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Does Common Ownership Explain Higher Oligopolistic Profits?

Law Working Paper N° 528/2020
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Abstract

A stylized fact that lurks in the background of the recent literature on common ownership is the parallel increase in the profitability of oligopolistic industries and common ownership. Some have argued that the growth in common ownership has caused the increase in oligopoly profits and have proposed a variety of policy responses. This paper briefly reviews the available evidence and finds it unconvincing. It then provides an overview of the evidence that concentration and profitability have increased, considers alternative explanations, and suggests that the emergence of "superstar" firms -- and not the growth in common ownership – could be a fundamental driver of the parallel increase in concentration and profitability.

Keywords: common ownership, corporate governance, Index funds, passive investing, active funds, institutional investors, coordinated effects, superstar firms, oligopoly profits

JEL Classifications: K21, K22, L4, L40, L41

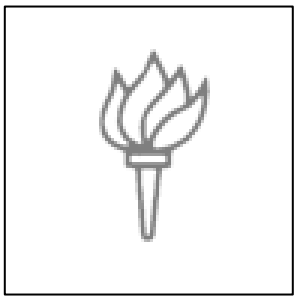
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Does Common Ownership Explain Higher Oligopolistic Profits?

Edward B. Rock[1] and Daniel L. Rubinfeld[2]

Abstract

A stylized fact that lurks in the background of the recent literature on common ownership is the parallel increase in the profitability of oligopolistic industries and common ownership. Some have argued that the growth in common ownership has *caused* the increase in oligopoly profits and have proposed a variety of policy responses. This paper briefly reviews the available evidence and finds it unconvincing. It then provides an overview of the evidence that concentration and profitability have increased, considers alternative explanations, and suggests that the emergence of "superstar" firms -- and not the growth in common ownership – could be a fundamental driver of the parallel increase in concentration and profitability.

1. Introduction

There is compelling evidence that both concentration and profitability in oligopolistic industries have increased over the past two decades. Over roughly the same time period, the concentration of shareholding in the hands of the largest institutional investors has dramatically increased, with a corresponding increase in the degree to which investors (such as Vanguard, State Street and BlackRock) own large equity stakes in competing portfolio companies. A number of authors have argued that the growth in this "common ownership" has *caused* the increase in oligopoly profits and have proposed a variety of policy responses.

In this paper, we briefly review the available evidence. We argue that as of now (a) the evidence that common ownership is the driving force behind the increasing oligopoly profits is unconvincing, and (b) there are plausible competing explanations for the correlation between profitability and common ownership. As a result, (c) regulatory intervention directed against common ownership is not currently warranted, given the significant costs of such intervention.

The paper proceeds as follows. In Section 2 we provide an overview of the evidence that concentration and profitability have increased. In Section 3, we consider the evidence that increased common ownership is the cause of the increase in profitability. Section 4 considers alternative explanations for the correlation between increasing concentration, increasing profitability, and increasing common ownership, along with the available evidence in support of these alternative hypotheses. Section 5 considers the policy implications of the current state of play.

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2. The Evidence: Concentration and Profitability

Over the past two decades, major industries in the U.S. and worldwide have become more concentrated and, over the same time period, more profitable. The U.S. Council of Economic Advisors 2016 "Issue Brief" documents that between 1997 and 2012 changes in the revenue share of the largest firms in a variety of industries has ranged between -2% and 11.4%, with the majority of those firms showing substantial increases.[3] More recently, a study by Bajgar et al. used firm-level concentration measures, and found that the share of industry sales due to the 10 largest companies in 10 European economies increased on average by 2 percent in manufacturing and 3 percent in non-financial services from 2001 to 2012.[4] The authors conclude that there has been a clear increase in industry concentration in both Europe and North America (from 2000 to 2014) by between 4 percent and 8 percent, with the absolute increase being somewhat greater in North America.[5]

Industry-specific studies support and augment this broad picture. To mention just a few, a 2010 Congressional Research Service study by Shields found that between 1971 and 2002 dairy industry concentration increased in eight of the nine agricultural industries studied.[6] Gaynor, Ho, and Town found that between the early 1990s and 2006, the average HHI for hospital markets increased by about 50% to approximately 3,200, substantially above the DOJ/FTC Guidelines' 2,500 cutoff measure of high concentration.[7] With respect to mobile wireless, concentration has steadily increased over time, highlighted by the recent successful acquisition of Sprint by T-Mobile, leaving the U.S. with only three facilities-based wireless carriers having a national footprint.[8]

Interestingly, there are significant exceptions to this overall pattern in some high-profile markets. Froeb and Werden found that U.S. airline route-level HHIs slightly decreased over their broad period of

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[3] U.S. COUNCIL OF ECON. ADVISERS. ISSUE BRIEF, BENEFITS OF COMPETITION AND INDICATORS OF MARKET POWER (April 2016).

[4] Matej Bajgar, Giuseppe Berlingieri, Sara Calligaris, Chiara Criscuolo & Jonathan Timmis, *Industry Concentration in Europe and North America* (OECD Productivity Working Papers, Paper No. 18, 2019)

[5] The increased consolidation in the U.S. has been echoed in the Canadian economic environment. A 2019 study by Bawania and Larkin shows that one-third of Canadian industries have seen an increase in the HHI of over 50%. *See* Ray Bawania and Yelena Larkin, Are Industries Becoming More Concentrated? The Canadian Perspective (Mar. 20, 2019), available at SSRN: https://ssrn.com/abstract=3357041 or http://dx.doi.org/10.2139/ssrn.3357041 .

[6] DENNIS A. SHIELDS, CONG. RESEARCH SERV., R41224, CONSOLIDATION AND CONCENTRATION IN THE U.S. DAIRY INDUSTRY (2010). *See also* Richard J. Sexton & Tian Xia, *Increasing Concentration in the Agricultural Supply Chain: Implications for Market Power and Sector Performance*, 10 ANN. REV. RESOURCE ECON. 229 (2018) (discussing concentration and coordination in the agri-food supply chain).

[7] Martin Gaynor, Kate Ho & Robert Town, *The Industrial Organization of Health-Care Markets*, 53 J. ECON. LIT. 235 (2015).

[8] For historical perspective, *see* FED. COMMC'N COMM'N, 30 FCC Rcd. 14515 (18), EIGHTEENTH MOBILE WIRELESS COMPETITION REPORT (2015).

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study, ranging from 1984 through 2012.[9] Likewise, a study by the U.K. Social Market Foundation found little indication of increasing concentration in most U.K. consumer markets over the period of 2000 to 2017.[10]

The link between concentration and profitability has been more contested. Antitrust law, scholarship and policy have all been based on a link between the two. Indeed, that link has been one of the foundations for the DOJ-FTC Horizontal Merger

Guidelines. The Guidelines, in turn, were highly influenced by the "Structure-Conduct-Performance paradigm" in Industrial Organization.[11] Convincing empirical analysis has historically been sparse for a variety of reasons that modern industrial organization scholarship describes. For one thing, concentration is not an exogenous force; as a result, we cannot be certain of the direction of the concentration-profitability relationship. For another, published concentration measures are often not coincident with the relevant economic markets that underlie industrial organization economics.

Studies looking for evidence from earlier periods have found weak or no correlation between these variables.[12] Indeed, the uncertain connection between industry concentration and anticompetitive outcomes is one of the reasons why, in the Guidelines, HHI levels are the starting point for further investigation and do not, on their own, trigger challenges.[13] Post 2000, however, the evidence of this link is more robust. A Swiss finance Institute Research Paper by Grullon et al, supports the correlation between concentration and profit margins.[14] The authors find that more than three-fourths of U.S

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[9] Luke M. Froeb & Gregory J. Werden, *Don't Panic: A Guide to Claims of Increasing Concentration*, ANTITRUST MAG., Fall 2018. Froeb and Werden reference three papers with differing periods of study. For the 1984-90 period Borenstein found that route-level HHIs on domestic U.S. routes decreased slightly. *See* Severin Borenstein, *The Evolution of U.S. Airline Competition*, 6 J. ECON. PERSPECTIVE 45 (1992). For the 1995-2009 period, according to Huschelrath and Muller the HHIs for the largest 100 short-, medium- and long-haul routes revealed a general downward trend in concentration. *See* Kai Hüschelrath and Kathrin Müller*, Low Cost Carriers and the Evolution of the Domestic U.S. Airline Industry*, 13 COMPETITION & REG. NETWORK INDUSTRIES 133 (2012). Finally, for the 2007-12 period, the GAO concluded that there was a slight reduction in concentration in the highest-travelled markets. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, AIRLINE COMPETITION: THE AVERAGE NUMBER OF COMPETITORS IN MARKETS SERVING THE MAJORITY OF PASSENGERS HAS CHANGED LITTLE, BUT STAKEHOLDERS VOICE CONCERNS ABOUT COMPETITION, 26 (2014).

[10] Scott Corfe & Nicole Gicheva, *Concentration not competition: the state of UK consumer markets*, THE SOC. MKT. FOUND. (Oct. 2017), http://www.smf.co.uk/wp-content/uploads/2017/10/Concentration-not-competition.pdf. *See also* Thomas A. Lambert & Michael E. Sykuta, *The Case for Doing Nothing About Institutional Investors' Common Ownership of Small Stakes in Competing Firms*, 13 VA. L. & BUS. REV. 213 (2019).

[11] The SCP paradigm can be traced back to the work of Bai. *See,* e.g., Joe S. Bain, *Relation of Profit Rate to Industry Concentration: American Manufacturing: 1936 to 1940*, 65 Q'TLY J. ECON. 293 (1951).

[12] For a thoughtful early overview, *see* Richard Schmalensee & Robert Willig, (1989). Handbook of Industrial Organization, Volume 2, Elsevier, pp 951 – 1009

[13] DOJ/FTC Horizontal Merger Guidelines at Section 1.5, Sections 2-5.

[14] Gustavo Grullon, Yelena Larkin & Roni Michaely, *Are U.S. Industries Becoming More Concentrated?* Forthcoming, Review of Finance, Swiss Finance Institute Research Paper No.

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industry have experienced an increase in concentration levels over the past two decades and that those industries with the highest increased in concentration have seen higher profit margins.[15] The authors credit these changes in part to reduced antitrust enforcement and increased technological barriers to entry.[16]

Along the same lines, an informative paper by Gutierrez and Philippon shows clearly that there has been an increase in the HHI in most U.S. industries and correspondingly an increase in profit margins as measured by the Lerner index.[17] The evidence that, since 2000, increased concentration is correlated with increased profitability suggests that an adequate theory must explain two things: why is there a correlation between concentration and profitability? And why has there been a strong(er) correlation post 2000 than pre-2000? Jonathan Baker tells a compelling story. According to Baker, large businesses have profited by using sophisticated pricing algorithms and customer data to secure substantial, persistent advantages over smaller players.[18]

3. Has Common Ownership Led to Higher Profit Margins? The Claims and a Critique of the Evidence

Much of the current debate results from the extraordinary attention attracted by Jose Azar, Martin Schmalz and Isabel Tecu's (AST) widely read working paper (now published in the Journal of Finance) that claims the increased common ownership by diversified investors has *caused* a significant increase in the price of airline tickets.[19] A related paper claims that the same effect is found in commercial banking.[20] In response to the dramatic clams of these papers, there has been a huge outpouring of theoretical and empirical research and analysis. In this section, we briefly review that research.

a. The AST claim

Azar, Schmalz and Tecu make two main arguments. First, they argue that managers of firms in concentrated industries characterized by high levels of common ownership will have an incentive to

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19-41, Available at SSRN: https://ssrn.com/abstract=2612047 or http://dx.doi.org/10.2139/ssrn.2612047.

[15] *See id.* at 6-11.

[16] *Id.*

[17] Germán Gutierrez & Thomas Philippon, *Declining Competition and Investment in the U.S.* (July 2017). NBER Working Paper No. w23583, Available at SSRN: https://ssrn.com/abstract=3003721. The Lerner index is a measure of a firm's profit margin (typically the gross profit margin as a percentage of the price of the product). *See e.g.*, Robert S. Pindyck & Daniel L. Rubinfeld, *Market Power: Monopoly and Monopsony*, *in* MICROECONOMICS, (9th ed. 2018).

[18] Jonathan B Baker, *The Antitrust Paradigm: Restoring the American Economy*, 2019, Harvard University Press.

[19] José Azar, Martin C. Schmalz and Isabel Tecu, *Anti-competitive Effects of Common Ownership*, 73 J. FIN. 1459 (2018).

[20] José Azar, Sahil Raina & Martin C. Schmalz, Ultimate ownership and bank competition (May 4, 2019) (unpublished manuscript) https://ssrn.com/abstract=2710252.

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adopt a "soft competition" strategy out of deference to their shareholders' ownership of competing firms. Second, they argue that, in fact, this is what has happened in the airline industry -- with the effect of increasing ticket prices. As noted, a related paper finds that common ownership had the same effect in the commercial banking industry.

b. Concerns with the AST Claim

There are a variety of theoretical and empirical concerns that have been raised in response to these claims. As we have argued in detail elsewhere, it is unclear whether shareholders as a group would in fact have an *incentive* to encourage firms to adopt a "soft competition" strategy.[21] While there is clearly a degree of common ownership among airlines, there is also substantial heterogeneity, with a mix that has varied substantially over time. Thus, while the common holdings of the largest index funds have remained fairly constant, as would be expected for funds that track an index, the holdings of actively managed investors are large and have varied substantially over relatively short time periods. AST's argument that managers of airlines will sacrifice their own airline's profits out of deference to investors' holdings in competitors assumes a degree of commonality in the holdings of investors that, in practice, does not exist. Moreover, when investors' portfolios are heterogeneous, each investor will have a different view of the right sort of competition within the industry and the extent to which managers should take into account the effect on competitors of a competitive strategy.

These concerns point to a more fundamental question: how exactly would an individual firm find a way to maximize the weighted average of the profits enjoyed by the shareholders of all of the firms in the industry, accounting for some shareholders' ownership of horizontal competitors? Does this broader more complex objective function explain the strategic behavior of the airlines more accurately than the usual firm-based profit-maximization assumptions? We have seen no compelling evidence that firms, in fact, take their shareholders' investment portfolios into account in setting competitive strategy.

This leads directly into a second set of concerns with the AST argument: what is the basis for thinking that common owners have the *ability* to influence managers to soften competition even if doing so would increase the investors' portfolio value? The corporate governance channels by which investors would influence managers in the way that AST hypothesize remain obscure. While shareholders elect directors, who disclose vast amounts of information in proxy statements, we are not aware of any directors who have "run" on a "soften competition" platform. While shareholders have a periodic non-binding vote on management compensation, this is likewise too blunt an instrument to be plausible.[22]

What has led the AST paper to attract such attention, however, is not the theoretical possibility but, rather, the empirical claim that common ownership has *actually* resulted in significantly higher

[21] Edward B. Rock and Daniel L. Rubinfeld, *Antitrust for Institutional Investors*, 82 ANTITRUST L.J. 279 (2018)("R & R I").

[22] *Id*. at 239-40; C. Scott Hemphill & Marcel Kahan, *The Strategies of Anticompetitive Common Ownership*, 129 YALE L. J. 1392, 1413-19 (2020). See, also, Jill Fisch, Darius Palia and Steven Davidoff Solomon, *Is Say on Pay All About Pay? The Impact of Firm Performance*, 8 Harv. Bus. L. Rev. 101 (2018).

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prices in airlines and other industries. Their empirical analysis of the airline industry starts with an analysis of the correlation between the change in the degree of common ownership and airline fares (using a measure of overlapping ownership that O'Brien and Salop used in their quite different cross-ownership context – the MHHIΔ). AST then treat an exogenous event that increased ownership concentration – BlackRock's 2009 purchase of Barclay's iShares business – as a natural experiment to determine whether a change in ownership concentration leads to an increase in ticket prices.

Every step of this analysis has been subjected to substantial scrutiny. First, Hemphill and Kahan show that the use of MHHIΔ as the measure of ownership concentration is problematic because it is not the right measure for testing plausible channels of influence and the channels of influence that it tests are not plausible.[23] Others agree that the MHHIΔ is not a useful measure for a variety of other reasons and have tried to develop alternative approaches.[24]

Second, and more fundamentally, Backus, Conlon and Sinkinson show that looking for correlations between prices and common ownership concentration runs into all of the same issues that have long been raised regarding correlations between prices and market concentration, as measured by the HHI.[25] Specifically, the results are often spurious or impossible to interpret; ultimately, the relationship identified is an equilibrium outcome that may well not identify any meaningful economic relationship. Moreover, there are issues concerning the appropriate choice of profit weights and endogeneity with respect to the determination of prices, outputs, market shares and concentration.

Third, the empirical results in the airline industry are not robust. Dennis et al and Kennedy et al have both shown that the AST results are extremely sensitive to initial assumptions.[26]

Fourth, if the AST theory is correct, one would expect to find similar effects in concentrated markets with equivalent levels of common ownership other than airlines and banking. To our

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[23] Hemphill & Kahan, supra note X.

[24] Matthew Backus, Christopher Conlon & Michael Sinkinson, *Theory and Measurement of Common Ownership*, 110 AEA PAPERS AND PROCEEDINGS 1 (2020); Matthew Backus, Christopher Conlon & Michael Sinkinson, *Common ownership and competition in the ready-to-eat cereal industry*, Sept. 2018 (available at https://www.law.northwestern.edu/research-faculty/clbe/events/antitrust/documents/sinkinson_cereal.pdf); Erik Gilje, Todd A. Gormley & Doron Levit, *Who's Paying Attention? Measuring Common Ownership and Its Impact on Managerial Incentives*, 137 J. FIN. ECON. 152-178 (2020).

[25] Matthew Backus, Christopher Conlon & Michael Sinkinson, *The Common Ownership Hypothesis: Theory and Evidence* (Brookings Economic Studies Paper, Feb. 5, 2019), available at https://www.brookings.edu/research/the-common-ownership-hypothesis-theory-and-explanation/ .

[26] *See* Patrick J. Dennis, Kristopher Gerardi & Carola Schenone, *Common Ownership Does Not Have Anti-Competitive Effects in the Airline Industry* (McIntire Sch. Commer. Working Paper, 2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3063465#. For a broader criticism of AST, *see* Pauline Kennedy, Daniel P. O'Brien, Minjae Song & Keith Waehrer, The Competitive Effects of Common Ownership: Economic Foundations and Empirical Evidence (July 2017), available at SSRN: https://ssrn.com/abstract=3008331 or http://dx.doi.org/10.2139/ssrn.3008331.

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knowledge, such attempts have failed. Backus et al, in a working paper, find that the results cannot be replicated in the ready-to-eat cereal market, despite similar levels of market and ownership concentration.[27] With respect to banking, Gramlich and Grundl find little evidence of economically large effects of common ownership on profits.[28]

Koch, Panayides, and Thomas have carried out some interesting empirical tests across a wide range of product markets. They conclude that higher industry common shareholding levels have no robust, positive effects on industry profitability measured as either the average cross-industry ratios of revenues over costs or the price-cost margin.[29] In response to the difficulty of drawing causal conclusions absent an ideal randomized experiment (e.g., in which the system receives a random shock in the form of an unexpected change in the extent and/or form of common ownership) the authors looked for structural breaks in time series that might be indicative of the possibility of a related quasi-experiment. They found no systemic changes in markups or price-cost margins following dramatic changes in common ownership. The same conclusion flowed from industry-level regressions of profitability on non-price competition proxies for common ownership, with controls that take into account other aspects of institutional ownership and differences in industry structure.[30]

Although the research triggered by the AST paper reinforces our doubts about the unilateral effects theory that is at the heart of the AST analysis, we remain agnostic with respect to the more general claim that common ownership has led to higher profit margins and prices. As we explain in our most recent common ownership paper, there are a number of potential links, but we have yet to see empirical evidence establishing a compelling causal story linking the growth of common ownership with systemic coordinated anticompetitive effects.[31] We recognize the recent contribution by Anton, Ederer,

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[27] Matthew Backus, Christopher Conlon & Michael Sinkinson, Common ownership and competition in the ready-to-eat cereal industry, supra note X.

[28] Jacob Gramlich & Serafin Grundl, *The Effect of Common Ownership on Profits: Evidence from the U.S. Banking Industry* (FEDS Working Paper No. 2018-069, 2018).

[29] Andrew Koch, Marios A. Panayides and Shawn Thomas, *Common Ownership and Competition in Product Markets*, J. FIN. ECON. (forthcoming 2020) available at SSRN: https://ssrn.com/abstract=2965058 or http://dx.doi.org/10.2139/ssrn.2965058

[30] For a study that draws similar conclusions, *see* Katharina Lewellen and Michelle Lowry, *Does Common Ownership Really Increase Firm Coordination?* (July 15, 2020). Journal of Financial Economics (JFE), Forthcoming, Tuck School of Business Working Paper No. 3336343, Available at SSRN: https://ssrn.com/abstract=3336343 or http://dx.doi.org/10.2139/ssrn.3336343. (finding no evidence that common ownership increases the likelihood of firm coordination, as measured by joint ventures, strategic alliances, or mergers).

[31] Edward B. Rock & Daniel L. Rubinfeld, Common Ownership and Coordinated Effects, 83 ANTITRUST L.J. 201, 222-24 (2020(R & R II)). A recent paper by Mengde Liu ("Players Behind the Scenes: Common Ownership in the Hospital Industry," draft, October 31, 2019) claims to find causal price effects from common ownership in the hospital industry. The author conducts a range of statistical tests, but in the end several major conceptual flaws remain: (1) The lead-lead and other methods to treat endogeneity are not compelling; (2) There is no explanation as to the causal mechanism by which the common owners impact hospital management behavior (while the author cites our coordination paper, the paper uses a

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Gine, and Schmalz. [32] They offer a theoretical framework in which performance-sensitive contracts induce managerial effort to reduce costs, and lower costs induce higher output. In that world, greater managerial effort can lead to lower product prices and industry profits. They also offer some empirical evidence supporting the suggestion that managerial wealth is more sensitive to performance when a firm's largest shareholders do not own large stakes in competitors. We are more sympathetic with this coordination-centric viewpoint for reasons discussed in our recent paper, but we nevertheless remain skeptical with respect to the empirical evidence (especially the difficulty of dealing with the endogeneity of market concentration).[33]

4. Alternative Explanations for the Correlation Between Concentrated Markets, Higher Profits and Concentrated Common Ownership

If the increase in common ownership is not the cause of the increase in concentration or profitability, what might that cause be? In this section, we consider some alternative explanations.

a. Reverse Causation? Suppose that Savvy Investors Invest in Oligopolies?

Observers have noted that Warren Buffett, a legendary investor, tends to invest in oligopolies.[34] Indeed, he has explicitly noted that the most wonderful business to invest in is one with pricing power.[35] If other savvy and successful investors follow a similar strategy, then the increase in common ownership in concentrated industries may be the *result* of concentration and profitability and not the *cause* of either.

As an explanation, this has some plausibility. Because oligopolies and monopolies tend to have high and sustained profits, it is not crazy to think that savvy investors would disproportionately gravitate to such investments and, having identified an oligopoly, invest in many if not all the firms in the market.

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unilateral effects methodology); and (3) There is no attempt to account for any hospital or hospital systems mergers.

[32] Miguel Anton, Florian Ederer, Mireja Gine, and Martin Schmalz, Common Ownership, Competition, and Top Managerial Incentives," European Corporate Governance Institute (ECGI) - Finance Working Paper No. 511/2017, Available at SSRN: https://ssrn.com/abstract=2802332 or http://dx.doi.org/10.2139/ssrn.2802332.

[33] See R&R I at 239-240 and Hemphill and Kahan, supra note X.

[34] Jonathan Tepper & Denise Hearn, *Where Warren Buffett and Silicon Valley Billionaires Agree*, BARRON'S (Dec. 11, 2018, 8:00 AM), https://www.barrons.com/articles/myth-of-capitalism-book-excerpt-51544500404; Paulo Santos, *A Warren Buffett Insight: Buy Monopoly-Like Situations*, SEEKING ALPHA (Dec. 28, 2015, 1:11 PM). https://seekingalpha.com/article/3778976-warren-buffett-insight-buy-monopoly-like-situations; Vincent Fernando, *Warren Buffett Building a Cosy Insurance Oligopoly*, BUSINESS INSIDER (Feb. 26, 2010, 5:04 AM), https://www.businessinsider.com/buffett-2010-2; FINDING STOCK THE WARREN BUFFET WAY, *Part 2: A Screen for Identifying Consumer Monopolies*, http://web.csulb.edu/~pammerma/fin382/screener/buffett3.htm.

[35] Nicholas Vardy, *Is Warren Buffett the Ultimate Anti-Capitalist?*, LIBERTY THROUGH WEALTH (Nov. 20, 2018), https://libertythroughwealth.com/2018/11/20/warren-buffett-anti-capitalist-anti-competition/.

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At the same time, this explanation has its limits. First, it does not explain the timing: why did concentration, common ownership and profitability all increase since around 2000? Second, the persistence over time is puzzling because it is unclear why unsophisticated investors would not eventually learn to follow the lead of the sophisticated investors. Third, it may be a complementary rather than competing explanation if Buffett and the other common owners somehow put pressure on members of an oligopoly not to engage in sharp competition, or if, in anticipation of such pressure, managers tailored their strategies to the savvy investors' portfolios.

b. Might there be a common cause?

The most interesting and puzzling finding in the literature is that the link between concentration and profitability is clearer post-2000 than pre-2000. Concerns about the limits of oligopoly competition go back decades, as do concerns with common and cross ownership.[36] The fact that the link has become stronger since 2000 raises the possibility that some other recent change is primarily responsible.

What are the main changes that plausibly could have such a significant effect? Two candidates come to mind: technology (especially in markets with strong network effects); and the old bogeyman, regulation. Might some combination of these explain the observed changes? Might the increase in concentration, the increase in profitability and the increase in common ownership all be a consequence of the impact of technology and/or regulation? In this section, we examine the plausibility of this suggestion.

In an insightful paper by Autor, et al., the authors suggest that "superstar firms" -- firms whose productivity and rate of innovation allows them to outgrow their competitors – account for the increased market shares of the leading firms in some industries.[37] Put simply, the higher productivity of the superstars allows them to cut costs and reduce price (while in many cases increasing their price/cost markups and their profitability).[38] The ability to undercut competitors allows the firm to grow market share as well.[39]

What "special sauce" could make a firm into a superstar and allow it to remain one? Autor and his co-authors suggest that the increase in market shares might be attributed to greater competition caused by globalization, especially in markets in which demand is relatively elastic. This, however, seems unlikely because, as Bessen points out, there does not appear to be any correlation between the extent of globalization and the extent of industry concentration.[40]

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[36] US v. E.I. du Pont de Nemours & Co., 353 U.S. 586 (1956).

[37] David Autor, David Dorn, Lawrence F. Katz, Christina Patterson & John Van Reenen, *The Fall of the Labor Share and the Rise of Superstar Firms*, 135 Q. J. ECON. 645 (2020).

[38] *Id.* at 6. Autor et al, point out the conditions under which higher markups are likely to be achieved.

[39] The Autor, et al. claim that that superstar firms are becoming larger and more productive than other firms has been challenged by German Gutierrez and Thomas Philippon, Causes and Consequences of Rising Concentration in the United States Economy, 109 AEA Papers and Proceedings 312-316 (2019), https://doi.org/10.1257/pandp.20191065.

[40] James Bessen, *Information technology and Industry Concentration* (Boston Univ. Sch. Law, Law and Econ. Research Paper, No. 17-41, 2019), Bessen, James E., Industry Concentration

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Bessen makes a plausible argument that the "special sauce" is the sustained increase in productivity that derives from *proprietary* advances in information technology. Whether due to network effects, technological advances, or more generally effective competitive mechanisms, we can expect the more technologically productive firms to have a substantial competitive advantage over firms that are less productive. This offers a good explanation for the increased profitability of a number of oligopolistic industries.

Delving more deeply into the sources of IT productivity, Bessen credits the differential productivity of firms to management's ability to utilize its software development abilities to take advantage of economies of scale as well as network effects. He notes that the development of IT systems has varied substantially across firms.[41] The key is whether firms (a) have the ability to develop cutting edge systems, and (b) have the management or software-development skills to put new technologies into the marketplace.

This is an intriguing perspective; it offers a set of explanations as to why there has been substantial variation in the growth and profitability of oligopolistic firms. In particular, it offers an explanation for why there has been a parallel increase in concentration in airlines and banking: in both, proprietary IT has arguably provided enduring competitive advantages.

With respect to banking, nearly a decade ago Hughes and Mester found evidence that IT development costs along with network effects help to explain the presence of substantial scale economies.[42] They pointed out that proprietary IT can help to explain the reallocation to more productive firms, growing rising industry concentration and growing profit margins. Delving more deeply into the cost functions of banks, the authors emphasized that larger banks have a greater ability to manage the scale economies that flow from the diversification of risk.[43]

Now consider airlines. The airline industry utilizes highly sophisticated software technologies in managing (i) the allocation of equipment among a multitude of available routes; (ii) the allocation of available seats among the available categories (first class, economic plus, regular coach as well as

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and Information Technology (December 1, 2017), available at SSRN: https://ssrn.com/abstract=3044730

[41] Id., citing Dan Andrews, Chiara Criscuolo, and Peter N. Gal, *The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy*, No. 5. (2016), OECD Productivity Working Papers, No. 5, OECD Publishing, Paris, https://doi.org/10.1787/63629cc9-en; and Giuseppe Berlingieri, Patrick Blanchenay, and Chiara Criscuolo (2017), *The great divergence(s)*,OECD Science, Technology and Industry Policy Papers, No. 39, OECD Publishing, Paris, https://doi.org/10.1787/953f3853-en.

[42] Joseph P. Hughes and Loretta J. Mester, *Who Said Large Banks Don't Experience Scale Economies? Evidence from a Risk-Return-Driven Cost Function*, 22 J. FIN. INTERMEDIATION 559 (2013).

[43] For recent empirical evidence that these scale economies are significant, *see* David C. Wheelock & Paul W. Wilson, The Evolution of Scale Economies in U.S. Banking (Feb. 2017),FRB St. Louis Working Paper No. 2015-21, Available at SSRN: https://ssrn.com/abstract=2655448 or http://dx.doi.org/10.20955/wp.2015.021 . *See also* Simplice A. Asongu and Nicholas M. Odhiambo, *Size, Efficiency, Market Power, and Economies of Scale in the African Banking Sector,* 5 FIN. INNOVATION No. 4 (2019).

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"opaque" seats those that are sold to businesses that are heavy users); and (iii) the offering of ticket prices up to 11 months in the future for all air classes. These software technologies, along with the substantial network effects that flow from the hub and spoke business model, have allowed three of the four major U.S. carriers to achieve reasonable levels of profitability in a competitive environment. The fourth, Southwest Airlines has been the most profitable.[44] Southwest has at best a partial network operation. It has benefitted generally by flying point to point in competition with profitable network routes, while utilizing airports with relatively low utilization fees.

It is worth considering whether the increase in common ownership is driven by the same technological changes. Asset management likewise combines extreme competition with economies of scale driven by technology. The largest managers of index strategies – BlackRock, State Street and Vanguard – have developed systems that allow for the deployment of massive amounts of capital at an extraordinarily low cost (at Vanguard, 4 basis points), while still making money. BlackRock combines additional technological advantages with its Aladdin platform, an operating system for investment professionals that manages large volumes of investment data, maintains quality control, and allows for a wide range of analyses for its clients. On the other hand, it is less clear whether the technological sophistication of BlackRock, Vanguard and State Street provides any enduring competitive advantage, given that the sort of technology necessary for running an index fund at scale is likely to be widely available. The popularity of index strategies combined with standard economies of scale provide an alternative explanation for the increased concentration in asset management, even as asset management overall remains a fragmented industry.[45]

If some version of the claim that proprietary improvements in information technology is the heart of the special sauce is correct, it could explain why AST observe a correlation between concentration, common ownership and profitability in airlines and banking while Backus et al. find no such relationship in breakfast cereals. Here, the suggestion would be that proprietary software and network effects play an important role in airlines and banking but a relatively minor role in a classic consumer product market like ready to eat cereals.

5. Current Policy Implications

The rise of the large institutional investors over the last 30 years has been the biggest "story" in corporate governance.[46] With AST's pathbreaking work on the competitive effects of common

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[44] *See, e.g.* Mark Israel, Bryan Keating, Daniel L. Rubinfeld & Bobby Willig, *Airline Network Effects and Consumer Welfare*, REV. NETWORK ECON. 1 (2013).

[45] While BlackRock, Vanguard and State Street are the dominant players for indexed strategies, the overall asset management industry is quite unconcentrated. See, e.g., Francesco Franzoni, The effects of concentration in the asset management industry on stock prices, Table 1, https://voxeu.org/article/concentration-asset-management-industry-and-stock-prices (2019); Ben-David, Franzoni, Moussawi, and Sedunov, The Granular Nature of Large Institutional Investors (NBER working paper 22247); Anadu, Kruttli, McCabe, Osambela and Shin, The Shift from Active to Passive Investing: Potential Risks to Financial Stability? Federal Reserve Bank of Boston Working Paper RPA 18-04 (August 27, 2018).

[46] Edward B. Rock, *The Logic and (Uncertain) Significance of Institution Shareholder Activism*, 79 GEO. L. J. 445 (1991); Bernard Black, *Agents Watching Agents: The Promise of*

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ownership, we are at the beginning of what promises to be a fascinating investigation of the competitive effects of common ownership. In this section, we consider some of the policy implications of this new debate.

Some who are convinced by the AST analysis have proposed systemic solutions to what they believe is a systemic problem. Einer Elhauge argues that the current common ownership by the largest institutional investors constitutes a continuing violation of Section 7 of the Clayton Act and possibly Section 1 of the Sherman Act and advocates for government enforcement actions and private class actions.[47] As we have discussed at length elsewhere, we disagree with Elhauge's legal analysis.[48] For what it is worth, we are not aware of any enforcement actions or private class actions embracing Elhauge's legal theory.

Posner, Scott Morton and Weyl are, likewise, convinced by the AST analysis and have proposed an alternative to complete divestiture. In their view, the danger posed by common owners across industries is so severe that they should be put to a choice: divest all but one firm in each oligopoly; or limit holdings to less than 1% and pre-commit to governance passivity by sterilizing votes.[49] Given the huge benefits of index investing for ordinary investors, and what we view as the generally positive role that the largest institutional investors play in corporate governance, we think that the Posner et al policy change is not warranted by the evidence gathered to date, and would cause significant harm.

For both Elhauge and Posner et al.'s proposals, the difficulty of replicating the AST results in other industries, discussed above, undermines the case for a global/systemic reform. Rather, any intervention addressing the anti-competitive effects of common ownership should require a specific showing of such effects, based on particularized industry findings. Although common ownership is a market wide phenomenon, there is no evidence that the supposed anti-competitive effects of common ownership obtain in every concentrated market.

Although unconvinced that common ownership undermines competition systemically, common ownership does raise significant antitrust issues that enforcement authorities should investigate. First, in oligopolies, shareholders – whether they are common owners or undiversified owners – can indisputably play an anticompetitive role. They can, for example, organize competitors into a "hub and spokes" conspiracy and, if they do so, will violate Section 1 of the Sherman Act and be subject to criminal sanctions and treble damages.[50] Likewise, there are a variety of other plausible coordinated scenarios in which shareholders can cause competitive harm, such as if shareholders act as a

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Institutional Investor Voice, 39 UCLA L. REV. 811 (1992); Lucian A. Bebchuk, Alma Cohen and Scott Hirst, *The Agency Problem of Institutional Investors*, 31 J. ECON. PERSPECTIVES 89 (2017); Edward B. Rock & Marcel Kahan, *Index Funds and Corporate Governance: Let Shareholders be Shareholders*, 100 B.U. L. REV. 1753 (2020).

[47] Einer Elhauge, *Horizontal Shareholding*, 129 HARV. L. REV. 1267, 1301-16 (2016).

[48] R & R I, *supra* note 20, at 251-262.

[49] This can be done either be committing not to vote their shares or, to avoid depriving companies of a quorum at the annual meeting, to commit to voting shares in proportion to how the non-common owners vote (what is known as "mirror voting").

[50] R & R II, supra note X.

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trustworthy conduit for communication among competitors, advocate an industry-wide anticompetitive compensation structure or possibly even as the spreader of anticompetitive practices.[51] In each of these cases, depending on the factual context, shareholder conduct may violate existing antitrust law and be subject to sanctions.

Finally, there may be implications for merger policy. The European Commission, in the Dow/DuPont matter, suggested that, in light of the AST analysis, the treatment of traditional measures of market concentration such as the HHI should be supplemented by the MMHIΔ to take into account the competitive effects of common ownership. This is unwarranted for a number of reasons beyond the preliminary nature of the AST results. First, in mergers of commonly owned firms, while incorporating MMHIΔ may affect the threshold at which enforcement officials look closely at mergers on the grounds that HHI understates the pre-merger competitive condition, it will likewise *reduce* the significance of any increases in HHI resulting from the merger (on the same grounds). Second, while focusing on MMHIΔ points in the right direction in the review of mergers between a large incumbent and a non-commonly owned maverick firm, merger policy already subjects such mergers to enhanced scrutiny. In such cases, focusing on MMHIΔ adds little.

But suppose that the relation between increased industry concentration, increased oligopoly profits and increased common ownership since 2000 are all the result of a common cause. What if it turns out that the rise of superstar firms, driven by changes in information technology, network effects, regulation and/or globalization, is responsible for the simultaneous increase in concentration and common ownership? What are the implications?

This will be an important debate going forward. Some will argue that the rise of superstar firms should justify stricter merger control.[52] Others, however, will argue that the rise of the superstar firms – firms that become and remain superstars because they reduce costs and increase output at the same time as they increase profits – calls into question the fundamental assumptions of current merger regulation. If the superstar firm hypothesis is confirmed, these will be among the most important debates of the next era of antitrust enforcement.

[51] *Id*.

[52] *See* Carl Shapiro, *Protecting Competition in the American Economy: Merger Control, Tech Titans, Labor Markets*, 33 J. ECON. PERSPECTIVES 69, 75 (2019) (noting that if Azar, Schmalz and Tecu's claims find additional support in future research, they would provide an additional basis for stricter merger controls).

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