

Uncommon Implications of the Common Ownership Hypothesis

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Abstract:

One of the most pressing dilemmas facing consumer protection policy and corporate law is the common ownership problem – the idea that diversified investment products that help millions of consumers are indirectly making them worse off. The hypothesis states that when the same investment funds own sizable stakes in rival firms, those firms will have less incentive to compete with one another, leading to higher prices, lower wages and greater income inequality. We argue that current attempts to resolve the common ownership question are destined for stalemate because they are premised on a misunderstanding of the empirical evidence that frames the issue. The problem stems from a flawed measure of common ownership that drives the results of the empirical research on common ownership mechanically, rather than revealing anything about the underlying reality of the issue. We demonstrate this flaw by replicating the foundational “airline paper,” showing that a relationship between ownership and anticompetitive price increases can be obtained using completely random common ownership or low, presumably harmless levels of common ownership, in line with what some have proposed as a legal limit.

We propose an alternative empirical and legal approach to the common ownership problem that empirically tests a set of logical implications of common ownership theory that have thus far been missing from the conversation. These implications entail empirical observations that should be surprising and uncommon absent the effects of common ownership. Specifically, if the economic theory that underpins the hypothesis is true, certain transactional forms in the life of a firm that are assumed irrelevant for consumers should have dramatic effects on consumer prices. For example, Mondelez’s decision to change a subsidiary’s on-paper nationality through a tax inversion would be expected to lower other companies’ coffee prices. And Proctor & Gamble’s decision to pay in stock instead of cash to acquire Gillette should cause unrelated third-party companies to sell cheaper batteries. We explain how predictions like these can guide legal research and empirical inquiry into common ownership’s effects, mechanisms and solutions.

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INTRODUCTION

To read recent academic articles and news reports, people could be forgiven for thinking that their retirement fund means them harm.² A debate is raging about the negative effects on society from common ownership – the vast, overlapping common shareholdings of institutional investors like BlackRock, Vanguard and State Street.³ The allegations are unpleasant but critically important: harms

² See, e.g., Matt Levine, People are Worried About Index Funds (Bloomberg, Jan. 9, 2020), online at <https://www.bloomberg.com/opinion/articles/2020-01-09/people-are-worried-about-index-funds> (last visited July 21, 2020) (discussing ways in which index funds have been accused of harming society); Einer Elhauge, *Horizontal Shareholding*, 129 HARV. L. REV. 1267, 1270-73 (2016) (describing harmful effects of common share ownership by index funds identified in empirical literature).

³ See Elhauge, *supra* note 1 at 1269-70.

such as high consumer prices,⁴ depressed wages,⁵ and income inequality⁶ have all been laid at the doorstep of the investment managers that loom large in the American economy.⁷

At the root of these accusations is the common ownership hypothesis,⁸ an idea that has quickly become one of the most influential theories of the decade.⁹ According to the common ownership hypothesis, when large investment funds own stakes in the same rival companies, those companies stop competing against each other, resulting in higher consumer prices in industries where economics would predict they should be kept low.¹⁰ In more technical terms, rival companies' incentives shift from maximizing their *own* profits to maximizing the returns of the investment funds' *entire portfolios*; this shift causes commonly owned firms to soften price competition.¹¹ After all, why compete if your rivals' profits enrich your investors as much as your own profits do?

The common ownership hypothesis is the subject of a heated debate, sparked by empirical evidence that has been described as an “economic blockbuster.”¹² An article commonly referred to as the “airline paper” reported that investment funds' overlapping ownership of airlines' stock was associated with anticompetitive airfare hikes,¹³ and similar empirical findings have emerged for other industries.¹⁴ On the basis of this evidence, intense deliberation has emerged on two fronts: some legal

⁴ *Id.* (describing possible anti-consumer effects of common ownership and analyzing the antitrust implications). *See also* José Azar, Martin Schmalz and Isabele Tecu, *Anticompetitive Effects of Common Ownership*, 73 J. FIN. 1513 (2018) [hereinafter *Airline Paper*] (finding empirical support for the common ownership hypothesis, namely, that overlapping ownership of airline stocks by institutional investors is associated with higher prices); Eric Posner and Glen Weyl, *Mutual Funds' Dark Side: Why Airlines and Other Industries Keep Prices Too High* (Slate, April 16, 2015), online at <https://slate.com/news-and-politics/2015/04/mutual-funds-make-air-travel-more-expensive-institutional-investors-reduce-competition.html> (discussing common ownership and high consumer prices).

⁵ *See* José Azar, Ioana Marinescu, and Marshall Steinbaum, *Labor Market Concentration* (December 10, 2018) (unpublished manuscript) (<https://ssrn.com/abstract=3088767>) (examining whether common ownership depresses wages).

⁶ Einer Elhauge, *How Horizontal Shareholding Harms our Economy – and Why Antitrust Law Can Fix It*, 10 HARV. BUS. L. REV. 207, 219 (2020) (arguing that common ownership increases income inequality).

⁷ Institutional asset managers owned 80% of the total value of the S&P 500 (an index of the largest companies in the United States) as of the end of 2017. *See* Matthew Backus, Christopher Conlon and Michael Sinkinson, *Common Ownership in America 1980-2017* 3 (Nat'l Bureau of Econ. Res., Working Paper No. 25454, 2019) [hereinafter *Common Ownership in America*], <http://www.nber.org/papers/w25454>.

⁸ *See* Elhauge, *supra* note 2, at 1267. Common ownership is sometimes also referred to as horizontal shareholding. *See id.* We call it common ownership in this paper for consistency, and because it is referred to that way in the majority of the literature.

⁹ *See, e.g.*, Elhauge, *supra* note 2; Fiona Scott Morton and Herbert Hovenkamp, *Horizontal Shareholding and Antitrust Policy*, 127 YALE L.J. 2026, 2028 (2018); Eric A. Posner, Fiona Scott Morton and E. Glenn Weyl., *A Proposal to Limit the Anti-Competitive Power of Institutional Investors*, 81 ANTITRUST L.J. 669, 672 (2017).

¹⁰ *See* Elhauge, *supra* note 1, at 1273-74. *See also*, Azar et al., *Airline Paper*, *supra* note 2, at 1515; José Azar, Sahil Raina and Martin Schmalz, *Ultimate Ownership and Bank Competition* (July 23, 2016) [hereinafter *Banking Paper*] (unpublished manuscript) (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2710252) (examining indicators of a common ownership effect with respect to bank fees).

¹¹ *See* Azar et al., *Airline Paper*, *supra* note 2, at 1515 (explaining how common ownership provides incentives to reduce output and raise prices).

¹² Elhauge, *supra* note 1, at 1273-74 (describing the airline paper as an “economic blockbuster”).

¹³ *See* Azar et al., *Airline Paper*, *supra* note 2, at 1515.

¹⁴ For instance, researchers have produced empirical studies linking common ownership to reduced entry of generic drugs in pharmaceutical markets. *See* Jin Xie and Joseph Gerakosz, *Institutional Horizontal Shareholdings and Generic Entry in the Pharmaceutical Industry* (Tuck Sch. Of Bus. Working Paper No. 3285161, 2018), <https://ssrn.com/abstract=3285161>; Melissa Newham, *Common Ownership and Market Entry: Evidence from the Pharmaceutical Industry* (DIW Berlin Discussion Paper No. 1738, 2019), <https://ssrn.com/abstract=3194394>. Tentative evidence has also emerged in the seed industry, *see* Elhauge, *supra* note 4 at 253, and with respect to bank fees in the banking industry, *see* Azar et al., *Banking Paper*, *supra* note 1 at 5.

scholars have questioned the mechanism, arguing that it is implausible for investment funds to cause anticompetitive consumer harms given the way that such funds typically involve themselves (or fail to involve themselves) in corporate governance,¹⁵ while others have taken common ownership's plausibility as a given and begun advocating for solutions such as heightened antitrust enforcement and restrictions on funds' ability to invest.¹⁶ These discussions are important because if the common ownership hypothesis is correct, then the problem must be addressed to prevent further harm to consumers. But the stakes are high because the proposed solutions would devastate the indexed investment model, thus depriving over half of U.S. households of the most successful, inexpensive retirement savings system the country has yet produced.¹⁷

However, as we show, the debate over plausibility and the debate over solutions each suffer from misconceptions about common ownership's foundational theoretical and empirical premises, and thus are both lurching toward stalemate. Contrary to prevailing assumptions, the empirical evidence animating the common ownership debate does not establish a correlation between *common ownership* and *higher consumer prices*; nor are the ways in which that evidence was developed capable of finding such a connection. This is problematic because establishing a relationship between ownership and prices is a logically prior step in the discussion that both sides are now having.

To use an analogy to legal process, some participants in the common ownership debate argue that the jury is still out and continue to deliberate the evidence. Others presume a culpable verdict and have moved on to remedies. This Article takes a step back and shows why even a *prima facie* case has not yet been established. Moreover, if a *prima facie* case can eventually be made, it must involve different evidence that may shape discussions of plausibility, mechanism and remedies very differently.

In particular, we show how measures of ownership used in the empirical literature are poorly suited to identifying the anticompetitive effects of common ownership. This is because these measures conflate common ownership with proxies of market structure that may themselves be correlated with prices, independently of any institutional investors' involvement. Thus, the method of common ownership measurement used in the empirical literature can have multiple causes and multiple effects, making its mechanism fundamentally indeterminate. For the same reason, legal proposals based on a misunderstanding of the empirical evidence run the risk of targeting the wrong problem while ignoring serious anticompetitive harms.

We demonstrate the importance of the theoretical problem by replicating the empirical results of the famous airline paper that remains the bedrock of the common ownership dialogue.¹⁸ The airline study provided evidence that institutional investors' common ownership of shares in Delta Airlines, United Airlines and American Airlines was related to price increases at all three companies.¹⁹ We re-

¹⁵ A number of scholars have pushed back, arguing against taking action. *See e.g.*, 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) (expressing skepticism about the plausibility of the common ownership hypothesis); Edward B. Rock, Daniel L. Rubinfeld, *Antitrust for Institutional Investors*, 82 ANTITRUST L.J. 221, 230 (2018) (arguing against proposals for limiting common ownership).

¹⁶ The common ownership hypothesis has vocal supporters who argue for more robust enforcement and regulation. *See e.g.*, Elhague, *supra* note 1 at 1515-8; Posner et al, *supra* note 8 at 670.

¹⁷ *See* Rock, et al., *supra* note 16 at 230 (discussing the problems for the index fund business if diversification is prohibited); Kim Parker and Richard Fry, *More Than Half of U.S. Households Have Some Investment in the Stock Market*, FactTank (March 25, 2020) <https://www.pewresearch.org/fact-tank/2020/03/25/more-than-half-of-u-s-households-have-some-investment-in-the-stock-market> (providing a breakdown of investors in U.S. equity markets).

¹⁸ *See* Azar et al, *Airline Paper*, *supra* note 2 at 1513.

¹⁹ *Id.*

create the study's headline empirical finding using the replication package provided by the authors of that paper, and show that its results – i.e., that more common ownership leads to higher ticket prices – can be obtained using *completely random* levels of institutional common ownership. We also show that the result can be obtained by artificially restricting each airline's common ownership to a low, presumptively harmless level of 1%, in line with what some advocates have proposed as a new legal limit.²⁰ By doing so, we show that whatever common ownership's harms may be, they cannot be identified empirically or addressed by the law relying solely on the methods upon which the debate has largely been based. However, this is not a reason to reject the common ownership hypothesis altogether. Rather, we highlight that common ownership has implications that reach beyond first order issues of pricing and market concentration, leading to our second point.

With respect to this article's second contribution, we map out ways to test the logical implications of the theory that would have surprising or uncommon results absent the anticompetitive effects of common ownership. We do this by returning to the economic theory and proposing an alternative basis for identifying harms related solely to common ownership and not confounded by other correlated issues. Taking the common ownership hypothesis at face value, we observe that, if true, it bundles consumer welfare with corporate transactions and deal structures in ways that would be unexpected absent a common ownership effect. The common ownership hypothesis can thus be subjected to falsification tests by looking at transactions that would isolate its effects. Where anticompetitive effects are found, the type of transaction would further reveal information about plausible mechanisms and point to previously overlooked problems that the law should address.

We identify two general situations in which these effects can be tested, and provide empirical examples to explain why and how these situations would be useful tests. The first situation occurs when corporate transactions keep market conditions static but change levels of common share ownership; the second situation occurs when transactions change market conditions, but due to changes in common ownership, would have a far greater or far lesser impact on prices than would be expected by looking at market structure alone.

We illustrate our points with a series of empirical case studies using original data and analysis. With respect to the first type of general situation, events that would change a company's membership in an a major stock index, such as tax inversions and some types of private equity buyouts – transactions that would ordinarily not be expected to impact consumer prices – should have consumer price effects by changing common ownership while keeping other market conditions the same.

With respect to the second type of general situation, we show that in a merger transaction, the acquiring company's choice between using cash or stock for a merger – a choice that should be analogous to paying with a dollar bill versus four quarters regarding the expected effect on consumer prices – should impact competitive incentives and consumer welfare independently of any change in the companies' market shares from the transaction. We illustrate this with the Procter & Gamble (P&G) acquisition of Gillette in 2005.²¹ While the firms did not have much overlap in products, they had a common competitor, Energizer Holdings, whose brands competed with both P&G's battery brands and Gillette's razor brands. If the common ownership hypothesis is true, this should have the surprising result that a merger otherwise expected to raise consumer prices would lower them merely

²⁰ See e.g., Posner et al, *supra* note 8 at 669 (proposing, among things, a safe harbor for funds who limit investments to 1% of a company's equity).

²¹ Chris Isadore, *P&G to Buy Gillette for \$57 Billion*, CNN MONEY (Jan. 28, 2005) https://money.cnn.com/2005/01/28/news/fortune500/pg_gillette/

due to the deal being structured as a share swap instead of a cash tender offer, thus revealing by negative implication the effect of common ownership.

In a similar vein, we show how common ownership theory implies that mergers in concentrated markets, often thought to be negative for consumers, could have neutral or even positive effects on consumer prices at the time of the transaction itself. We explain this point using the recent attempted merger of Aetna and Humana, two large health insurance companies whose merger was blocked due to its presumed effect on affordable health insurance.²² We describe how common ownership theory predicts that, since these two firms had significant overlapping ownership prior to the transaction, such a merger would be unlikely to raise prices and could actually lead to more affordable health insurance for consumers. That would occur if the deal increased the merged firm's bargaining power or yielded mild cost savings. This observation suggests an effect that could be ascertained in retrospective merger studies. If present, such an effect would counsel reconsideration of reliance on market concentration for merger enforcement.

Evidence of the effects we describe would bolster the case that common ownership has negative effects that are independent of the passive ownership problem in corporate governance. Failure to find evidence of these effects would be cause for further skepticism that common ownership is at the root of problems for which it has been blamed. In either case, the approach described in this paper has implications for proposals that have been advanced for dealing with common ownership and suggests new ways in which the law should account for any potential common ownership effect.

The airline paper whose empirical finding launched the common ownership discussion made use of a believable culprit, but airlines have devised colorful ways to collude even in the absence of overlapping shareholding.²³ In the 1990's for instance, they evaded prohibitions on price fixing²⁴ by introducing a new fare code, "FU," into public databases whenever a rival sought to undercut another's prices.²⁵ The signal's message was clear and rivals would immediately retract any fare reductions.²⁶ The common ownership debate raises questions about whether airlines and others are at it again, now with the cooperation of America's retirement funds.²⁷ But if investment funds are making anticompetitive problems worse, then common ownership needs to be addressed in more ways than have been previously advanced. On the other hand, if anticompetitive behavior is occurring irrespective of common ownership as history has shown it can,²⁸ then dealing with it not only wastes resources but runs the risk of focusing on the wrong problem at the expense of fixing the right ones. Understanding where to look for evidence beyond the most immediate places holds promise for advancing the debate and creating better tailored policies.

This article does that, proceeding as follows. Part I provides context on the fund management industry that gave rise to the common ownership phenomenon and describes the contours and limitations of the debate over it. Part II looks at common ownership theory and evidence. It discusses how disaggregating market structure from common ownership is necessary for understanding common ownership's possible effects, and revisits the empirical approaches used in the debate,

²² See *United States v. Aetna Inc.*, 240 F. Supp. 3d 1, 47 (D.D.C. 2017).

²³ See Scott McCartney, *Airfare Wars Show Why Deals Arrive and Depart*, WALL ST. J. (Mar. 19, 2002, 12:01 AM), <https://www.wsj.com/articles/SB1016494375818041680>.

²⁴ See Sherman Act § 1, 15 U.S.C. §1; 4 PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* (4th ed. 2016).

²⁵ *Id.*

²⁶ See McCartney, *supra* note 25.

²⁷ See Azar et al, *Airline Paper*, *supra* note 2 at 1513.

²⁸ See McCartney, *supra* note 25.

replicating the airline paper results. Although the debate takes for granted a correlation between common ownership and increased prices and focuses instead on causation and solutions, we show that even a correlation is not reliably established. Part III shows how theory can be extended to create falsification tests of the common ownership hypothesis. We explain when these could be used and give case studies with original data to provide examples. Part IV considers implications for existing proposals and points to new directions for further policy research. It makes the point that many currently floated ideas are not specific to common ownership per se, and even if the theory is true, more targeted policies are needed to fix the problem without doing more harm than good.

I. The Contours of the common ownership debate

The debate over the common ownership hypothesis is important and consequential, but faces a logjam on questions of what mechanism might explain how they are occurring, and what to do about them. These questions highlight a tension between the benefits of fund investment for corporate governance and retail savings on the one hand, and the possibility that collusive behavior is harming consumers on the other.²⁹ This section gives context to the debate by explaining the emergence of the investment management industry as a major part of the U.S. economy. It then describes the controversy over how asset managers could cause collusive behavior and what to do about it.

A. Mutual funds and the emergence of common ownership

The growth of the investment management industry in the last several decades has had many benefits but has also led to concern about over-concentration of power in a small group of financial institutions. The mutual fund industry has created a model of savings that allows consumers to invest in a large range of diversified assets.³⁰ A mutual fund is essentially a portfolio of stocks in which retail investors (among others) can invest.³¹ They may have an industry focus (for example, the banking industry), strategy focus (for example, aggressive growth), or they may be index funds, i.e., vehicles that hold a portfolio of stocks that mirrors stock indices such as the S&P 500 – an index that includes, roughly speaking, the 500 largest public companies in the U.S.³²

The industry has been successful in affording consumers low-cost investment products that generate better returns than traditional bank accounts. That feature has resulted in these funds' explosive popularity as means for saving for retirement, among other things.³³ As of the beginning of 2020, 46% of American households were estimated to own interests in such funds.³⁴ Because keeping these funds' costs down requires economies of scale, a relatively small number of large early movers in the fund industry have emerged over time to provide a majority of these investments, including

²⁹ Matthew Backus et al., *The Common Ownership Hypothesis: Theory and Evidence* 1 (Feb. 5, 2019) [hereinafter *The Common Ownership Hypothesis*] (working paper) (on file with the Brookings Institution).

³⁰ See Jan Fichtner et al., *Hidden Power of the Big Three? Passive Index Funds, Re-Concentration of Corporate Ownership, and New Financial Risk*, 19 BUS. & POL. 298, 323 (2017); Joseph A. McCahery et al., *Behind the Scenes: The Corporate Governance Preferences of Institutional Investors*, 71 J. FIN. 2905 (2016); Kristian Rydqvist et al., *Government Policy and Ownership of Equity Securities*, 111 J. FIN. ECON. 70, 72 (2014).

³¹ See Fichtner et al., *supra* note 16, at 298-99.

³² See INVESTMENT CO. INST., 2019 ANNUAL REPORT TO MEMBERS 2 (2019) [hereinafter ICI Report]; see also, Eric A. Posner et al., *A Proposal to Limit the Anti-Competitive Power of Institutional Investors*, 81 ANTITRUST L.J. 669 (2017).

³³ See Fichtner et al., *supra* note 16, at 302-03.

³⁴ See ICI Report, *supra* note 18, at 1.

familiar names Vanguard, Fidelity, BlackRock, State Street and Prudential.³⁵ Many of the investment products these funds sell are interests in equity portfolios of firms included in indexes such as the S&P 500, which means that these entities also hold large stakes in all of the largest companies in the US.³⁶

Funds hold these stakes on behalf of individual investors who are the ultimate beneficial owners.³⁷ But because most individuals do not take the time to vote on issues related to corporate governance of companies they hold through mutual funds, the funds themselves usually retain discretion to vote as their shareholders' proxies.³⁸ This in turn gives them enormous power in corporate governance.³⁹

Mutual funds and other kinds of institutional investors were a much smaller presence as recently as twenty years ago, with BlackRock, Vanguard and State Street collectively holding shares of only 9% of the companies S&P 500 in the year 2000.⁴⁰ Through the 1980s and 1990s, these funds stakes were even smaller. Until 2005, fewer than 10% of publicly listed firms in the US had institutional shareowners in common with their industry competitors.⁴¹ The largest asset management firms hold only about 5-7% of all US shares each, while smaller asset managers own the remaining 50% of the market.⁴² Nonetheless, this small group has disproportionate presence – BlackRock, Vanguard and State Street (the three largest U.S. asset managers) collectively comprise the single largest shareholder in 40% of all US listed companies, and 88% of companies in the S&P 500.⁴³ Such a high concentration of owners across the entire market necessarily means that there are now large common shareholders in companies that compete with one another in their industries. If firms act to maximize their investors' portfolio values, a key assumption of the common ownership hypothesis, then this could create an incentive to soften competition and raise consumer prices.

B. Common ownership, concentrated ownership and collusion

The recent interest in common ownership was sparked by the airline paper (also known as “AST” after the last initials of its authors). It examined the relationship between a measure of common ownership by asset management firms and airline ticket prices between 2000 and 2014.⁴⁴ In that paper, Professors Azar, Schmalz, and Tecu provided empirical evidence that suggested a link between several

³⁵ See Fichtner et al., *supra* note 16, at 303-04.

³⁶ See *id.* at 313.

³⁷ Fiona Scott Morton and Herbert Hovenkamp, *Horizontal Shareholding and Antitrust Policy*, 127 YALE L.J. 2026, 2028 (2018).

³⁸ See *id.*

³⁹ See e.g., Fichtner et al., *supra* note 16, at 323 (noting that the combined holdings of fund managers Vanguard, BlackRock and State Street make them the largest investors in 80% of all the companies in the S&P 500); Azar et al., *supra* note 2, at 2 n.2 (indicating that BlackRock and Vanguard are the largest shareholders of one fifth of all American publicly traded firms); Miguel Anton et al., *Common Ownership, Competition, and Top Management Incentives* 3 (Ross Sch. of Bus., Working Paper No. 1328, 2018), http://ssrn.com/abstract_id=2802332 [<http://perma.cc/CTR3-7B5X>] (“BlackRock and Vanguard are among the top five shareholders of almost 70 percent of the largest 2,000 publicly traded firms in the US.”).

⁴⁰ Sinkinson et al. 2020; see also Azar et al., *supra* note 7, at 2. These funds have become the largest shareholders of many companies in recent years, which has led to discussion of their influence generally. See, e.g., Fichtner et al, *supra* note 11; Scott Hirst and Lucien Bebchuk, *The Specter of the Giant Three*, 99 B.U. L.REV. 721 (2019); Scott Hirst and Lucien Bebchuk, *Index Funds and the Future of Corporate Governance: Theory, Evidence, and Policy*, 199 COLUM. L. REV. 2029 (2019).

⁴¹ See Scott Morton & Hovenkamp, *supra* note 23, at 2029; Jie (Jack) He & Jiekun Huang, *Product Market Competition in a World of Cross-Ownership: Evidence from Institutional Blockholdings*, 30 REV. FIN. STUD. 2674, 2674 (2017).

⁴² See Scott Morton & Hovenkamp, *supra* note 23, at 2029.

⁴³ Fichtner et al., *supra* note 16, at 313.

⁴⁴ Azar et al., *Airline Paper*, *supra* note 7.

funds' common shareholdings in United, Delta and American Airlines, and increased ticket prices.⁴⁵ The findings were instantly intriguing, and spurred an energetic debate and a wave of research on both the empirical validity of the idea as well as its legal and policy consequences.⁴⁶ In this section we describe the emergence of the evidence and how it led to the debate over the causation and solution questions.

1. The evidence of effects

The unsettling implications of the airline paper drew attention from government regulators⁴⁷ and gave rise to more empirical research into areas where evidence of anticompetitive common ownership might exist. Among other areas, researchers have looked for evidence in specific industries (such as the banking and seed industries),⁴⁸ in executive compensation decisions,⁴⁹ and in societal issues such as the gap between corporate profits and investment.⁵⁰ Several of these studies produced further evidence of common ownership's effects.⁵¹ The airline paper and its progeny have drawn criticisms from academia and the asset management industry, mostly with respect to the plausibility of the results.⁵² Regardless of criticisms, however, those discussing the common ownership issue have continued to base their proposals on the empirical connection between pricing and ownership.⁵³

We discuss in greater detail the problems with these studies below in Part II, but for now we note two important problems with the airline paper and the larger endeavor to find effects of common ownership. The first is that the majority of these papers rely on an analysis of firms' market power that incorporates the commonly-used Herfindahl-Hirschman Index (HHI), a measure of market concentration that accounts for the number of companies in a given market and their respective market shares.⁵⁴ The common ownership studies modify HHI to take into account firms' shareholders' ownership of competitors' shares (and denote this modified version MHHI).⁵⁵ The use of market concentration is a problem in empirical analysis of price changes, because market shares and prices

⁴⁵ *Id.* at 26.

⁴⁶ See, e.g., Lambert et al, *supra* note 15 at 213; Rock, *supra* note 15 at 221; Scott Morton et al, *supra* note 26 at 2028; Menesh S. Patel, *Common Ownership, Institutional Investors, and Antitrust*, 82 ANTITRUST L.J. 279 (2018).

⁴⁷ In particular, the Federal Trade Commission (FTC) held hearings on the topic with leading researchers and agency staff. Fed. Trade Comm'n, Hearing #8: Common Ownership (Dec. 6, 2018). Government coordination also occurred between the US and Europe. See Note by the United States to OECD, Hearing on Common Ownership by Institutional Investors and Its Impact on Competition, OECD DAF/COMP/WD (2017)86, at ¶¶ 12, 15 (Dec. 6, 2017).

⁴⁸ Azar et al, *Banking Paper*, *supra* note 4 at 4-5 (discussing evidence of common ownership in banking).

⁴⁹ Miguel Anton, Florian Ederer, Mireia Gine & Martin Schmalz, *Common Ownership, Competition, and Top Management Incentives* 1, 2-3, 8-14 (European Corporate Governance Institute (ECGI), Working Paper No. 511/2017, 2018), <http://ssrn.com/abstract=2802332> (examining the effects of common ownership on executive pay).

⁵⁰ See Germán Gutiérrez & Thomas Philippon, *Investment-Less Growth: An Empirical Investigation* 2, 5-11 (Nat'l Bureau of Econ. Rsch., Working Paper 22897, 2016), <http://www.nber.org/papers/w22897>. See also Elhauge, *supra* note 1, at 1281-1301.

⁵¹ See e.g., Anton et al, *supra* note 38 at 2-3; Xie et al, *supra* note 11 at 4.

⁵² See e.g., Daniel P. O'Brien and Keith Waehrer, *The Competitive Effects of Common Ownership: We Know Less than We Think* 5 (unpublished manuscript) (Feb. 22, 2017) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2922677; Patrick Dennis, *Common Ownership Does Not Have Anti-Competitive Effects in the Airline Industry* (unpublished manuscript) (Nov. 1, 2017) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3063465; Jacob Gramlich and Serafin Grundl, *Testing for the Competitive Effects of Common Ownership*, Wash.: Bd. of Governors of the Fed. Res. Sys. (Fin. and Econ. Discussion Series, Working Paper No. 2017-29), <https://doi.org/10.17016/FEDS.2017.029>.

⁵³ See, e.g., Elhauge, *supra* note 5 at 671; see also note 82, *infra* and accompanying text.

⁵⁴ See Azar, et al, *Airline Paper*, *supra* note 2 at 1520; Azar et al, *Banking Paper*, *supra* note 4 at 10-14; Anton et al, *supra* note 38 at 2-3; Xie et al, *supra* note 11 at 4.

⁵⁵ See e.g., Azar, et al, *Airline Paper*, *supra* note 2 at 1520.

can (and do) change in tandem with other influences that have nothing to do with a firm's shareholders.⁵⁶

The second is that where these studies find evidence, they claim to find evidence of *correlation* between common ownership and consumer prices, but they do not necessarily establish *causation*.⁵⁷ They are largely agnostic about the mechanism and the means by which anticompetitive harms would be caused by common ownership, which has been an important topic in the larger debate.⁵⁸ The leading voices in this debate accept the existence of a correlation between common ownership and anticompetitive pricing, even if they do not agree on causation or solutions.⁵⁹

2. Debates about mechanism

The search for possible mechanisms has become an angle of attack for critics of the common ownership hypothesis, as well as branch of inquiry for empirical and legal scholars seeking to validate it. Taking a critical view, a contingent of scholars and representatives from fund management groups have argued that the common ownership hypothesis is implausible because investors have limited means to influence companies, and in all events investment fund managers are not set up to engage with corporate managers in this way.⁶⁰ They point out that shareholders do *not* vote on operational decisions like how to price airline tickets or whether to reduce capacity, but only vote on a limited number of corporate matters.⁶¹ Their formal influence is limited to voting for directors, who in turn hire and fire the CEO;⁶² voting on shareholder resolutions (non-binding suggestions for corporate management to adopt policies regarding things like whether to have a staggered board, or whether to adopt policies related to the environment);⁶³ and voting on executive compensation packages under Dodd-Frank's say-on-pay provisions, although these votes are advisory.⁶⁴ Thus shareholders' official influence is cabined by the relatively narrow set of decisions they are empowered to vote on.

Critics have also pointed out that investment funds have only small teams of people dealing with corporate governance issues for hundreds of portfolio companies, making it unlikely if not impossible for them to pay attention to pricing decisions of any individual firm.⁶⁵ The limited resources most investment funds devote to proxy voting means that they tend to vote with the recommendations of proxy advisors such as ISS and Glass Lewis, and overwhelmingly vote along with management's recommendations.⁶⁶ These facts, they argue, cut against the possibility that institutional common owners are influencing the pricing behavior of corporate CEOs and other managers.⁶⁷

a. Possible "active" mechanisms

⁵⁶ See O'Brien et al, *supra* note 41 at 3-4.

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ See note 82, *infra* and accompanying text.

⁶⁰ See, e.g., 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); Menesh S. Patel, *Common Ownership, Institutional Investors, and Antitrust*, 82 ANTITRUST L.J. 279 (2018); Edward B. Rock, Daniel L. Rubinfeld, *Antitrust for Institutional Investors*, 82 Antitrust L.J. 221 (2018).

⁶¹ See Rock et al, *supra* note 47 at 235.

⁶² *Id.* at 236

⁶³ *Id.*

⁶⁴ Dodd-Frank Wall Street Reform and Consumer Protection Act §951 (2018). See also Rock et al, *supra* note 47 at 236.

⁶⁵ See Lund, *supra* note 16 at 120.

⁶⁶ See Rock et al, *supra* note 47 at 232.

⁶⁷ See *id.*

Those on the other side of the debate point out ways in which even investors who are formally disempowered or disengaged could cause companies to soften competition. Generally speaking, two kinds of possible mechanisms have emerged – what can be called “active” mechanisms and “passive” mechanisms.⁶⁸ Active mechanisms are those in which common owners’ ability to vote the shares they hold in corporate governance decisions drive the actions of company managers.⁶⁹ This could happen, for instance, if investment managers reliably use their voting power to elect sympathetic directors whom they could influence.⁷⁰ Perhaps unsurprisingly, evidence of direct influence of this kind has been hard to find.⁷¹

Another possibility is that funds use soft power. The fact that large institutional shareholders vote for directors and have large blocks of shares means directors and CEO’s will take their phone calls, schedule meetings, and listen to their opinions and questions on earnings calls (i.e., regular conference calls with shareholders to discuss the company’s performance).⁷² So-called activist investors have made a successful strategy of pointing out management’s weaknesses to other investors, and creating critical mass to change the company’s leadership and direction.⁷³ Even absent an outright management change, the shadow of that threat can be enough to keep company managers in line. Nominally passive investors might also exert influence by sending discreet signals, or through the implicit threat that if management fails to act in accordance with the common owners’ wishes, they will use their voting power against them.⁷⁴ For example, one study found that when large shareholders asked questions about “capacity discipline” on airlines’ earning calls, the companies tended to cut capacity (thus raising prices) shortly thereafter.⁷⁵ Thus, to some, the idea that company managers would actively work to please their largest shareholders seems quite possible.

b. Possible “passive” mechanisms

In addition, whatever the plausibility of active mechanisms, passive mechanisms provide an alternative explanation altogether. Those promoting passive mechanisms assert that, far from exerting

⁶⁸ We use the terms “active” and “passive” to distinguish different theories for how institutional investors could influence firms’ competitive decisions. Apart from overt action to induce collusion, most of these activities would meet the SEC’s definition of “passive” for purposes reporting. *See* 7 CFR, Part 240 (2019); RIN 3235-AG81; Adopting Release at p. 10, 1998 SEC LEXIS 63, *33.

⁶⁹ *See* Edward Rock and Daniel Rubinfeld, *Defusing the Antitrust Threat to Institutional Investor Involvement in Corporate Governance* (NYU Law & Econ. Working Paper No. 17-05); C. Scott Hemphill and Marcel Kahan, *The Strategies of Anticompetitive Common Ownership*, 129 *YALE L.J.* 1392, 1416–17 (2020) (discussing active fund strategies). *See also*, Lund, *supra* note 16 at 104.

⁷⁰ Hemphill et al, *supra* note 56 at 1417.

⁷¹ *See* Rock et al, *supra* note 56 at 34 (observing that this type of behavior is illegal and be difficult to find if it is occurring).

⁷² *See* Rock et al, *supra* note 56 at 34. Funds tout their engagement with shareholders outside of formal voting processes as part of their managerial service. For example, Vanguard’s proxy voting guidelines state “We believe that engaging in direct discussions with the leaders and directors of the companies in which the Vanguard funds invest is a particularly effective way for us to advocate for our views. During our conversations with corporate leaders and board members, we strive to provide constructive input that will better position companies to deliver sustainable value over the long term for all investors.” Vanguard Asset Management, PROXY VOTING GUIDELINES, available at <https://about.vanguard.com/vanguard-proxy-voting/voting-guidelines>.

⁷³ *See* Rock et al, *supra* note 56 at 5. *See also* Anabtawi & Stout, *supra* note 25, at 1270–71 (discussing how minority shareholders can influence corporate decision-making even when they have small stakes in the company).

⁷⁴ *See id.* at 35.

⁷⁵ Gaurab Aryaly et al., *Coordinated Capacity Reductions and Public Communication in the Airline Industry*, working paper (Feb. 9, 2019) (available at <https://ssrn.com/abstract=3122560>).

undue influence, common owners are in fact doing too little to monitor company management.⁷⁶ Some scholars have even argued that institutional shareholder are *too deferential*, giving management a free pass to manage their companies without interference.⁷⁷ This leads the managers to be complacent and lazy; rather than actively softening competition with rivals, they simply fail to compete with them.

The facts about shareholder inaction overlap with a related issue of concentrated, but disengaged shareholders. This is a corporate governance problem that sometimes gets lumped in with the common ownership debate, but it is a distinct problem. Inactive shareholders (regardless of whether they are common owners or not) have long been a concern of corporate law scholars because their failure to monitor management and reign in agency costs.⁷⁸ Importantly, the passivity explanation for higher prices could just as logically apply whether the shareholders are passive common owners, or passive non-common owners. As we explain further below in Part II, the prevailing methods used for studying common ownership empirically rely on measures of market concentration and are ill suited to distinguishing between the effects of common versus non-common passive owners.⁷⁹

Importantly, this means that neither the empirical debate over effects or the conversation over causes is able to tease out whether the root problem is concentrated ownership (i.e., that may involve as little as one concentrated but undiversified owner) or whether it is common ownership, the incidence of which is greatly affected by the rise of the mutual fund industry.⁸⁰ Each of these problems is distinct and as we explain in the next section, warrants different solutions. Nuanced approaches targeting the right problem are required to address the issue while avoiding harmful unintended consequences.

3. The search for solutions

In light of the empirical research, the legal and policy debate have forged ahead, but the search for solutions is limited by the problems it inherits from with the search for causes and effects. Proposed solutions accept the findings of the airline paper (and others like it) as plausible if not proven, and proceed based on the same premises. Proposals to deal with the problem have ranged from invigorating enforcement under current antitrust law⁸¹ to enacting sweeping changes to fund management regulation.⁸² These proposals, summarized below, might make sense if common ownership is indeed a problem, but to the extent common ownership's anticompetitive effects turn out to be real, several of them incorporate thorny problems derived from the way economic theory was translated to empirical analysis.

a. Enhanced enforcement under current law

⁷⁶ See Azar et al, Airline Paper, *supra* note 2 at 1531 (arguing that “[t]he omission to explicitly demand or incentivize tougher competition between portfolio firms may allow managers to enjoy a ‘quiet life’ and thus cause an equilibrium with reduced competition and sustained high margins”).

⁷⁷ See Lund, *supra* note 16 at 120 (noting the fact that indexed asset managers vote along with management a majority of the time).

⁷⁸ See *id.*

⁷⁹ See note *infra* and accompanying text.

⁸⁰ See note *supra* and accompanying text.

⁸¹ See, e.g., Elhauge, *supra* note 1, at 1302-04.

⁸² See Posner et al., *supra* note 18, 677-78.

A number of scholars have contended that the problems of common ownership can be addressed through current antitrust law.⁸³ In particular, scholars have argued that the Sherman Act and §7 of the Clayton Act provide all the legal authority necessary to deal with the anticompetitive problems of common horizontal shareholding.⁸⁴ They point out that Clayton Act §7 prohibits stock acquisitions that have the potential to substantially lessen competition,⁸⁵ implying that common ownership is illegal when it creates horizontal shareholding relationships that are likely to create anticompetitive effects.⁸⁶

A carve-out exists shielding actors from antitrust regulation if their stock purchases are made “solely for investment”⁸⁷ which arguably fits most asset managers’ primary activity; nonetheless scholars have argued that this provision is no obstacle for two reasons.⁸⁸ The first is that the carveout does not apply to companies purchasing stock with the intention to actively discourage competition.⁸⁹ The second is that the carveout still allows for enforcement if the government can show that it was intended to lower competition, actually has lowered competition, or would likely do so.⁹⁰ Thus, asset management firms that exercise any control, or whose investments can be proved to result in less competition could be divested of some of their holdings under the Clayton Act’s authority.⁹¹

On the basis of these legal conclusions, proposals have emerged to limit or prevent common ownership by preventing share acquisitions of would-be common owners, and forcing divestment of common owners that already exist. Scholars have also pointed out that Sherman Act §1 would empower regulators to enforce if evidence emerged that asset management firms or company managers were intentionally acting to reduce competition.⁹² In a similar vein, Professors Scott Morton and Hovenkamp have analyzed how antitrust laws currently in place can be used to limit horizontal ownership despite the fact that a causal mechanism for its anticompetitive effects may be difficult to identify.⁹³ They couch their proposal in the Clayton Act’s “effects test” – a test that allows regulators to challenge corporate combinations that result in anticompetitive effects, even in the absence of any direct evidence that common share-owning is the cause.⁹⁴

However, as others have pointed out, relying on these provisions would be a difficult enforcement strategy.⁹⁵ In the empirical literature, no evidence of direct collusion has emerged, nor do the methods

⁸³ See, e.g., Elhauge, *supra* note 8, at 1302-04; Einer Elhauge, *New Evidence*, *supra* note 51, at 29; Herbert Hovenkamp & Carl Shapiro, *Horizontal Mergers, Market Structure, and Burdens of Proof*, 127 YALE L.J. 1996, 2025 (2018).

⁸⁴ See Posner et al., *supra* note 18, at 677-78.

⁸⁵ See Clayton Act §7 (1914) (codified as amended in 15 U.S.C. § 18). See also Elhauge, *supra* note 46, at 1267, 1267-78, 1302-4; Posner et al., *supra* note 18, at 677-78.

⁸⁶ See Clayton Act §7. The Supreme Court has held that acquisition need not result in control of a company in order for the Clayton Act to apply. See *Denver & Rio Grande W. R.R. v. United States*, 387 U.S. 485, 501 (1967) (“A company need not acquire control of another company in order to violate the Clayton Act.”). At least one federal circuit has reinforced this point. See *United States v. Dairy Farmers of Am., Inc.*, 426 F.3d 850, 859–60 (6th Cir. 2005) (“We do not agree with the ... conclusion that a lack of control or influence precludes a Section 7 violation” because “even without control or influence, an acquisition may still lessen competition.”). See also AREEDA & HOVENKAMP, *supra* note 2, ¶ 1203.

⁸⁷ Clayton Act § 7.

⁸⁸ See Posner et al., *supra* note 18, 677-78.

⁸⁹ *Id.*

⁹⁰ AREEDA & HOVENKAMP, *supra* note 2, ¶¶ 1203c, 1204b.

⁹¹ See Elhauge, *supra* note 46, at 1302-04.

⁹² See *id.* See also 15 U.S.C. § 1 (2014).

⁹³ See Morton & Hovenkamp, *supra* note 23, at 2027.

⁹⁴ See *id.*

⁹⁵ Rock et al, *supra* note 56 at 15.

used in the literature thus far provide a definitive way to determine if it is happening.⁹⁶ On the contrary, the investment management industry and some scholars have claimed that all evidence indicates a lack of direct collusion.⁹⁷ Moreover, even if it is occurring, evidence of direct collusion is often difficult to adduce, making enforcement of it hit-or-miss, and rendering it a poor approach for dealing with a systematic harm.⁹⁸ Meeting the effects test entails similar problems, because it would require showing a direct connection between an investment manager's share acquisition and softened competition.⁹⁹ As we show in the next section, even evidence of a correlation is weaker than commonly assumed.¹⁰⁰

Another enforcement idea leveraging current law has sought to adapt merger analysis to address common ownership. For instance, Professor Elhauge has recommend that regulators investigate horizontal stock acquisitions that would result in a Δ MHHI (a measure of difference between HHI and MHHI, essentially, market concentration accounting for common ownership) exceeding 200, and an MHHI exceeding 2500.¹⁰¹

These thresholds track the ones used by the Department of Justice for when a merger should be challenged as presumptively anticompetitive.¹⁰² The use of market concentration for common ownership tracks the approach used in the airline paper and its ilk. However, these measures are ultimately descriptive, and so while they may be useful as a merger screen, they are not what should be used for detecting or screening for the effects of common ownership on prices.¹⁰³

b. Changing investment fund regulation

A number of proposals aim to deal with common ownership by enacting new regulations. One set of recommendations would effectively force investment managers to give up shares that create problematic overlapping ownership, and in some cases to prohibit share acquisitions resulting in horizontal ownership in the first place.¹⁰⁴ Others have suggested that asset management firms should be limited to owning no more than 1% of each public company's voting stock, or be limited to investing in only one company in any concentrated market in order to avoid antitrust enforcement.¹⁰⁵ Some have also suggested that asset managers should be forced to give up voting power over the shares that they hold, sometimes referred to as putting the shares "in the drawer."¹⁰⁶

Such proposals would drastically limit, if not destroy, the ability of indexed investment funds to provide low-cost retirement savings to millions of retail investors.¹⁰⁷ That would amount to a societal loss, but might be justified if the harms of common ownership are significant enough. As we discuss

⁹⁶ *Id.*

⁹⁷ Lund, *supra* note 16 at 120.

⁹⁸ See Scott Morton & Hovenkamp, *supra* note 23, at 2027.

⁹⁹ Rock et al, *supra* note 56 at 15.

¹⁰⁰ See note *infra* and accompanying text.

¹⁰¹ Elhauge, *supra* note 1 at 1302.

¹⁰² See Dept. of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines § 1 (Aug. 19, 2010) [*hereinafter* Merger Guidelines].

¹⁰³ For more detailed discussion, see Parts II and III, *infra*.

¹⁰⁴ *Id.* at 1301-1316.

¹⁰⁵ See Posner et al., *supra* note 18, at 708-10. Specifically, the authors propose safe harbor from antitrust enforcement for institutional investors, assuming that current law covers anticompetitive common ownership. *Id.* Their proposed safe harbor states "No institutional investor or individual holding shares of more than a single effective firm in an oligopoly may ultimately own more than 1% of the market share or directly communicate with the top managers or directors of firms." *Id.*

¹⁰⁶ See Posner et al., *supra* note 18, at 708-10.

¹⁰⁷ *Id.* at 21.

in the next section, such proposals highlight the need for better evidence before disruptive action is taken. As discussed further below,¹⁰⁸ even if the problem does exist, the main proposals are indiscriminate about the possible causes of common ownership's anticompetitive effects. If it is true that passivity on the part of investors is leading to lazy managers, then forcing investment funds to limit their investments or limit their influence in corporate governance will not solve the problem, and might even make it worse.

Those sounding the alarm about common ownership allege a systematic harm and propose systematic solutions. However, more nuance may be warranted regarding where we should expect to see the effects of common ownership and when we should not. As we explain below, features of the economic theory and empirical evidence that have assumed prominence in the common ownership debate are a poor fit with the search for both evidence and solutions, and thus limit the progress that can be made.

II. Alignment and misalignment of theory and evidence

As explained above, much of the legal discourse takes for granted that a correlation between common ownership and higher prices has been established, and focuses on whether a causal connection is plausible and what to do about the issue. However, as we show in this section, a first order problem is that the theory and empirical work *do not even support such a correlation*. Rather, the evidence generated shows correlation between prices and MHHI, a measure of market concentration that accounts for ownership, but as we explain, this is problematic. This problem creates downstream trouble for policy deliberations.

A. The theory basis for empirical studies

The airline paper and those that followed it were built on work in economics that looked at what happens when competing companies hold investments directly in one another. Generally speaking, economic theory holds that when independent, identical profit-maximizing firms compete by setting output of a fungible, commodity-like product, the prices in the market will depend upon market concentration.¹⁰⁹ In more precise terms, theory predicts that the amount by which the price of goods exceed the producers' marginal costs will be equal to the market's HHI – a measure of market concentration – divided by the market elasticity of demand.¹¹⁰ Thus, profit maximizing firms will seek to compete by increasing supply, thereby lowering price in order to undercut their rivals and capture more of the market.¹¹¹

In the 1980's Professors Bresnahan and Salop derived economic models in which this accepted truth about pricing decisions might vary.¹¹² They developed models for joint ventures in which competing firms have control and/or profit interests in one another.¹¹³ In such situations, they show

¹⁰⁸ See note 261, *infra* and accompanying text.

¹⁰⁹ See Einer Elhauge, *New Evidence, Proofs, and Legal Theories on Horizontal Shareholding 2* (Jan. 4, 2018) [hereinafter *New Evidence*] (unpublished manuscript) (on file with SSRN); see also CARLTON & PERLOFF, *MODERN INDUSTRIAL ORGANIZATION* 268 (3rd ed. 2000).

¹¹⁰ See Elhauge, *supra* note 8, at 1273-78. Regulators and economists often assess market concentration using the Herfindahl-Hirschman Index (HHI) which is calculated by taking the square of the market share of each firm competing in the market and then adding them together. See Merger Guidelines, *supra* note 89, § 5.3.

¹¹¹ See Carlton et al, *supra* note 96 at 268-75.

¹¹² See Timothy F. Bresnahan & Steven C. Salop, Quantifying the Competitive Effects of Production Joint Ventures, 4 *INT'L J. INDUS. ORG.* 155 (1986).

¹¹³ *Id.* at 155-157.

that the extent to which market prices exceed marginal costs will depend on MHHI (modified HHI) that reflects those overlapping profit or control interests.¹¹⁴ This model was later extended by Professors Salop and O'Brien to show that the same would be true for firms with cross-ownership interests (meaning companies that own each other's shares directly, as would be the case if Delta owned shares of United or vice versa, for example). In such cases, the models predict that prices would exceed marginal costs in proportion to the amount of common control interests between the firms.¹¹⁵ Notably, they also showed that this relationship did not hold in differentiated markets in which firms can set prices (as opposed to setting only output) because the products they produce are differentiated in the eyes of consumers (i.e., different in terms of quality or features). In that case the effect on price would depend on the degree to which products are substitutable to consumers and there was no inevitable relationship between prices and MHHI.¹¹⁶

The airline paper took its theoretical grounding from the economic model of identical firms selling identical goods and choosing output. Professors Azar, Schmalz, and Tecu recast Salop, O'Brien and Bresnahan's work, placing institutional investors into the role that owners had in cross-ownership situations.¹¹⁷ Following the same logic, Azar et al calculated MHHI taking into account common ownership, assuming that a company's managers consider the interests of each shareholder in proportion to their share of stock relative to other shareholders (implying that managers care more about larger shareholders than they do about smaller shareholders).¹¹⁸ Their analysis showed a correlation between higher levels of MHHI (i.e., market concentration modified by common ownership) and higher airline ticket prices in highly concentrated markets between 2000 and 2014.¹¹⁹

To provide a rough analogy of the move from the classic model of competition to the alternative models, imagine that you are taking a class, and that your teacher or professor grades each student individually on a steep curve. This is the classic model of competition: if your goal is to get the best grade you can, then your incentive is to pay attention to your own performance and do as well as you can. You might care about the performance of others to the extent it matters for your own, but you might not rush to do someone else's homework for them, especially if they might end up ahead of you in the class. If, instead, you are put into teams and part of your grade is based on team performance, you would have much greater incentive to help some of your fellow classmates. This situation is the one described by the original Bresnahan and Salop model.

Alternatively, imagine that you are in a class where you are graded individually, but that you share that class with two of your cousins, and you believe your parents will be pleased (and perhaps reward you) if everyone does well in the class. This is the scenario as modified by Azar and his coauthors. In that scenario you would presumably have an extra incentive to help your cousins (beyond that which comes from being a good member of the family).

This shift in incentives essentially describes the progression of theory represented by the common ownership hypothesis. And if you can see the logic of it but question just how realistic it is in practice,

¹¹⁴ See *id.*; see also Elhauge, *New Evidence*, supra note 32, at 11.

¹¹⁵ See *id.* at 559-60.

¹¹⁶ Daniel P. O'Brien & Steven C. Salop, *Competitive Effects of Partial Ownership: Financial Interest and Corporate Control*, 67 ANTITRUST L. J. 559 (2000).

¹¹⁷ Azar et al., *Airline Paper*, supra note 7 at 26

¹¹⁸ *Id.* The data is known as the Airline Origin and Destination Survey provided by the Department of Transportation.

¹¹⁹ *Id.* at 8. The authors' results held for markets with HHI above 2500. *Id.* Azar, Raina, and Schmalz provided similar evidence in the banking industry of a correlation between prices and fees and high levels of GHHI, a measure that accounts for both horizontal ownership and cross-ownership. Azar et al., *Banking Paper*, supra note 9, at 1. However, this paper was widely critiqued and never published.

then you grasp one of potential problems with the baseline common ownership model. The idea provides a plausible narrative at a general level, but further consideration of it raises questions about how well it describes reality.

B. (Mis)translation of theory

The airline paper thus introduced two new twists on the underlying economic theory. First, following Bresnahan and Salop's theory model, the paper used statistical regressions to look for a relationship between airline ticket price and market share accounting for common ownership, despite the fact that the underlying theory posited that *markups*, not *price*, would be affected by *cross-ownership*.¹²⁰

More importantly, the economic theory's use of market shares as a component of MHHI is only applicable in limited circumstances, and the theory does not generally support using it to test for the effects of common ownership in most real-world settings. The reason is that calculating MHHI requires using market shares; however, in most consumer markets, external factors can influence both market share and price in tandem, causing the appearance of correlation that is, in fact, spurious. For example, suppose that both Southwest and United operate a route between Chicago and Boston, but only United operates a lounge with free food and beverages. The presence of the lounge could lead to both higher prices and higher market share for United, completely independently of any common ownership with Southwest. But if airlines with higher common ownership are more likely to operate lounges, this would lead a researcher to incorrectly infer that common ownership is related to higher prices when in fact, there is no such relationship.¹²¹

C. The problem with market concentration

The problematic theoretical model has led to a problematic empirical approach, which has contributed to problematic legal analysis. We demonstrate the empirical problems here by replicating the analysis of airline paper using different assumptions to show why market concentration should not be used in the analysis. In order to do so adequately, and to inform the remaining ideas in this article, we first address some weaknesses in the data to ensure our analysis in this and subsequent sections is correct.

1. Data

The airline paper draws its data on institutional shareholding from a database maintained by Thomson Reuters known as s34.¹²² Its description states that it collects data from Form 13F filings that institutional investors are required to make with the SEC, disclosing the names of companies whose shares they hold and the quantity of those shares.¹²³

Although the s34 database is widely used in common ownership research as well as research in other areas, it contains a large number of omissions, coverage gaps and errata. This is not a problem

¹²⁰ O'Brien & Salop, *supra* note 37, at 584-98.

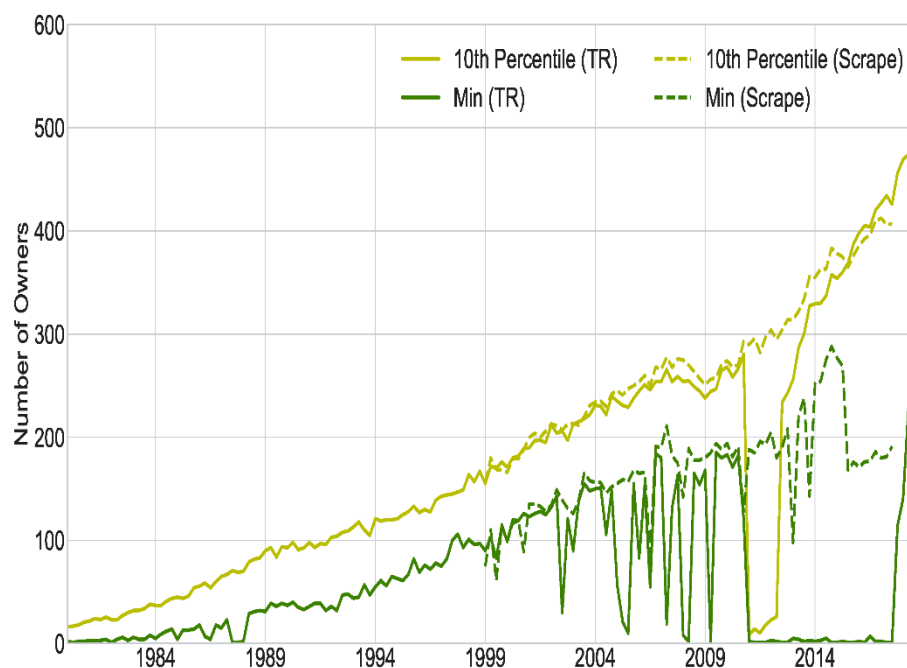
¹²¹ For another example, Professors Backus, Conlon, and Sinkinson test for common ownership pricing in the ready-to-eat cereal market using a different approach, but show that a regression of prices on MHHI in their setting – where products are clearly not identical – shows that if anything, a higher MHHI is associated with lower prices. See Matthew Backus, Christopher Conlon, and Michael Sinkinson, *Common Ownership and Competition in the Ready-to-Eat Cereal Industry* 2-3 (Nat'l Bureau of Econ. Res., Working Paper No. w28350, 2021).

¹²² See THOMSON REUTERS, S24 DATABASE.

¹²³ Form 13F is filed with the SEC quarterly by institutional investment managers. See Securities Exchange Act of 1934 §13(f), 15 U.S.C. § 78.

particular to the airline paper – all research on common ownership is susceptible to using unreliable data from this source. To assess this problem, we extracted the original 13F filings from the SEC’s EDGAR site for the firms in the S&P 500 to catalogue the true institutional ownership (as reported to the government), and to document the extent of the errors in the Thomson Reuters data. Particularly between 2000 and 2014 the data is off significantly.¹²⁴ Figure 1 below depicts the true ownership data versus the data in the Thomson dataset.

Figure 1: Thomson Reuters s24 Data and SEC 13F Data: Owners per Firm Over Time.



The graph shows large discrepancies between the Thomson data and the true data filed with the SEC. The Figure plots the 10th percentile and minimum of the number of owners (y axis) of S&P 500 firms over time in years (x axis). Solid lines represent the Thomson s34 data, while dashed lines represent data that was gathered directly from Form 13F filings.

Overall, the Figure indicates that the Thomson data is not always reliable, especially for firms which it reports as having a relatively low number of owners, which is often the case for commonly owned firms. In the Figure, the Thomson data indicates that some firms have very few owners, as evidenced by the green “min” line, although this is not consistent with the data taken directly from the SEC filings. In other words, for many companies that had 100 to 200 owners, the Thomson data indicated that the companies had less than ten owners. In addition, the yellow “10th percentile” line shows that there is a series of quarters beginning in 2011 in which the Thomson data indicates that over 10% of S&P 500 firms have just a few dozen owners, when in fact the SEC data shows that they have 300 or more.

¹²⁴ Backus et al, *supra* note 29 at 14.

2. The problem of MHHI – a demonstration using the airline paper

Even with the correct data, the analysis is flawed. The debate over common ownership begins with the assumption that a correlation has been established between overlapping institutional shareholdings and higher prices.¹²⁵ However, the statistical regressions used in the airline paper (as well as the other empirical papers following its methodology) can lead to results that give the appearance of anticompetitive behavior, irrespective of common ownership. This is because the independent variable the papers use as a measure of market concentration, MHHI, is calculated using market shares which depend on prices, the dependent variable. Thus, the outcome of the statistical regressions is *mechanically* linked to the input, guaranteeing a result no matter what the reality of the situation may be. While empirical studies using MHHI find statistically significant correlation between MHHI and prices, that is different from a correlation between common ownership and prices.¹²⁶

To demonstrate that this is the case, we replicated the analysis from the airline paper using the replication package created by the authors. The headline result of the paper (column 1 of their Table III) is re-created in column 1 of our Table 1, below.¹²⁷ The main analysis regresses market level fares on MHHI Δ , and the number in the first row of column 1 (0.191) can be interpreted to say that going from the 10th to 90th percentile of MHHI Δ increase fares by 8.2% in concentrated airline routes.

We then re-created the same analysis with the same code and data a number of times, but changing only the amount of common ownership prior to computing the MHHI Δ . In the first iteration, we set common ownership at a small but constant level (1%) across all airlines, consistent with what some policies have recommended as a limit¹²⁸ (the result is in column 2 of Table 1). In the second iteration we randomly generated the levels of common ownership from the true empirical distribution (the result is in column 3 of Table 1). In the third iteration, we ran the analysis 100 times, generating random levels of common ownership each time.

Looking across the first row of Table 1 indicates a positive and statistically significant coefficient in each state of the world for the main outcome variable used to proxy for pricing power in the airline paper. In one case, the results are almost identical. The fact that the results from the airline can be reproduced at low levels of common ownership, or even random levels of common ownership, raises doubts about how much they really convey about common ownership and prices.

In other words, as is evident from the table, the low common ownership world (column 2), and the randomly-assigned ownership worlds (columns 3 and 4) obtain essentially the same results as the actual common ownership world that the airline paper produced (column 1). When randomizing 100 times, 53 of the 100 simulations had a positive statistically significant result at the 5% level, far more than should occur if the true effect is zero, which should have been the case with random data if the true data have an effect. In addition, the airline paper attempted to show causation by using an

¹²⁵ See, e.g., Hemphill et al, *supra* note 56 at 1447 (“As of December 2019, only one published article—the AST airline study—has found a statistically significant relationship between common ownership and price.”). Claims are also made about studies which do not examine anticompetitive behavior. See, e.g., Einer Elhauge, *Horizontal Shareholding’s Anticompetitive Effects and the Mechanisms that Produce It*, PROMARKET (June 24, 2019), <https://promarket.org/horizontal-shareholding-anticompetitive-effects-and-the-mechanisms> [https://perma.cc/8D67-DV3X] (“Over two dozen empirical studies have now confirmed the economic reality that common shareholding alters corporate behavior.”). The studies cited suffer from the same problems we identify here.

¹²⁶ See note 42, *supra* and accompanying text.

¹²⁷ See Azar, *supra* note 2, at 1565 (linking to replication package).

¹²⁸ See note 93, *supra* and accompanying text.

instrumental variable – the merger of BlackRock and Barclays – as an exogenous natural experiment.¹²⁹ However, as the analysis here shows, results from the natural experiment do not indicate anything about causation, because they would be obtained irrespective of any change in common ownership.

Table 1

	Original airline paper main result	Result with 1% common ownership for all airlines	Result with random common ownership
Variables	(1) Fare	(2) Fare	(3) Fare
MHHIΔ	0.191*** (0.0465)	0.193*** (0.0455)	0.159*** (0.0577)
HHI	0.221*** (0.0249)	0.233*** (0.0267)	0.199*** (0.0232)
Observations	1,237,791	1,237,791	1,237,791
R-squared	0.821	0.820	0.820
Number of market-carrier pairs	46503	46503	46503

Robust standard errors in parentheses

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

This highlights the trouble with relating price to MHHI Δ, which is actually a measure of both common ownership and market shares. Prices and market shares are likely to be correlated independently of share ownership, as shown clearly in the second column where eliminating any variation in horizontal ownership still results in a statistically significant result.

Every study using this method suffers from the same problem. It is premature to assume that even a correlation has been reliably established between common ownership and anticompetitive pricing. Similarly, a *causal* connection between ownership and pricing cannot be established as long as methods to find it use market share (and MHHI Δ). Market concentration-based metrics limit the ability to identify where common ownership might be creating harm. And proposed solutions based on market concentration, a key metric in enforcement policy, will not adequately deal with common ownership as a distinct problem.

We do not claim that this result rules out the possibility that common ownership has anticompetitive effects. It is still quite possible that the airline paper and empirical studies like it are pointing to the right answer but for the wrong reasons. The staying power of the debate is testament to the logical force of the common ownership narrative.¹³⁰ In the next section, we propose another way to think about the harms of common ownership that has the potential to open new paths for empirical analysis and policy research.

¹²⁹ See Azar et al, *Airline Paper*, *supra* note 2, at 1565.

¹³⁰ For other studies that have criticized common ownership empirical literature, see note 67 *supra*.

III. Another approach – teasing apart market concentration from ownership concentration.

We propose other ways of looking at common ownership that broaden the scope from the current debate, and can help move it past deadlock. A wider frame is useful for testing the plausibility of common ownership’s anticompetitive effects, as well as to tease apart the harms of common ownership from issues of market concentration and the harms of passive concentrated ownership generally. We start by going back to the original common ownership theory adapted by the airline paper.

A. Broadening the frame of inquiry

Given the problems inherent in using market concentration to study or make policy on common ownership, another tool is needed that isolates corporate managers’ incentives better. “Profit weights,” a concept that Bresnahan and Salop’s theory incorporates, can be usefully borrowed here.¹³¹ Profit weights are a conceptual tool that economists use to describe the incentives of a company’s managers with respect to their rivals’ performance.¹³² They are routinely used in antitrust analysis of mergers, and are a fundamental component of the theory that common ownership theory and empirical studies on which it is based.¹³³

Profit weights are simply a way of describing the amount of importance that the managers of one firm give to the profitability of a competitor firm.¹³⁴ In competitive markets, profit-maximizing firms place a profit weight of 0 on their competitors, meaning that their own payoff is entirely determined by their own profitability, and not by the profitability of rivals.¹³⁵ By contrast, firms that fully collude (or to put it another way, firms that are merged) place profit weights approaching 1 on each other, indicating that their payoff is directly correlated with the profitability of their (would be) competitors.¹³⁶ The common ownership hypothesis can be used to derive profit weights from overlapping ownership. Doing so, we see that implies that in recent years profit weights that firms place on their rivals are approaching, if not surpassing 1. This would mean that firms are making competitive decisions placing as much weight on the profits of their competitors as they are on their

¹³¹ See Backus et al., *Common Ownership in America*, *supra* note 26, at 3. the profit weights measure is implicit in the MHHI measure used by Bresnahan & Salop. See Bresnahan & Salop, *supra* note 34 at 585. For a detailed explanation of how profit weights are calculated, and how they are a constituent of Bresnahan and Salop’s MHHI, see the text and example in the Appendix.

¹³² See *id.* See also Jacob Gramlich and Serafin Grundl, *Testing for the Competitive Effects of Common Ownership*, Wash.: Bd. of Governors of the Fed. Res. Sys. (Fin. and Econ. Discussion Series, Working Paper No. 2017-29), <https://doi.org/10.17016/FEDS.2017.029>.

¹³³ See Backus et al., *Common Ownership in America*, *supra* note 26, at 3; see also Julio Rotemberg, *Financial Transactions Costs and Industrial Performance* (Sloan School of Management, Working Paper No. 1554-84, 1984), <http://hdl.handle.net/1721.1/47993>; O’Brien & Salop, *supra* note 37, at 584-98. In addition, the profit weights measure is implicit in the MHHI measure used by Bresnahan & Salop. See Bresnahan & Salop, *supra* note 34; Backus et al., *Common Ownership in America*, *supra* note 26, at 5. Other recent work to use the profit weight measure include Kennedy et al., *The Competitive Effects of Common Ownership* (July 26 2017) (working paper) (on file with SSRN); Jacob Gramlich & Serafin Grundl, *Estimating the Competitive Effects of Common Ownership* (Fin. & Econ. Discussion Series, Working Paper No. 2017-029, 2017), <https://www.federalreserve.gov/econres/feds/files/2017029r1pap.pdf>; Lysle Boller & Fiona Scott Morton, *Testing the Theory of Common Stock Ownership* (Sept. 4, 2019) (working paper) (on file with Northwestern University); Backus et al. *Common Ownership in America*, *supra* note 26, at 5.

¹³⁴ See Backus et al., *The Common Ownership Hypothesis*, *supra* note 15, at 5.

¹³⁵ See *id.*

¹³⁶ See *id.*

own profits – which would be the equivalent of the two firms acting as though they had partially or fully merged.¹³⁷

For example, profit weights have been central to merger analysis for decades, where a merger takes profit weights from zero to one for the merging parties as the merged firm would maximize total profits of the merging entities. Profit weights are also used to model firm pricing decisions for multi-product firms; Corn Flakes and Special K would have profit weights of 1 on each other since they are both produced by the same firm, Kellogg's. To proponents of the MHHI approach, the good news is that the MHHI computation itself incorporates profit weights: MHHI is defined as the sum across pairs of firms of profit weights between those firms times those firms' market shares. Therefore, any proponent of the MHHI approach has implicitly accepted the logic of profit weights. That is, profit weights are more general than MHHI and do not require restrictive assumptions on the nature of competition.

Profit weights run separately to the incentives provided by market concentration alone. This is important because profit weights and market concentration have different implications for how managers would be expected to act in different situations. According to economic theory, pricing by firms represents a type of prisoner's dilemma: whoever is first to undercut the others captures the most gain.¹³⁸ When there are few players (i.e., markets are concentrated) it is easier for players in the market to tacitly collude and keep prices elevated, because there are fewer parties with the ability to undercut, and it is easier to maintain cooperation through informal or interpersonal ties.¹³⁹ The more players that enter the market, the more difficult it is to maintain such collusion because the odds go up that someone will find the windfall of undercutting to be more valuable than any other relational or incentives.¹⁴⁰ This theory is the basis for using market concentration as a signal for possible collusive behavior and a threshold for merger enforcement by the government.¹⁴¹ To return to the classroom analogy, if you are in a class with just one other person, you may not feel the need to compete very aggressively (assuming you want to do well) because it would be impossible to grade you on a curve, and your social interactions with the other person might make it easier to set a standard for classroom performance that did not tax either of you too much. However, if several other students were suddenly added to the class, it would be harder to ensure that everyone stays on the same page in terms of performance, and that one person doesn't try to outwork everyone else.

Common ownership theory cuts against this traditional understanding, because it suggests that if firms take their overlapping ownership into account, then as long as other players in the market are also commonly owned, market concentration will not influence management incentives, or at least, that influence will take a back seat to the interests of common owners. The result is that traditional views of firm boundaries need to be reconsidered if the common ownership hypothesis is correct. Using the profit weight framework makes visible places where those firm boundaries are blurred. We propose that situations in which the implied firm boundaries change provide a useful place to look for common ownership's effects, provide insight onto its mechanisms and guide policymaking. Two general situations are especially useful. The first are transactions in which common ownership changes but market concentration remains static. The second are situations in which common ownership should provide incentives that move in the opposite direction of what would be expected based on

¹³⁷ See Backus et al., *Common Ownership in America*, *supra* note 26, at 3.

¹³⁸ Carlton, *supra* note 13, at 272.

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ See Merger Guidelines, *supra* note 90, § 5.

market concentration alone. We provide illustrations below to highlight the counterintuitive ways common ownership should reveal its presence and provide a roadmap for further research.

B. Transactions that change common ownership concentration but keep market concentration static

In situations where common ownership changes but market conditions remain static, a change in consumer prices would suggest that common ownership is at work. These situations provide a falsification test of the hypothesis, and warrant new policy thinking if the hypothesis is confirmed. To extend the analogy from above, imagine again that you are in a class that is both graded on a curve and that you are in the class with cousins. If we wanted to know if your concerns about your cousins' performance was affecting your own, we could put your siblings in a different class but keep the curve the same and see if it changes your competitiveness.

Transactions that remove companies from the U.S. public equity markets can have an analogous effect. Two primary examples are transactions that remove a company from a major stock index, and going private transactions.¹⁴² If followed to its logical conclusion, the common ownership hypothesis provides a strong consumer welfare rationale for allowing these transactions. The reason is that these transactions result in the removal of companies from U.S. stock indices, which in turn eliminates holdings by indexed institutional investors that otherwise own stakes in competitor firms. Thus, the firms subject to these transactions no longer have owner-driven incentives to soften competition. We use the example of tax inversions and private equity transactions to demonstrate below why this conclusion follows.

1. Removal from stock indexes – the example of tax inversions

Removing companies from stock indexes results in a change in common ownership while keeping market structure the same. One type of transaction that has had this effect is a tax inversions – a re-incorporation of U.S. companies in foreign jurisdictions for the purpose of reducing U.S. tax burdens.¹⁴³ In some instances, these transactions should have had an unexpectedly beneficial effect on consumer welfare if the common ownership hypothesis is accurate. In a tax inversion, a U.S. corporation acquires a foreign firm and merges into it, assuming the foreign merger partner's tax nationality.¹⁴⁴ A prototypical example occurred in 2014, when Miami-based Burger King acquired

¹⁴² See Steven M. Davidoff, *The Failure of Private Equity*, 82 S. CAL. L. REV. 481, 493 (2009) (discussing tax inversions); John C. Hamlett, *The Declining Allure of Being American and the Proliferation of Corporate Tax Inversions: A Critical Analysis of Regulatory Efforts to Curtail the Inversion Trend*, 93 WASH. U. L. REV. 767 (2016) (analyzing tax inversion trend and corresponding regulatory scheme).

¹⁴³ See *Corporate Inversions: Hearing Before the H. Comm. On Ways & Means*, 107th Cong. 10-11 (2002) (statement of Pamela F. Olson, Acting Assistant Secretary for Tax Policy, U.S. Department of the Treasury) (providing the Treasury Department's Office of Tax Policy definition of inversion as "a transaction through which the corporate structure of a U.S.-based multinational group is altered so that a new foreign corporation, typically located in a low-or no-tax country, replaces the existing U.S. parent corporation as the parent of the corporate group."). See also Inho Andrew Mun, *Reinterpreting Corporate Inversions: Non-tax Competition and Frictions*, 126 YALE L. J. 2152, 2156 (2017) (defining tax inversions generally); Cathy Hwang, *The New Corporate Migration: Tax Diversion Through Inversion*, 80 BROOK. L. REV. 807, 812 (2015) (describing inversions).

¹⁴⁴ See Hwang, *supra* note 217 at 812. See also John C. Hamlett, *The Declining Allure of Being "American" and the Proliferation of Corporate Tax Inversions: A Critical Analysis of Regulatory Efforts to Curtail the Inversion Trend*, 93 WASH. U. L. REV. 767 (2016) (describing inversions generally).

Canadian donut chain Tim Horton's, and transformed itself from a U.S. to a Canadian taxpayer.¹⁴⁵ A few years later, Burger King performed the same trick again by acquiring fast food fried chicken chain Popeye's Louisiana Kitchen and making it Canadian also.¹⁴⁶ These transactions reportedly saved the new conglomerate hundreds of millions of dollars in U.S. tax payments,¹⁴⁷ and they have hardly been alone in pursuing such deals.¹⁴⁸

Inversions have seen periods of popularity, first in the 1980's,¹⁴⁹ in the 1990's¹⁵⁰ and again in the early 2000's.¹⁵¹ The most recent wave beginning in 2011 was especially active, described by one prominent academic as a "feeding frenzy"¹⁵² and by another as a "sharknado of inversions"¹⁵³ as U.S. companies sought to lower their tax burdens.¹⁵⁴ Among other well-known U.S. companies to "invert" their tax domicile to a foreign land between 2011 and 2015 were pharmaceutical giant Pfizer¹⁵⁵ (which became Irish by merging with Allergan), Chrysler (which acquired U.K. tax domicile after merging with Fiat),¹⁵⁶ General Electric (which purchased Alstrom and became French)¹⁵⁷ and Walgreens (which became Swiss after acquiring Alliance Boots).¹⁵⁸ These transactions subsequently became less common when U.S. tax policy shifted to discourage them.¹⁵⁹ However, if history is any guide, inversions can be expected to emerge again. As has happened before, future tax policy or the discovery of new loopholes

¹⁴⁵ See BURGER KING WORLDWIDE, INC., CURRENT REPORT (FORM 8-K) (2014) (announcing the completion of Burger King's acquisition of Tim Hortons). See also Kevin Drawbaugh, *Burger King to Save Millions in U.S. Taxes in 'Inversion'*, REUTERS (Dec. 11, 2014), <https://www.reuters.com/article/us-usa-tax-burgerking/burger-king-to-save-millions-in-u-s-taxes-in-inversion-study-idUSKBN0JP0CI20141211>.

¹⁴⁶ See Maggie McGrath, *A Whopper of A Deal: Burger King Owner Restaurant Brands International Acquires Popeyes For \$1.8 Billion*, FORBES (Feb. 21, 2017), <https://www.forbes.com/sites/maggiemcgrath/2017/02/21/a-whopper-of-a-deal-burger-king-owner-restaurant-brands-international-acquires-popeyes-for-1-8-billion/#2ed831d0db40>.

¹⁴⁷ See Drawbaugh, *supra* note 218.

¹⁴⁸ See Hwang, *supra* note 218 at 809.

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ See James Mann, James Mann, *Corporate Inversions: A Symptom of a Larger Problem, the Corporate Income Tax*, 78 S. CAL. L. REV. 521, 521 (2005) (discussing the tax costs and benefits of inversions in the early 2000's).

¹⁵² See Mark Garrison, *Corporate Inversion: An Expensive Way to Save on Taxes*, MARKETPLACE (Jul. 15, 2014), <http://www.marketplace.org/topics/world/corporate-inversion-expensive-way-save-taxes> (discussing the tax costs and benefits of inversions in the early 2000's).

¹⁵³ *Id.*

¹⁵⁴ The quote came from the late Professor Edward Kleinbard, former chief of staff of the Congressional joint Committee on Taxation. Lori Montgomery, *U.S. Policymakers Gird for Rash of Corporate Expatriations*, WASH. POST (Aug. 6, 2014), http://www.washingtonpost.com/business/economy/us-policymakers-gird-for-rash-of-corporate-expatriations/2014/08/05/4898ca5e-18d9-11e4-9349-84d4a85be981_story.html (reporting on the wave of tax inversions and quoting Professor Kleinbard)

¹⁵⁵ *Id.*

¹⁵⁶ Hwang, *supra* note 232, at 809.

¹⁵⁷ Dustin Walsh, *Tax Inversion Rules: A Moving Target*, CRAIN'S DET. BUS. (Nov. 30, 2014), <https://www.craindetroit.com/article/20141130/NEWS/311309983/why-corporate-tax-inversion-rules-are-a-moving-target>.

¹⁵⁸ Vanessa Houlder, Vincent Boland & James Politi, *Tax Avoidance: The Irish Inversion*, FIN. TIMES (Apr. 29, 2014), <https://www.ft.com/content/d9b4fd34-ca3f-11e3-8a31-00144feabdc0>.

¹⁵⁹ Hwang, *supra* note 232, at 809

¹⁶⁰ In September 2014, the Internal Revenue Service announced regulations that limited the tax benefits of inversions. I.R.S. Notice 2014-52, 2014-42 I.R.B. 712 (Sept. 22, 2014). See also MICHAEL L. SCHLER, CRAVATH SWAIN & MOORE LLP, NEW TAX RESTRICTIONS ON INVERSIONS (Sept. 30, 2014), https://www.cravath.com/files/uploads/Documents/Publications/3494991_1.PDF (summarizing Notice 2014-52 in a notice to clients).

in the anti-inversion rules could easily set off a new wave of them, making consideration of them ever relevant.¹⁶⁰

These transactions have stirred criticism for the fact that they allowed corporations operating in the U.S. to escape billions of dollars in tax payments in what they saw as abuse of the tax system.¹⁶¹ But amidst the periodic froth over inversions, they have never previously been thought to impact competitiveness or consumer welfare. Rather, they have been critiqued primarily as technical maneuvers that affect the government's tax revenue.¹⁶² However, if the common ownership hypothesis is correct, an overlooked result of several tax inversions is that they should have led to increased competition in the industry of the company that is inverting. The reason is that inversions have resulted in the removal of companies from U.S. stock indexes such as the S&P 500, the rules of which require U.S. domicile in order to be included.¹⁶³ Removed from the indexes, a company would lose a large proportion of its common ownership, much of which is due to investment funds or ETFs that hold an index.¹⁶⁴ However, the company's market share would remain the same as a result of the transaction. Reducing the common ownership of such firms would diminish the managerial incentive to enhance rivals' profits (in economic terms, it would reduce their relative profit weights with respect to other firms), thereby restoring their motivation to compete.

Thus, in theory, these seemingly non-consumer related transactions should have incredibly strong product market effects. When a company is in league with its competitors and then is suddenly removed from an index, we should see it drastically cut prices, because prior to the inversion prices would represent the profit weight the inverting firm had on its competitor firms. Immediately after the transaction, the profit weight fall, and in some cases drop to zero.

An example illustrates the point. In 2015, Chicago-based food conglomerate Mondelez International (formerly Kraft Foods) consummated an inversion of its coffee subsidiary by joining it with Dutch company Douwe Egberts Master Blenders ("DEMB").¹⁶⁵ The transaction was structured so as to create a new jointly owned company of which Mondelez would own 49%, while the privately-

¹⁶⁰ See Hwang, *supra* note 232 at 836 (stating that "whenever a new generation of anti-inversion policy is enacted, it is only a matter of time before corporations find a way to invert."). Professor Hwang describes the various eras of inversion and the government's attempts to stop them, only for corporations to find new ways to skirt the rules. *See id.* at 821-26.

¹⁶¹ See e.g., Press Release, Senator Ben Cardin, Senators Introduce Bill to Clamp Down on Inversions Tax Loophole (May 20, 2014), available at <http://www.cardin.senate.gov/newsroom/press/release/senators-introduce-bill-to-clamp-down-on-inversions-tax-loophole> (quoting Senator Tim Kaine, among others, characterizing inversions as "flagrant abuse of our system [leading to] billions of dollars of lost revenue"). This criticism was also alluded to in the President's State of the Union Address in 2014.

¹⁶² In 2014, the Congressional Joint Committee on Taxation estimated that stopping inversions could result in tax revenue gains of \$19.5 billion over ten years. *See* Letter from Thomas A. Barthold, Chief of Staff, Joint Committee on Taxation, to Karen McAfee, Democratic Chief Tax Counsel, House Ways and Means Committee (May 23, 2014), <http://democrats.waysandmeans.house.gov/sites/democrats.waysandmeans.house.gov/files/113-0927%20JCT%20Revenue%20Estimate>.

¹⁶³ *See* S&P 500 Inclusion Criteria. Removal from stock indexes has been noted as a result of inversions, although the consumer welfare effect of this has not. *See also*, Chris Matthews, Will the Pfizer Inversion Get It Booted From the Dow?, *Fortune* (November 23, 2015) available at <https://fortune.com/2015/11/23/pfizer-dow-jones> (noting that inversions will result in firms being removed from the S&P 500, the Dow Jones Industrial Average, and the Fortune 500). Prior to 2011, the S&P 500 removed 9 companies for conducting inversions. However, it changed its rules in 2011 to allow many inverted companies to remain in the index, and subsequently re-admitted the 9 that it had excluded.

¹⁶⁴ *See* Backus et al., *Common Ownership in America*, *supra* note 26, at 3.

¹⁶⁵ *See* Press Release, Mondelez International, Mondelez International & D.E Master Blenders 1753 To Form World's Leading Pure-Play Coffee Company (May 7, 2014), <https://ir.mondelezinternational.com/news-releases/news-release-details/mondelez-international-de-master-blenders-1753-form-worlds>

held DEMB owned a controlling 51% stake.¹⁶⁶ The deal was arranged this way to evade soon-to-be-enacted anti-inversion rules that diminished the tax advantages of traditional merger inversions.¹⁶⁷ At the time of the transaction, Mondelez's largest shareholders were Vanguard, with 7%, BlackRock with 4.5% and SSgA Funds Management, with 4% and Capital Research and Management with 2% (for a total of 17.5% fund ownership). These funds were also heavily invested in competing firms Keurig Green Mountain (of which these funds collectively held 15%), Smucker's (of which the funds held 22.9%), which owns popular coffee brands Folgers, Dunkin Donuts and Café Bustelo, and PepsiCo (of which the funds held 19%), which owned Seattle's Best and Starbucks' retail brands.

Mondelez's inversion effectively removed its coffee business from index fund ownership for control purposes, while the market for coffee remained unchanged. Using the ownership data for each company, it is possible to calculate that the coffee subsidiary's profit weight on its rivals went from 0.7 to nearly 0.¹⁶⁸ According to common ownership theory, this should have had a positive effect on competition and driven retail coffee prices down.

Importantly, this conclusion has testable implications. If a product market effect were observed, it would warrant greater support for inversions, and a reconsideration of their costs versus their benefits. But more importantly, if this were observed, it would bolster the evidence for common ownership's anticompetitive effects.

In the Mondelez example, the consumer price index data from that time period shows scant evidence to support the conclusion that a change in common ownership reducing profit weights to zero made the company more competitive. Figure 2 below¹⁶⁹ shows average coffee prices per pound in the U.S. between January 2013 and June 2016. The inversion transaction was completed July 2, 2015. Common ownership theory would predict a decline in coffee price starting in July 2015 that departs from the overall trend. The figure shows a decline, but it is one that continues an overall trend: the average price decrease per month is actually higher for the two years before the inversion (at 4.5% per month, on average) than it is for the two years afterwards (3% per month).¹⁷⁰

¹⁶⁶ *Id.*

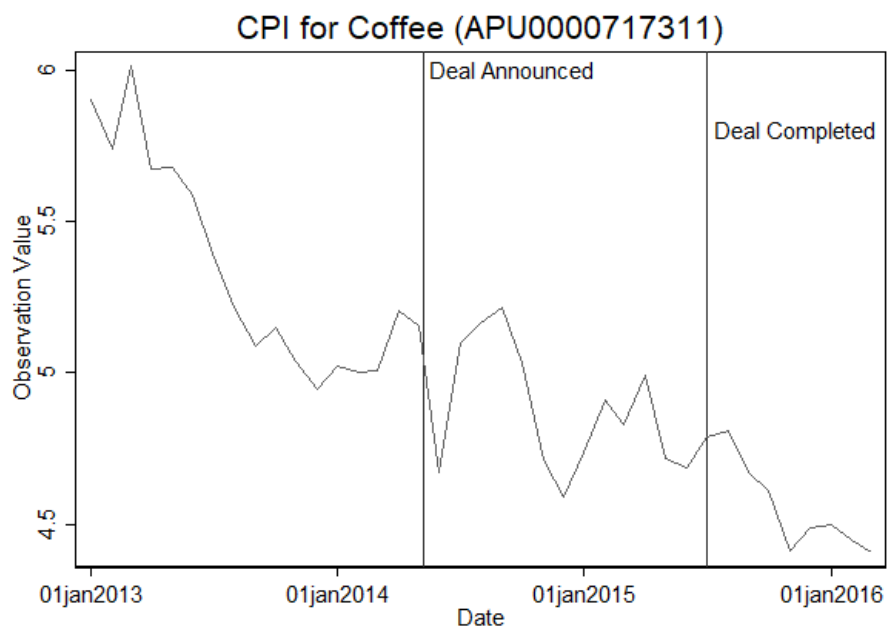
¹⁶⁷ *Id.*

¹⁶⁸ See Backus et al., *supra* note 29. The profit weights are derived from the data, in the same manner as used in the common ownership theoretical and empirical literature. See e.g., Azar, et al, *supra* note 7.

¹⁶⁹ BUREAU OF LABOR STATISTICS, CONSUMER PRICE INDEX FOR COFFEE (2016).

¹⁷⁰ See Azar, *supra* note 7.

Figure 2: Consumer Price Index: Average Price of Coffee per Pound, January 2013—June 2016.



Although looking at the raw consumer price data does not support the effects of common ownership, it is important not to draw firm conclusions. We do not purport to do an econometric analysis, which is beyond the scope of this article. This is merely one illustration of the point, intended to highlight the logic of the argument and guide further research. A thorough analysis would require more examples and controls for other factors that might affect consumer prices, to inform sound policy recommendations.

2. Private equity and going private transactions

Going private transactions are a staple of the private equity industry, the business model of which is to take control of underperforming companies and improve their value. Private equity firms accomplish this aim through leveraged buyouts (LBOs), transactions in which they acquire all of a company's publicly traded shares and remove the company from public equity markets.¹⁷¹ By definition, these transactions undo common equity ownership of these companies by forcing indexed horizontal investors to sell their shares, and prevent further ownership by indexed equity investors.¹⁷²

¹⁷¹ Jason Fernando, *Going Private*, INVESTOPEDIA, <https://www.investopedia.com/terms/g/going-private.asp#:~:text=A%20going%20private%20transaction%20is,management%20buyouts%2C%20and%20tender%20offers.&text=The%20assets%20and%20cashflows%20of,to%20pay%20for%20those%20debts> (last updated Sept. 12, 2019) (defining going private transaction).

¹⁷² Indexed institutional investors do not typically engage in private equity, although some do to a certain degree. BlackRock, for example, has private equity holdings in its portfolio, although they account for a relatively small portion of overall holdings, and an even smaller relative share of firms in markets with concentrated horizontal ownership.

Private equity has come under fire from policymakers for the common practices the industry employs to make firms profitable.¹⁷³ Criticisms include the fact that private equity firms frequently cut costs by firing employees,¹⁷⁴ cutting research and development,¹⁷⁵ and prioritizing short term actions to inflate stock prices at the expense of long term strategy.¹⁷⁶ The academic literature has provided a more nuanced assessment, with some scholars criticizing private equity practices for blunting the long term value of firms in favor of short term cost savings,¹⁷⁷ and others giving a positive account of private equity's ability to improve efficiency and performance of its portfolio companies.¹⁷⁸

If the common ownership hypothesis is correct, this means that the profit weights these firms place on their rivals fall to zero (or close to it).¹⁷⁹ In any industry that should otherwise be highly competitive, this means that these firms cease any collusive behavior as their incentives move from raising prices to help their rivals, to undercutting their rivals and capturing market share.¹⁸⁰ One consequence of this is that many private equity transactions would be good for consumers in an unexpected way, at least when companies formerly traded in indexes are taken private. The benefits to consumers, if present, need to be weighed against potential drawbacks for employees and other company stakeholders. Moreover, if the common ownership hypothesis is true and the cause is a passive mechanism such as lazy management, one should see more private equity activity in the industry as dealmakers realize they can readily improve performance.

The ultimate goal of private equity is for portfolio companies to go public again, an event that occurs on average five to ten years after it is taken private.¹⁸¹ Assuming the common ownership hypothesis is correct, if the firm re-enters an index at that time, the event should have a negative effect on consumer welfare even if market concentration remains stable, because common ownership would increase.

An example helps illustrate the point. The soft drink industry has historically been marked by fierce competition.¹⁸² Rivalries between the main companies even entered the cultural imagination during the so-called "Cola Wars" of the 1980's, when Coca-Cola ("Coke") and Pepsi vied for market share among fizzy beverage drinkers.¹⁸³ The industry has historically been competitive in part because the goods they sell are relatively homogenous, and therefore substitutable for many consumers.¹⁸⁴ The industry is also highly concentrated, with Coke at 43%, Pepsi at 25% and Dr. Pepper at 18% of the market share for soft drinks nationwide.¹⁸⁵ Each of these companies is part of the S&P 500 and prior to 2018 their equity was commonly owned in large part by Vanguard and BlackRock, which together

¹⁷³ See Emily Stewart, *What is private equity, and why is it killing everything you love?*, VOX (Jan. 6, 2020 7:00 AM), <https://www.vox.com/the-goods/2020/1/6/21024740/private-equity-taylor-swift-toys-r-us-elizabeth-warren>

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

¹⁷⁸ See Thomas Schneeweis, Raj Gupta & Edward Szado, *The Benefits of Private Equity*, 9 J. INV. CONSULTING 27, 28-29 (2008) (discussing benefit of private equity on portfolios).

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

¹⁸¹ Sammy Abdullah, *How Long Does It Take a Startup to Exit?*, CRUNCHBASE (Nov. 25, 2018), <https://about.crunchbase.com/blog/startup-exit/>.

¹⁸² See Kim Bhasin, *COKE VS. PEPSI: The Amazing Story Behind the Cola Wars*, BUS. INSIDER (Nov. 2, 2011 4:40 PM), <https://www.businessinsider.com/soda-wars-coca-cola-pepsi-history-infographic-2011-11>.

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ See Emma Bedford, *Market share of leading CSD companies in the U.S. 2004-2018*, STATISTA (July 1, 2020), <https://www.statista.com/statistics/225464/market-share-of-leading-soft-drink-companies-in-the-us-since-2004/>.

held 14.4% of Pepsi, 12.4% of Coke and 21% of Dr. Pepper, and to a lesser extent by State Street, which held 4.4% of Pepsi and 5.3% of Dr. Pepper.

From 2010 until July 2018, the funds held a much greater percentage of Dr. Pepper than Pepsi or Coke, and consequently Pepsi had a profit weight on Dr. Pepper that ranged from 1.2 to nearly 1.5.¹⁸⁶ Control of Dr Pepper Snapple Group (DPS) was acquired by private equity firm JAB Holdings in July 2018.¹⁸⁷ The transaction was effected via a merger between DPS and Keurig Green Mountain, which JAB also controlled.¹⁸⁸ The merger resulted in a new company, Keurig Dr. Pepper, Inc., which was completely controlled by privately held JAB Holdings through its ownership of 87% of new firm's stock.¹⁸⁹ Although Keurig Dr. Pepper's stock continued to trade in the market, JAB's 87% holding made it a privately controlled firm.¹⁹⁰

A logical extrapolation of common ownership theory would predict that this deal should have had a price impact on the market for carbonated drinks. Once JAB took control, Dr. Pepper's profit weight on Coke and Pepsi went to zero and vice versa. If Dr. Pepper had been able to compete more effectively and cut prices, it could have captured more market share, earning additional profit. This means that anticompetitive pricing that Dr. Pepper had engaged in with respect to Coke and Pepsi prior to the acquisition should have disappeared when the incentive to do so did. That would have been reflected in consumer prices for carbonated beverages from that time.

However, in this instance the theoretical picture fits poorly with empirical reality. Figure 3 below shows the average price for carbonated beverages over time from 2010 until 2020. The figure shows that average price trend changed little at the time of the privatization. On the contrary, prices for carbonated beverages have gone up in the years since Dr. Pepper changed hands and profit weights between it and its rivals collapsed to zero. Once again, we do not present this as definitive proof of a lack of price effect since many factors contribute to consumer pricing. However, the fact that no effect is evident whatsoever in the raw consumer pricing data is troubling for common ownership's logical implications.

¹⁸⁶ These numbers were calculated from ownership data taken from the SEC, as described in Part II, *supra*. Profit weights were calculated according to description in the Appendix, *infra*.

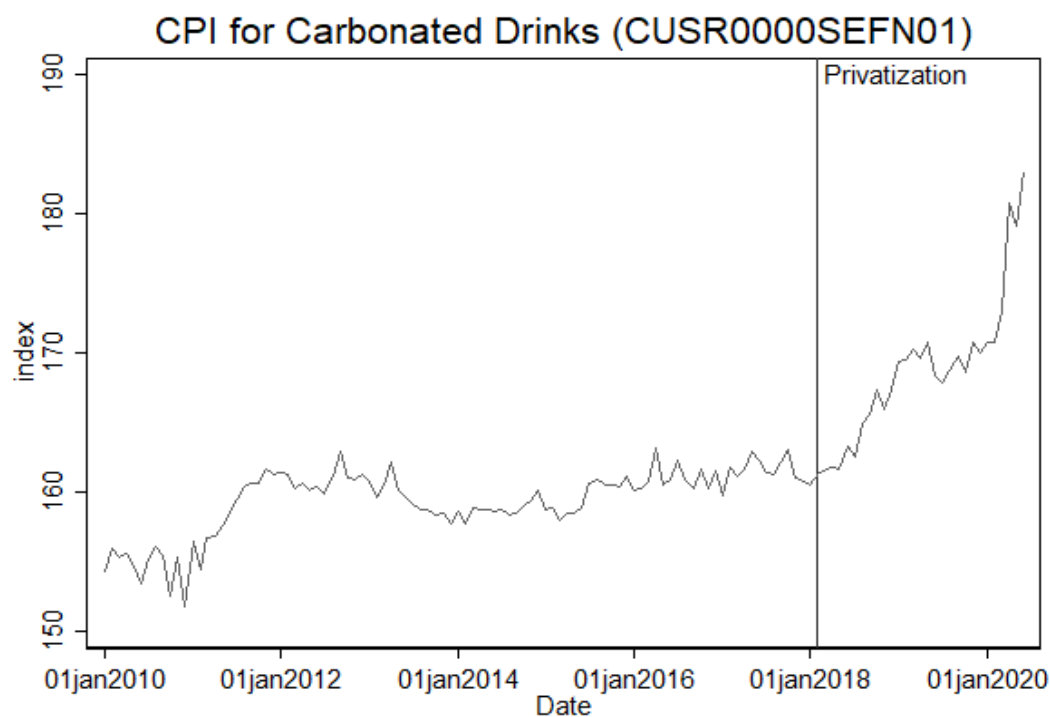
¹⁸⁷ See Keurig Dr. Pepper, Inc., Annual Report (Form 10-K) (2018), <https://www.sec.gov/Archives/edgar/data/1418135/000141813519000007/kdp-10kx12312018.htm>.

¹⁸⁸ See *Keurig Dr Pepper Announces Successful Completion of the Merger between Keurig Green Mountain and Dr Pepper Snapple Group*, BUSINESSWIRE (July 9, 2018 5:00 PM), <https://www.businesswire.com/news/home/20180709005853/en/Keurig-Dr-Pepper-Announces-Successful-Completion-Merger>.

¹⁸⁹ Paul R. La Monica, *Beverage bonanza: Dr Pepper Snapple merging with Keurig Green Mountain*, CNN BUS. (Jan. 29, 2018 11:08 AM), <https://money.cnn.com/2018/01/29/investing/dr-pepper-snapple-keurig-green-mountain-merger/index.html>.

¹⁹⁰ See Jennifer Kaplan, *Keurig to Go Private in \$13.9 Billion Buyout Led by JAB*, BLOOMBERG (Dec. 7, 2015 3:09 AM), <https://www.bloomberg.com/news/articles/2015-12-07/keurig-to-be-bought-by-jab-led-investor-group-for-13-9-billion>.

Figure 3: Consumer Price Index for Carbonated Drinks Over Time.



The likely explanations for this are that the market was already competitive before the transaction, despite the existence of common ownership, or that the market was collusive for reasons independent of common ownership, and those reasons remained after the going private transaction was consummated. In any event, the reduction in common ownership alone had no apparent effect to lower consumer prices.

It is also possible that there are other reasons that prices did not go down, but they are less plausible. For instance, it is possible that some private equity firms are also horizontal owners, and that therefore the incentives did not really change after a company was taken private. However, the vast majority of private equity firms, including JAB, exist separately from indexed institutional investors.¹⁹¹ To the extent private equity firms and horizontal owners are related, they account for a small percentage of the overall market. This example therefore demonstrates the point and provides a pathway for further research. We propose that an analysis of numerous such examples would be worthwhile for informing policy and debate going forward.

C. Transactions that have a different impact under common ownership than otherwise

The second type of transaction that can provide useful insight are those for which market conditions may change, but common ownership predicts a weaker or stronger effect than what would otherwise be expected. These situations provide another falsification test of the hypothesis, as well as a way to potentially isolate passive mechanisms if the common ownership hypothesis is correct.

¹⁹¹ Schneeweis, *supra* note 169 at 134 (describing the different strategy and separation of the private equity business model from that of institutional investors).

Returning to the classroom analogy helps, although this time it is a bit more complicated. Imagine a class that is graded on a curve, and imagine also that we know that curves generally affect people in certain ways (make them more competitive if it's steep, less competitive if it is not). If you're in the class with your cousins and suddenly take the curve is taken away, what happens to your competitive behavior will say something about how much you were helping your cousins all along. If you don't become any more competitive toward your cousins, it would suggest some favorable treatment toward them (which, in this scenario, we hope would be the case). Alternatively, if the curve were made easier but your cousins were taken out of the class, if you became a lot more competitive it would be surprising, but would say something about your reaction to your cousins as well as your level of effort before the changes. This coarse analogy conveys the contours of the basic idea here.

When firms combine, market concentration shifts and this change of concentration is generally presumed to have an effect on consumer prices.¹⁹² But if the common ownership hypothesis is true, then firms are behaving as if their boundaries are more porous than generally assumed, and the way they wield market power cannot be inferred by looking at a market's players as though they are each entirely separate entities. This means that mergers can have unexpected market effects in two ways. First, the simple choice between cash and stock as merger consideration can shift market incentives and, surprisingly impact consumer prices if the common ownership hypothesis is true. Second, the difference in consumer prices before and after a merger should be far lower than predicted using standard models if common ownership is at work. Each of these observations has implications for empirical testing and law.

1. Deal consideration

Surprisingly, under the common ownership hypothesis, a company's choice to use cash or stock as consideration in a horizontal merger would affect consumer prices. The effect could often cut in the opposite direction from changes in market concentration.¹⁹³ This is remarkable because merger consideration is not commonly assumed to have any import for the welfare of consumers in the merged companies' market.¹⁹⁴ As a rough analogy, the choice of merger consideration would be like the choice to pay for something in the store using a \$5.00 bill as opposed to 20 quarters – the value to you and store is equivalent even if the form is different. But it shouldn't influence whether the store decides to raise prices on its goods.

Common ownership implies that using stock as merger consideration would have consumer welfare effects that would not occur for an all-cash merger. The basic idea, in general terms, is that if we assume that companies think about shareholders in rough proportion to the shares that they own relative to other shareholders, a merger in which stock is used instead of cash can end up increasing one owner's stock, while lowering the proportion owned by others, or vice versa. That, in turn, changes the profit weights.

To explain a bit more technically, consider a stylized example involving a market with three rival firms (Firms 1, 2 and 3), all of which are included in the S&P 500. Assume that there are four large institutional investors (Investors A, B, C and D). Firm 1 is 10% owned by each of Investor A and

¹⁹² See Carleton, *supra* note 86 at 270.

¹⁹³ See Merger Guidelines, *supra* note 90, § 5 (describing the use of market concentration as a proxy for anticompetitive effects).

¹⁹⁴ See, e.g., Merger Guidelines, *supra* note 90, § 5 (setting out criteria for anticompetitive mergers, among which deal consideration is never mentioned). In a review by the authors of the last 89 antitrust enforcement suits brought by the government, none have used merger consideration as a contributing factor to reduced priced competition.

Investor D, and 80% held by retail investors. Firm 2 is 10% owned by each Investor B and Investor D, and 80% held by retail investors. Firm 3 is 10% held by each of Investor C and Investor D, and 80% held by retail investors. The ownership of each firm is reflected by the diagram below.

	Firm 1	Firm 2	Firm 3
Investor A	10%		
Investor B		10%	
Investor C			10%
Investor D	10%	10%	10%
Retail Investors	80%	80%	80%

In this configuration, profit weights for each firm on every other firm would be 0.5.¹⁹⁵ Now suppose that Firm 1 acquires Firm 2. To do this Firm 1 needs to acquire all of Firm 2's shares from the current shareholders of Firm 2. Firm 1 has the option of using all cash as consideration (i.e., paying Firm 2's existing shareholders cash for the shares thus pushing those shareholders out of the firm) or it can use its own stock as consideration (i.e., paying Firm 2's tendering shareholders with Firm 1's stock, thus making them shareholders of the new combined firm).¹⁹⁶

If Firm 1 opts for an all cash transaction, then after the merger its profit weight on Firm 3 will remain unchanged, because the ownership of each company would remain unchanged. If Investor A owned 10% of Firm 1 and 10% of Firm 3 before the merger, it will still own 10% of each as a result of the merger. However, the situation would be different if Firm 1 used stock as consideration. For example, if Firm 1 made an exchange offer with a ratio of 1:2 (meaning that one share of Firm 1 would be given to investors for every two shares of Firm 2 that they tendered), then Firm 1's profit weight on Firm 3 would rise to just over 0.64. This is because Firm 1's undiversified owners would be diluted from the share issuance.

If the common ownership hypothesis is true, mere choice of merger consideration would result in something resembling a monopoly market, far beyond what would be expected by looking at market concentration. Due to that choice of consideration, not only would Firm 1 and Firm 2 end up combined, but the combined Firm would begin to behave as though substantially combined with Firm 3 as well.

Perhaps more surprisingly, this can also cut the opposite way and the choice of merger consideration can make a market *more competitive* even though firms are merging.¹⁹⁷ To illustrate this possibility, consider Procter & Gamble's (P&G) 2005 announcement that it was acquiring Gillette for \$57B in an all-stock transaction, where P&G issued 0.975 shares for each share of Gillette.¹⁹⁸ While these two companies did not have many overlapping product lines, they very much had an overlapping

¹⁹⁵ For an explanation of how profit weights are calculated, see the text and example in the Appendix, *infra*.

¹⁹⁶ Firm 1 could also use a combination of stock and cash, although for simplicity of explanation, we describe the either an all cash or all-stock transaction.

¹⁹⁷ In fact, in this case there is no exchange rate of shares that would leave the profit weight on Firm 3 unchanged at 0.5. Of course, some mergers involve a mixture of both cash and stock. Solving for an exchange rate of shares that keeps the merged firm's profit weight on Firm 3 at 0.5 yields exactly one solution: an exchange rate of 1:0, or in other words, an entirely cash deal.

¹⁹⁸ Chris Isadore, *P&G to Buy Gillette for \$57 Billion*, CNN MONEY (Jan. 28, 2005) https://money.cnn.com/2005/01/28/news/fortune500/pg_gillette/ (last visited September 3 2020).

competitor: Energizer Holdings, who produced batteries that competed with P&G’s Duracell line, but also razor blades under the “Schick” brand that competed with Gillette’s razor offerings.¹⁹⁹

We have computed the profit weights implied by the common ownership hypothesis for these three firms as of Dec 31, 2004. The table below shows that P&G would place a high profit weight on both Energizer (0.9456) and Gillette (1.2339), but that those two firms place relatively low profit weights on others (Energizer and Gillette’s largest shareholders were undiversified shareholders with stakes near 10% of each firm; P&G’s largest stakeholders were asset management firms with relatively larger stakes in the others).²⁰⁰

Profit Weights:	Energizer Holdings	Gillette	P&G
Energizer Holdings	1	0.292027	0.252806
Gillette	0.277483	1	0.313448
P&G	0.945632	1.233919	1

The merger required P&G to expand its number of shares outstanding by over 60%. We can recompute the profit weights after the merger:

Post-Merger Profit Weights:	Energizer Holdings	P&G-Gillette
Energizer Holdings	1	0.263658
P&G-Gillette	0.35824	1

What is remarkable is that issuing so much new stock allowed P&G to “inherit” Gillette’s largest shareholder, who was undiversified. A cash offer would not immediately do so: under a cash offer, P&G would have maintained a large profit weight on Energizer, and Gillette would now also have that high profit weight on Energizer. Although deal consideration per se is not directly part of traditional merger analysis, under the common ownership hypothesis the stock-swap nature of this transaction was important to the merger’s pro-competitive benefits.

This result is counterintuitive, and it is difficult to imagine that any deal lawyer or investment banker would ever consider consumer welfare or market concentration effects when structuring deal consideration. Moreover, regulators do not weigh deal structure implications in the course of antitrust review.²⁰¹ Yet, the common ownership hypothesis implies that they should.

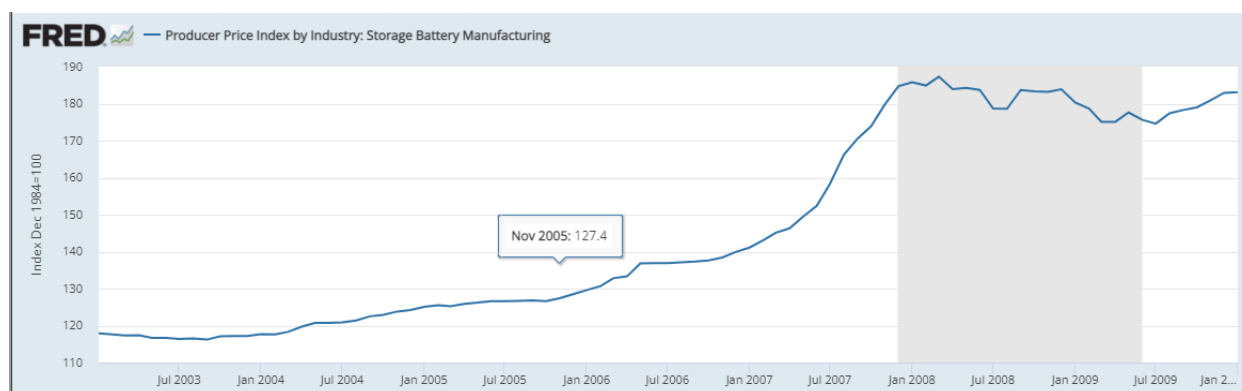
This suggests that if common ownership theory is correct, antitrust regulators should consider the deal consideration when evaluating a merger. This observation also provides a roadmap for empirical testing. A change in profit weights might undercut a change in market competition from a merger, leading to a different result than expected using standard analysis. Granular data on batteries and razors is costly to obtain, although aggregated producer price data for batteries (Figure 3.1 below) provides no evidence of a break in the overall trend of gradual upward battery prices.

¹⁹⁹ *Id.*

²⁰⁰ Profit weights were computed using ownership data from the SEC’s EDGAR website, as described in Part II. *See* note 120, *supra* and accompanying text. Values were computed according to the method set out in the examples and text in the Appendix, *infra*.

²⁰¹ See Merger Guidelines, *supra* note 90, §§1, 5.

Figure 3.1: Producer Price Index for Batteries Over Time



Future funded research or studies by government regulators could quite feasibly obtain more granular information and analyze whether the price effects on these goods diverged from what market structure analysis would predict. An aggregation of such tests would provide a sound empirical test for the effects of common ownership.

2. Horizontal mergers and market share

Horizontal mergers – mergers between rival firms in the same market – serve as regulatory touchpoints that focus government attention on possible anticompetitive behavior; the ability to block them gives the government a clear course of action for preventing harm to consumers when warranted.²⁰² Breakups are more controversial and less common,²⁰³ but have drawn attention from policy makers as a tool for helping consumers by dividing up companies with monopoly-like power to create smaller rivals, which in turn would lead to more competition.²⁰⁴

²⁰² Vertical mergers – in which firms merge with upstream or downstream companies in their supply chain – are rarely challenged by regulators. See Bruce Hoffman, Acting Director, Bureau of Competition, FTC, Remarks on Vertical Merger Enforcement at the FTC (Jan. 10, 2018) (discussing FTC vertical merger enforcement). This is due to the fact that there are very often benefits to consumers based on efficiencies that such mergers produce, and it has proved difficult for the government to win enforcement cases. *Id.* This may change in the future give the government’s adoption last year of revised vertical merger guidelines. See Comments of Dechert LLP on the DOJ/FTC Draft Merger Guidelines (Feb. 26, 2020) available at https://www.ftc.gov/system/files/attachments/798-draft-vertical-merger-guidelines/dechert_llp_vertical_merger_guidelines_comments.pdf (discussing the dearth of vertical merger enforcement cases and the proposed revisions to the guidelines). This article deals with horizontal mergers, which to date have been the focus of the common ownership debate.

²⁰³ See Rory Van Loo, *In Defense of Breakups: Administering a “Radical” Remedy*, 105 CORNELL L. REV. 1955, 1957-8 (2020) (discussing different rationales for why breakups are rarely used); Herbert Hovenkamp, *Progressive Antitrust*, 2018 U. ILL. L. REV. 71, 99 (2018) (discussing why breakups impose costs that usually make them infeasible). Some notable exceptions have occurred in the telephone industry (the creation of the Baby Bells and the attempt to force Microsoft to hive off its web browser). See *id.*

²⁰⁴ See *id.* Breakups have also been floated more recently with regard to some of the technology companies. See Van Loo, *supra* note 161 at 1957-8. See also Rob Copeland, *Breakup of Tech Giants ‘on the Table,’ U.S. Antitrust Chief Says*, WALL STREET J. (Oct. 22, 2019, 2:00 PM), <https://www.wsj.com/articles/breakup-of-tech-giants-on-the-table-u-s-antitrustchief-says-11571765689> [<https://perma.cc/9NXG-SXM2>] (quoting Makan Delrahim, head of the DOJ Antitrust Division).

However, if the common ownership is correct, then an analysis of the profit weights implies that many companies, including 70% of those in the S&P 500, are behaving as though partially merged already.²⁰⁵ Thus, as isolated transactions some large company mergers in concentrated markets should have unexpectedly small product market effects (and some breakups should make surprisingly little difference to consumers from a competition standpoint). Given the cost savings and efficiencies that corporate combinations sometimes create, it is possible that some mergers would even be good for consumers (and some breakups bad) if the common ownership hypothesis is correct. Of course, this is not to say that the underlying problem of anticompetitive pricing from common ownership should be disregarded if it exists. But the corporate transaction itself would have consequences that differ from what is assumed under the current paradigm. If so, then it suggests a different approach for empirical testing and the government's retrospective review. It also implies that the existing merger enforcement framework need to be modified.

a. Merger analysis – moving prices differently than moving market share

In order to see how common ownership would affect government merger analysis and confound reliance on market shares, it is important to understand the antitrust doctrinal framework. The FTC and DOJ have the ability to challenge horizontal mergers on antitrust grounds based on their potential effects on market power and consumer prices.²⁰⁶ The standard for mounting a prima facie case against such mergers turns on the pre-existing level of market concentration and the extent to which that concentration would increase due to the merger.²⁰⁷ Regulators assess the relative benefits to consumers that the merger will generate against the reduction in competition resulting from increased market power of the merged firm.²⁰⁸ The government recognizes that benefits from a merger might be derived from lower overall average costs of production which lead to lower prices, more efficient industries and more reliable products or services.²⁰⁹ These are balanced against the extent to which consumers may be harmed from lower competition that raises prices and leads to less choice.²¹⁰

Thus, the essence of an antitrust claim against a horizontal merger is that market concentration will create anticompetitive effects outweighing any countervailing benefits.²¹¹ Courts employ a burden shifting analysis that presumes that a merger will weaken competition if the government can show that it “would produce a firm controlling an undue percentage share of the relevant market, and would result in a significant increase in the concentration of firms in that market.”²¹² Defendants can rebut

²⁰⁵ The profit weights were calculated from the data. This implication has also been described by one of us in other work. See Backus, et al, *supra* note 26 at 3 and online app.

²⁰⁶ See Herbert Hovenkamp & Carl Shapiro, *Horizontal Mergers, Market Structure, and Burdens of Proof*, 127 YALE L.J. 1996, 1997 (2018) (describing the operation of antitrust enforcement). Section 7 of the Clayton Act prohibits mergers “where in any line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly.” 15 U.S.C. § 18.

²⁰⁷ The standard was originally set out by the Supreme Court in 1963. See *U.S. v. Philadelphia Nat’l Bank*, 374 U.S. 321 (1963). The basic framework endures to this day. See Hovenkamp & Shapiro, *supra* note 85, at 1997 (recounting the development of antitrust caselaw).

²⁰⁸ See Merger Guidelines, *supra* note 90, § 1.

²⁰⁹ See *id.*

²¹⁰ See *id.* § 5.

²¹¹ See *id.* Congressional intent has been interpreted to focus on “probabilities, not certainties,” and thus mergers with “probable anticompetitive effect[s]” are deemed illegal. See *Brown Shoe Co. v. United States*, 370 U.S. 294, 323, 82 S.Ct. 1502, 8 L.Ed.2d 510 (1962). See also *FTC v. H.J. Heinz Co.*, 246 F.3d 708, 719 (D.C. Cir. 2001) (stating that the government need not prove anticompetitive effects “with ‘certainty.’”).

²¹² *Heinz*, 246 F.3d at 715 (internal quotation marks and alterations omitted). See also *FTC v. Sysco Corp.*, 113 F.Supp.3d 1, 24 (D.D.C. 2015); *United States v. H & R Block, Inc.*, 833 F.Supp.2d 36, 50 (D.D.C. 2011).

the prima facie case by showing that the market as described by the plaintiffs is poorly defined;²¹³ by showing that other competitors will enter the market and mute any price increases;²¹⁴ or by showing that the merger will produce efficiencies (or “synergies” in business-speak) that will counteract any anticompetitive effects.²¹⁵ If the defendant successfully alleges any of those things, then the burden of persuasion shifts back to the government.²¹⁶

This standard requires the use of some measure of market concentration, and relies on HHI to screen acceptable mergers from ones that presumptively create an unacceptable anticompetitive harms.²¹⁷ The importance of HHI as a screen is demonstrated by the fact that it has been the basis for each of the last 89 antitrust enforcement actions brought by federal regulators.²¹⁸ Under current standards, any merger that would increase HHI by more than 200 in highly concentrated markets (i.e., those with HHI at or above 2,500) are presumed likely to enhance market power.²¹⁹ This general heuristic is well known by antitrust lawyers, since it is the threshold at which the government will seek to block a merger,²²⁰ and comprises the main component of the government’s case.²²¹

b. Market concentration under common ownership

HHI and other measures of market share do not capture the true competitive effects of a merger if the common ownership hypothesis is correct. If two firms are already behaving as if merged, then market shares would not accurately reflect their market power or predict their decisions with respect to competition. Moreover, if cost savings and efficiencies between the merging companies are great enough, it is even possible that the transaction would lead to *lower* prices, a result that would appear beneficial to consumers.

To provide an illustration, consider the 2016 proposed merger of Aetna and Humana, two of the largest health insurance companies in the country, which was successfully blocked through a lawsuit filed by the DOJ and joined by several states and the District of Columbia.²²² Following the passage of the Affordable Care Act²²³ a number of health insurance companies sought ways to combine.²²⁴ The benefits of these combinations included greater economies of scale and more leverage in price negotiations with hospitals and pharmaceutical companies, all of which allowed for health care cost savings.²²⁵ Of course, potential downsides of these consolidations were accumulation of market power

²¹³ *Id.* at 715.

²¹⁴ *Id.* n.7. *See also* AREEDA & HOVENKAMP, *supra* note 2, ¶ 941.

²¹⁵ *See* 4A PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶¶ 970-76 (4th ed. 2016).

²¹⁶ *See* H&R Block, 833 F.Supp.2d at 49 (noting that the government “has the ultimate burden of proving a Section 7 violation by a preponderance of the evidence.”).

²¹⁷ *See* United States v. H & R Block, Inc., 833 F. Supp. 2d 36, 72–73 (D.D.C. 2011).

²¹⁸ *See supra* note 100.

²¹⁹ *See id.*

²²⁰ *See* Merger Guidelines, *supra* note 89, § 5.3.

²²¹ *See, e.g.*, F.T.C. v. H.J. Heinz Co., 246 F.3d 708, 716 (D.C. Cir. 2001). *See also* Steven C. Salop, *The Evolution and Vitality of Merger Presumptions: A Decision-Theoretic Approach*, 80 *ANTITRUST L.J.* 269, 276-78 (2015).

²²² *See* United States v. Aetna Inc., 240 F. Supp. 3d 1, 47 (D.D.C. 2017). For another similar case involving consolidations in concentrated markets, *see* United States v. AT&T et al., No. 11-cv-01560 (D.D.C. Oct. 29, 2011). That proposed merger also included Deutsche Telekom, A.G., a German cellular company, although its market share in the U.S. was negligible for purposes of the analysis. *Id.*

²²³ Patient Protection and Affordable Care Act, 42 U.S.C. § 18001 (2018).

²²⁴ *See* United States v. Aetna Inc., 240 F. Supp 3d at 11.

²²⁵ *See id.* at 65-68.

allowing insurance companies to price health coverage anti-competitively, which would be bad for consumers.²²⁶

Citing section 7 of the Clayton Act, the government asserted that the merger would lessen competition in numerous geographic areas with respect to two product markets: insurance sold on the public exchanges created by the ACA, and Medicare Advantage plans, private health insurance alternatives to Medicare that cover a broader range of costs.²²⁷ The government argued that the two companies directly compete in those product markets, and based its prima facie case on the fact that HHI would rise by 1,000 to above 5,000 in 70% of the counties affected, lifting them above presumptively unlawful levels if the merger were to proceed.²²⁸ The defendant companies challenged the government's market definition, and argued that mitigating factors such as efficiencies that benefit consumers would outweigh any anti-competitive disadvantages, but they could not do so convincingly.²²⁹

However, this litigation paradigm did not account for common ownership. Both firms share large shareholders BlackRock, Capital World Investors, T. Rowe Price and Vanguard.²³⁰ At the time of the proposed merger, each fund held between 6% and 13% of the equity of each company (together accounting for 32% of Aetna and 34% of Humana).²³¹ Taking horizontal ownership seriously, competitive incentives should be based upon profit weights, per the common ownership literature.²³² Profit weights depend on ownership, and do not account for product market definition at all; nor do they depend on whether the company is merged or not.²³³ They simply reflect the firms' objective functions if their goal is maximizing the value of their investors' portfolios, and should be reflected in all strategic interactions of the firms.

We gathered the ownership data and analyzed how each firm's incentives would change by showing the profit weights for each firm both before and after the merger, as shown in Figure 4 below.

²²⁶ See *id.* at 43-46.

²²⁷ See Pretrial Brief for Plaintiff at 17, *United States v. Aetna Inc.*, 240 F. Supp. 3d 1, 9-11 (D.D.C. 2017) (No. 1:16-cv-1494).

²²⁸ See *id.* at 12.

²²⁹ See *United States v. Aetna Inc.*, 240 F. Supp. 3d at 94-99.

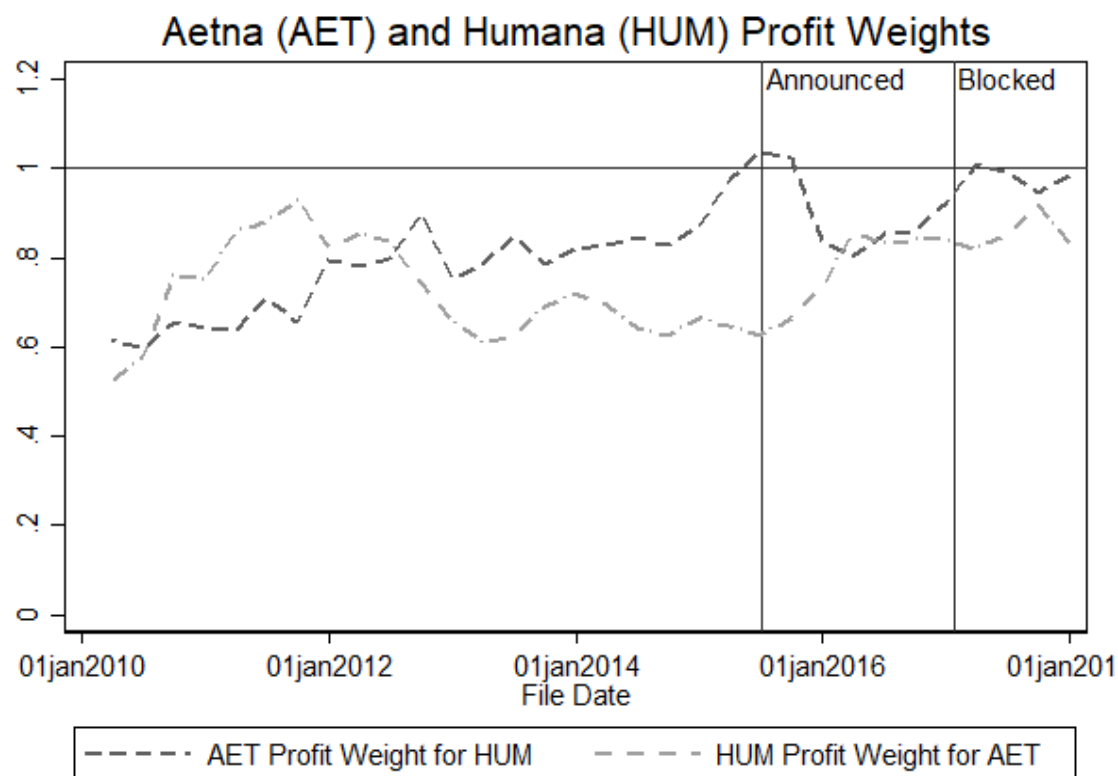
²³⁰ See Backus et al., *Common Ownership in America*, *supra* note 26, online app.

²³¹ See *United States v. Aetna Inc.*, 240 F. Supp. 3d at 94-99.

²³² See Posner et al., *supra* note 18, at 682-84.

²³³ See Menesh S. Patel, *Common Ownership, Institutional Investors, and Antitrust*, 82 ANTITRUST L.J. 279, 281 (2018).

Figure 4: Aetna and Humana – Mutual Profit Weights over Time



The Figure shows that both before and after the merger was blocked, Aetna's profit weight on Humana was close to 1, indicating that, if the common ownership theory is true, Aetna already had an incentive to price as though merged with Humana. As depicted by the Figure, the government's successful lawsuit did nothing to change that fact. On the other side of the transaction, Humana's profit weight on Aetna was approximately 0.8 before and after the merger was blocked.²³⁴ This level of profit weight implies that Humana was also incentivized to act as though nearly merged with Aetna both before and after the merger transaction was blocked. If that is true, then it would mean that a lot of time and money were spent on an enforcement action that had little impact on competition.²³⁵

Thus, common ownership implies that many mergers that were blocked under prevailing law were not be nearly as harmful as the legal framework presumed. This is a conclusion that can be back tested. To illustrate, consider a simple demand model for a market in which Aetna and Humana are competitors.²³⁶ For simplicity, assume that both Aetna and Humana each have 50% market share for Medicare Advantage plans in a given geographic market.²³⁷ If the firms have profit weights on each

²³⁴ These numbers were calculated by the authors using ownership data taken from the SEC's EDGAR web page. See www.SEC.gov/EDGAR. For calculations using the same method, see Backus et al., *Common Ownership in America*, *supra* note 26, online app.

²³⁵ In addition to legal and other fees, Aetna paid a \$1 billion breakup fee to Humana for the broken deal. See *United States v. Aetna Inc.*, 240 F. Supp 3d at 11.

²³⁶ The simple demand model is given for each firm by the following expression: (Quantity for Firm 1) = 100 - (Firm 1 Price) + (Market Share)*(Firm 2 Price).

²³⁷ In fact, this is not far from what each company's market share was in a number of geographic markets. See, e.g., *U.S. v. Aetna et al*, Expert Report of Aviv Nevo (giving market share of counties with 47%/ 53% market share split).

other of 1 and 0.8 respectively (as they in fact were), then the model predicts a price increase of one-tenth the size that would be predicted if the firms were acting competitively. The Aetna Humana antitrust litigation featured expert testimony predicting that a merger would cause prices to rise by approximately 5% in numerous markets.²³⁸ The report did not account for common ownership; if it had, the predicted price increase would have been closer to 0.5%.²³⁹

If common ownership theory is correct, one might wonder why Aetna and Humana would choose to merge in the first place. One possible reason is that even with the pricing power of partially merged companies, the firms might benefit from cost savings and synergies.²⁴⁰ If that is true, then cost savings passed to consumers would need to be weighed against any predicted price increase.²⁴¹ For context, the average operational synergies gained from a merger are 2.1%, much larger than the price increase predicted in the Aetna Humana merger accounting for common ownership.²⁴² This implies that if cost synergies were on the order of 1% for the proposed Aetna/Humana merger, then consumers could actually have benefitted from this merger under the common ownership hypothesis. High synergies are likely in such a case if common ownership applies, because if two firms' mutual profit weights are high, then it means that the prospective merger partners collectively wield pricing power as if they were already merged, and a modest amount of additional pricing power would not justify the trouble and expense of a merger unless cost savings would be high.²⁴³

This observation has implications for both ex ante and ex post merger review. Of course, whatever the immediate benefits of a merger to consumers, they may have been better off if there had been no common ownership in the first place. But enacting a general policy or enforcing in a specific situation requires being able to point to concrete harms. The current paradigm would miscalculate those harms if it does not adequately account for common ownership. This is important for prospective merger review, but equally so for retrospective studies of mergers that regulators periodically undertake to determine if mergers' pricing effects turned out to follow ex ante predictions.²⁴⁴ One purpose of these studies is to assess whether mergers have been allowed to happen that should, in hindsight, have been blocked based on their impact on consumer prices.²⁴⁵ These retrospective studies provide an opportunity to compare predicted outcomes to actual outcomes to find evidence of common ownership's influence. Such evidence is needed to further guide the policy debate as discussed in the next section.

IV. Common Ownership Testing and Policy

In this section, we bring findings from that preceding sections to bear on the causation question and the solution question that have occupied much of the literature to date. We first describe areas of policy and scholarship which have thus far been left out of the discussion. We then address how our conclusions impact existing ideas. We divide that analysis into two parts: considerations for proposals

²³⁸ *U.S. v. Aetna et al*, Expert Report of Aviv Nevo.

²³⁹ This is the result of incorporating profit weights into the basic pricing model, using the elasticity of demand and predicted price from the expert report. *See U.S. v. Aetna et al*, Expert Report of Aviv Nevo.

²⁴⁰ *See* Jen Kengelbach, et al., Boston Consulting Group 2018 M&A Report: Synergies Take Center Stage, 5 (Sept. 2018) available at https://image-src.bcg.com/Images/BCG-Synergies-Take-Center-Stage-2018_tcm9-202243.pdf.

²⁴¹ *See id.*

²⁴² *See id.*

²⁴³ *See* Kengelbach, *supra* note 241.

²⁴⁴ One such study is underway at the time of this writing. Fed. Trade Comm'n, *FTC's Bureau of Economics to Expand Merger Retrospective Program* (Sept. 17, 2020), <https://www.ftc.gov/news-events/press-releases/2020/09/ftcs-bureau-economics-expand-merger-retrospective-program>.

²⁴⁵ *Id.*

that are contingent on establishing common ownership's harms, and implications for proposed reforms if the common ownership hypothesis turns out to be true.

A. New considerations

One of our main takeaways is that analysis of profit weights boasts both fidelity to common ownership's underlying theory and reveals new spaces for inquiry. Here we sketch out directions for further work on that basis that would advance the larger conversation. First, profit weights can help tease apart active versus passive mechanisms. One way to do this is look at what profit weights imply about tunneling relationships between firms in the transaction types we discussed above. Specifically, if one company's profit weight on another is greater than one, it would imply an incentive for the first company to shift value directly to the second under common ownership, because that would maximize the common owners' portfolio value. This is because, if the theory is correct then a profit weight greater than one means that the first firm would satisfy its dominant shareholders better by valuing the second firm's profits *more* than its own. This kind of tunneling behavior is found in foreign jurisdictions in which multiple firms share a common owner, and often takes the form of facially legitimate business arrangements at asymmetrically favorable prices.²⁴⁶ But tunneling between firms is presumed rare in the U.S. because public companies have mainly dispersed shareholders with none presumed to have the formal control or incentive to make it happen.²⁴⁷ However, if the common ownership hypothesis is correct, then then many such relationships should exist, albeit in a different form. Calculating profit weights of firms in the S&P 500 reveals that approximately 10% of them should have an incentive to tunnel value to other companies.²⁴⁸ Those tunneling partners need not be rivals or even in the same industry.

If this is occurring then it indicates an active mechanism because tunneling requires intentionality and would not be explained through passive (or lazy) inaction.²⁴⁹ Thus, in the transactions described above, finding common ownership's effects along with evidence of tunneling (or changes in tunneling due to the transactions we discuss) would provide support for active mechanisms, while common ownership effects without tunneling would lend credence to passive ones. Thus, examining common ownership in light of tunneling can further clarify the mechanism.²⁵⁰ For instance, between 2010 and 2018 Pepsi's profit weight on Dr. Pepper ranged from 1.2 to 1.5, implying strong incentives to tunnel that would have disappeared upon Dr. Pepper's privatization.²⁵¹ Evidence of a changing tunneling relationship along with common ownership's effects would suggest an active mechanism.

Second, the discussion in preceding section warrants new policy considerations. Analysis of mergers should account for profit weights to determine the extent to which common ownership is

²⁴⁶ See Vladimir Atanasov, Bernard Black & Conrad S. Ciccotello, et al., *Law and Tunneling*, 37 J. CORP. L. 1, 3 (2011-2012) (defining tunneling and describing the forms that it takes); Simon Johnson et al., *Tunneling*, 90 AM. ECON. REV. 22 (2000) (examining the presence of tunneling in civil-law countries). Although tunneling can occur through theft or fraud that directly moves cash or assets out of the company, it more commonly occurs through facially legitimate transactions at non-market prices that favor the tunneling recipient. For example, transactions that transfer assets to another company at below market prices, or that purchase assets at above market prices, could accomplish tunneling. *Id.*

²⁴⁷ See Atanasov et al., *supra* note 247 at 3-4 (describing reasons for tunneling and its presumed scarcity in the U.S.).

²⁴⁸ These calculations were taken from the data, using the method described in the Appendix, *infra*.

²⁴⁹ See Atanasov et al., *supra* note 110 at 3-4 (describing how tunneling works).

²⁵⁰ Methods of identifying and measuring tunneling have been extensively developed. See e.g., Vladimir Atanasov, Bernard Black & Conrad S. Ciccotello, *Unbundling and Measuring Tunneling*, 2014 U. ILL. L. REV. 1697 (2014)

²⁵¹ See note 187 *supra* and accompanying text.

leading to weakened competition in ways that differ from the structural presumption. If the common ownership hypothesis is correct, it implies that the current approach to merger enforcement should be updated, because many mergers would have greater or lesser impact than their market structures imply. At the very least, choice of deal consideration should be considered in any merger inquiry, which would be a departure from current practice.²⁵² And regardless of consideration, antitrust enforcement may need to occur long prior to any proposed merger. This would require a new form of regulatory trigger, such as crossing of a profit weigh threshold. This would require ongoing policing by the government, which would itself entail significant costs to weigh against its benefits. Government monitoring would consume scarce enforcement resources that are already scarce. But more importantly, as we show above, a transaction can shift relative profit weights even for firms that are nominally third parties, and thus any new regime would potentially impose reporting and enforcement costs onto uninvolved companies for transactions over which they have no control. And of course, if the common ownership hypothesis is incorrect, those costs would be without offsetting benefit.

Third, in addition to the insight into common ownership that can be gleaned from tax inversions and private equity transactions, their consumer welfare effects need to be re-examined if the hypothesis is true. If evidence of common ownership's effects exists, it means that the debate over inversions needs to be broadened to include consumer price effects instead of focusing primarily on federal tax consequences. Such evidence would also add an unexpected positive dimension to private equity transactions. In both cases, the direct legal implications would be to provide a rationale against regulations that limit or prohibit these transactions, by revealing them to be consumer welfare enhancing. For each of these areas, we argue that empirical exploration is warranted.

B. Proposals contingent on emerging evidence

A number of ideas to fix the common ownership problem have gained traction in the debate. Many of these ideas may be sensible if common ownership creates the anticompetitive and other harms that have largely been taken for granted in the discussion. However, if common ownership is not responsible for these harms, then implementing those ideas would entail significant unjustified costs. One such group of regulatory ideas involves limiting the aggregate amount of shares that an index fund can hold of any company, or alternatively limiting funds' investment to a single company per industry. These proposals take various forms, from across-the-board limits on the percentage of companies shares that institutional investors may hold, to more flexible tests limiting institutional share ownership to amounts that do not have anticompetitive effects. For example, one proposal would create a safe harbor against antitrust enforcement for institutional investors that limit share ownership to 1% of a company's outstanding shares.²⁵³ Another would limit share ownership more flexibly, urging intervention only if there is evidence of anti-competitive effects in the market.²⁵⁴ This type of proposal has been criticized as administratively infeasible.²⁵⁵ Among other reasons, this is because any fund availing itself of such a safe harbor would need to move millions of customers to other savings products or divest altogether; the first would be enormously costly for both funds and retail investors, the latter would wreak havoc on the markets.²⁵⁶

²⁵² See Merger Guidelines, *supra* note 90 at §5.

²⁵³ See Posner et al., *supra* note 18, at 682-84.

²⁵⁴ Note by the United States to OECD, Hearing on Common Ownership by Institutional Investors and Its Impact on Competition, OECD DAF/COMP/WD (2017)86, at ¶¶ 107-08 (Dec. 6, 2017).

²⁵⁵ Rock, et al *supra* note 56 at 34.

²⁵⁶ See *id.*

However, without evidence of even a correlation between common ownership and prices, these ideas entail larger problems than administrability. As pointed out in our empirical demonstration of the airline paper, a low limit would not change the state of the evidence currently available. Nor is there reason to assume, based on current evidence, that such an investment cap would have the desired effect on competition. Moreover, a holding limit like the proposed 1% (or any other low limit capping funds' investments) would block the funds' ability to leverage economies of scale, a key feature of the business model that allows index funds to provide low-cost products.²⁵⁷ This would result in higher prices for savers while giving them far less benefit from investment in the market.²⁵⁸ Likewise, limits on concentration within industry would destroy index funds' other advantage, the ability to provide diversified (and therefore lower risk) investment products.²⁵⁹ Thus, these policies would deprive many consumers of the benefits of low-cost savings, in effect depriving many people of a valuable service that they depend on for retirement, among other things. These outcomes would end up harming many of the same consumers the policies are intended to help.

Such proposals would also hinder the ability of funds to participate in corporate monitoring and governance by forcing them to give up either their voting power, or their size-based influence at many companies. This would remove what some consider to be the only adequate means to monitor managerial agency costs, since only such funds have large enough stakes to confer the power and incentive to wield influence.²⁶⁰ To the extent that such proposals extend only to voting control and not size of investment, they assume that any effects from common ownership are a result of funds' formal power and not soft power or other means of influence. This is a reasonable notion but one that nonetheless could be subject to dispute. Even assuming that voting control is the crux of the common ownership problem, investment managers are emerging as a force pushing for more responsible environmental, diversity and social policies, and giving up voting control would hinder those efforts.²⁶¹ Such proposals might negatively impact financial returns, if in equilibrium, fund oversight of management leads to less waste and better performance.²⁶² In any event, for proposals that limit ownership or voting, the loss of governance benefits would need to be weighed carefully against any gain, and the net benefits are far from certain.

Just as importantly, if anticompetitive behavior is occurring but common ownership is not at its root, then policies aimed at it would divert valuable attention from real anticompetitive harms. The examples we have discussed in this article, including those involving Coke, Pepsi, Dr. Pepper, Keurig, Kraft/Mondelez, P&G and Gillette, provide snapshots of a larger phenomenon: a market for consumer goods dominated by large conglomerates that own many of the various brands that appear to be in competition and give the illusion of choice in the marketplace.²⁶³ Common ownership is not needed for these types of collusion to occur. If there is no causal link or even correlation between

²⁵⁷ Committee on Capital Markets Regulation, *An Analysis of Proposals to Restrict Institutional Ownership* 7 (April 2019) <https://www.cpmktsreg.org/wp-content/uploads/2019/03/CCMR-Analysis-of-Common-Ownership-Proposals.pdf>.

²⁵⁸ *Id.*

²⁵⁹ *Id.* See also Harry Markowitz, *Portfolio Selection*, 7 *J. Fin.* 77, 80 (1952) (Describing the benefits of diversification for investment risk reduction).

²⁶⁰ Hirst et al, *supra* note 13 at 1324.

²⁶¹ *Id.* at 1330.

²⁶² *Id.*

²⁶³ For a discussion of this phenomenon, see Emily Stewart, *Corporate monopolies are hiding in your grocery aisle*, VOX (Feb. 25, 2020) <https://www.vox.com/2020/2/25/21147280/illusion-of-choice-monopolies-brands-sarah-miller>. See also Vivek Bapat, *The Seductive Illusion of Choice*, FORBES, (June 5, 2012) <https://www.forbes.com/sites/sap/2012/06/05/the-seductive-illusion-of-choice/?sh=16e669ce5a12> (quoting Henry Ford's statement that "You can have any car you want as long as it is black").

common ownership and softened competition, then policies aimed at fixing common ownership would provide no relief for the problems these conglomerates create. On the contrary, such policies could generate problems of their own while doing little to address anticompetitive practices.

C. Reconsiderations even if common ownership theory is correct

If the common ownership hypothesis is correct, our discussion in the preceding sections merits reconsideration of some proposed ideas as well. Even if proven justified by anticompetitive harms, proposals that would have the effect of limiting funds' investments would be problematic because those advanced so far are not tailored to issues caused *specifically* by common ownership, as opposed to those that are the result of overly passive, ineffective corporate governance. This is an important distinction because policies that limit concentration or voting power will make matters worse if the real problem is that managers soften competition out of laziness caused by lack of oversight, or because of the failure of index funds to allocate discriminately to high performing companies.²⁶⁴ For the same reason, limiting diversification would not solve the problem if large passive investors remain dominant stakeholders in firms. In that event, incentives for more investor involvement, not less, would be warranted.²⁶⁵ If anticompetitive harms are truly caused by ownership, it is important to be able to discern exactly what the problematic pattern of ownership is.

Moreover, investment limitations (such as the 1% threshold discussed previously) may not solve the problem even if diversification is at its root. If common ownership is a problem, then it exists not only because of large, concentrated shareholders, but because a vast majority of investors hold the same or similar diversified portfolios.²⁶⁶ If savings products are forced to disaggregate to meet a new, low threshold, it is likely that this would result in a large number of smaller investment vehicles, with each still holding similar diversified portfolios. Thus, to the extent that the problem is caused primarily by managers considering overlapping shareholdings, such shareholdings would not go away.

Legal thresholds and proxies for problematic ownership as proposed by some suffer from a similar problem. In particular, policies have been proposed to force funds to divest when they reach certain presumptively anticompetitive ownership thresholds, as proxied by measures of market concentration.²⁶⁷ Proposals have stated that market concentration should be continually assessed to account for common ownership, and even absent a potential merger, common owners should be forced to divest if their ownership levels cause certain thresholds to be breached.²⁶⁸ These proposals assume that overlapping ownership, and not overly passive ownership, are the root cause of the problem. Moreover, the details of some of these proposals also presuppose the usefulness of market concentration measures as ways to screen for undesirable firm behavior.²⁶⁹ As we have explained, correlations between prices and MHHI-based measures of common ownership can be produced for nearly any level of horizontal shareholding, and are not well-suited to setting regulatory thresholds.²⁷⁰ Metrics based on market shares cannot reliably separate benign from anticompetitive common ownership. This means that attempts to suggest a numerical threshold for mandating fund divestiture

²⁶⁴ See Lund, *supra* note 16 at 103; Hirst, *supra* note 13 at 1321.

²⁶⁵ See Hirst et al, *supra* note 13 at 2031.

²⁶⁶ See Backus et al., *Common Ownership in America*, *supra* note 26, at 21.

²⁶⁷ See Posner et al, *supra* note at (proposing a safe harbor for funds that limit holdings in a given industry, or limit diversified holdings to 1% unless funds withdraw completely from corporate governance). See also Rock et al, *supra* note at 28 (proposing a 15% holding limit if certain corporate governance restrictions are observed).

²⁶⁸ See e.g., See Elhauge, *supra* note 1 at 1232.

²⁶⁹ See e.g., See Elhauge, *supra* note 1 at 1232.

²⁷⁰ See note 105, *supra* and accompanying text.

based on market shares will be overly broad even if the common ownership hypothesis is true. For example, one proposal would force funds to divest if firms in a market crossed an MHHI threshold of 2,500.²⁷¹ However there is no empirical basis for setting such a threshold even if the common ownership hypothesis is correct: the difference between MHHI and HHI (referred to as the MHHI delta) does not depend on market definition and provides little guidance for how to assess over-concentration from common ownership, or harmful ownership patterns from beneficial ones.²⁷²

Other possible metrics, including upward pricing pressure and diversion ratio, provide a more suitable basis in theory to distinguish problematic from benign ownership because they assess more directly firms' actions to price anticompetitively in response to their ownership.²⁷³ However, these metrics are extremely difficult to adduce econometrically, and thresholds based on them would be difficult to use in practice, which is why they have received less attention.²⁷⁴ They also would not be useful if overly passive corporate governance, rather than common ownership is the larger problem. Shifting to analysis of incentives, as measured by profit weights, would provide a better proxy if common ownership's harms are established.

CONCLUSION

In this paper we have provided novel ideas for critically assessing the common ownership hypothesis and its impact on law and regulation. We suggest that thinking through the idea's equilibrium implications – what the theory implies beyond the first order effects – opens up new ways to test the theory and understand how it intersects with law. Although we cannot make any firm conclusions from what we have presented here, an initial exploration of these ideas suggests caution before acting too hastily on policy with regard to common ownership. It is easy to understand the allure of the common ownership idea, but in assessing it we suggest an analogy to narrative and burden of proof. Narratives are used everywhere in law. In a trial or regulatory process, they give a decisionmaker a conceptual model to make sense of the world and see the implications of policy. Narratives, like all good stories, have heroes and villains. More convincing narratives use familiar villains and cast the heroes in a light with which a decisionmaker can identify. The common ownership narrative provides us with familiar villains in the form of price-gouging corporations. Airlines and banks—two kinds of firms with which many consumers have experienced angst – are the paradigmatic examples. The theory also leaves us in the hands of a familiar hero – existing regulation that protects all of us if properly enforced or properly tweaked. As in a trial, any narrative that is to be convincing needs evidence. It is important not only to know what the evidence is, but to understand what it is not. Something that seems technically sound at first glance may suffer from fundamental flaws upon cross-examination. The evidence supports a believable narrative, but overlooks both problems with the evidence and plausible countervailing stories. It is important also not to jump to conclusions prematurely, and pin blame on a villain that fits the mold but may not in fact be the culprit.

²⁷¹ See Elhauge, *supra* note 1 at 1232.

²⁷² See Backus et al., *Common Ownership in America*, *supra* note 26, at 4-5.

²⁷³ Scott Morton & Hovenkamp, *supra* note 23, at 2034.

²⁷⁴ See Backus et al., *Common Ownership in America*, *supra* note 26, at 10.

APPENDIX

Computing Profit Weights

The formula for the profit weights used in the common ownership literature:

$$\kappa_{fg} = \frac{\sum_{\forall s} \gamma_{fs} \beta_{gs}}{\sum_{\forall s} \gamma_{fs} \beta_{fs}}$$

The profit weight for firm f on firm g is denoted by κ_{fg} , and is the quotient of two summations across investors (indexed by s). The term β_{fs} denotes how much of firm f is held by shareholder s , and β_{gs} denotes how much of firm g is held by shareholder s . The term γ_{fs} is the weight that firm f places on investor s 's portfolio. The literature has, for the most part, assumed that $\gamma_{fs} = \beta_{fs}$, or “proportional control”: a firm places a weight on an investor in proportion to that investor's stake in the firm. Once we assume proportional control, we can simplify the above profit weight calculation to:

$$\kappa_{fg} = \frac{\sum_{\forall s} \beta_{fs} \beta_{gs}}{\sum_{\forall s} \beta_{fs} \beta_{fs}}$$

In this form it is a little clearer what is happening: the numerator is summing across shareholders the product of their holdings in you and their holdings of your rival firm g . This captures the natural idea of common ownership. The denominator is something of a normalization: that is the weight this theory implies you place on yourself. Since we want firms to have a profit weight of 1 on themselves, we divide through by this factor to rescale profit weights on others. The results in the nice interpretation of profit weights where a weight of zero is competition and a weight of one is a merger.

For example, consider the following industry and ownership structure:

Ownership:	Firm 1	Firm 2
Investor A	10%	0%
Investor B	0%	20%
Investor C	20%	20%

We are interested in computing the profit weight that Firm 1 places on Firm 2. Recall the calculation of both the numerator and denominator sums across investors (A, B, and C here).

$$\kappa_{12} = \frac{\sum_{\forall s} \beta_{1s} \beta_{2s}}{\sum_{\forall s} \beta_{1s} \beta_{1s}} = \frac{\begin{array}{c} \text{A's stake in 1} * \text{ B's stake in 1} * \text{ C's stake in 1} * \\ \text{A's stake in 2} \quad \text{B's stake in 2} \quad \text{C's stake in 2} \end{array} \begin{array}{c} (10\%)(0\%) + (0\%)(10\%) + (20\%)(20\%) \\ (10\%)(10\%) + (0\%)(0\%) + (20\%)(20\%) \end{array}}{\begin{array}{c} \text{A's stake in 1} * \text{ B's stake in 1} * \text{ C's stake in 1} * \\ \text{A's stake in 1} \quad \text{B's stake in 1} \quad \text{C's stake in 1} \end{array} \begin{array}{c} (10\%)(10\%) + (0\%)(0\%) + (20\%)(20\%) \end{array}} = \frac{0.04}{0.05} = 0.8$$

In this case, Firm 1 places a profit weight of 0.8 on Firm 2.