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"The Strategies of Anticompetitive Common Ownership"

by

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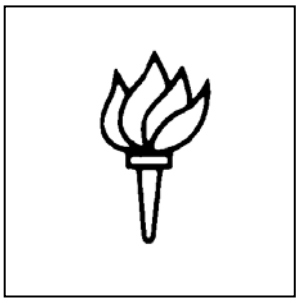

The Strategies of Anticompetitive Common Ownership

C. Scott Hemphill and Marcel Kahan

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Recent scholarship considers anticompetitive effects of common concentrated ownership. Empirical evidence reporting that common concentrated owners ("CCOs") are associated with higher prices and lower output seems to confirm such effects, posing a sharp challenge to both antitrust orthodoxy and corporate governance scholarship.

We identify and examine the causal mechanisms that could link common ownership to higher prices. To do so, we offer a typology that distinguishes potential mechanisms along three dimensions: whether CCOs induce anticompetitive firm actions that raise the CCO's portfolio value *at the expense of firm value*; whether a mechanism operates at the firm level or is instead targeted to specific firm actions; and whether the CCO induces anticompetitive effects through affirmative activities, such as communicating with management or voting, or instead by remaining passive.

We make three major points. First, several mechanisms emphasized in the literature are not, in fact, empirically tested. Of particular interest, the leading empirical studies are limited to value-decreasing mechanisms that target specific firm actions. They are not designed to identify the use of value increasing mechanisms or mechanisms that operate at the firm level. Second, some mechanisms are ineffective in raising portfolio value or would pose major implementation problems for CCOs. Third, institutional investors are likely to avoid mechanisms that carry significant reputational costs or legal liability, particularly because their incentives to increase portfolio value are much weaker than generally appreciated.

Our main conclusion is that, for most proposed mechanisms, there is no strong theoretical basis for believing that institutional CCOs would want to employ them, no significant evidence suggesting that they do employ them, or both. The mechanism that is most plausibly employed by institutional CCOs is selective omission: to press for firm actions that increase both firm value and portfolio value, while remaining passive where the two conflict.

We also spell out several implications of our analysis. First, index funds—the paradigmatic common owners—are ill-equipped to employ selective omission or other mechanisms targeting specific firm actions. Second, CCOs have ambiguous welfare effects. Even if their conduct raises prices in some markets, it also induces efficiency improvements and lower prices in other markets. Third, the case for broad reform has not been made. Such reforms are ineffective in dealing with passive mechanisms and counterproductive, imposing new costs without generating significant procompetitive effects for consumers. We advocate a more searching examination of the steps actually taken by CCOs and firms—the who, where, when and how predicted by the most plausible mechanisms.

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Introduction

Institutional investors often own shares of firms that compete. For example, the T. Rowe Price family of funds has a substantial ownership position in American, Delta, and United Airlines. Recent scholarship considers whether such common concentrated owners ("CCOs") might have an anticompetitive effect. Antitrust theorists have long suggested that CCOs have interests that differ from those of owners of a single competing firm and might be able to induce firms in which they hold a stake to further these interests.[1] Recently, empirical evidence reporting that CCOs are associated with higher prices and lower output seems to confirm this theory.[2]

The claimed anticompetitive effects of common concentrated ownership, if they exist and especially if they are widespread across industries, would require a major rethinking of antitrust enforcement. In particular, antitrust enforcers might accept the strong urging of commentators that funds must cease their ownership of competing firms, shrink to a fraction of their current size, or lose the right to vote their shares in their portfolio companies.[3] This

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[1] *See* Daniel P. O'Brien & Steven C. Salop, *Competitive Effects of Partial Ownership: Financial Interest and Corporate Control*, 67 ANTITRUST L.J. 559, 579–80, 583, 608–11 (2000); *see also* Timothy F. Bresnahan & Steven C. Salop, *Quantifying the Competitive Effects of Production Joint Ventures*, 4 INT'L J. INDUS. ORG. 155 (1986).

[2] *See, e.g.*, Jose Azar, Martin Schmalz & Isabel Tecu, *Anti-Competitive Effects of Common Ownership*, J. FIN. (forthcoming 2018) [hereinafter AST].

[3] *See* Einer Elhauge, *Horizontal Shareholding*, 129 HARV. L. REV. 1267 (2016); Fiona Scott Morton & Herbert Hovenkamp, *Horizontal Shareholding and Antitrust Policy*, 127 YALE L.J. 2026 (2018); Eric A. Posner, Fiona Scott Morton & E. Glen Weyl, *A Proposal to Limit the Anti-Competitive Power of Institutional Investors*, 81 ANTITRUST L.J. 669 (2018) [hereinafter PSW]; Eric Posner, Fiona Scott Morton & Glen Weyl, *A Monopoly Donald Trump Can Pop*, N.Y. TIMES, Dec. 7, 2016, at A29 (arguing that the holdings of CCOs are "already illegal" but, "because the antitrust implications of institutional investment were not recognized until recently, legal action has not yet been taken"); Eric Posner & Glen Weyl, *The Real Villain Behind Our New Gilded Age*, N.Y. TIMES, May 1, 2018, http://www.nytimes.com/2018/05/01/opinion/monopoly-power-new-gilded-age.html ("Institutional investors need to be blocked from further expansion and forced to restructure. They should be allowed to own shares of no more than one

scholarship makes the startling suggestion that large index funds and many large actively managed mutual funds are incompatible with antitrust law. These proposals, if adopted, would transform the landscape of institutional investing.

Anticompetitive effects of CCOs pose a sharp challenge not only to antitrust orthodoxy, but to corporate governance scholarship as well. Corporate governance scholars have long viewed most institutional investors—and mutual funds in particular—as largely benign forces that fail to exercise their substantial powers.[4] Institutions—due to their large shareholdings, access to sophisticated advice, and economies of scope—have the potential to help overcome the collective action problems that plague corporate America. Alas, for the taste of corporate governance scholars, institutional investors have not been active enough. In particular, mutual funds are mostly reactive: while they vote on proposals by management and other shareholders, they rarely sponsor precatory resolutions, do not run proxy contests, and generally do not openly push for the removal of ineffective management.[5] Thus, an important goal of corporate governance reformers has been to increase the activity level of institutional investors.[6]

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company per industry, or to own no more than a small portion of every company—say, 1 percent—if they want to remain fully diversified.").

[4] *See, e.g.*, Edward B. Rock, *The Logic and (Uncertain) Significance of Institutional Shareholder Activism*, 79 GEO. L.J. 445 (1991); Bernard S. Black, *Agents Watching Agents: The Promise of Institutional Investor Voice*, 39 UCLA L. REV. 811 (1992); Bernard S. Black, *Shareholder Passivity Reexamined*, 89 MICH. L. REV. 520 (1990).

[5] Marcel Kahan & Edward B. Rock, *The Insignificance of Proxy Access*, 97 VA. L. REV. 1347 (2011).

[6] *See, e.g.*, Ronald J. Gilson & Reinier Kraakman, *Reinventing the Outside Director: An Agenda for Institutional Investors*, 43 STAN. L. REV. 863 (1991); Joseph A. Grundfest, *Just Vote No: A Minimalist Strategy for Dealing with Barbarians Inside the Gates*, 45 STAN. L. REV. 857 (1993).

From the traditional corporate governance perspective, evidence that CCOs have an anticompetitive effect is therefore disconcerting. Many corporate governance scholars harbor doubts that this conclusion, so different from their long-held notions, can be correct. Moreover, even talk of potential antitrust liability or additional regulation of institutional investor voting—including proposals that CCOs should be deprived of their voting rights—could scare these already-reluctant shareholders from becoming more assertive. Such threats could play into the hands of supporters of managerial primacy who, for their own reasons, have been skeptical about the influence of institutional shareholders.

The trigger for this outpouring of new scholarship, and the most important article in this literature, is an empirical study of the airline industry by Jose Azar, Martin Schmalz and Isabel Tecu (AST).[7] AST conclude that common ownership of competing airlines, evaluated at the route level, is associated with higher prices on that route.[8] The airline study's empirical results have been highly touted and heavily relied upon. While critics have subjected AST's methodology to sustained scrutiny and disputed its results, a debate that continues to rage,[9]

[7] *See* AST, *supra* note 2.

[8] A related paper, which uses a similar methodology to study consumer banking, reaches similar conclusions. Jose Azar, Sahil Raina & Martin Schmalz, Ultimate Ownership and Bank Competition (July 24, 2016), http://ssrn.com/abstract=2710252 (unpublished manuscript) [hereinafter ARS]. For discussion of this and other empirical studies of common ownership, *see infra* Section I.A.

[9] *Compare* Daniel P. O'Brien & Keith Waehrer, *The Competitive Effects of Common Ownership: We Know Less than We Think*, 81 ANTITRUST L.J. 729 (2018) (arguing that AST findings are the result of reverse causation or joint determination); Pauline Kennedy, Daniel P. O'Brien, Minjae Song & Keith Waehrer, The Competitive Effects of Common Ownership: Economic Foundations and Empirical Evidence (July 26, 2017), http://ssrn.com/abstract=3008331 (unpublished manuscript); Patrick J. Dennis, Kristopher Gerardi & Carola Schenone, Common Ownership Does Not Have Anti-Competitive Effects in the Airline Industry (Feb. 5, 2018), http://ssrn.com/abstract=3063465 (unpublished manuscript); Edward Rock & Daniel Rubinfeld, *Antitrust for Institutional Investors*, ANTITRUST L.J. (forthcoming 2018); Jacob Gramlich & Serafin Grundl, *Estimating the Competitive Effects of Common Ownership* (FEDS Working Paper No. 2017-029, 2017), http://ssrn.com/abstract=2940137 (replicating and critiquing methodology of banking study); *with* Jose Azar, Martin C. Schmalz & Isabel Tecu, The Competitive Effects of Common Ownership:

some scholars have advocated sweeping reform based on this and related studies. For example, Eric Posner, Fiona Scott Morton and Glen Weyl (PSW) have proposed that an investor should be limited to a maximum 1% total holding in an oligopolistic industry or else confine itself to shares in a single firm.[10] And Einer Elhauge has urged antitrust enforcers to file suit to undo stock acquisitions that create anticompetitive common ownership structures.[11]

In this paper, we take a different tack. We inquire into the causal mechanisms that could link common ownership to higher prices. Identifying the mechanism is important because its absence would raise doubts about proponents' preferred interpretation of the statistical relationship between price and ownership structure. Moreover, a finding that only certain types of investors can plausibly avail themselves of the mechanism would suggest narrower, more targeted reform proposals and enforcement actions, as well as targeted investigations to uncover direct evidence of CCOs influencing corporate policy.

We identify and examine a wide range of potential mechanisms that might connect common ownership with higher prices. We first distinguish among potential mechanisms along three dimensions: whether CCOs induce anticompetitive actions by a firm that raise the value of the firm or induce actions by a firm that raise the CCO's portfolio value *at the expense of firm value* (firm value-increasing versus firm value-decreasing mechanisms); whether a mechanism operates at the firm level or is instead targeted to specific firm actions (macro versus micro

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Economic Foundations and Empirical Evidence: Reply (Sept. 28, 2017), http://ssrn.com/abstract= 3044908 (unpublished manuscript) (replying to criticisms); Jose Azar, Martin C. Schmalz & Isabel Tecu, Reply to "Common Ownership Does Not Have Anti-Competitive Effects in the Airline Industry" (Apr. 24, 2018), http://ssrn.com/abstract=3168095 (unpublished manuscript); Einer Elhauge, New Evidence, Proofs, and Legal Theories on Horizontal Shareholders (Jan. 4, 2018), http://ssrn.com/abstract=3096812 (unpublished manuscript) (critiquing critics of AST and ARS).

[10] PSW, *supra* note 3.

[11] Elhauge, *supra* note 3.

mechanisms); and whether the CCO induces anticompetitive effects through affirmative activities, such as communicating with management or voting on certain proposals, or instead by remaining passive (active versus passive mechanisms).

We then evaluate these mechanisms using four criteria. First, we ask whether the mechanism would actually generate the observed empirical results. As we demonstrate, some widely discussed mechanisms are, in fact, not tested through the methodology employed in these papers. Specifically, the tests in AST apply neither to value-increasing mechanisms[12] nor to macro mechanisms.[13]

Next, we examine whether and when a mechanism is effective and feasible. To be effective, a mechanism must not only result in anticompetitive effects but also benefit the CCO by increasing its portfolio value. To be feasible, a CCO must be capable of generating a strategy that has an anticompetitive effect, transmitting it to management, and inducing management to act accordingly. To varying degrees, institutional CCOs face serious challenges in accomplishing these tasks.[14]

Finally, we analyze the incentives of institutional CCOs. We show that institutional CCOs have only weak incentives—much weaker that the institutional ownership literature presumes—to maximize the aggregate value of their portfolio securities.[15] Moreover, an

[12] As we explain, the measure of common ownership employed by AST and many other papers—the Modified Herfindahl-Hirschman Index—is premised on common owners pursuing a strategy *that other investors oppose*. This limitation rules out value-increasing strategies. *See infra* Sections I.A-B.

[13] As we show, neither passive macro mechanisms, *see infra* Section I.C, nor active macro mechanisms, *see infra* Section I.D, are tested.

[14] *See infra* Part II.

[15] Among other problems, institutional investors receive, as fees, only a small fraction of increased portfolio value, and increasing portfolio value may even reduce their fees. *See infra* Section III.A.

institutional CCO would want to employ a mechanism only if the benefit it derives from increased portfolio values exceeds the expected cost. But as we explain, some mechanisms entail significant legal and reputational risk, making it unlikely that institutional CCOs would employ them.[16]

Our main conclusion is that, for most mechanisms, there is either no strong theoretical basis for believing that institutional CCOs would want to employ them or no significant evidence suggesting that they do employ them, or both.[17] However, our judgment is not uniformly negative. In particular, a mechanism that we call "selective omission" is consistent with both theory and the empirical evidence.[18] A CCO engaged in selective omission presses for firm actions that increase both firm value and portfolio value, while remaining silent as to actions where the two conflict.

Our analysis has several important implications. First, index funds and their advisors must be distinguished from other CCOs in any serious analysis of anticompetitive effects.[19] Index funds are, at first blush, the most plausible culprits because they tend to own similar shares across multiple competitors and maintain stable holdings over time, which, as we show, facilitates the use of certain mechanisms. Index funds, however, have the lowest incentives and the least capabilities to employ most of the proposed mechanisms. Our analysis therefore suggests it is unlikely that index funds play a significant role in generating anticompetitive effects.

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[16] As we demonstrate, these risks include violations of investment advisors' fiduciary duty to its funds and clients. *See infra* Section III.B.

[17] *See infra* Section IV.A and table 7, which summarizes our assessment of each mechanism.

[18] *See infra* Section II.C.

[19] *See infra* Section IV.B.

More generally, the empirical literature to date has paid insufficient attention to systematic differences in the incentives of different investor types. As we explain, these systematic differences, in turn, are correlated with the propensity to be a CCO, complicating efforts to link CCOs with higher prices. In particular, CCOs may fail to encourage firms to compete, not because of their common ownership interests, but because most of them are institutional investors with much lower incentives to get involved than large individual shareholders or hedge funds. Future empirical studies should correct for this deficiency.

Second, the welfare effects of CCOs are ambiguous.[20] Even if CCOs do induce the anticompetitive outcomes for which they have been blamed, they also can be expected to push for procompetitive actions such as cost reductions. Moreover, where CCOs own some but not all firms in a market, the effects are subtle. Such CCOs have different incentives, which cause them to avoid and even counteract the harms that have been attributed to CCOs. This is yet another respect in which active funds (which usually own some firms in a market, not all) differ systematically from index funds.

Third, our analysis indicates top priorities for further research.[21] The results of AST and other studies raise concerns that deserve significant attention, but are neither sufficient to establish that CCOs engage in selective omission nor well designed to test certain other plausible casual mechanisms. We suggest studies to fill the gap and emphasize the importance of seeking direct evidence of the steps taken by CCOs, and the responsive steps taken by firms, that produce anticompetitive results.

[20] *See infra* Sections I.A and IV.C.

[21] *See infra* Section IV.D.

Finally, our analysis shows that, depending upon the specific mechanism at work, wide-ranging reform proposals are likely to be ineffective and counterproductive.[22] The most likely effects of these proposals, if adopted, are greater passivity by shareholders and fragmentation of institutional shareholdings in portfolio companies in all industries, not just the concentrated ones. The proposals would thus be ineffective, to whatever extent passive mechanisms are responsible for anticompetitive results; and they would be counterproductive, because concentrated owners would have less power and lower incentives to induce portfolio companies to increase their value when doing so is not anticompetitive.

I. What Mechanisms Are Tested?

AST propose a wide variety of mechanisms that might explain their results, without taking a position on any particular one. Other commentators have remained similarly agnostic. In this Part, we evaluate proposed causal mechanisms from the perspective of whether they would generate the results found in AST. Since the empirical evidence produced by AST is the central fact relied on in ongoing discussion of whether CCOs produce anticompetitive results, and since the methodology used by AST has been followed in subsequent work, determining whether a specific causal mechanism is consistent with this methodology is of importance. While CCOs may still use mechanisms that are not tested, the empirical basis for such use would be weaker or lacking.

For our purposes, it is useful to categorize mechanisms along three dimensions.

[22] *See infra* Section IV.E.

Firm value increasing versus firm value decreasing. Some CCO actions directed at a specific firm increase CCO portfolio value and also increase that firm's value. Other actions are firm value reducing: they still increase CCO portfolio value because they increase the value of competing firms held by the CCO, but at the expense of firm value.

Macro versus micro. Macro mechanisms operate at the level of the firm. For example, they may affect the general propensity of managers to maximize firm value (as opposed to, in AST's words, "enjoying the quiet life"). Micro mechanisms, by contrast, are targeted to specific firm actions that affect the value of other companies in the CCO's portfolio. For example, the CCO might advocate or oppose a price change on a particular airline route.

Active versus passive. Active mechanisms entail CCOs taking an affirmative step to affect firm behavior. Passive mechanisms entail a strategic failure to take actions because taking the action would reduce the value of other companies in the CCO's portfolio.[23]

As we demonstrate in this Part, the empirical evidence presented by AST only relates to a subset of potential mechanisms. Specifically, this paper only tests micro mechanisms that are firm value decreasing. Neither macro mechanisms, nor mechanisms that increase firm value, are tested by AST or by other papers that follow a similar approach.

We first explain the foundation for the method used by AST to test the effect of CCOs, the so-called Modified Herfindahl-Hirschman Index (MHHI). We then draw an important implication from the use of MHHI—that MHHI is not a proper metric for testing firm value-

[23] Passive mechanisms are generally value decreasing, so far as the firm is concerned. The CCO declines to take actions that would increase the value of the firm. A passive *value increasing* strategy—declining to take actions that reduce both firm value and portfolio value—is natural, pervasive, and seldom worthy of note.

increasing mechanisms. Finally, we show that AST do not test macro mechanisms either, considering passive and active strategies in turn.

A. MHHI as a Measure of Common Ownership

AST run regressions with the price of an airline ticket as the dependent variable and a measure of common ownership on a particular route as the key independent variable. In AST's analysis, the common ownership measure is a component of MHHI.[24] MHHI is central to AST's analysis, AST's critics and defenders,[25] policy recommendations premised on the AST results,[26] and related work finding a positive association between prices and common ownership in the banking industry.[27] The airline and banking studies are the strongest evidence—arguably, the only significant evidence—that common ownership of competing firms by institutional investors is associated with higher prices. Other papers only take an indirect approach,[28] for example, by examining industry-level relationships between common ownership and compensation.[29] These and other papers rely on MHHI too.[30]

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[24] Technically, MHHIΔ rather than MHHI, as we explain shortly.

[25] *See, e.g.*, the papers debating the AST results discussed *supra* note 9.

[26] *See, e.g.*, Elhauge, *supra* note 3; PSW, *supra* note 3 (basing policy proposals on MHHI levels).

[27] *See* ARS, *supra* note 8. Except where noted, our methodological comments on AST apply equally to ARS.

[28] These other papers not only fail to link common ownership directly to prices, but also depend on industry-level, rather than (within-industry) market level, analysis. As Schmalz argues, industry-level analysis weakens any causal interpretation and raises concerns about omitted variable bias. *See* Martin C. Schmalz, *Common-Ownership Concentration and Corporate Conduct*, 10 ANNUAL REV. FIN. ECON. 1, [20–21] (2018).

[29] *E.g.*, Miguel Anton, Florian Ederer, Mireia Gine & Martin Schmalz, *Common Ownership, Competition, and Top Management Incentives* (European Corporate Governance Institute, Finance Working Paper No. 511/2017, 2017), http://papers.ssrn.com/abstract=2802332 [hereinafter AEGS]; Rebecca DeSimone, Stealth Ownership and Executive Incentives (June 5, 2017) (unpublished manuscript); Heung Jin Kwon, Executive Compensation Under Common Ownership (Nov. 29, 2016) (unpublished manuscript). We

As the name suggests, MHHI is a modification of the Herfindahl-Hirschman Index (HHI), a commonly used measure of market concentration. In any market, the HHI is the sum of the squared market shares of each competitor. In a monopoly—one competitor with a 100% market share—the HHI is 10,000. In a duopoly of two firms equally sharing the market, the HHI is 5000 ($50^2 + 50^2$). In a market with a very large number of small competitors, the HHI approximates 0. Table 1 reports the HHI for the duopoly scenario and for markets with 10 and 100 competing firms, respectively, assuming identical market shares.

MHHI adjusts the HHI to account for ownership overlap among competing firms.[31] MHHI has been used as a tool of economic theory to describe two settings in which a firm might take the profits of a competitor into account. The first is *cross-ownership*, in which the firm holds a stake in its rival. For example, imagine that United owned 10% of Delta. United's value then includes the value of those Delta shares, and thus, maximizing overall firm profits includes, in

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discuss AEGS, DeSimone, and Kwon *infra* Section I.D; *see also* German Gutierrez Gallardo & Thomas Philippon, Ownership, Governance and Investment (Mar. 2017) (unpublished manuscript) (regressing investment on HHI, MHHIΔ and an interaction term and finding that HHI and MHHIΔ are both negatively related to industry level investment, but the interaction term is positively related to investment); German Gutierrez Gallardo & Thomas Philippon, *Investment-less Growth: An Empirical Investigation* (Nat'l Bureau of Econ. Research, Working Paper No. 22897, 2016), http://ssrn.com/abstract=2880335 (finding positive association between common ownership and investment but cautioning that results do not establish causality).

[30] *See also* Alon Brav, Wei Jiang & Tao Li, *Picking Friends Before Picking (Proxy) Fights: How Mutual Fund Voting Shapes Proxy Contests* (Columbia Business School Research Paper No. 18-16, 2018), http://ssrn.com/abstract=3101473 (examining relationship between MHHI and votes in proxy contests); Miguel Anton, Florian Ederer, Mireia Gine & Martin C. Schmalz, Innovation: The Bright Side of Common Ownership? (Mar. 10, 2017), http://ssrn.com/abstract=3099578 (unpublished manuscript) (common ownership can mitigate impediments to corporate innovation); Svetoslav Semov, Common Ownership, Competition and Firm Financial Policy (Apr. 19, 2017), http://ssrn.com/abstract=2888722 (unpublished manuscript) (finding that increases in MHHIΔ are associated with lower cash holdings). An exception is Marios A. Panayides & Shawn Thomas, Commonality in Institutional Ownership and Competition in Product Markets (May 8, 2017), http://ssrn.com/abstract=2965058 (unpublished manuscript) (finding that some measures of common ownership are significantly related to industry profitability, but not finding any significant relationship to prices).

[31] Bresnahan & Salop, *supra* note 1; O'Brien & Salop, *supra* note 1.

part, the interests of a competitor. The second setting is *common ownership*, in which an investor holds stakes in competing firms. For example, imagine instead that a CCO owns 10% of United and 10% of Delta. MHHI posits that, by virtue of the CCO's partial ownership of United, it can control United's actions to some degree; and because it also owns Delta shares, it uses that control of United to increase the value of its Delta shares.[32]

In the absence of any ownership overlap, the HHI is equal to the MHHI. But if competitors have common owners, the MHHI exceeds the HHI. The difference between the MHHI and the HHI, in turn, is referred to as MHHIΔ.[33] As an illustration, consider the duopoly scenario discussed above. If CCOs had total control of both firms, the MHHI is 10,000, which is equal to the HHI (and MHHI) for monopoly. In this situation, MHHIΔ is 5000.[34]

In between, CCOs have partial control. For example, let us further assume that each firm has ten 10% owners. Each owner might be either a CCO or else a noncommon concentrated owner (NCO) that owns a stake in just one of the firms. If one out of ten owners is a CCO, the

[32] O'Brien and Salop's discussion of proportional control spells out the theory of common ownership. *See* O'Brien & Salop, *supra* note 1, at 583 (discussing "proportional control" structures wherein "the Board and managers of the acquiring [sic—acquired] firm take into account their shareholders' interests in other firms . . . [by taking] shareholders' interests into account in proportion to their financial interests in the acquired firm"); *see also id.* at 579 (discussing "partial control" structures in which "decision makers of the acquired firm take into account the fact that certain of its shareholders hold financial interests in competing firms . . . [and] the influence of each shareholder is constrained by the other shareholders of the acquired firm").

[33] Here is the formula:

$$\underbrace{\sum_j \sum_k s_j s_k \frac{\sum_i \gamma_{ij}\beta_{ik}}{\sum_i \gamma_{ij}\beta_{ij}}}_{MHHI} = \underbrace{\sum_j s_j^2}_{HHI} + \underbrace{\sum_j \sum_{k \neq j} s_j s_k \frac{\sum_i \gamma_{ij}\beta_{ik}}{\sum_i \gamma_{ij}\beta_{ij}}}_{MHHI\Delta},$$

where *i* indexes owners, and *j* indexes firms. s_j is the market share of firm *j*, γ_{ij} is the control fraction of owner *i* in firm *j*, and β_{ij} is the ownership fraction of owner *i* in firm *j*.

[34] MHHIΔ = MHHI – HHI = 10,000 – 5,000 = 5000.

MHHIΔ is one-tenth as large as total control—500, compared to 5000.[35] The other nine owners, the NCOs, limit and counteract the influence of the CCO. As the number and importance of CCOs rise, MHHI increases.[36] Table 1 reports the MHHI and MHHIΔ for duopoly, 10-opoly, and 100-opoly, under different assumptions about the number of CCOs.

Table 1: Common Concentrated Owners and MHHI

Number of Firms	HHI	MHHI and *MHHIΔ*				
		[0] 0 10% CCOs 10 10% NCOs	[1] 1 10% CCO 9 10% NCOs	[2] 2 10% CCOs 8 10% NCOs	[3] 4 10% CCOs 6 10% NCOs	[4] 10 10% CCOs 0 10% NCOs
2	5000	5000 *0*	5500 *500*	6000 *1000*	7000 *2000*	10,000 *5000*
10	1000	1000 *0*	1900 *900*	2800 *1800*	4600 *3600*	10,000 *9000*
100	100	100 *0*	1090 *990*	2080 *1980*	4060 *3860*	10,000 *9900*

Assumptions: firms have equal shares; each firm has ten 10% owners.

[35] Using the definition of MHHIΔ in *supra* note 33, and noting that there are two firms (call them Firm A and Firm B) with market shares of 50% apiece,

$$MHHI\Delta = \underbrace{(50)(50)\frac{\sum_i \gamma_{iA}\beta_{iB}}{\sum_i \gamma_{iA}\beta_{iA}}}_{\substack{Firm\ A\ takes\ Firm\ B \\ into\ account}} + \underbrace{(50)(50)\frac{\sum_i \gamma_{iB}\beta_{iA}}{\sum_i \gamma_{iB}\beta_{iB}}}_{\substack{Firm\ B\ takes\ Firm\ A \\ into\ account}}$$

The first term represents the extent to which Firm A takes Firm B's profits into account due to common ownership. The core of the calculation is in the numerator: $\gamma_{iA}\beta_{iB}$ is nonzero when owner *i* has partial control of Firm A combined with partial ownership of Firm B. CCOs fit the bill; NCOs do not.

Further assume, following the literature, that control is proportional to ownership. Then, for each CCO with a 10% stake in both, $\gamma_{iA}\beta_{iB} = (10\%)(10\%) = 1\%$. For each NCO with a 10% stake in firm A, $\gamma_{iA}\beta_{iB} = (10\%)(0\%) = 0$. As for the denominator, $\gamma_{iA}\beta_{iA} = (10\%)(10\%) = 1\%$, for each CCO or NCO. The second term, which represents the extent to which Firm B takes Firm A's profits into account, is symmetric. Thus, if there is one CCO and nine NCOs:

$$MHHI\Delta = (50)(50)\frac{1\%}{(10)(1\%)} + (50)(50)\frac{1\%}{(10)(1\%)} = 500.$$

[36] If there are *n* CCOs and 10 – *n* NCOs, then the numerator of each term is *n*% instead of 1%, and hence MHHIΔ = 500*n*.

The intuition for these results is that a common 10% owner has both the incentive and some influence over a firm in which it holds a stake to induce that firm not to maximize firm value, but instead to maximize the value of the CCO's joint stake in multiple competitors. In the extreme case of ten common 10% owners of all firms, that influence is complete and generates incentives equivalent to those of a monopolist.

MHHIΔ has two important but often overlooked features. The first feature is that MHHIΔ not only *increases* with the number and importance of *common* owners (the CCOs), but also *decreases* with the number and importance of *noncommon* owners (the NCOs). That NCOs reduce the MHHIΔ reflects the notion that they will use their influence to induce a firm to maximize firm value, without regard to the effect on competitors.

To illustrate this point, consider one of the scenarios described in table 1: a duopoly with four 10% CCOs and six 10% NCOs (column 3). The MHHIΔ is 2,000. But if, instead of NCOs, the noncommon shares are held instead by a very large number of dispersed shareholders (DOs), the MHHIΔ is 5,000 and the MHHI rises to 10,000. This contrast is depicted in Table 2 (columns 3 and 4). If on the other hand the remaining shares are held by NCOs in a more concentrated fashion, the MHHI falls. For example, if the remaining shares are held by a single 60% NCO, MHHIΔ falls to 500 (column 1).[37] Table 2 reports the MHHI and MHHIΔ for duopoly, 10-opoly and 100-opoly, under a range of assumptions about NCOs.

[37] For the first term, the numerator $\sum_i \gamma_{iA}\beta_{iB} = 4\%$. The denominator $\sum_i \gamma_{iA}\beta_{iA} = (4)(1\%) + (1)(60\%)(60\%) = 40\%$. The second term is symmetric. Thus, $MHHI\ delta = (50)(50)(4\%/40\%) + (50)(50)(4\%/40\%) = 500$.

Table 2: Noncommon Concentrated Owners and MHHI

Number of Firms	HHI	MHHI and *MHHIΔ*			
		[1] 4 10% CCOs 1 60% NCO	[2] 4 10% CCOs 3 20% NCOs	[3] 4 10% CCOs 6 10% NCOs	[4] 4 10% CCOs 60% DOs
2	5000	5500 *500*	6250 *1250*	7000 *2000*	10,000 *5000*
10	1000	1900 *900*	3250 *2250*	4600 *3600*	10,000 *9000*
100	100	1090 *990*	2575 *2475*	4060 *3860*	10,000 *9900*

Assumptions: firms have equal shares; each firm has four common 10% owners.

Comparing the two tables illuminates the similar effect on MHHI from subtracting NCOs and adding CCOs. Column 3, with four 10% CCOs and six 10% NCOs, is identical in both tables. Eliminating NCOs entirely (Table 2, column 4) has the same effect as moving up to complete common ownership (Table 1, column 4), resulting in an MHHI of 10,000. In the other direction, combining three 20% NCOs into a single 60% NCO (Table 2, column 1) reduces MHHI to the same extent as cutting the number of CCOs down from four to one (Table 1, column 1).

The disparate effect of CCOs and NCOs on the level of MHHIΔ limits the set of causal mechanisms tested by any analysis that relies on MHHIΔ. The causal mechanism must be one in which the conduct in question is preferred by CCOs *but opposed by NCOs*. Otherwise, MHHIΔ is not a good measure of the role of concentrated ownership. The implications of this limitation are discussed in the next section.

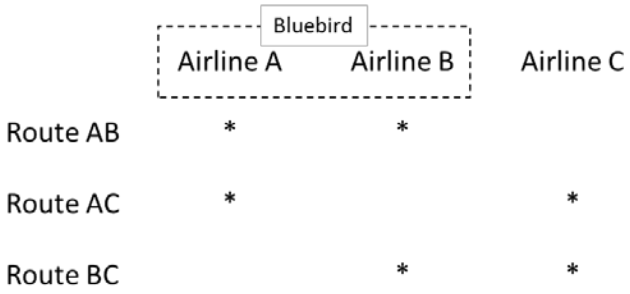
The second feature is that when an investor owns *some, but not all*, competing firms, it acts both as a CCO and as an NCO. This feature is most evident when firms compete in multiple markets with different configurations of competitors. The airline industry studied by AST is such

a setting: airlines compete with one another in a large number of different routes (e.g. Charlotte-Atlanta) and the set of important competitors and market shares varies by route. AST exploit this multiplicity of markets in their analysis. They collect route-level data on domestic airline prices and on market shares, and combine the market share data with ownership structure to calculate a *route-level* measure of MHHIΔ. AST run panel regressions with price as the dependent variable and MHHIΔ and various control variables as independent variables. In these regressions, AST find evidence that route pricing increases with MHHI.

AST exploit the fact that MHHI varies by route to distinguish the effects of common concentrated ownership from general changes in competitive strategy over time. If MHHI were identical on each route and varied only over time, and we observed that both MHHI and prices rose from one period to another, it would be hard to distinguish whether prices changed because MHHI rose or for some other reasons (such as a change in oil prices or a change in competitive strategy that just happens to coincide with the change in MHHI). But if, from one period to another, prices rose on routes where MHHI increased but fell on routes where MHHI decreased, a general change in oil prices or competitive strategy would be unlikely to account for this result.

As a simple illustration, assume that there are three airlines, A, B, and C. Airlines A and B compete on one route ("Route AB") and share the route 50/50. Airlines A and C compete on a second route ("Route AC"), and B and C on a third ("Route BC"), again with 50/50 splits. Figure 1 illustrates this arrangement.

Figure 1: Concentrated Ownership in Multiple Markets



Suppose that each airline has a 10% NCO.[38] At this point, absent any CCO, the HHI and MHHI on each route is 5000; MHHIΔ is 0.[39] If Whiterock subsequently acquires a 10% stake in Airline A, Airline B, and Airline C, the MHHIΔ on each route rises to 2500.[40] This effect, arising from the introduction of a common owner of all competitors, is unremarkable.

But now consider the effect on MHHIΔ if, the following year, a second investor, Bluebird, acquires 10% of both A and B from dispersed owners. Bluebird is a CCO on the first route, but an NCO on the other two routes. Table 3 reports the results. The MHHIΔ of Route AB rises from 2500 to 3333, but *falls* on the other two routes from 2500 to 1667.[41]

[38] By definition, the NCOs are not shared among the airlines.

[39] NCOs are a counterweight to CCOs. If there are no CCOs, then the firm simply maximizes its profits and NCOs have no incremental effect.

[40] For example, for Route AB, MHHIΔ is the sum of two terms: the extent to which Airline A maximizes Airline B's profits, and the extent to which Airline B maximizes Airline A's profits. The first of these is the product of market shares times this expression (with the key term in bold):

$$(50)(50)\frac{\gamma_{[NCOA]A}\beta_{[NCOA]B} + \boldsymbol{\gamma_{[W]A}\beta_{[W]B}}}{\gamma_{[NCOA]A}\beta_{[NCOA]A} + \gamma_{[W]A}\beta_{[W]A}} = (50)(50)\frac{10\%(0\%) + \mathbf{10}\%(\mathbf{10}\%)}{10\%(10\%) + 10\%(10\%)} = 1250. = 1/2.$$

The second term is symmetric; thus, MHHIΔ equals 2500.

[41] For example, consider the symmetric case in which a second investor acquires 10% of Airline B and Airline C, and a third investor acquires 10% of Airline A and Airline C. Then each route has an MHHIΔ of 2000.

Table 3: Common Owners of Some (But Not All) Competitors

Route	HHI	MHHI and *MHHIΔ*		
		10% NCO	10% NCO Whiterock (A,B,C)	10% NCO Whiterock (A,B,C) Bluebird (A,B)
Route AB	5000	5000 *0*	7500 *2500*	8333 *3333*
Route AC	5000	5000 *0*	7500 *2500*	5667 *1667*
Route BC	5000	5000 *0*	7500 *2500*	5667 *1667*

But common ownership of some but not all competitors is also relevant in a setting where all competitors compete in a single market, such as the market for breakfast cereals. In such a setting, depending on the market shares of the firms and the holdings of other concentrated owners, the acquisition of a common ownership interest in some competitors can raise, lower, or have no effect on MHHI.[42]

This discussion illustrates three points. First, when a new investor is a CCO in some markets and an NCO in others, and MHHIΔ is indeed associated with higher prices, then we should expect the price to rise in some markets but fall in others. In our illustration, Bluebird's acquisition should result in higher prices on Route AB and lower prices on the other routes. Second, an investor's optimal strategy in this setting may vary across markets. For example, Bluebird may prefer less aggressive competition on Route AB but more aggressive competition

[42] For an illustration in which the acquisition leaves the MHHI unchanged, see the Appendix. The intuition for this result is that when an investor acquires a stake in Firms A and B, but not C, Firm A's incentive to compete with Firm C is strengthened, as is Firm B's incentive to compete with Firm C.

on the other routes. Third, the net welfare effects of ownership of some but not all competitors are complex and indeterminate. We return to this point in Part IV. [43]

B. Firm Value-Increasing Mechanisms

One way in which CCOs could lead to reduced competition is to encourage their portfolio firms to compete less aggressively—for example, by raising prices—when doing so would increase firm value. Such increase in firm value may be unilateral—the firm may for some reason charge a price below the profit-maximizing price—or may come about through the strategic response of competitors—which may raise prices in response, whether as a result of price-fixing, conscious parallelism, or other cartel-like and collusive behavior. Such encouragement would appear quite natural: after all, concentrated owners are supposed to care about firm value and take actions to increase it.

From the perspective of the common-ownership literature, however, this is exactly the problem. The interest in increasing firm value by competing less aggressively is not unique to common concentrated owners; it is shared by *noncommon* concentrated owners. Although a CCO may benefit from such reduced competition both through its stake in the firm and through its stakes in competing firms, an NCO benefits as well.

But MHHIΔ—the principal common ownership metric employed in the literature[44]—measures the degree to which a firm's profit maximization decision is *distorted* by owners with

[43] *See infra* Section IV.B.

[44] Other secondary metrics used by AST, such as the overlap among the largest 10 owners, share this feature as well. *See* AST, *supra* note 2, at [24].

conflicts of interest.[45] As CCOs become more important in firm decision-making, the distortion increases; as NCOs become more influential, the distortion decreases. MHHIΔ predicts a price increase provided that price increase is in a CCO's interest but not in an NCO's interest. Put differently, the feature of MHHIΔ that it increases as CCO ownership goes up *but decreases as NCO ownership goes up* requires a conflict of interest between CCOs and NCOs.

In the mechanisms we discuss below, this conflict is generated by the CCO inducing the firm to adopt an action that *reduces* firm value, so that an NCO is worse off, but increases competitor value by a sufficient amount, so that a CCO still comes out ahead. Similarly, the CCO can sin by omission, by failing to discourage value reducing strategies or failing to encourage value increasing strategies. By contrast, if a CCO limits itself to measures that are firm-value increasing, no conflict is present. Indeed, although AST are sometimes misunderstood as suggesting a firm value-increasing mechanism, they neither raise nor claim to test such a mechanism.

Thus, it is the presence of concentrated owners of any sort—rather than the presence of CCOs—that arguably make it more likely for managers to take anticompetitive actions that are firm value-increasing.[46] Indeed, even though AST is styled as testing the hypothesis that *CCOs*

[45] This distortion can be seen directly in AST's formal model, which features a firm objective function in which the firm "maximizes its own profits, plus a linear combination of the profits of other firms in which the shareholders with control hold ownership stakes." AST, *supra* note 2, at 61. Formally, firm *j* maximizes its own profits π_j plus this expression (*see supra* note 33 for notation):

$$\sum_{k \neq j} \frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}} \pi_k.$$

[46] While both CCOs and NCOs would want firms to reduce competition if doing so increases firm value, it may be that only an NCO would want a firm to increase competition where doing so increases firm value. To that extent that a CCO fails to encourage value-increasing competition, CCO ownership may be associated with reduced competition. This mechanism is discussed *infra* Section II.C (selective omission strategies).

have an anticompetitive effect, their research design is equally consistent with testing the hypothesis that *NCOs have a procompetitive effect*. Indeed, Martin Schmalz, one of the AST authors has basically said so explicitly.[47] Thus, as to mechanisms wherein a CCO raises firm value, the AST approach not only does not test such mechanisms, but is inconsistent with their use.

C. Passive Macro Mechanisms

One potential causal mechanism mentioned by AST is passivity: CCOs, rather than induce managers to compete harder, "instead let them get away with the 'quiet life.'"[48] If a CCO believed that a certain action would induce managers of one firm to compete harder and raise the firm's value but would have adverse effects on other firms in the portfolio and thereby lower the CCO's overall portfolio value, why take such action? Instead, the CCO could just remain passive and fail to induce stronger competition.[49]

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[47] Martin C. Schmalz, Common Ownership and Competition: Facts, Misconceptions, and What to Do About It (Dec. 6, 2017), http://ssrn.com/abstract=3176696 (background paper for Organisation for Economic Co-operation and Development roundtable on Common Ownership by Institutional Investors and Its Impact on Competition, DAF/COMP/WD(2017)93) ("Perhaps more important than the presence of common ownership is the absence of powerful undiversified shareholders who would benefit from increased competition.").

[48] AST, *supra* note 2; *see also* Einer Elhauge, *The Growing Problem of Horizontal Shareholding*, CPI CHRON., June 2017, at 2 ("Nor does the anticompetitive effect require any communication between shareholders and managers, because managers know whether their leading shareholders are horizontal and know that lessening competition benefits those shareholders."); Elhauge, *supra* note 3, at 1270 (similar).

[49] *See* Jose Azar, Martin C. Schmalz & Isabel Tecu, *Why Common Ownership Creates Antitrust Risks*, CPI ANTITRUST CHRONICLE, June 2017, at 10, 15 [hereinafter AST CPI] (arguing that it is "*an absence of incentives to compete (rather than an increased incentive to collude)* that leads to reduced competition under common ownership") (emphasis in original). Notably, this mechanism does not require managers to recognize the CCO's portfolio interest or take affirmative steps to serve that interest.

Among passive mechanisms, a passive *macro* mechanism is a failure to encourage certain general firm-level strategies that sharpen the firm's competitive instinct. One such "sharpening" strategy pertains to the use of performance incentives. Paying managers for performance—that is, paying more when firm profits are high or awarding them stock options—gives managers a stronger incentive to maximize firm value. Failing to use performance incentives may thus lessen competition.

The tests performed by AST, however, are not properly designed to detect the use of passive macro mechanisms. They fail in this regard for two distinct reasons. First, MHHIΔ is not a proper metric for *passive* mechanisms. Recall that the MHHIΔ depends on the presence of three shareholder types: CCOs, who increase MHHIΔ; NCOs, who lower MHHIΔ; and DOs, who, due to their low stakes and low influence, literally drop out of the equation.[50] A move from DOs to CCOs, or a combination of two smaller CCOs into a larger one, would increase MHHIΔ, but would not increase passivity.

Rather, a proper metric of passive mechanisms would *only* consider the extent to which NCOs are present in the shareholder base. CCO ownership would figure into such a comparison only indirectly, to the extent it replaces NCO ownership but not, as it does in the AST study, to the extent it replaces DOs or reflects increased concentration among CCOs. A study of passive mechanisms would thus be very different from the study conducted by AST.

Second, the AST tests are not properly designed for *macro* mechanisms. Recall that AST compare prices along different routes where one airline competes with different other airlines. If a fund acquires a stake in some but not all competitors, the MHHIΔ model would predict a

[50] *See* O'Brien & Waehrer, *supra* note 9, at 29.

differential impact on price for different routes, depending on which airlines compete in it. The differences-in-differences design employed by AST is structured to pick up only such *differential* route effects, not effects that arise equivalently for the entire route network.[51] But passive macro mechanisms—failing to induce managers to compete harder, using tools such as relative performance incentives—are not likely to induce differential route effects. While passive mechanisms may or may not be employed, AST does not provide any empirical support for their use.[52]

D. Active Macro Mechanisms

AST and the other papers in the genre mention several active macro mechanisms. Some, like the passive mechanisms discussed before, are related to managerial compensation. Here, AST suggest that CCOs may actively work against pay for performance and thereby help ensure that managers "enjoy the quiet life" rather than maximize firm value.[53] In addition, AST suggest that CCOs may try to manipulate a firm's capital structure or payout policies to make them compete less strongly or elect directors who will favor a strategy involving less competition.[54]

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[51] If prices changed equivalently along the entire network, route prices would not be independent observations, creating other econometric issues.

[52] The AST authors, in response to the criticism that they have not identified an observable mechanism linking CCOs to higher prices, have replied that such a critique "seems to reflect a misunderstanding of the economic mechanism that we argue can lead to anti-competitive outcomes. . . . It is hard to see why not implementing aggressive competition needs a mechanism or could produce measurable traces." AST CPI, *supra* note 49, at 15. This reply misses the mark, at least insofar as passive macro mechanisms are concerned. The problem is that a lack of incentive to compete aggressively would not explain AST's empirical results; hence the results provide no support for the use of this mechanism. AST's theoretical argument that CCOs have reduced incentives to push managers to compete aggressively due to their ownership stakes in competitors is addressed *infra* Sections II.A and IV.B.

[53] *See* AST, *supra* note 2, at 35 (citing AEGS).

[54] *Id.* at 32.

Like the passive macro mechanisms discussed in the prior section, active macro mechanisms have general effects on incentives, product markets, or competitive strategy. They are unlikely to produce differential effects depending on whether the airlines competing on a specific route have a common owner or not. Thus, the AST study does not properly test for the use of active macro mechanisms.

Beyond AST, a second set of papers employs a different empirical approach that is better suited to a test for active macro mechanisms. We are aware of three papers, all unpublished, that examine the relationship between MHHI and executive compensation *across* different industries, rather than across products within a single industry. Anton, Ederer, Gine, and Schmalz (AEGS) find a negative association between MHHI and the use of performance incentives.[55] Kwon reports opposite results.[56] DeSimone largely finds no statistically significant relation between MHHI and compensation.[57]

Although proponents of aggressive measures to limit common concentrated ownership have relied on AEGS for support,[58] the conflicting results of these papers, considered as a set, yield no firm conclusion. Moreover, the papers share several shortcomings, compared to the AST study, that recommend caution in interpreting their results.

First, the papers rely exclusively on ownership data contained in quarterly reports filed by large institutional investors—so-called Form 13F filings. As a consequence, they ignore the holdings of non-institutional blockholders such as firm founders, managers, and (non-

[55] *See supra* note 8.

[56] Kwon, supra note 30.

[57] DeSimone, supra note 30

[58] *See* Elhauge, *supra* note 9 (relying on AEGS and dismissing results of Kwon paper); PSW, *supra* note 3 (relying on AEGS).

institutional) corporate holders. Yet such ownership is quite common. A survey conducted by Alex Edmans and Clifford Holderness found that, for the firms in their sample, 52% had an individual and another 11% had a corporation as its largest owner.[59] For firms where the largest owner was an individual, the individual's block size was 32%, and the individual had a board representative in 91% of the firms. (The analogous figures for corporations were 39% and 83%, respectively.)

Individual and corporate blockholders are presumptively much less likely to be CCOs than institutional holders. The omission of individual and corporate ownership data is thus likely to yield incorrect calculations of MHHI. Moreover, to the extent that individual blockholders are officers, they have substantial performance incentives derived from their stockholdings that are largely ignored in the compensation-related studies.[60]

Second, the papers examine the relationship between *industry* MHHI and *firm* compensation. But the theoretical relationship between these variables is unclear. MHHIΔ can change because the ownership structure of only some firms in that industry changes. To illustrate, in our example, an acquisition by Bluebird of stock in Airlines A and B would affect industry MHHIΔ. But it is not evident why this should have any effect on

[59] Alex Edmans & Clifford G. Holderness, *Blockholders: A Survey of Theory and Evidence* 95 tbl. 2 (European Corporate Governance Institute Finance Working Paper No. 475/2016, 2017), http://ssrn.com/abstract=2820976 (examining ownership in a sample of 375 firms as of 1995). All such blockholders had an ownership share of at least 5%. These results exclude 15 firms (out of 375) in which no individual or entity owned at least 5%.

[60] The same criticism applies to other papers that rely exclusively on 13F data, such as Gallardo & Philippon, supra note 30.

compensation of firms, such as Airline C in the example, where there was no change in common ownership.[61]

Third, there are paper-specific data and methodological issues. For example, AEGS fails to make adjustment for the firms the fiscal year of which does not coincide with the calendar year.[62] As for Kwan, that paper fails to adjust Form 13F data to account for recognized errors in the Thomson Reuters database.[63] On the whole, therefore, these papers shed little light on whether many CCOs employ compensation-related macro mechanisms.

II. Effectiveness and Feasibility

A. Macro Mechanisms

The principal macro mechanisms proposed by AST are compensation-related. These proposed mechanisms have a patina of plausibility, given that institutional shareholders regularly vote on compensation structures in say-on-pay and other votes, frequently discuss compensation in engagement meetings,[64] and at least implicitly claim expertise in evaluating compensation. But whether it is in fact desirable for CCOs to use any influence over compensation generally to dilute incentives to maximize firm value is less clear: most

[61] Moreover, to take account of the possibility that variables that are not added as control variables affect compensation for all firms in the industry similarly, treating each firm-year compensation as independent could lead to overstated *t* statistics. To correct for that, errors should be clustered at the industry level. These problems are not equivalently present in AST's airline paper. A change in route MHHI could theoretically be expected to affect the prices of all airlines flying the route, including those where ownership structure changed. In addition, AST include regressions with market level prices, which do not raise the concern that variables that are not added as control variables affect the prices charged by all airlines on a specific route similarly.

[62] *See* DeSimone, supra note 57. Also, unlike AST, AEGS use ranked MHHIΔ and ranked HHI in most of their regressions.

[63] AEGS, *supra* note 30, at n. 9.

[64] AST, *supra* note 2, at 35.

compensation schemes are a blunt instrument, affecting managerial incentives generally. A CCO wishes to reduce incentives to maximize firm value only where maximizing firm value comes at the expense of another portfolio firm and reduces the CCO's overall portfolio value. But a CCO prefers to preserve the incentive to maximize firm value in all other respects.

A wholesale dilution of incentives makes sense, if at all, only for firms where the bulk of managerial effort otherwise would be devoted to competition at the expense of other CCO portfolio firms. Where competition is directed against nonportfolio firms, or managerial actions increase the firm's profits without significantly harming rivals' profits, a CCO is likely to conclude that the costs of diluting incentives exceed the benefits.

AST borrow the phrase "enjoying the quiet life" from a well-known article by Marianne Bertrand and Sendhil Mullainathan.[65] But that article actually illustrates the cost of employing a value-reducing macro strategy. Bertrand and Mullainathan use the term for managers who tend to behave inefficiently—for example, by paying inefficiently high wages, failing to close old plants or to open new ones, and running less productive plants. Such inefficient management is contrary to the interest of CCOs and NCOs alike. Whether CCOs accrue sufficient benefits from the less aggressive competition that may also result from reduced incentives, alongside these inefficiencies, is far from clear.

Other macro mechanisms mentioned by AST include capital structure, payout policies, and board composition.[66] But shareholders have no direct influence over capital structure and

[65] Marianne Bertrand & Sendhil Mullainathan, *Enjoying the Quiet Life? Corporate Governance and Managerial Preferences*, 111 J. POL. ECON. 1043 (2003). Those authors, in turn, draw upon J.R. Hicks, *Annual Survey of Economic Theory: The Theory of Monopoly*, 3 ECONOMETRICA 1, 8 (1935) ("The best of all monopoly profits is a quiet life.").

[66] AST, *supra* note 2, at 32.

payoff policies, and the effects of capital structure and payout policies on product markets are, in AST's own words, "very subtle." And while shareholders elect directors, most elections are uncontested and there is no evidence that outside director candidates in uncontested elections stand for any particular competitive strategy or that institutional shareholders are given a choice of candidate to fill board openings.[67] These macro mechanisms are thus unlikely to be effective.

Strategies based on voting or passivity, as opposed to direct communications with firms, suffer from another drawback. It may take several years of voting—whether on compensation-related matters or anything else—or, in the case of passive mechanism, of failure to take an action—before the votes or failure to act affects competitive strategy. But, at least for CCOs other than index funds,[68] a mechanism that produces results only over a longer time horizon is likely to be problematic. The asset-weighted average portfolio turnover rate of actively managed U.S. equity mutual funds and ETFs was 51% in 2011.[69] Even over a single year, industry holdings of active funds change significantly. Moreover, market structure would often also change. At the time a CCO casts its first vote or first decides to be passive, it would thus be difficult to predict what competitive strategy will maximize its portfolio by the time it comes to

[67] *See* Rock & Rubinfeld, *supra* note 9, at 17.

[68] We return to this aspect of index funds *infra* Section IV.B.

[69] *See* VANGUARD GROUP, INC., MUTUAL FUNDS—LIKE ETFS—HAVE TRADING VOLUME 5 (Nov. 2012), http://personal.vanguard.com/pdf/s344.pdf. By comparison, the turnover rates for index mutual funds and ETFs were 9% and 15%.

fruition.[70] This is a further reason why strategies based on voting and passivity are not likely to be effective for active funds.

Two macro mechanisms, however, are in our assessment more plausible, at least for investors with a longer-term perspective. First, CCOs may favor absolute over relative performance incentives. Relative performance incentives, where compensation is based on how a firm's performance compares to the performance of other firms in the industry,[71] have both advantages and disadvantages over the more common absolute performance incentives.[72] Compared to absolute performance incentives, relative performance incentives tend to penalize firm managers if their competitors do well and reward managers if competitors do poorly. Since CCOs, unlike NCOs, are harmed when managers reduce competitor value and benefit when managers increase competitor value—exactly the opposite of what relative

[70] Although, as discussed, AST do not properly test for macro mechanisms, they find that only common ownership by shareholders with a long-term horizon has a significant positive effect on prices. AST, *supra* note 2, at 26.

[71] We do not focus on a further type of relative performance incentive, which is to compare firm performance to the performance of the economy rather than a single industry.

[72] Relative performance incentives have the desirable property of imposing lower risk-bearing cost on managers than absolute incentives, which reward managers in part based on industry-wide and economy-wide developments that bear on firm performance but may be outside managerial control. At the same time, managers have some control over the extent to which a firm is exposed to industry-wide and economy-wide developments as well as over the industries their firms operate in, thus reducing risk-bearing costs (while potentially introducing other distortions). As for relative performance incentives, such incentives are hard to implement for firms that operate in multiple or hard-to-define industry segments. Moreover, in concentrated industries, relative performance incentives provide excessive incentives for managers to take actions that *reduce* competitor value and insufficient incentives for actions that increase both firm and competitor value. Actions that increase both firm value and competitor value can be either anticompetitive or procompetitive (for example, a cost saving device that is easily copied by competitors).

performance incentives reward—CCOs may actively favor, or passively fail to oppose, the use of absolute over relative performance incentives.[73]

Second, in contested elections and in companies targeted by activists more generally, CCOs could plausibly affect competitive strategy over a shorter time horizon. Here, shareholders are faced with an activist who proposes a different business strategy than incumbent management, a component of which may include a different competitive strategy. By lending support to management or the activist, CCO may affect competitive strategy.[74]

B. Active Micro Mechanisms

1. Macro and Micro Mechanisms Distinguished

Micro mechanisms, unlike macro mechanisms, are targeted at specific actions of the firm. Among actions that increase firm value, the CCO takes a divergent approach to actions that reduce the value of its other portfolio companies, versus actions that do not.

To illustrate the difference between macro and micro mechanisms, let us return to our airline example from Section I.A. Consider the disparate interests of Whiterock (a CCO of all three airlines), Bluebird (invested in Airlines A and B alone), and an NCO of Airline A alone.

[73] Lantian (Max) Liang, *Common Ownership and Executive Compensation* (Univ. Texas—Dallas Working Paper, 2016), presents empirical evidence that institutional cross-ownership (defined as a common 5% holder for a firm pair) is associated with lesser use of relative performance incentives. Like AEGS, Kwon, and DeSimone, Liang's paper relies exclusively on 13F data and is a cross-industry study, but unlike these other papers, Liang common ownership measure is defined at the firm pair, rather than industry, level.

[74] As activists are generally NCOs, the most likely reason why strategies may differ on this dimension is that a management team, used to enjoying the easy life, faces an activist hedge fund advocating increased competition to raise firm value. This hypothesis could be tested by checking whether, in such situations, common ownership is associated with support for incumbents in concentrated industries.

Compare three actions that Airline A might take, each of which requires the same amount of managerial effort and increase Airline A's value by the same amount:

[1] reduce the price charged on Route AB, thereby reducing the profits and value of Airline B;

[2] reduce the price charged on Route AC, thereby reducing the profits and value of Airline C; or

[3] move its headquarters to a cheaper location, which saves money and has no effect on its competitors' profits.

An example of an active macro strategy, already discussed above, would be for Bluebird to affect managerial efforts at Airline A as to all three actions by altering its management compensation system.[75] An active micro strategy, by contrast, would have Bluebird induce the manager *not* to reduce price on Route AB (an action that, if taken, harms Bluebird's investment in Airline B), while reducing price on Route AC and moving its headquarters.

Such a strategy has the virtue of narrowness: some profit increasing actions are left undisturbed. Narrowness, however, comes at a price. First, this micro strategy may require the CCO to identify which specific actions harm its portfolio. Here, Bluebird would have to know enough about route-level operations (capacity, prices, costs, and competitors) to form a view that competition on Route AB is bad for its portfolio.[76] Second, at least indirectly, Bluebird would need to communicate its preferences to management: do not reduce price on Route AB, but do reduce price on Route AC and move your headquarters. Third, Bluebird may have to

[75] *See supra* Section I.D.

[76] It would generally not be sufficient for just firm management to have such knowledge since a CCO would need to monitor whether management faithfully executes the selective non-competition strategy.

induce management to take the action that the CCO prefers. Put differently, effective implementation of a micro strategy requires generation of, transmission of, and inducement to follow the strategy.

2. Generation, Transmission, and Inducement

AST make several suggestions that bear on how a CCO might generate, transmit, and induce observance of a micro strategy. Most of them pertain to transmission. They cite anecdotal evidence of asset managers favoring less intense competition. They point to institutional investors' frequent meetings with management and remark, as an "open question," whether "product market strategy is part of the conversations."[77] They note that "route-level capacity decisions of conversation" are a frequent topic in public earnings calls.[78] As to inducement, they reason that a CCO obtains leverage over managers through its voting power and its ability to sell shares and depress the market price of the firm's stock.

While we agree with AST that a CCO may be able to generate, transmit, and induce observance of a micro strategy, doing so is complex. The complexities are enhanced by the nature of the "concentrated owners" that have been the focus of recent studies and debates. In particular, an effective micro strategy probably requires the support and involvement of some top-level managers as well as several other lower-level employees of the CCO, together with participation of senior executives and lower-level employees at the firm. Moreover, a micro strategy is likely to generate some dissent both within the CCO and between the CCO and the

[77] AST, *supra* note 2, at 33.

[78] *Id.* at 34.

firm and other firm owners. A micro strategy is thus much more likely than a macro mechanism to leave strong traces and dissatisfied players willing to point to them.

To see this and other difficulties with executing active micro strategies, it is necessary to examine the entities that are treated as CCOs more closely. With a few exceptions, the most prominent CCOs identified in the literature about anticompetitive common ownership are entities with names such as "Blackrock," "Vanguard," or "Fidelity." That literature treats each as a single entity—as though there is only a single Fidelity, Vanguard and Blackrock. Consider, for example, "Fidelity," as analyzed by AST. "Fidelity" is FMR LLC ("FMR"), the legal entity that files the 13F forms that supply the ownership data AST use. FMR is an investment advisor and has investment power over the stock listed in the 13F. But FMR is not the "owner" of these shares in any economic sense. Rather, the shares are owned by various mutual funds sponsored by Fidelity and by other Fidelity clients.[79] The mutual funds, in turn, are owned by mutual fund shareholders, not by FMR or any FMR affiliate.

Treating "Fidelity" as a single owner of the assets of the various Fidelity mutual funds and its other clients is deeply problematic in two respects. First, that treatment implies that FMR acts like an individual owner would in trying to maximize its total portfolio. But in fact, as we explain in Part III, an investment advisor that has investment power over certain shares has incentives that are quite different from those of an individual with an ownership stake in those shares. Second, as we now explain, that treatment obscures the multi-layered structure and divergent interests within the investment advisor.

[79] *See* John Morley, *The Separation of Funds and Managers*, 123 YALE L.J. 1118 (2014); *see also* Douglas H. Ginsburg & Keith Klovers, *Common Sense About Common Ownership*, CONCURRENCES REV., May 2018, at [12].

Investment advisors are complex organizations. To run their investment and voting operations, larger investment advisors generally employ fund portfolio managers, analysts, and a centralized voting unit. These groups have different economic interests, different powers, and different competencies. Fund portfolio managers make the ultimate investment decisions for specific funds managed by the investment advisor. Fund portfolio managers differ from fund to fund within the same investment advisor complex. For example, Fidelity's Contrafund has been run by William Danoff since 1990 and its Growth Company Fund by Steven Wymer since 1997.

Fund portfolio managers are generally viewed as having incentives to maximize the value of the fund they manage. Thus, Danoff cares much less about the performance of other Fidelity funds and clients than about the performance of his Contrafund.[80] The portfolio of a specific fund (such as the Contrafund) is likely to differ from the portfolio value of another fund (such as the Growth Company Fund) and the aggregate portfolio holdings of the investment advisor (such as FMR) in the relative proportion of shares of competing firms held. As a consequence, fund portfolio managers within the same investment advisor complex have interests that conflict with one another and with the interests of the advisor as a whole. And since individual funds will tend to own many fewer shares in a competing firm than the reported aggregate stake of the investment advisor, no individual fund portfolio manager would have the influence over a firm attributed to the advisor based on the advisor's aggregate reported stake.

[80] *See* Fidelity Contrafund, Statement of Additional Information ("The primary components of each portfolio manager's bonus are based on the pre-tax investment performance of the portfolio manager's fund(s) and account(s) measured against a benchmark index and within a defined peer group assigned to each fund or account.").

This conflict is neglected in AST and other papers that view investment advisors such as Fidelity as a consolidated whole. For example, as characterized by AST, Fidelity at the end of 2016 "owned" 5.5% of the stock of Southwest, 7.3% of the stock of JetBlue, 10.7% of the stock of Spirit Airlines, and sizeable but smaller stakes in several other airlines, making it one of the most significant CCOs. But the Fidelity Contrafund owned 1.9% in Southwest—which would make it its seventh largest holder—and no other airline stock. Danoff would thus have incentives to oppose any strategy that reduced the value of Southwest even if it increased overall Fidelity portfolio value. To be sure, the Fidelity Growth Company Fund held 0.5% of Southwest, 3.0% of JetBlue and 3.8% of Spirit Airlines.[81] Its portfolio value, like Fidelity's overall, could increase if Southwest sacrificed some of its profits for the benefit of its competitors. But its 0.5% stake would give Wymer little sway over management of Southwest, and it is unclear why Southwest would think that Wymer represented the entire 5.5% holdings of Fidelity.

Most investment advisors also employ analysts who specialize on certain firms and industries, supply research to fund portfolio managers, and are evaluated by them. Although some investment advisors have different analyst teams work with different fund portfolio managers, often a single analyst, or a single group, covers a certain portfolio company for all funds on a centralized basis. Since analysts focus on a smaller subset of firms than fund portfolio managers do, they probably have the largest amount of firm-specific information. However, their principal focus is to predict short and medium-term stock price changes to inform buy and sell decisions, not to generate suggestions to enhance portfolio value. While an analyst would benefit if the stock price of a firm she recently recommended to fund portfolio

[81] *See* Fidelity Growth Company Company Fund, Annual Report (Form N-CSR) (Nov. 30, 2016), http://www.sec.gov/Archives/edgar/data/707823/000137949117000251/filing936.htm.

managers increased, it is unlikely that she would obtain equivalent benefits if the shares of a firm that has not been touted went up.

The centralized voting unit, as a practical and sometimes as a legal matter, generally controls the voting of the shares of advised funds and of other client assets where the client has delegated voting authority to the advisor. The voting unit may communicate with fund portfolio managers and analysts before it makes voting decisions and, depending on the advisor, fund portfolio managers or other fund officials have greater or lesser authority to deviate from the voting recommendations made by the voting unit. But the voting unit lacks the know-how and, ordinarily, the incentives, to develop a micro strategy.

Of the three groups, analysts who cover an entire industry on a centralized basis are most likely to generate an active micro strategy as they have financial and industry expertise and their job, at least to some extent, relates to all industry holdings by the investment advisor. Analysts who assist only certain fund portfolio managers or who cover only certain shares would be unlikely to take into account, respectively, holdings of other funds or in other firms. Fund portfolio managers may have the financial expertise but would usually lack the requisite industry knowledge and also have potentially conflicting incentives to maximize fund portfolio value, rather than the aggregate portfolio value of the investment advisor. Officials working at the investment advisor level and dealing with voting are unlikely to possess the requisite industry knowledge and financial expertise.

Once generated, the strategy would have to be transmitted and its observance induced. But analysts, on their own, are likely not able to do that.[82] They would have to convey the favored strategy to senior executives of the portfolio company—lower level firm managers would not, on their own, agree to a strategy that lowers firm profits. But analysts lack control over investments and voting and generally stand lower in the hierarchy of mutual fund officials than large fund portfolio managers.[83] Even if senior firm executives are willing to agree to meet analysts, they may not be willing to heed their demands to pursue a firm value-decreasing strategy.[84]

To put pressure on firm executives, analysts might try to brief voting officials on the strategy. Investment advisor officials dealing with voting hold regular meetings with management and the board and, perhaps, could use these meetings, and their control over voting decisions, to induce executives to adopt the strategy favored by the analysts. Doing so

[82] There is at least anecdotal direct evidence suggesting that asset managers sometimes try to induce less aggressive competition. For example, AST note that they had been told in personal communications that a common topic in meetings between asset managers and portfolio firms is how firms can "throw the switch from developing market share to instead exercise [their] market power to get [their] margins up." AST, *supra* note 2. Such anecdotes, of course, may show merely that asset managers care about firm profits. They show neither that CCOs are more likely to push for higher margins than NCOs are, nor that CCOs do not also push firms to expand market share where doing so would raise a firm's profits, nor that such communications actually affect firm behavior.

[83] According to Glassdoor, the average salary of a mutual fund analyst based on 273 submissions was $68,106. *See* http://www.glassdoor.com/Salaries/mutual-fund-analyst-salary-SRCH_KO0,19.htm. Equity portfolio managers with more than 10 years of experience had average salaries of $500,000 to $600,000. http://www.wallstreetoasis.com/forums/how-much-do-equity-portfolio-managers-make.

[84] To be sure, analysts could threaten managers with issuing a negative report that would induce fund portfolio managers to sell the firm's stock. But it is doubtful that such threats could induce a firm to adopt a value-reducing strategy. If a stock sale depresses the stock price and the negative report is not warranted by fundamental factors, the fund would lose value and the analyst would look foolish. And since the anticompetitive strategy the CCO wants to induce is *value-reducing*, a firm's refusal to execute it should raise rather than lower its stock price. Moreover, analysts rely on good relations with management to obtain clarifications and get their questions answered. Antagonizing management is generally not conducive to their career prospects.

would be unusual, though, and almost certainly raise eyebrows.[85] Voting officials normally discuss matters of compensation structure and corporate governance—issues on which they regularly have to vote—or broad issues which require little firm-specific knowledge, like whether the board has an executive succession plan or risk-management controls, and not micro strategies like route-level pricing.[86]

Alternatively, top-level managers of the advisor could get involved in the transmission and inducement process. Top managers of the advisor would in principle have the strongest incentives to maximize the overall profitability of the advisor (rather than fund-level returns). Top advisor managers could arrange private meetings with senior firm executives, with or without analysts present, where they would convey their thoughts on how the firm should be managed.[87] Top managers of an advisor would more likely be viewed as peers by senior firm executives and may have some supervisory authority over voting officials and fund portfolio managers. As a result, they have more heft than analysts.

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[85] *See* Dorothy S. Lund, *The Case Against Passive Shareholder Voting*, 43 J. CORP. L. 493, 519 (2018) ("active fund analysts, not members of corporate governance teams, are the primary drivers of informal meetings and interactions with management").

[86] *See, e.g.*, VANGUARD GROUP, INC., INVESTMENT STEWARDSHIP: 2017 ANNUAL REPORT 7, http://about.vanguard.com/investment-stewardship/annual-report.pdf.

[87] McCahery et al. report the results of a survey of institutional investors, indicating 63% of respondents had discussions with top management in the prior five years. Joseph A. McCahery, Zacharias Sautner & Laura T. Starks, *Behind the Scenes: The Corporate Governance Preferences of Institutional Investors*, 71 J. FIN. 2905, 2912 (2016). However, only 21% of the respondents were from mutual funds. *Id.* at 2910. Even setting aside the issue of whether top advisor managers would need to be present, public earnings calls are for multiple reasons an unlikely vehicle for a fund to induce a firm to pursue an anticompetitive strategy: other analysts who work for NCOs may voice opposition; public earnings calls are recorded and transcribed, leaving a record of past statements by any participant available to any other shareholder, reporter, or investigator whose suspicions are aroused, participants in calls can only talk if called on by management to ask a question, a format designed to have the company explain provide explanations to investors, not to have investors provide input on company strategy; and mutual fund analysts' active participation in these calls is so uncommon such that a high level of involvement would be likely to raise suspicion. Michael Jung, M.H. Franco Wong & X. Frank Zhang, *Buy-Side Analysts and Earnings Calls*, 40 J. ACCOUNTING RES. 1, 37–38 (2017).

But even if top advisor managers are involved, they would also need analysts to monitor whether firm executives implement the micro strategy they advanced and voting officials (or fund portfolio managers) to take actions if they do not. Indeed, failure by firm executives to heed the advanced strategy should be common. After all, the strategy favored by one CCO not only involves lower profits for the firm—which firm executives may resent—but also differs from the strategies favored by other CCOs who hold different stakes in competing firms and from those favored by NCOs.

Effective implementation of a micro strategy would thus involve several different branches within the investment advisor—top advisor managers, analysts, voting officials and perhaps fund portfolio managers—and several management layers in firms, from senior management down to those, in the airline industry, making route-level pricing and capacity decisions.

In addition, implementation would make some officials at both the investment advisor and at the firm unhappy. Within the investment advisor, fund portfolio managers may be unhappy about the pursuit of a strategy that lowers the value of their fund's portfolio and voting officials about the intrusion by top advisor managers. Within the firm, executives may be unhappy about being pressured to pursue a strategy that lowers firm value. And among the firm's other owners, NCOs and other CCOs may be unhappy about the firm not pursuing their desired strategy.

C. Passive Micro Mechanisms: Selective Omission

In the example of an active micro strategy discussed in the preceding Section, Bluebird (the investor in Airlines A and B) advocated the suppression of competition on Route AB, promotion of competition on Route AC, and cost reduction. The first action reduced the value of Airline A; the latter two actions increased the value of Airline A; all three increased the value of Bluebird's portfolio.

An alternative micro strategy is for Bluebird to press only for actions that increase the value of *both* Airline A *and* its portfolio holdings, while "letting sleeping dogs lie" as to actions where the two conflict. For example, Bluebird could actively promote competition on Route AC and cost reduction, while remaining silent about Route AB. Such selective omission is, in effect, a passive micro mechanism. The two actions of Bluebird—promoting competition on Route AC and cost reduction—match those that an NCO would take. CCOs engaged in selective omission generate an anticompetitive effect because they selectively fail to push—remain passive as to—certain firm value-increasing actions that would be procompetitive, rather than (as in an active micro mechanism) because they actively push the firm to implement value-decreasing measures that are anticompetitive. It is only their failure to push for value-increasing procompetitive actions that is a source of conflict between a CCO and an NCO.

Compared to active micro strategies, the selective omission strategy has a significant benefit: it does not entail affirmative promotion of a strategy that reduces firm value. While generation of a selective omission strategy would require similar effort to generation of the active micro strategies described before, transmission and inducement would be simpler. A CCO could rely on the persuasive force of its arguments, rather than on explicit or implicit

threats of consequences, as to strategies—all firm value increasing—it actively favors and, as to these strategies, would find common cause with most other shareholders. It could thus advocate these strategies openly; convey them to lower-level executives; and execute them without involving top advisor managers or risking managerial resentment and retaliation.

Unlike the purely passive macro mechanisms discussed in Section I.C, selective omission could account for the results found by AST. Assume that firms, but for shareholder pressure, would sometimes compete overly aggressively and sometimes compete insufficiently. Compare the differences between NCOs, CCOs and DOs across these two scenarios. Compared to NCOs, CCOs would tend to push less for aggressive competition where more aggressive competition would increase firm value (because of its effect on the value of competitors in which the CCO has a stake); compared to DOs, CCOs would push, along with NCOs, for less competition where aggressive competition would reduce firm value. (See Table 4.) The average effects of NCO, CCO and DO ownership on different firms (or different product decisions, such as pricing on a particular route) would roughly align with the effects of NCO, CCO and DO ownership on MHHIΔ: a move from DO to CCO ownership increases MHHIΔ and, on average, increases prices (by increasing pressure to raise prices on routes where less aggressive competition increases firm value); a move from NCO to CCO ownership also increases MHHIΔ and, on average, also increases prices (by reducing pressure to lower prices on routes where more aggressive competition increases firm value).[88]

[88] A move from NCO to DO ownership increases MHHIΔ and has an indeterminate effect on prices. Still, if CCOs effectively pursue selective omission, an increase in route-level MHHIΔ should be correlated with an increase in route-level prices. However, a more direct test of selective omission would include separate variables for CCO and NCO ownership.

Table 4: Comparison of NCOs, CCOs and DOs under Selective Omission

Increase firm value by:	Advocate?		
	NCO	CCO	DO
Less aggressive competition/higher price	Yes	Yes	
More aggressive competition/lower price	Yes		

D. Detection

The various mechanisms that we have discussed differ in the likelihood that they would generate direct evidence of their use that would come to light by its own force. Generally speaking, the likelihood that such direct evidence would emerge is a function of three factors: the degree of observable activity; the number of people who know that the mechanism is used; and the incentive of those who do to stay quiet.

The mechanisms least likely to cause the emergence of direct evidence are passive macro mechanisms. Passive macro mechanisms entail no communication between the CCO and the firm and no specific act that has an anticompetitive effect. While their generation and implementation require participation of several personnel within the CCO, not all of them need to be aware of the purpose of the mechanism.

Next are active macro mechanisms. Like passive macro mechanisms, many active ones do not require any communication with the firm. But active macro mechanisms involve specific acts and their use may generate more questions within the CCO as to why some portfolio companies are treated differently than others.[89]

[89] The likelihood of detection also depends on whether a CCO has established voting guidelines that presumptively determine its votes on certain recurring issues and has conflict of interest policies that subject votes that deviate from these guidelines to special scrutiny. For example, at T. Rowe Price,

Selective omission tends to require an even larger number of people within the CCO to develop the strategy. But although it involves communications between the CCO and the firm, the firm may not be fully aware of the underlying strategy and would not have tangible evidence of its use.

Evidence of the use of active micro mechanisms is most likely to emerge on its own. These mechanisms require a large set of people within the CCO who participate in the generation of, transmission of, and inducement to observe the micro strategy. In addition, several managerial layers within the targeted firms would be involved in deciding to heed the CCO and implement the micro strategy. The fact that of some of those in the know—firm managers pressured to implement a value-reducing strategy, voting officials, as well as, possibly, fund portfolio managers and other firm shareholders—may be dissatisfied further increases the likelihood the evidence of use becomes public.

The likelihood that direct evidence will become known bears on the assessment of whether a mechanism is actually in use. From a Bayesian perspective, one starts with some prior probability based on (among other things) theoretical arguments that CCOs have an interest in increasing their portfolio values, and information regarding the effectiveness and

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certain index funds are not permitted to cast votes inconsistent with its guidelines (and must abstain on matters not governed by guidelines). At its other funds, votes inconsistent with voting guidelines must be approved by its proxy committee. *See* T. Rowe Price, Proxy Voting Guidelines, http://www3.troweprice.com/usis/content/trowecorp/en/utility/policies/_jcr_content/maincontent/polices_row_1/para-mid/thiscontent/pdf_link/pdffile. At State Street, the Asset Stewardship team has the sole discretion to decide on votes, may not disclose any voting decision to individuals not affiliated with the voting process prior to the meeting dates, and must report any votes in deviation from the guidelines to the Proxy Review Committee on a quarterly basis. *See* State Street Global Advisors, 20188SSGA Conflict Mitigation Guidelines (Mar. 16, 2018), http://www.ssga.com/our-insights/viewpoints/2018-ssga-conflict-mitigation-guidelines.html. Such guidelines and policies make it harder for an investment advisor to execute any macro mechanism involving voting unless a larger number of advisor officials are aware of and actively participate in the execution of the mechanism.

feasibility of various mechanisms. Empirical studies such as AST prompt an updating of this prior probability. To the extent that certain mechanisms as well as other factors could lead to the results that AST found, the posterior probability *conditional on the result found* is higher than the prior probability. But lack of direct evidence of the use of the mechanism leads to a further updating. To the extent that one would have expected such evidence to have emerged, the posterior probability *conditional on such evidence of its use not having emerged* is lower than the prior one.

To us, the absence of any direct evidence of the use of active micro strategies where the direct evidence should be plentiful and easy to obtain casts significant doubt on whether these strategies are used.

E. Firm Value-Increasing Mechanisms

In our discussion in this Part, we have so far not explicitly addressed the effectiveness and feasibility of firm value-increasing mechanisms. As we already explained in Part I, firm value-increasing mechanisms entail no conflict between CCOs and NCOs and are thus not tested by studies where the explanatory variable is MHHIΔ—a variable that is premised upon the presence of such conflicts.

But the issues with firm value-increasing mechanisms transcend the present lack of empirical evidence. The larger issue is that there is no evident connection between *common concentrated* ownership and the use of such a mechanism.

The underlying basis of the literature presenting CCOs as a source of anticompetitive effects is the premise that common concentrated ownership affects the firm's objective

function.[90] But to induce a firm to pursue a value increasing strategy, neither common ownership nor concentrated ownership is needed. Even if management on its own fails to come up with such a strategy, a *non*-common large shareholder can as easily point management on this course as a CCO. For that matter, so can a non-shareholder. A holder of options, a holder of stock in a competitor, or a consultant could do so as well. Neither the originators of the theoretical literature,[91] nor the leading empirical scholars,[92] nor to our knowledge anyone else has proposed a persuasive theory that addresses, *as to value-increasing strategies*, why firms on their own do not pursue such strategies and why institutional CCOs are superior to NCOs in inducing managers to pursue such a strategy.[93] Until such time as either a persuasive theory or empirical evidence is developed, there is no point in treating an increased tendency to pursue anticompetitive firm value-increasing strategies as a phenomenon linked to CCOs.

[90] *See supra* note 45.

[91] Bresnahan, Salop, and O'Brien.

[92] For example, the authors of AST, ARS, or AEGS.

[93] Arguably, although both a CCO and an NCO have *incentives* to discourage value-decreasing competition, a CCO might conceivably have certain advantages in its *ability* to do so. Some forms of reduced competition require some degree of "coordination" with—or a specific competitive response by—competing firms. Increasing one's price may, say, be value increasing if the competitor reacts by increasing its own price, but not if the competitor increases its capacity in response; or abiding by cartel rules may be profit-maximizing if defections are detected and penalized, but not if they are not. A CCO's relationship with multiple competitors might leave it well positioned to facilitate such "coordination" or to detect defections. *See* Menesh Patel, *Common Ownership, Institutional Investors, and Antitrust*, ANTITRUST L.J. (forthcoming 2018) (suggesting that CCOs may, by virtue of their ownership stake, have information about firm strategies that enable it to detect deviations for a collusive agreement). But institutional investors that are CCOs generally do not enjoy access to nonpublic information at a scale that would give them a superior ability to monitor the competitive response or detect defections. Moreover, even if a CCO detected cheating, the CCO may be reluctant to share this knowledge with other members of the cartel because this could lead to a break-down of the cartel.

III. The Economic Interests of Investment Advisors

So far, we have assumed—alongside with literature in this field—that the objective of CCOs is to raise portfolio value. But as we have indicated in Part II, the archetypal CCO, the investment advisor, has incentives quite unlike those of an individual who holds the ownership stakes. In this Part, we will elaborate on this argument. As we will show, it would not be in the financial interest of investment advisors to pursue many of the proposed mechanisms.

A. How (Much) Do Investment Advisors Benefit?

Although investment advisors have been treated as common concentrated "owners" in the literature, it bears repeating that they are not, in fact, the owners of the shares attributed to them. They lack an ownership interest both legally and economically.

The reason why investment advisors are treated as owners in the literature is that they have investment authority over the shares, which makes them "beneficial owners" under the expansive definition of the term for purposes of Section 13 of the Securities Exchange Act and requires them to list these shares when filing a Form 13F. The true legal title of the shares, however, rests with the various mutual funds and other clients advised by the investment advisor. And the economic interest in these shares is held by the ultimate economic beneficiaries—in the case of mutual funds, by the mutual fund shareholders.

If an individual shareholder manages to raise the value of her portfolio securities by $1 billion, whether by inducing firms to adopt an anticompetitive strategy or through some other means, she would be $1 billion richer. But if an investment advisor manages to raise the value

of its portfolio securities by $1 billion, the value of the investment advisor does not increase by $1 billion. Not even close.[94]

To be sure, an investment advisor has *some* incentives to raise the value of the securities for which it acts as an advisor. Most directly, in the case of advised mutual funds, the advisor's annual fee is a percentage of the value of the assets under management. Hence, as the value of the assets under management grows, so does the advisor's fee.

But the applicable percentage is low. For equity index funds, the asset-weighted average fee in 2016 was 9 basis points.[95] For actively managed equity funds, it was 82 basis points.[96] Even assuming that the advisor expects to earn these fees for multiple years,[97] the advisor has a much smaller interest in increasing the value of the assets than an individual owner would have.

These lower incentives are further diluted because investment advisors are likely to bear at least some of the cost of anticompetitive conduct through their ownership of suppliers and customers.[98] Even if reducing capacity and raising prices raises *industry* profits, it is likely to

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[94] Corporate governance scholars have long noted the limited incentives of mutual fund managers. *See, e.g.*, Marcel Kahan & Edward Rock, *Hedge Funds in Corporate Governance and Corporate Control*, 155 U. PA. L. REV. 1021, 1050–54 (2007); others have noted that these reduced incentives apply to the common ownership context. *See* Rock & Rubinfeld, *supra* note 9; Lucian A. Bebchuk, Alma Cohen & Scott Hirst, *The Agency Problems of Institutional Investors*, 31 J. ECON. PERSP. 89 (2017).

[95] INVESTMENT COMPANY INSTITUTE, 2017 INVESTMENT COMPANY FACTBOOK 93, http://www.ici.org/pdf/2017_factbook.pdf.

[96] *Id.* at 96.

[97] The number of years an advisor would earn fees would depend on the remaining period of time mutual fund shareholders and other clients keep their assets with an advisor before they withdraw it.

[98] *See, e.g.*, AST CPI, *supra* note 48, at 15 (acknowledging this critique); Jonathan B. Baker, *Overlapping Financial Investor Ownership, Market Power, and Antitrust Enforcement: My Qualified Agreement with Professor Elhauge*, 129 HARV. L. REV. F. 212, 225 (2016); Thomas A. Lambert & Michael E. Sykuta, *The Case for Doing Nothing About Institutional Investors' Common Ownership of Small Stakes in Competing*

have some adverse effects on suppliers and customers. Large investment advisors—and index fund advisors in particular—are almost certain to own shares in some suppliers and customers and thus bear a portion of these costs. To some extent, at least, they therefore also bear the costs of anticompetitive conduct.

The issue with fees is not only that advisors receive only a small fraction of any increase in their portfolio value. Increasing overall portfolio value may even *reduce* their fees. The reason is that different funds or clients pay different percentage fees to the advisor.[99] Increasing the value of stock held in low-fee paying funds at the expense of the value of stock held in high-fee paying funds can reduce overall fees even if it increases overall portfolio value. This problem is particularly acute for investment advisors—such as Blackrock—with large assets under management in both low-fee index funds and much higher-fee active funds.[100] Active and index funds run by the same advisor are not just likely to differ in fees, they are also likely to differ greatly in the stocks held by these funds. While an index fund should hold similar percentages in all companies in an industry that are in the index, holdings by active funds are likely to be concentrated in a subset of such companies.

To illustrate these points, consider Primecap, one of the principal CCOs of airline stock according to AST. At the end of 2016, Primecap held, among other airline stock, 5.2% of the

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Firms 21 (Univ. of Missouri Sch. of Law Legal Studies Research Paper No. 2018-21, 2018), http://ssrn.com/abstract=3173787.

[99] Lambert & Sykuta, *supra* note 98, at 21 (noting that different funds charge different fees).

[100] According to Blackrock's 10-K for 2017, assets under management include $311 billion in actively managed equity and $3,060 billion in ETF and non-ETF indexed equity. Blackrock, Inc., Annual Report 40 (Form 10-K) (Feb. 28, 2018), http://www.sec.gov/Archives/edgar/data/1364742/000156459018003744/blk-10k_20171231.htm. Fees from actively managed equity (including performance fees) totaled $1.8 billion, while fees from ETFs and non-ETF indexed equity amounted to $3.9 billion. Fees as a percentage of assets under management are thus 0.58% for actively managed equity and 0.13% for ETF and non-ETF indexed equity.

stock of Alaska Air and 6.3% of the stock of United Continental, with a combined value of $2 billion. Primecap acts as an advisor to the lower-fee Vanguard Primecap fund[101] and the higher-fee Primecap Odyssey funds as well as for other clients,[102] with its mutual funds accounting for 67% of the holdings in these two airlines.[103] Because of its joint holdings in Alaska Air and United Continental, Primecap could increase its portfolio value by $5 million if it induced United to pursue a strategy that reduced the value of United by $500 million and increased Alaska Air's value by $700 million.[104] But because the lower-fee Vanguard Primecap fund holds most of the Alaska Air stock but only about half of the United stock,[105] Primecap's annual fees adjusted for the fund holdings would actually *decline* by $10,000.[106] Indeed, if Primecap had the opposite opportunity—reduce Alaska Air's value by $700 million to increase United's value by $500 million—it would reduce portfolio value yet increase its fees. And even if Primecap charged the

[101] The Vanguard Primecap fund charges annual fees of 0.33% to 0.39%. The calculations assume that Primecap earns fees of 0.36% on assets in this fund.

[102] The Odyssey funds charge fees of 0.64% to 0.69%. The calculations assume that Primecap earns fees of 0.65% on assets in this fund.

[103] Primecap's 13F also includes shares that are in neither of these funds and we assume its advisory fees on these shares are equal to the fees it earns on the Odyssey funds.

[104] The increase in Alaska Air's value would increase Primecap's portfolio value by $36.4 million (5.2% of $700 million); the decrease in United's value would decrease Primecap's portfolio value by $31.5 million (6.3% of $500 million).

[105] The Vanguard Primecap Fund accounted 86.2% of Primecap's 13F holdings in Alaska Air but only 53.7% of the holdings in United.

[106] The change in Vanguard Primecap's value is (86.2%)($36.4 million) + (53.7%)(-$31.5 million) = $14.46 million. The change in the value of the Odyssey funds and other assets is (13.8%)($36.4 million) + (46.3%)(-$31.5 million) = -$9.56 million. The increase in fees from Vanguard Primecap is 0.36% of $14.46 million), or approximately $52,000. The decrease in fees from Odyssey funds and all other assets is 0.65% of $9.56 million, or approximately $62,000. The net effect on fees is therefore approximately -$10,000.

same fee on all its funds, its annual fees (based on its average fund fee) would increase by only $25,000.[107]

Mutual funds also have incentives to improve performance in order to generate net inflows. But empirical evidence has shown that net inflows respond to relative performance, not absolute performance.[108] As such, attracting net inflows would not generate significant incentives for index funds, which are designed to neither underperform nor outperform the index benchmark. And for nonindex funds, the impetus to improve relative performance is associated with incentives quite distinct from maximizing portfolio values, and quite unrelated to MHHIΔ as conventionally measured.

Relative fund performance is improved if (and to the extent that) stocks in the company in which a fund is *overweight* relative to the benchmark rise and stock in which a fund is *underweight* drop.[109] To illustrate, reconsider one of the airline examples from Section I.A. Three NCOs each own 10% in one of the airlines, and Whiterock owns 10% of each airline. MHHIΔ for each route is 2500.[110] Now assume that, for each of the NCOs and for Whiterock, the benchmark would have them hold, given their size, 6.67% of each airline, such that each NCO is overweight in its airline and underweight in the two others, and Whiterock is overweight in all three airlines. Table 5 reports the degree to which each investor is over- or underweight in each airline.

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[107] This calculation assumes that Primecap earns fees of 0.52% on all its assets. 0.52% of $4.9 million is approximately $25,000.

[108] *See, e.g.*, Brad M. Barber, Xing Huang & Terrance Odean, *Which Factors Matter to Investors: Evidence from Mutual Fund Flows*, 29 REV. FIN. STUD. 2600 (2016).

[109] *See, e.g.*, Kahan & Rock, *supra* note 94.

[110] This calculation is reported in Table 3, third column, and also reproduced in Table 8 *infra*.

Table 5. Holdings of NCOs and Whiterock Relative to Benchmark

	Holdings and *over/underweight*		
	Airline A	Airline B	Airline C
Benchmark	6.67%	6.67%	6.67%
NCO "A"	10% *+3.33%*	0% *-6.67%*	0% *-6.67%*
NCO "B"	0% *-6.67%*	10% *+3.33%*	0% *-6.67%*
NCO "C"	0% *-6.67%*	0% *-6.67%*	10% *+3.33%*
Whiterock	10% *+3.33%*	10% *+3.33%*	10% *+3.33%*

Table 6 recalculates the MHHIΔ where the economic stake of each investor is based *solely* on the relative performance incentives—where being overweight is equivalent to a long position to the extent a fund is overweight and being underweight is equivalent to holding a short position. This calculation is made for each market in which the firms interact. In our example, for MHHI calculations that include NCO "A," the MHHIΔ is calculated assuming that NCO "A" has a control share of 10% in Airline A and 0% in Airlines B and C, corresponding to its actual ownership stake, and an economic stake of 3.33% in Airline A and 6.67% short positions in Airlines B and C, corresponding to its relative performance incentives. As Table 6 shows, on each of the three routes, MHHIΔ is -2500.[111] MHHI with such an ownership structure now has the opposite implication—it *reduces* the effective HHI, from 5000 to 2500, rather than

[111] This calculation assigns control weights based on absolute ownership, just as with conventional MHHIΔ. Ownership share β_{ij} is not absolute ownership but ownership *relative to the benchmark*—that is, the degree to which investor *i* is overweight or underweight in firm *j*. To illustrate, for Route AB, MHHIΔ is the sum of two terms: the extent to which A maximizes B profits, and the extent to which B maximizes A's profits. The first of these is the product of market shares times this expression:

$$\frac{\gamma_{[NCOA]A}\beta_{[NCOA]B} + \gamma_{[W]A}\beta_{[W]B}}{\gamma_{[NCOA]A}\beta_{[NCOA]A} + \gamma_{[W]A}\beta_{[W]A}} = \frac{10\%(3.33\%) + 10\%(-6.67\%)}{10\%(3.33\%) + 10\%(3.33\%)} = -1/2.$$

The second term is symmetric and also equal to -1/2. Thus, MHHIΔ = 2(50)(50)(-1/2) = -2500.

increasing it. As this example illustrates, whatever marginal incentive contribution may be generated by benefits from enhancing relative performance, there is no reason to believe that they are correlated with MHHIΔ as calculated in the common-ownership literature.

Table 6. Adjusting MHHIΔ for Relative Performance

	HHI	MHHI and *Conventional MHHIΔ*	MHHI and *Relative Performance MHHIΔ*
Route AB	5000	7500 *2500*	2500 *-2500*
Route AC	5000	7500 *2500*	2500 *-2500*
Route BC	5000	7500 *2500*	2500 *-2500*

On the whole, therefore, the amount of benefits that investment advisors derive from increasing portfolio value are only a small fraction of the amount by which portfolio value increased and, for investment advisors that charge disparate fees on disparate investment vehicles, not well proxied by changes in overall aggregate portfolio values. We should thus expect them to take steps to increase portfolio values only if the costs of these steps are below the benefits they obtain.

B. The Costs to Advisors

The costs to advisors of employing the mechanisms we have discussed above go beyond the costs of generating, evaluating and implementing a strategy that leads to anticompetitive results. They include, depending on the specific mechanism involved, significant reputational and legal risks if use of the mechanism is detected.

The institutional investors likely to have the largest common ownership stakes in any industry will be—and the institutional investors that AST find as having the largest common ownership stakes in the airline industry are—some of the largest and best-known investment advisory companies, such as Vanguard, Blackrock, Fidelity, and T. Rowe Price. The assets under management by these companies run in the trillions of dollars; their products are marketed to retail and institutional investors including defined benefit and defined contribution pension plans, charities, endowments, and central banks;[112] and their business operations are highly regulated.[113]

From a strategic perspective, these companies do not want to generate controversy. Controversy and scandals are prone to attract attention from regulators and to generate withdrawals from investors. Even a small difference in the growth rate of assets under management, say 4% compared to 5%, would mean $50 billion fewer assets under management for Vanguard and $21 billion fewer for Fidelity. In fact, mutual fund companies have been largely successful in staying on everybody's good side and the industry as whole, and the largest players in particular, enjoy a squeaky-clean image.

Any suggestion that an investment advisor as a whole—not just some obscure analyst or a portfolio manager of an individual fund—had a policy of encouraging firms to pursue an anticompetitive strategy could be damaging. An article in the *Wall Street Journal* detailing

[112] Blackrock, Inc. (Form 10-K), *supra* note 100, at 1.

[113] *Id.* at 10 ("virtually all aspects of [its] business operations are subject to various laws and regulations around the world," including the Investment Company Act, the Securities and Exchange Act, ERISA, and a multitude of other U.S., European and Asian-Pacific regulations); *id.* at 18–27 (containing three-and-a-half page "Legal and Regulatory Risks" disclosure, as long as the four risk sections on Market and Competition Risk, Risks Related to Investment Performance, Risks Related to Human Capital, and Risks Related to Key Third Party Relationships combined).

internal deliberations within an investment advisor on how best to get firms to adopt such a strategy would be highly detrimental. And a criminal investigation, let alone an indictment, could be devastating.

Legal risks to advisors arise from several sources: the possibility that the mechanism engenders a violation of the antitrust laws for the portfolio company or, more worryingly, implicates the advisor itself in a violation; the possibility that the mechanism involves a breach of fiduciary duty by the advisor to the advised funds and clients; and the possibility that the mechanism entails a violation of the federal securities laws.

A CCO pursuing an active micro strategy—for example, pressing several airlines to avoid competition with one another—might well face antitrust liability. The interactions between the CCO and each portfolio firm could be regarded as vertical agreements in restraint of trade or as facilitation of a cartel among the firms, with the CCO serving as the cartel's ringmaster. Even if the firms do not communicate among themselves, the CCO's involvement could expose them to liability on a "hub-and-spoke-and-rim" theory of liability, in which an agreement among the firms ("along the rim") is inferred from the interactions between the CCO (the hub) and each firm.[114] The exact scope of inferring a horizontal agreement is not well settled, but a common formulation is that liability attaches when the hub makes an offer to each firm, which is accepted with the knowledge that (and perhaps in reliance upon the fact that) the other firms have accepted as well. Moreover, the hub is regarded as an integral (and joint and severally

[114] *See, e.g.*, Toys "R" Us v. FTC, 221 F.3d 928, 932–36 (7th Cir. 2000). *See also* Interstate Circuit v. United States, 306 U.S. 208 (1939) (dicta).

liable) part of the resulting conspiracy, despite its vertical relationship to the other conspirators.[115]

Furthermore, investment advisors face potential legal risks for breach of fiduciary duty.[116] Investment advisors provide services to mutual funds, separate legal entities, and other clients that own the shares of portfolio companies. The advisor owes independent fiduciary duties to each fund and each other client.[117] If an advisor votes a client's shares in a manner that increases the advisor's overall portfolio value, but reduces the client's portfolio, or otherwise uses the leverage of being in control of a client's shares to induce a firm to adopt a strategy that is not in the best interest of the client, it violates its fiduciary duties.

Different mutual funds in the same family and advised by the same advisor, and different other clients, will own different stakes in competing firms. Any strategy that leads to a reduction in the value of one portfolio company for the benefit of other companies in the advisor's portfolio is liable not to be in the interest of some of the advisor's clients.[118] To return to our example from Section III.A, if Primecap induced United to pursue a strategy that reduced the value of United by $500 million and increased Alaska Air's value by $700 million, its overall

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[115] *See, e.g.*, United States v. Apple, Inc., 791 F.3d 290, 321–25 (2d Cir. 2015).

[116] *Cf.* O'Brien & Waehrer, *supra* note 9, at 6, 33–34 (discussing fiduciary duty of managers, rather than advisors).

[117] *See, e.g.*, John Morley, Too Big to Be Activist [9] (2018) (unpublished manuscript) ("each client is a separate locus of fiduciary duties").

[118] To be sure, a client with shares in many oligopolistic industries and a long-term horizon may, across stocks and over time, come out ahead if the advisor used its control to maximize overall portfolio, rather than client portfolio, value. Such a client may thus consent to such use. Without a client's consent, however, an advisor could not on its own decide to act for the benefit of some client portfolios and against the interest of others on the hope that, in the end, everyone will come out ahead. *See also* Vanguard Proxy Voting Guidelines, http://pcg.law.harvard.edu/wp-content/uploads/2016/09/5-Vanguards-proxy-voting-guidelines-_-Vanguard.pdf (stating that Vanguard's Proxy Oversight Committee is charged to vote each fund's shares in the best interest of that fund's shareholders).

portfolio value would increase by about $5 million, the portfolio value of the Vanguard Primecap fund would increase by $14.5 million, but the value of the assets held in the Primecap Odyssey funds and of other assets held outside the Vanguard Primecap fund would decline by $9.6 million.[119]

From the perspective of fiduciary duty, the safest solution is for the voting group to base its recommendations on what vote maximizes the value of a portfolio company. In the event that a portfolio fund manager believes that a different vote is in the interest of her fund, the fund could depart from the recommendations. Indeed, mutual funds in the same family sometimes vote differently. As long as an advisor does not affirmatively act in a manner that reduces the value of a portfolio company, it faces no serious risk of liability for breach of fiduciary duties. Thus, passive macro mechanisms and selective omission—which merely involve a failure to take actions that would increase the value of a portfolio company—do not create material fiduciary duty risks.

Finally, investment advisors would face some legal risks under the securities laws. The principal risk arises under Rule 10b-5, which forms the basis for the prohibition of insider trading.[120] If an advisor obtains material nonpublic information from a firm manager about her company and that manager breaches her fiduciary duties in conveying that information, the advisor must abstain from trading stock in that company until the information is disclosed.

Active micro mechanisms create the most 10b-5 concerns. At first blush, there might seem to be no issue. The CCO is trying to direct the firm, as opposed to gleaning material

[119] As calculated *supra* note 106, the value of Vanguard Primecap would increase by $14.46 million, while the value of assets in the Primecap Odyssey funds and other assets would decline by $9.56 million.

[120] Chiarella v. United States, 445 U.S. 222 (1980) (basing prohibition of insider trading on violation of Rule 10b-5).

nonpublic information from it. However, matters are not so simple. Active micro mechanisms would likely be implemented through private meetings; thus, any information learned would often be nonpublic. In such private meetings, firm managers may indicate that they will follow the strategy pushed by a CCO. If that strategy relates to a significant segment of the firm's operations, this information could be material. And since the firm manager would agree to a strategy that lowers firm value, and would presumably do so to avoid the adverse ramifications from refusing to agree, the manager would breach her fiduciary duties to the company and its shareholders. By contrast, mechanisms that involve no communications with firm managers, mechanisms where any communications take place in public settings, and communications where firm managers do not pursue an action that reduces firm value would not generate equivalent concerns.

To be sure, with respect to breaches of fiduciary duty and Rule 10b-5, the monetary liability even if a violation is established may be small. However, the associated reputational penalty may be much larger. Assume, for example, that, in the context of a governmental investigation or a civil lawsuit, an internal memo by Whiterock is discovered. The memo shows calculations of how a certain strategy by Airline A would lower its profits and raise profits for Airlines B and C and then concludes that Whiterock would benefit if Airline A pursued that strategy because its holdings in Airlines B and C would rise by more than its holdings in Airline A would decline. Whiterock may be able to settle a breach of fiduciary duty suit by clients who hold only stock in A for a small amount. But the reputational damages would be much higher.

Notably, any monetary liability or reputational penalty would be borne by the investment advisor, *not* by the advised mutual fund or other client that received the lion's share

of any increase in its portfolio value. The advised fund or other client would generally not be involved in the wrongdoing and have no particular reputational stake. The investment advisor would thus bear the full legal and reputational costs but would benefit only fractionally from an increase in portfolio values. As a result, the advisor should be reluctant to employ a mechanism that engenders significant costs if detected and a significant risk of detection.

The possibility that a mechanism, if detected, could result in legal liability or reputational harm affects not just the cost-benefit calculus. It also bears on the leverage a CCO has over firm management to induce it to pursue a firm value-reducing strategy. To the extent that firm management (or, for that matter, an NCO) is aware of the mechanism, it could threaten the CCO with publicly disclosing its use if a CCO retaliates against management for not observing the CCO-favored strategy. The CCO, as a result, would have more to lose than firm management. The only plausible mechanisms, therefore, are ones where either the firm management is not aware of its use, where detection would result in no legal liability of reputational harm, or where firm management has no incentives to disclose the use of the mechanism.

From a cost-benefit perspective, it is therefore unlikely that an advisor would want to employ active micro mechanisms. Active micro mechanisms generate the highest risks of material legal and reputational sanctions if detected and the highest risks of detection, both because the number of individuals needed to implement the mechanism is high and because some of these individuals would have incentives to disclose the use of the mechanism. Passive mechanisms and active macro mechanisms generate lower risks, but are also least likely to be effective. The only mechanism that is arguably both effective in raising portfolio values if it

remains undetected and that does not generate material legal or reputational risks to the advisor is selective omission.

IV. Implications

In this Part, we draw several implications from our analysis. First, we summarize the results of our evaluation of potential mechanisms, distinguishing those that are more or less supported by the available theory and evidence. Next, we explain the central importance of investor type to the analysis of CCOs. Then we identify a persistent gap in our empirical understanding of common ownership, namely direct evidence about the "who, where, when, and how" employed by COOs. Finally, we explain our bases for concluding that the case for radical reform has not been proved.

A. Assessing Mechanisms

In Parts I through III, we identified and then assessed a wide range of potential mechanisms linking CCOs to anticompetitive outcomes. Our assessment evaluated each mechanism according to four criteria: whether the mechanism is actually tested by the empirical evidence; whether the mechanism is effective; whether the mechanism is feasible; and whether the expected benefits to an institutional CCO from employing the mechanism are likely to exceed its expected costs.

We conclude that, as to most mechanisms, there is no strong theoretical basis for believing that institutional CCOs would want to employ them or else no significant evidence suggesting that they do employ them (or both). For example, macro mechanisms are not tested

and are mostly of doubtful effectiveness. Active micro mechanisms are difficult to execute and entail substantial legal and reputational risks.

However, our assessment is not uniformly negative. The mechanism that is most plausibly employed by a CCO is selective omission. Selective omission would appear to be potentially effective and feasible; would be consistent with the evidence in AST; and could conceivably generate benefits for institutional investors that exceed the legal and reputational risk. Our assessment of mechanisms is summarized in Table 7.

Table 7: Assessment of Mechanisms

Mechanism	**Tested?**	**Effective?**	**Feasible?**	**Risk?**
Firm value increasing	No			
Firm value decreasing:				
Passive macro	No	No (mostly)	Yes	None
Active macro	No	No (mostly)	Mixed	Low
Active micro	Yes	Maybe	Very difficult	High
Passive micro (selective omission)	Yes	Maybe	Yes (difficult)	Low

B. The Importance of Investor Type

Our analysis reveals a pervasive shortcoming in the analysis of CCOs: the failure to carefully distinguish among different types of owners. Our analysis shows the need to think more carefully about how incentives differ systematically by owner type and how investment advisors that mostly advise index funds differ from other institutional CCOs.

1. Owner Types

Owner types differ systematically in the benefits they would obtain from employing the mechanisms we have discussed and in the reputational costs of employing the mechanisms. Given the typical fee structure, investment advisors that manage predominantly index funds—Vanguard, State Street, and Blackrock—have lower incentives (relative to size) than investment advisors that manage predominantly nonindex funds. As large institutions subject to extensive regulation, mutual fund advisors in general, and Vanguard, State Street, and Blackrock in particular, may also face high costs if they are implicated in antitrust violations or other actions that generate adverse publicity. Actively managed funds would have relatively stronger incentives since they charge higher fees and can strategically allocate a greater portion of their assets to industries where pursuit of anticompetitive strategies may be profitable. Hedge funds, which charge much higher asset-based fees than even actively-managed mutual funds as well as steep performance-based fees and which have less to lose from adverse publicity, as well as individual investors, would have even stronger incentives than investment advisors for actively managed mutual funds. Even if some of the mechanisms we have discussed would be in the interest of CCOs who are hedge funds or individuals, and even if we had conclusive evidence that CCOs who are hedge funds or individuals employ a mechanism, that would shed little light on the issue of whether mutual funds do so as well.

Systematic differences in incentives to increase portfolio value between different types of owners also complicate any assessment of passivity mechanisms. Almost by definition, mutual fund advisors are more likely to be CCOs than individual investors and hedge funds; and among mutual fund advisors, index fund advisors are more likely to be industry-wide CCOs than

active funds. As a result, changes in MHHIΔ may be correlated with changes in the average incentives of shareholders to raise firm value.

Consider, for example, two industries, both duopolies, with mutual fund CCOs holding significant stakes in the duopolists in the first industry and hedge fund NCOs holding significant stakes in the duopolists in the second. Let us suppose that empirical evidence shows that managerial incentives are lower in the first industry than in the second—a finding corresponding roughly to the results in AEGS. The difference could be due to CCOs encouraging firm value-reducing anticompetitive strategies in order to maximize the value of their portfolio—for example, by failing to push for performance incentives. But the difference in managerial incentives could instead be due to the fact that the *mutual-fund* CCOs in the first industry have lower incentives to encourage firm value-increasing strategies than the *hedge-fund* NCOs in the second industry—that they are passive not because passivity benefits their portfolio but because they lack, compared to NCOs, incentives to take firm-value increasing actions. To distinguish among these explanations, one would need to compare two industries, one with mutual fund CCOs and another with *mutual fund* NCOs; that is, one would have to control for owner type. Such an examination has not yet been pursued.

2. The Special Case of Index Fund Advisors

Two of the largest investment advisors, prominently featured in AST's list of CCOs, manage predominantly index funds. State Street Global Advisors manages hardly any active domestic equity funds. Vanguard has a quantitative equity group that manages or co-manages

some active domestic equity funds, but the assets of these funds constitute a very small portion of Vanguard's total domestic equity assets under management.[121]

On the one hand, index funds are paradigmatic CCOs. They own, in equal proportions, all firms represented in the index. To the extent the index includes most of the relevant competitors, they benefit when industry profits rise. In the airline industry, for example, Alaska, United, Delta, American and Southwest are all in the S&P 500 index, and JetBlue is in the S&P Midcap index. While increased ownership shares by advisors of active funds, who may own some but not all competitors, may or may not raise MHHIΔ,[122] increased ownership shares by index funds is much more likely to have such an effect. Index fund growth would thus appear to be a major contributor to the observed increase in MHHIΔ.[123]

Moreover, index funds (absent a change in the index) do not change their relative portfolio composition. In theory, that leaves index funds better positioned to employ mechanisms that require longer time horizons, such as voting and passivity-based macro mechanisms.[124]

But advisors who predominantly manage index funds face particularly high challenges in employing micro mechanisms. The task of portfolio managers in index funds is to generate returns that match that index. Even more so than portfolio managers for active funds, they lack

[121] In addition, some funds bearing the Vanguard name, such as the Vanguard Primecap Fund, are advised by different investment advisors (e.g. Primecap Management). *See supra* Section III.A.

[122] *See supra* Section I.A.

[123] *See* AST, *supra* note 2.

[124] *See supra* Section II.A (discussing this difference).

the incentives and the expertise to design micro strategies.[125] And investment analysts focusing on particular firms or industries are not needed at index funds. A lack of in-house analysts makes generation of a micro strategy harder.

Transmission of the strategy may also be harder. When interacting with firm executives, analysts or their equivalent at Vanguard and State Street, who advise only the small actively-management business segment, would clearly not be viewed as representing the views of Vanguard or State Street as a whole. Top-level managers at State Street and Vanguard subscribe to an indexing culture. For them, to hold meetings with voting officials or senior firm executives to discuss issues like route-level pricing and capacity would be exceedingly odd. Indeed, based on their published information, it seems that index fund advisors in their dealings with portfolio companies focus on broad governance issues and do not get involved in business strategy.[126]

Finally, as to the assets held in index funds, the advisor lacks a credible threat of selling them. Thus, any leverage to induce observance of a micro strategy would need to derive solely from the voting power, and not from any investment power, held by these advisors. Without voice, however, it is difficult to see how voting power can be used to transmit and induce micro strategies.

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[125] *Cf.* Frank Partnoy, *Are Index Funds Evil?*, ATLANTIC MAG., Sept. 2017, http://www.theatlantic.com/magazine/archive/2017/09/are-index-funds-evil/534183 ("[Vanguard's] index-fund managers don't engage with companies about their businesses.").

[126] Vanguard, for example, held 954 engagement meetings worldwide during 2017. According to Vanguard, the most frequent topics discussed during these meetings are governance (58%), executive compensation (55%), board of directors (including gender diversity) (52%), risk oversight (14%), and "activism and contentious transactions" (16%). *See* VANGUARD GROUP, *supra* note 86, at 7.

On the whole, therefore, the set of potentially effective and feasible mechanisms available to Vanguard and State Street differs from the respective sets available to investment advisors that largely manage active funds (or that, like Blackrock, have an active fund business that is large in absolute size). In particular, index-fund advisors like Vanguard or State Street may have difficulty developing and executing a selective omission strategy. On the other hand, because of their longer investment horizon, they may be better equipped to execute macro strategies, such as disfavoring relative performance incentives and supporting management against activists who advocate more aggressive competition. Whether Vanguard and State Street pursue any of these strategies and whether they have a material anticompetitive impact merits further inquiry.[127]

C. The Ambiguous Welfare Effects of CCOs

Our analysis also demonstrates that the net welfare effects of CCOs are ambiguous. As we have discussed above, if CCOs have anticompetitive effects, it is likely that CCOs also have beneficial effects. To the extent that concentrated owners have the ability and the incentives to affect company behavior, they can be expected to induce procompetitive actions by firms, where such actions increase firm value and do not unduly threaten the CCO's other portfolio holdings. And these situations arise more often than is generally recognized, given that often

[127] *See also* Brav et al., supra note 30 (not finding evidence that index funds are less likely to support activists).

CCOs are invested in fewer than all the firms in a market, altering their incentives in a procompetitive direction.[128]

To illustrate these points, let us return once again to our airline example from Part I, and focus on a strategy of selective omission, which is in our view is the best supported mechanism. Consider three types of profitable action that Airline A might take, not all of which are available at a given moment: raise price on a particular route if the price is too low; lower price on a route if it is too high; and reduce marginal costs, thereby improving efficiency. Some of these profitable strategies raise social welfare, and others lower it. The price reductions and improved efficiency generally increase social welfare (and consumer welfare), while the price increases generally have the opposite effect. These strategies are summarized in Table 8.

Table 8: Actions that Increase Profits of Airline A

	Social welfare	Advocate?		
		NCO (A)	Bluebird (A, B)	Whiterock (A, B, C)
Raise price on Route AB	–	Yes	Yes	Yes
Raise price on Route AC	–	Yes	Yes	Yes
Raise price on Route ABC	–	Yes	Yes	Yes
Improve A's efficiency	+	Yes	Yes	Yes
Reduce price on Route AB	+	Yes		
Reduce price on Route AC	+	Yes	Yes	
Reduce price on Route ABC	+	Yes		

Consider how an NCO and Bluebird (a CCO), each of which has a 10% stake in Airline A, would try to use their influence over the airline. The NCO would favor any action that raises A's

[128] *See supra* Section I.A. In addition, concentrated ownership more generally can have positive social welfare effects. *See* Anton et al., *supra* note 30.

profits. Bluebird would favor some but not all profitable actions. It would favor profitable price increases and efficiency enhancements. However, it would tend not to favor a profitable price reduction on Route AB, at the expense of its holdings in Airline B, and would tend to stay passive rather than advocating such a price reduction.[129] Bluebird would happily support a price reduction on some other route, such as route AC, where it does not have a conflict of interest. These preferences are depicted in Table 8.[130]

The net welfare effect of Bluebird's ownership is ambiguous.[131] Bluebird's ownership would induce more profit-increasing price increases—a welfare loss—but on the other hand, support efficiency improvements and some (albeit not all) profitable price reductions, resulting in welfare gains.[132]

D. The Need for More—and Different—Evidence

The available evidence, particularly AST, deserves the significant attention it has received from us and others. Yet, the results do not establish which specific causal mechanism,

[129] Where there is a conflict, the net effect is ambiguous. The price drop increases Airline A's profits (which is good for Bluebird) but at the expense of Airline B's profits (which is bad for Bluebird), and it is unclear a priori which effect is larger. The same is true for Route ABC.

[130] Table 8 also describes the preferences of Whiterock, a CCO invested in all three airlines. Whiterock would (like Bluebird) favor profitable price increases and efficiency enhancements. Compared to Bluebird, Whiterock would be more likely to stay passive as to price reductions on a wider range of routes (for example, Routes AC and ABC), given its wider set of holdings.

[131] This conclusion assumes that multiple concentrated owners are more likely to induce change than a single advocate—that is, that Bluebird's advocacy adds something to the NCO's. Another possibility, though, is that it takes just a single concentrated owner to induce management to maximize profits. If so, then the selective acts and omissions of Bluebird and Whiterock would make no difference in the example, given the presence of an NCO who advocates the full range of profit-increasing actions, and the CCO has no effect at all.

[132] As for Whiterock, the same tradeoff exists, albeit tilted more negatively, given Whiterock's passivity on a wider range of procompetitive actions.

if any, links common concentrated ownership to anticompetitive outcomes and which investors employ such mechanisms. But confirming that such a link exists, and understanding what form it takes and how widespread it is, is crucial in order to determine whether any and what kind of response is appropriate. Moreover, without a good understanding of mechanism, a court is properly reluctant to generalize from empirical results about airlines and banking to other industries.[133]

The obvious next step, then, is to gather more evidence. There is an ongoing effort to do just that, in the form of studies assessing whether there exists a statistical link between certain ownership structures and anticompetitive outcomes. This work is valuable, and the first three parts of this paper provide guidance as to what kinds of additional statistical studies we think should be undertaken.

Beyond the statistical work, we urge a further focus. The goal should be to obtain *direct* evidence—the who, where, when and how—for the steps taken by CCOs that produce anticompetitive results, and the responsive steps taken by firms to implement them. The existence and nature of such evidence varies depending on the mechanism. Thus, we have also provided guidance about where to look for direct evidence for a specific causal mechanism.

Either type of study should be informed by a deeper understanding of the "who" question—that is, structure and function of large investment advisors. This point is obvious but bears emphasis because the empirical literature has failed to take account of important differences in the voting power of large investment advisors.

[133] *See* Baker, *supra* note 98, at 231 (making this point).

The AST article is illustrative. The authors provide a table listing the top holders of nine U.S. airlines. The entities most commonly featured as one of the top five holders, and hence the most logical candidates for the "who" responsible for results found by AST, are Blackrock (all nine), Vanguard (all nine), Primecap (five), Fidelity (four), and Berkshire Hathaway (four). Together, these five entities account for 31 of the 45 top-five holder entries; no other entity appears among the top-five more than twice.

Yet, there are reasons to doubt both that these entities accounted for the statistical results found by AST and that they actually employ mechanisms that produce anticompetitive results. One reason relates to an aspect of MHHIΔ that we did not emphasize in Part I. Share ownership enters the MHHIΔ formula twice—as the "control share" and as the "ownership share." High levels of MHHIΔ are generated as a CCO has a high control share in one competitor *and* a high ownership share in another competitor.[134] To calculate the MHHIΔ, AST count as "control share" only those shares over which an investor has sole or shared voting power.[135] But Vanguard, in its Form 13F, disclaims any voting power over more than 90% of its holdings.[136] Therefore, its holdings would only have a minimal effect on AST's MHHIΔ calculations. Likewise, Fidelity disclaimed voting power over 75% to 85% of the stock of the airlines, and Primecap disclaimed voting power over 60% to 85%. Measured by voting power,

[134] To see this, recall that MHHIΔ includes this term in the numerator: $\sum_i \gamma_{ij}\beta_{ik}$, where γ is the control fraction and β is the ownership fraction. This term increases in γ_{ij} (the control fraction of owner *i* in firm *j*) and β_{ik} (the ownership fraction of owner *i* in firm *k*).

[135] AST, *supra* note 2, at [11] ("[W]e calculate the control share . . . as the percentage of the sole and shared voting shares . . . held by shareholder *i*. Similarly, we calculate the ownership share . . . as the percentage of all shares (voting and non-voting) . . . held by shareholder *i*.")

[136] *See, e.g.*, Vanguard Group Inc., Report for the Quarter Ended December 31, 2013 (Form 13F) (Feb. 12, 2014) (claiming investment authority over 49,674,722 shares in Delta Airlines, but sole or shared voting authority over only 1,171,283 of these shares).

all of these holdings would drop out of the list of top-5 airline holders reported by AST and most would drop out of the top ten. And Berkshire Hathaway, though a large owner as of year-end 2016 (the source for AST's table), does not seem to have been an owner of airline stock in the 2001 to 2014 period of the AST study. As measured by AST, therefore, none of these four entities were important CCOs in the 2001 to 2014 period and changes in ownership by these entities probably made no material contribution to the regressions run by AST.

Blackrock thus looms large. It is a significant holder in all nine airlines, its merger with Barclays is the basis for AST's instrumental variable design, and it claims voting power over most of its shares. But Blackrock's incentives are most misspecified by AST. Because Blackrock has a majority of its assets in low-fee indexed portfolios but a significant minority in much higher-fee actively managed portfolios, portfolio value maximization for Blackrock as a whole is *not* approximately the same as fee revenue maximization. As a result, if CCOs try to induce anticompetitive actions in order to maximize *their own profits*, Blackrock's misspecified objective function would make it a poor candidate to generate the results found by AST. The "who" of the who, where, when and how remains as murky as ever.

E. The Unproven Case for Reform

As already noted, the literature thus far does not establish which specific causal mechanism, if any, links CCOs to higher prices or which investors employ such mechanisms. Given the absence of a clear mechanism as well as the unsettled state of the empirical literature, we consider the case for broad reform to be not proved. Moreover, we disagree with the view that mechanism identification can or ought to be simply dispensed with, or that

reform efforts or enforcement actions against institutional investors should simply charge ahead in the meantime.

Our analysis furnishes three bases for disagreement. First, as explained above, the welfare effects of CCOs are ambiguous. Second, investment advisors differ on multiple fronts that relate to the likelihood that they would use one of the strategies we discussed: the benefits they would obtain from raising portfolio value, the costs from exposure that they induce anticompetitive actions, their ability to generate micro mechanisms, their dependence on access to managers, and their portfolio turnover. These differences are a further reason for skepticism about reforms that fail to attend to these differences. It also bears note that these proposals go well beyond the results obtained by AST which, for example, states that the statistical link between MHHIΔ and higher prices is confined to common owners with low portfolio turnover.[137]

Third, ambitious reform is beset by several perverse consequences. For example, as noted in the Introduction, PSW propose that investors be limited to holding either no more than 1% of the stock of companies in specified oligopolistic industries or to holding the stock of only a single company in any such industry.[138] Institutional investors that manage only index funds could also opt for pure passivity—not casting any votes and abstaining from any meetings with executives.

Consider the implications of the proposal for large investment advisors like Blackrock, Vanguard, Fidelity, and T. Rowe Price whose holdings would go beyond the 1% limit. For

[137] AST, *supra* note 2.

[138] PSW, *supra* note 3; *see also* Scott Morton & Hovenkamp, *supra* note 3.

advisors to active funds, being confined to a single stock in an industry would be highly problematic. As we have explained, many advisors manage assets in different funds and for a large number of clients. But funds (and clients) would not agree as to what stock to pick. Fund investment choices are affected by the fund objectives—growth or value, large cap or small cap—and the views of the fund portfolio manager. Since active funds are marketed on the bases of these objectives and on the track records of fund portfolio managers, limiting a fund to a single stock in an industry would place it at a severe competitive disadvantage, compared to funds managed by smaller advisors that are not constrained by the 1% limit.

Moreover, even if all portfolio managers within an investment advisory complex could agree about what company to invest in, that choice would change over time. Switching from one stock to another (say from Delta to United) as firm fortunes and investor views change would be a logistical nightmare. Due to the 1% cap, the investment advisor might have to divest itself from a large portion of its Delta stock to reduce its industry holdings before it could buy a single share of United.[139] By the time the advisor was permitted to buy United stock, its stock price might no longer present an attractive investment opportunity. To avoid these constraints, clients would probably move assets from larger investment advisors to smaller ones, for which the 1% industry limit would not be binding.

[139] For example, according to AST, Blackrock held between 5.6% and 7.6% of the stock in each of the six largest U.S. airlines, suggesting holdings of about 6% of the industry. Assuming Blackrock wanted to maintain its overall exposure to airlines and held only Delta stock in an amount equal to 6% of the industry, it would have to hold about 23% of Delta's outstanding stock. If Blackrock then decided that that United would be a better investment than Delta, it would be forced to sell 19% of Delta stock to bring its industry holdings to less than 1% before it could acquire any shares of United. During the transition period, Blackrock's investments would be substantially underweight in airline stock overall, making it more difficult for investors to obtain the benefits of diversification.

Given the disadvantages, the PSW proposal would increase fragmentation among advisors.[140] Fragmentation would have several effects. For companies in the oligopolistic industries targeted by the proposal, fragmentation could lead to fewer anticompetitive results. However, this benefit only arises if CCOs employ an active mechanism. As we have explained, combining two CCOs into a larger one, or splitting a CCO in two, has no effect on anticompetitive effects achieved through passivity.[141] On the other hand, fragmentation would reduce the procompetitive benefits of common ownership, such as efficient management, with ambiguous net effects. Meanwhile, in *non-oligopolistic* industries, increased fragmentation is likely to have purely adverse effects, by reducing the power and incentives of institutional holders to induce managers to increase company value.[142] A final effect is on the fees paid by investors to advisors, which should increase due to the multiplication of fixed costs amidst the subdivision of advisors.

But even putting aside the issue of reform, investigating whether and how CCOs generate anticompetitive outcomes is valuable. Sunlight is an effective disinfectant. As we have shown, to the extent that a mechanism creates the risk of legal liability or reputational harm to an investment advisor, the advisor would want to use it only as long as the risk of detection is

[140] The fragmentation would affect both index funds and active funds. As to index funds, the most likely effect is to split off such funds from actively managed funds. This, albeit for different reasons, is how Fidelity handles its index funds: they are advised by Geode, the voting of their shares is determined by a different group than the one that determines the vote of shares in other Fidelity funds, and their assets are not included in Fidelity's 13F, 13D and 13G filings. For some advisors, stand-alone index funds may either already fall below the 1% limit; if not, they could either be broken apart further or opt for pure passivity.

[141] *See supra* Section I.C.

[142] If, as appears to be a necessary premise for reform proposals, CCOs increase portfolio value by inducing firms to adopt firm-value decreasing measures and by means that may violate antitrust laws and the CCOs' fiduciary obligations, they presumably also do so by inducing firms to increase firm value by enhancing the efficiency of their operations.

sufficiently low. The attention drawn by AST and others to a possible link have raised the risk of detection, which may on its own tend to eliminate the use of such a mechanism.

Conclusion

In this article, we have examined a wide range of mechanisms by which CCOs might cause anticompetitive outcomes. Some of them—notably, value-increasing mechanisms and passive mechanisms—remain largely untested by the empirical literature. Others, including most micro mechanisms, require actions that are implausible for an institutional CCO to take. The mechanism that is tested by the data and plausibly consistent with institutional CCO capacities and incentives is selective omission. If this or other mechanisms are in fact employed by CCOs, there should be visible traces in the actions of CCOs and responses of firms. Searching for such direct evidence is therefore an urgent project for future research.

Even though it remains unclear whether CCOs might cause anticompetitive outcomes—and if so, which ones, and how—it may be tempting to follow the principle that "better safe than sorry." On this view, even a small probability of CCOs having anticompetitive effects supports a strong prophylactic response. An NCO might appear to be a safe pair of hands, fostering competition while preserving incentives to maximize firm value. And indeed, a leading figure in the literature about CCOs has extolled the ownership structure of Virgin America, in which Virgin's founder holds a large stake.[143] Such an NCO has "incentives to encourage the

[143] Schmalz, *supra* note 47 (describing Richard Branson's 31% stake in Virgin Atlantic).

firm to innovate, invest in increased capacity, reduce costs, and increase market share at the expense of the firm's rivals."[144]

This temptation should be resisted. As we have explained, getting rid of CCOs also means a significant loss of procompetitive benefits, particularly for investors that own some but not all of the firms in a market. Moreover, NCOs—particularly individual owners with large stakes—come with downsides of their own. Such owners have stakes that may enable them to dominate the board and insulate them from being ousted by their fellow shareholders—rendering them virtually accountable. They may use their power not, or not just, to encourage firms to innovate or compete, but to take part in varied forms of self-interested actions that have long been the scourge of corporate law scholarship.[145] It is against just such conduct that institutional investors such as Vanguard, State Street and BlackRock can provide a useful bulwark. Analyzing ownership structure purely through the lens of antitrust law—and embracing reforms that hobble CCOs to obtain hoped-for antitrust benefits—thus misses an important part of the story.

[144] *Id.*

[145] Such "private control benefits" include transactions that benefit the owner, hiring the owner or family members to corporate positions, timing corporate distributions to fit the owner's personal tax and liquidity needs, or refusing to sell the company at a price attractive to other shareholders. For an introduction to a large literature, see Ronald J. Gilson & Jeffery N. Gordon, *Controlling Controlling Shareholders*, 152 U. PA. L. REV. 785 (2003); Alexander Dyck & Luigi Zingales, *Private Benefits of Control: An International Comparison*, 59 J. FIN. 537 (2004); Zohar Goshen & Assaf Hamdani, *Corporate Control and Idiosyncratic Vision*, 125 YALE L.J. 560 (2016).

Appendix

Suppose that Airlines A, B, and C have equal shares on route ABC. MHHIΔ is the sum of six terms: the extent to which Airline A maximizes Airline B's profits, the extent to which Airline A maximizes Airline C's profits, and likewise for Airlines B and C.

If each airline has a 10% NCO and Whiterock owns 10% of all three, MHHIΔ is the sum of six terms. The first of these ("term A-B") is the product of market shares times this expression:

$$\frac{\gamma_{[NCOA]A}\beta_{[NCOA]B} + \gamma_{[W]A}\beta_{[W]B}}{\gamma_{[NCOA]A}\beta_{[NCOA]A} + \gamma_{[W]A}\beta_{[W]A}} = \frac{10\%(0\%) + 10\%(10\%)}{10\%(10\%) + 10\%(10\%)} = 1/2$$

Terms B-A, A-C, C-A, B-C, and C-B proceed in the same way. Thus, MHHIΔ equals (100/3)(100/3)(6)(1/2) = 3333.

Now suppose that Bluebird acquires 10% of Airlines A and B from dispersed owners. What is the size of MHHIΔ? Once again, MHHIΔ is the sum of six terms. Term A-B is the product of market shares times this expression (term B-A is symmetric):

$$\frac{\gamma_{[NCOA]A}\beta_{[NCOA]B} + \gamma_{[W]A}\beta_{[W]B} + \gamma_{[BB]A}\beta_{[BB]B}}{\gamma_{[NCOA]A}\beta_{[NCOA]A} + \gamma_{[W]A}\beta_{[W]A} + \gamma_{[BB]A}\beta_{[BB]A}} = \frac{10\%(0\%) + 10\%(10\%) + 10\%(10\%)}{10\%(10\%) + 10\%(10\%) + 10\%(10\%)} = 2/3$$

Term A-C (and likewise term B-C):

$$\frac{\gamma_{[NCOA]A}\beta_{[NCOA]C} + \gamma_{[W]A}\beta_{[W]C} + \gamma_{[BB]A}\beta_{[BB]C}}{\gamma_{[NCOA]A}\beta_{[NCOA]A} + \gamma_{[W]A}\beta_{[W]A} + \gamma_{[BB]A}\beta_{[BB]A}} = \frac{10\%(0\%) + 10\%(10\%) + 10\%(0\%)}{10\%(10\%) + 10\%(10\%) + 10\%(10\%)} = 1/3$$

Term C-A (and likewise term C-B):

$$\frac{\gamma_{[NCOC]C}\beta_{[NCOC]A} + \gamma_{[W]C}\beta_{[W]A} + \gamma_{[BB]C}\beta_{[BB]A}}{\gamma_{[NCOC]C}\beta_{[NCOC]C} + \gamma_{[W]C}\beta_{[W]C} + \gamma_{[BB]C}\beta_{[BB]C}} = \frac{10\%(0\%) + 10\%(10\%) + 0\%(10\%)}{10\%(10\%) + 10\%(10\%) + 0\%(0\%)} = 1/2$$

Thus, MHHIΔ equals

$$\left(\frac{100}{3}\right)\left(\frac{100}{3}\right)\left(\frac{1}{3} + \frac{1}{3} + \frac{2}{3} + \frac{2}{3} + \frac{1}{2} + \frac{1}{2}\right) = 3333,$$

which is the same level of MHHIΔ as a market with a 10% NCO and Whiterock alone.

If a new investor acquires 10% of Airlines A and C from dispersed owners, once again, MHHIΔ is unchanged, and likewise if a further investor acquires 10% of Airlines B and C from dispersed owners.