VERTICAL MERGERS, THE COASE THEOREM, AND THE BURDEN OF PROOF

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ABSTRACT

The challenge by the Department of Justice (DOJ) to the AT&T's acquisition of Time Warner, and a prior challenge by DOJ and the Federal Communications Commission to Comcast's acquisition of NBC-Universal, have increased attention on vertical mergers. The standard approach identifies a tactic that the merged firm would employ that is both profitable and harms consumers. This approach misses the target; a profitable but anticompetitive tactic may be necessary but is not sufficient. The "Coase Theorem" implies that courts and enforcement agencies should instead focus on why vertical integration is necessary to achieve an outcome that would be profitable to the merging firms. The focus on the tactic rather than why ownership matters presumes that vertical merger is necessary, without supporting theory or evidence. The same proposition should hold for horizontal mergers, but the required strength of evidence is greater for vertical mergers because mergers between complement providers are first-order beneficial and the conduct facilitated by horizontal mergers but not vertical mergers is typically illegal.

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I. MOTIVATION

In part because of the failed challenge by the Department of Justice (DOJ) of AT&T's acquisition of Time Warner,[1] and a prior challenge by DOJ and the Federal Communications Commission (FCC) to Comcast's acquisition of NBC-Universal,[2] the antitrust community is devoting considerable attention to vertical mergers.[3] The standard approach is to identify a tactic that the merged firm would employ that is both profitable and harms consumers. The argument here is that the standard approach misses the target; a profitable but anticompetitive tactic may be necessary but is not sufficient or even essential. Courts and enforcement agencies should focus their attention on showing why vertical integration is necessary to achieve an outcome that would be profitable to the merging firms. Focus on the tactic implicitly presumes that vertical merger is necessary, without providing theory or evidence for that presumption.

Vertical merger cases should be based on whether there is evidence to support a claim that such a merger is necessary to harm consumers. An important and obvious question is whether the same proposition should hold for horizontal mergers, where the focus is on a unilateral or coordinated effects story rather than the necessity of merger to bring about these effects. Consequently, supporting this assertion entails comparing horizontal and vertical mergers regarding the implicit case for whether merger is necessary.

II. Defining terms and summarizing the argument

First, "*vertical merger*": That term here refers to what one might call "pure" vertical mergers, that is, those between companies that have only a buyer-seller relationship or, more gener-

[1] The decision in the case is US v AT&T et al., 310 F.Supp.3d 161 (2018), *affd.*, United States v. AT&T, Inc., No. 18-5214 (D.C. Cir. 2019), available at https://www.cadc.uscourts.gov/internet/opinions.nsf/390E66D6D58F426B852583AD00546ED6/$file/18-5214.pdf.

[2] Federal Communications Commission, Memorandum Opinion and Order, In the Matter of Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. For Consent to Assign Licenses and Transfer Control of Licenses, MB Docket No. 10-56 (Jan. 20, 2011), especially Appendix B ("Technical Appendix").

[3] Competition Policy International, *Rethinking Vertical Mergers*, ANTITRUST CHRONICLE (Aug. 17, 2018), available (to subscribers) at https://www.competitionpolicyinternational.com/antitrust-chronicle-rethinking-vertical-mergers/; see also Koren Wong-Ervin, *Antitrust Analysis of Vertical Mergers: Recent Developments and Economic Teachings*, ANTITRUST SOURCE 1 (February 2019); Jonathan Baker, Nancy Rose, Steven Salop & Fiona Scott Morton, *Five Principles for Vertical Merger Enforcement Policy* 33 ANTITRUST 12 (Summer 2019).

ally, offer complements within a production chain, such as manufacturing on one side and distribution on the other. This term rules out potential competition cases, where the concern is that Company A with no current market overlap with Company B may nevertheless become a significant competitor to B absent the merger. "Only" refers to those mergers with no horizontal component, that is, no additional common ownership of previously independent actors that compete with each other. An oil company that already owns tankers and purchases a tanker company would not fall under this definition, because that acquisition entails a merger between tanker companies.[4]

Next, the "*Coase Theorem*": The "Coase Theorem" is the name applied to an argument from Ronald Coase in his article "The Problem of Social Cost".[5] That argument is that if costs of securing and enforcing a deal or contract are negligible, two parties can achieve an outcome that maximizes their joint profits regardless of who owns the right to do what. The shorthand version if transaction costs—these negotiating, contracting and enforcement costs—are negligible, ownership is immaterial. Applied to vertical mergers, the Coase Theorem implies that a profitable outcome, competitive or anticompetitive, can be achieved without the merger, making the merger itself irrelevant.

Transaction costs have been the focus of recent papers by Dennis Carlton and Carlton and Bryan Keating.[6] A sentence consonant with the theme of this paper is:

> Since there are transaction costs, it is important for an antitrust analysis to examine whether they are sufficiently low to enable nonlinear pricing and, if not, whether the conduct under scrutiny lowers transaction costs so as to allow the use of nonlinear pricing.[7]

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[4] Let A and B firms operate in two vertically related markets. Suppose an already integrated firm A + B1 acquired a B2, leading to a firm A + B1 + B2. One could have gotten to this juncture had a stand-alone firm A merged with B1 + B2. That would be a pure vertical merger in the sense here, where there could be a competitive concern presented by A + B1 + B2 that would not be presented by a horizontal merger creating B1 + B2.

[5] Ronald Coase, *The Problem of Social Cost*, 3 J. L. AND ECON. 1 (1960). The designation "Coase Theorem" is not due to Coase, but George Stigler. See the biography of Coase at https://www.econlib.org/library/Enc/bios/Coase.html.

[6] Dennis Carlton, *Transaction Costs and Competition Policy*, INTERNATIONAL JOURNAL OF INDUSTRIAL ECONOMICS (forthcoming, available online at https://doi.org/10.1016/j.ijindorg.2019.102539, November, 2019); Dennis Carlton & Bryan Keating. 2015. Rethinking Antitrust in the Presence of Transaction Costs: Coasian Implications (February, 2015), https://ssrn.com/abstract=2561783.

[7] *Id*. at 4.

Although these papers discuss the role of transaction costs in whether an anticompetitive outcome can be achieved, the emphasis of those papers and this one is different. Carlton's papers, appropriately and following Coase's earlier work on understanding the structure of firms, focus on whether reducing transaction costs explains why the merger is necessary to achieve benefits.[8] The focus here is on why reducing transaction costs is necessary to bring about the competitive harms alleged by opponents of a vertical merger—and that providing evidence of such costs should be central in the litigation of such mergers.[9]

Some mistakenly take the Coase Theorem as a statement about how the world works. Others would disagree, not least of all, Coase. Rather, the Coase Theorem is a baseline to show that if one wants to explain which firms own which operations, including the degree to which they are vertically integrated, the explanation lies in substantial transaction costs. If vertical mergers matter, it is because they avoid transaction costs that would otherwise preclude jointly profitable practices. Hence, competitive assessments of vertical mergers should to identify and prove the existence of such transaction costs. Otherwise, the absence of anticompetitive practices prior to a vertical merger is evidence that the merger will be benign.

This brings us to the third term in the title, *burden of proof*. The term here refers not to who bears the burden of proving that a vertical merger is harmful. Like horizontal mergers, that burden belongs with the plaintiff, and I am not contesting the level of confidence a judge or jury needs to prohibit a merger it deems would be harmful.[10] Rather, it is how the burden of proof for showing that a vertical merger leads to anticompetitive outcomes compares to the burden of

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[8] Ronald Coase, *The Nature of the Firm*, 4 ECONOMICA 386 (1937). Jeffrey Church has also highlighted the role of merger in reducing transaction costs that otherwise impede efficient outcomes. Jeffrey Church, *Vertical Mergers*, in 2 ISSUES IN COMPETITION LAW AND POLICY 1455, 1492-93 (W. Dale Collins ed. 2008).

[9] Carlton and Heyer posit a useful distinction between practices that create new market power, and practices that enable the exercise of market power. Dennis Carlton and Ken Heyer, *Extraction vs. Extension: The Basis for Formulating Antitrust Policy Towards Single-Firm Conduct*, 4 COMPETITION POLICY INT'L. 285 (2008). Price discrimination to end users is the standard example of the latter. At least some of the basis for the distinction is that price discrimination can increase output net economic benefit. While I generally agree with this distinction, the argument here in some ways posits a third category—evasion of transaction costs constraints—including legal limitations—on the exercise of market power. Consistent with Carlton and Heyer's stance, I argue here that in general vertical mergers are less presumptively problematic just because they do not inherently evade such constraints to the degree that horizontal mergers do.

[10] Hovenkamp and Shapiro have argued the merits of structural screens to "facilitate[e] the government's establishment of its prima facie case". Herbert Hovenkamp & Carl Shapiro, *Horizontal Mergers, Market Structure, and Burdens of Proof*, 127 YALE L. J. 1996 (2018).

showing that a vertical merger leads to benefits[11] and the burden of showing that horizontal mergers lead to anticompetitive outcomes.

Before describing this term's relevance to vertical mergers, I first need to make a distinction that is I believe blurred among many, certainly among non-lawyers, in what "burden of proof" means. "Burden of proof" can mean the degree of confidence one needs to have before rendering a judgment against a defendant. "Beyond a reasonable doubt" is one example. Analytically, one can think of it as the probability, after hearing the evidence, that one believes the defendant is guilty in a criminal sense or, most pertinent here, liable in a civil context. I take that as given in civil law and not variable across, say, vertical and horizontal merger cases.

The second meaning is the strength of evidence the prosecutor or, in civil antitrust, the plaintiff has to bring to justify this probability of belief. By this, I mean specifically the extent to which the net effect of litigation is the presentation of a body of evidence where the likelihood of seeing it if the defendant is at fault is sufficiently more likely than if the defendant's actions have not led or would not lead to harm. It is the "burden of proof", in the sense of the required strength of evidence, which determines whether the "burden of proof", in the sense of the post-trial likelihood of guilt or liability, is met.

Without going into the analytics here—an appendix provides those—the effort of a plaintiff or prosecutor needed to support a given level of belief in the defendant's liability depends on the presumption that the defendant's actions are harmful.[12] In mergers, the strength of evidence would be based on the extent to which one *ex ante* believes that a vertical merger is more or less likely to be harmful than a horizontal one. It is in this sense that the question of the whether the burden of proof should or should not be greater for vertical mergers relative to horizontal mergers presents itself.

[11] I thank Steve Salop for bringing this aspect of vertical mergers to my attention. He correctly has pointed out that one cannot simply assert that vertical mergers are valuable because they produce efficiencies but are irrelevant for anticompetitive outcomes.

[12] Those familiar with Bayesian probability might say that the strength of evidence necessary to meet a required *a posteriori* probability of liability depends on the *a priori* belief regarding the probability of liability. Scurich and John have shown the relationship between the presumption of innocence, burden of proof, and the "likelihood ratio" discussed here. Nicholas Scurich & Richard John, *Jurors' Presumption of Innocence*, 46 *Journal of Legal Studies* 187, Appendix A (2017).

However, from the Coase Theorem, that *ex ante* belief should be about whether transaction costs preclude the merging parties—or one with market power acting on its own—from taking profitable actions with anticompetitive consequences. Consequently, the issue at stake is whether not only whether agreements between the parties in a merger would reduce competition beyond what one or both parties could do on their own. It is about why there are transaction costs that render the merger necessary to bring about these profitable yet anticompetitive consequences.

Thus, defending the claim that stronger evidence is appropriate for (pure) vertical than horizontal mergers entails explaining why the presumptions differ between the two types of mergers that a merger is "innocent" in the sense of being benign and possibly beneficial, and that significant transaction costs impede the exercise of market power that could take place absent the merger. On the first, the presumption of innocence, the basic distinction is that horizontal mergers create upward pricing pressure, and vertical mergers create downward pricing pressure. The upward pricing pressure logic for horizontal mergers—that is mergers between suppliers of substitutes—is familiar: A merger increases the incentive for each party to raise price because it captures profits from demand diverted to the other party.[13] As a vertical merger involves sellers of complements, the reverse holds: After a merger, one party profits by reducing price because doing so stimulates demand for the other firm's goods or services. The familiar extreme version of this is that a vertical merger avoids double marginalization.

The "Coase Theorem" perspective, however, reminds us that in principle merger should not be necessary to realize the benefits of higher prices with horizontal agreements and lower prices with vertical agreements. The contribution from the Coasian perspective is that horizontal mergers are typically necessary to overcome transaction costs because agreements between parties to fix prices are illegal; the transaction costs are large to infinite. In the vertical mergers, the exclusive or discriminatory dealing that is essentially the root concern is that such conduct is not illegal, at least not *per se*, and thus the parties could undertake it without a merger.[14]

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[13] Joseph Farrell & Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, 10 BERKELEY ECON. J. THEORETICAL ECON.: POLICIES AND PERSPECTIVES Article 9 (2010).

[14] *Continental* T.V. v. *GTE Sylvania*, 433 U.S. 36 (1977) eliminated the *per se* rule against vertical restraints. In assessing the effect of that decision, Ginsburg argued that non-price vertical restraints had become effectively *per se* legal, at least as restraints of trade. Douglas Ginsburg, *Vertical Restraints: De Facto Legality under the Rule of*

Because of that difference, the necessity of horizontal merger to overcome transaction costs to engage in profitable and harmful conduct is relatively obvious. On the other hand, any harm from a vertical agreement—that outweighs downward pricing pressure and other familiar benefits from coordination—should be less obvious. The merger does nothing to enhance the market power of either party; it only allows them to evade transactions costs that would allow its exercise. With a greater presumption of innocence, the burden of proof (in the sense of strength of evidence) should be greater for vertical mergers than horizontal mergers.

That is essentially the argument: A "Coase Theorem" perspective on pure vertical mergers implies that the fact at issue in a vertical merger should be that transaction costs render merger necessary to exercise pre-existing market power—not that some vertical agreement could enable that exercise. The crucial importance of this point for litigation arises if plaintiffs cannot supply evidence, whether internal documents or external expertise, to show that vertical merger overcomes transaction costs that impede otherwise profitable and anticompetitive conduct. Without such evidence, the absence of such harm prior to the merger is compelling evidence to reject theories predicting that conduct and attendant harms. Calculations that exclusion or foreclosure following the merger would be profitable are inadequate if compared only to assuming without evidence or even acknowledgement the unprofitability of such conduct.

Before proceeding, it is important to acknowledge that one could view this argument as making it harder to prove a vertical case. As they saying goes in software circles, one could regard this "as a feature, not a bug". If one thinks that a merger matters, it should not be hard to find experts in organizational management and business behavior to explain why. My hope and expectation are that were transaction cost explanations demanded in vertical cases, evidentiary standards would evolve to reduce disputes over this aspect of cases.

Reason, 60 ANTITRUST L. J. 67 (1991). They could be tactics that create market power where it had not existed in the first place. Timothy Brennan, *Bundled Rebates as Exclusion Rather Than Predation*, 4 J. COMPETITION L. & ECON. 335 (2008). The analytical problem with pure vertical mergers, those considered here, is that on its face such mergers do not create market power by extending control over a larger part of a relevant market, but allows whatever control a firm has over a market to be exercised in harmful ways that could not be done but for the merger. It is exactly that contention that transaction costs are needed to explain. A corollary is that absent a transaction cost explanation, but for the merger one would still have an anticompetitive outcome.

My aspiration, however, is that this contribution can be seen more widely. The debate over the applicability of antitrust enforcement to pure vertical mergers has ensued for decades. Because of advances in modeling strategic behavior, the core question in that debate is implicitly whether a vertical merger is necessary to carry out a strategy that harms consumers. This question should be explicit, so it can be adequately answered and not be assumed away—in either direction.

III. THE COASE THEOREM

To understand the prominence that the elimination of transaction costs should play in assessing and adjudicating vertical mergers, it is useful to understand why they are important. The first step is understanding what transaction costs—as opposed to other costs are—and what happens if they are not there. The second is to see, specifically in the vertical merger context, how and why they can matter. Evidence for that second step should be the central issue in pure vertical merger cases.

A. A baseline: No $100 bills on the sidewalk

A classic economist joke is that two people, one an economist, are walking down the street, when the non-economist sees a $100 bill on the sidewalk. She tells this to the economist, who responds, "No, there can't be. Had there been, someone would have picked it up." The Coase Theorem, in some ways, is the proposition that the $100 would remain only if something keeps people from picking it up.

The Coase Theorem is best thought of as a baseline claim of a seemingly obvious proposition: If parties have no problem finding and reaching a deal that maximizes their collective benefit, they will do so, regardless of their starting point. In the usual version of the statement of this "theorem"—Coase was not given to mathematical methods or terminology—if "transaction costs" (finding and reaching a deal) are negligible, bargaining among the parties can achieve an efficient solution, regardless of the distribution of property rights among the parties.

This seems obvious, but was not (and in some cases still is not) easily accepted. As we see below, the main purpose of Coase's analysis here and in other articles was to show the ubiquitous significance of transaction costs in explaining the importance of organizational structure—

including, notably, vertical integration—and legal rules regarding property, tort and contract law. However, it was also his response to a long-standing view that market failures, particularly externalities, were the fault of bad guys having the ability to inflict harm on innocent victims. Coase's analysis showed that externalities were caused not by a misallocation of who has the right to do what to whom, but the inability of the "perpetrators" and the "victims" to reach a deal that would achieve an efficient outcome.[15]

A brief example of the Coase Theorem story, emphasizing that transaction costs are not the exchange price but the costs associated with coming to agreement on an exchange price. Imagine that a smoker and a non-smoker are sharing the same space. The smoker values the ability to smoke at $X, and the non-smoker values keeping the air smoke-free at $Y. Imagine two different legal regimes, one in which the smoker has the right to smoke and the other in which the non-smoker has the right to keep the air clean. Assume, importantly, that the smoker and non-smoker can cut a deal, that is, transaction costs are negligible. In the example, this means that if the smoker has the right to smoke, the non-smoker could pay him not to do so, and if the non-smoker has the right to clean air, the smoker could pay him for permission to smoke.

Will there be smoking? It depends on and, importantly, *only* on whether the smoker values smoking more or less than the non-smoker values clean air, that is, whether X is larger or smaller than Y. If the smoker has the right to smoke, then if Y exceeds X, the non-smoker and smoker can cut a deal where the non-smoker pays the smoker something between $X and $Y to keep the air clean. If X exceeds Y, the non-smoker isn't willing to pay the smoker enough to prevent smoking. On the other hand, if the non-smoker has the right to clean air, if Y exceeds X the smoker is willing to pay the smoker enough to get permission to smoke, while if X exceeds Y, the smoker can pay the non-smoker something between $Y and $X for the right to smoke. The lesson here is that as long as the smoker and non-smoker can cut and enforce a deal, one gets smoking only if the smoker places the higher value on smoking, and one gets non-smoking only

[15] If transaction costs are high, then who has the relevant property right, e.g., to pollute or to keep air clean, will determine the outcome, even if that outcome is inefficient. The central point of this paper is that the possibility of high transaction cost is what makes vertical integration—who owns whom—matter, and thus why the identification of transaction costs and provision of evidence for them should be the fundamental task of a plaintiff contesting a vertical merger.

if the non-smoker places the higher value on smoking, regardless of whether the smoker or the non-smoker initially "owns" rights over the use of the air.[16]

B. Baseline but not endpoint: The pain of bending over

The Coase Theorem is hardly the end of the story. Coase's purpose was not to argue that transaction costs are generally negligible, hence that ownership does not matter and markets never fail.[17] Rather, it is that transaction costs are so ubiquitous that we see them reflected in organizational structures—who owns what within a production chain—and legal rules chosen to minimize transaction costs or (ideally) replicate the outcome had costs been zero. To go back to the economist joke at the beginning of this section, in many circumstances it is too hard to bend over to pick up that $100 bill.

To see how transaction costs matter, imagine that in the example above that transaction costs were not zero, but high enough to prohibit deals between the smoker and non-smoker. Then, the initial assignment of rights determines the outcome, regardless of who benefits more. If the smoker has the right to smoke and the non-smoker cannot buy him off regardless of how much he is willing to pay to keep the air clean, one will get smoking. If the non-smoker has the right to clean air, there will be no smoking regardless of how much the smoker would pay to be able to smoke. If so, laws or regulations based on benefit-cost analysis would be necessary to determine whether the smoker or noon-smoker has the right to smoke.

Or, as is relevant here, the smoker and non-smoker could jointly own the air, if doing so would reduce transaction costs and allow them to determine whether smoking or not smoking is most beneficial. Of course, for an initially independent smoker and non-smoker to reach an agreement to own the air collectively requires overcoming transaction costs (as with carrying out a merger). However, if one saw such an agreement, one might infer that it has been adopted just because arriving at a solution when the smoker and non-smoker are independent actors is too dif-

[16] Moreover, the outcomes will be identical regardless of the assignment of these rights if that assignment has no effect on valuations, i.e., there are no income effects.

[17] See also Coase *supra* note 8.

ficult. This, in effect, is the economic rationale for which decisions are brought within a firm rather than transacted outside it, including when firms are vertically integrated and when they are not.

IV. VERTICAL MERGERS AND TRANSACTION COSTS

To see the application of the Coase Theorem in the vertical merger context, suppose that there is a claim that if Firm A purchased an upstream or downstream Firm B, they would engage in mutually profitable conduct that would create antitrust harm. The question is whether A owning B is necessary to create that harm. However, the Coase Theorem says that they can reach that outcome whether A owns B or B is separate, as long as they can reach a deal.

Consequently, for vertical mergers to matter, transaction costs have to preclude the parties, when independent, from reaching a jointly profit-maximizing deal. In general, transaction costs render contracts incomplete and prevent optimal coordination. As we saw above, prohibitive transaction costs can render who owns what crucial to realizing a profitable transaction. At least three such considerations can be relevant to vertical mergers. Let Firm A be the firm in one vertically related market and Firm B, the potential merger partner, in another.

Capturing returns. Suppose that Firm A can enter into an arrangement that, with Firm B's cooperation, would generate, $100 in profits. To enter into this arrangement, Firm A has to incur $60 in upfront costs, leaving $40 in net profit. However, suppose that Firm A expects the $100 gain to be divided 50-50 with Firm B. Then A would be spending $60 to get $50, and would not bother. Were A and B the same firm, then they would be spending $60 to gain $100, and the investment would be worth making.[18] Note that this argument also requires that Firm A and Firm B cannot contractually enter into a deal to split the upfront costs as well as the ensuing profits. For them do so requires that they be able to foresee the upcoming profits as well.

[18] This has been an argument used for "net neutrality" like regulations that restrict the ability of internet service providers to extract a large share of the value created by program suppliers, after those program suppliers have made their investments. *See*, Jay Pil Choi & Byung-Cheol Kim, *Net Neutrality and Investment Incentives*, 41 RAND J. ECON. 446 (2010); *see also* the argument at the end of Allison Baker, Timothy Brennan, Jack Erb, Omar Nayeem & Aleksandr Yankelevich, *Economics at the FCC 2013-2014*, 45 REV. INDUSTRIAL ORGANIZATION 345 (2014).

Uncertainty regarding profits. Considering an upfront contract leads to the consideration of uncertainty. Imagine that Firm A and Firm B could make an arrangement that would generate profits, but that those profits are uncertain. Firm A could pay Firm B a lump sum for its cooperation, but then Firm A would be bearing all of the profit risk. One could imagine more complex revenue and cost sharing agreements, but those become more difficult as the uncertainty increases, as disputes about data and verification likely become more intense.[19]

Specific investments. Klein et al.'s classic argument for vertical integration is that if Firm A has to make specific investments to undertake this profitable investment with Firm B, Firm A is vulnerable to opportunistic exploitation because those specific investments would have no value in setting up similar arrangements with other firms.[20] For example, if Firm A has to sink $100 specific in dealing with Firm B, Firm B can then force Firm A later to increase its payment to Firm B (or reduce B's payment to A) by $99. A vertical merger can avoid the contracting costs—both *ex ante* writing of the contract and *ex post* enforcement—to attempt to prevent this sort of extraction.

V. A TALE OF TWO U.S V. AT&TS

The crux of a vertical case should be the identification and provision of evidence to support one of these possibilities, or some other relevant justification for vertical integration. To illustrate the importance of transaction costs, we can compare the 1974-1982 Section 2 case brought by DOJ against AT&T, which resulted in the 1984 divestiture by AT&T of its local telephone monopolies, to the recent Section 7 case against AT&T's acquisition of Time Warner. While the Section 2 case was not a merger case, it essentially was akin to running a video of a merger case in reverse. It was about eliminating competitive harms through vertical divestiture, which is equivalent to preventing those harms by allowing a vertical merger that would have resulted in the pre-divestiture AT&T. Preventing a vertical merger is the other side of the coin of preventing competitive harms by maintaining vertical separation.

[19] This, essentially was Williamson's argument that franchise competition is insufficient to ensure competitive outcomes. Oliver Williamson, *Franchise Bidding for Natural Monopolies-in General and with Respect to CATV*, 7 BELL J. ECON. 73 (1976).

[20] Benjamin Klein, Robert. Crawford, & Armen Alchian, *Vertical Integration, Appropriable Rents, and the Competitive Contracting Process*, 21 J. L. & ECON. 297 (1978).

A. US v. AT&T, 1974-82: The divestiture[21]

The economic theory of the Section 2 monopolization case against AT&T, and the vertical divestiture as relief, was that vertical integration allowed AT&T to indirectly exploit its market power in the local telephone business that price regulation prevented.[22] There were two tactics for this evasion of regulation through vertical integration. One, discrimination, was that AT&T could provide its long distance or equipment competitors delayed or inferior connections to its monopoly local telephone networks. In effect, such discrimination would effectively tie AT&T's unregulated or less regulated long distance or equipment offerings to its monopoly local telephone service, and include the monopoly margin for the local telephone service in the price of the bundle.[23] The second concern, cross-subsidization, was that AT&T could misallocate some costs of its competitive services to the books of its regulated service, where under cost-of-service regulation they would be passed on AT&T's ratepayers.[24]

Crucial to this story was the regulation of AT&T's local service monopolies.[25] Were it not regulated, AT&T could have exercised the market power directly. AT&T could simply have charged the monopoly price to consumers to have a phone connection, and a monopoly access price to long-distance and equipment companies that wanted to connect to its local networks. Continued vertical integration into long distance and equipment markets, and discrimination and cross-subsidization against rivals in those markets, would have been unnecessary.

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[21] United States v. American Tel. and Tel. Co., 552 F. SUPP. 131 (D.D.C. 1983).

[22] Timothy Brennan, *Why Regulated Firms Should Be Kept Out of Unregulated Markets: Understanding the Divestiture in U.S. v. AT&T*, 32 ANTITRUST BULL. 741 (1987).

[23] This concern over discrimination is not a "one off". It serves as the basis for current regulations that limit the ability of electric utilities to use control regulated monopoly transmission grids to favor connections to their generators rather than generators owned by rivals. TIMOTHY BRENNAN, KAREN PALMER & SALVADOR MARTINEZ, ALTERNATING CURRENTS: ELECTRICITY MARKETS AND PUBLIC POLICY (2002); Timothy Brennan, *An Expanded Distribution Utility Business Model: Win-Win, or Win-Maybe?* in DISTRIBUTED GENERATION AND ITS IMPLICATIONS FOR THE UTILITY INDUSTRY 251 (Fereidoon P. Sioshansi ed., 2014).

[24] Timothy Brennan, *Cross-Subsidization and Cost Misallocation by Regulated Monopolists*, 2 J. REGULATORY ECON. 37 (1990); Timothy Brennan & Karen Palmer, *Comparing the Costs and Benefits of Diversification by Regulated Firms*, 6 J. REGULATORY ECON. 115 (1994).

[25] This is why the AT&T case was unlike the contemporary case against IBM, which Assistant Attorney General William Baxter dismissed with prejudice the same day he announced AT&T agreement to divest its local monopolies, and also the Antitrust Division's case against Microsoft in the 1990s. Timothy Brennan, *Do Easy Cases Make Bad Law? Antitrust Innovation or Missed Opportunities in U.S. v. Microsoft*, 69 GEORGE WASHINGTON L. REV. 1042, 1080-81 (2001).

Even with regulation, however, vertical integration theoretically would not have been necessary. AT&T could have exercised its market power in principle through explicit ties to an independent long distance or equipment provider, with payments back to AT&T so it could capture the benefits of discrimination. AT&T could also have arranged to subsidize the inputs of one rival in a competitive market, and with the latter transferring the profits back to AT&T. However, it is almost inconceivable that AT&T's state and federal regulators would have allowed them to get away with that.[26] In the parlance of the Coase Theorem, AT&T would have faced prohibitive transaction costs in acting anticompetitively without vertical integration. Because those costs are so high, vertical integration could lead to anticompetitive outcomes, and a vertical divestiture—akin to preventing a vertical merger—could prevent it.

To phrase this in "Coase Theorem" terms, price regulation and oversight essentially made the transaction costs of exercising market power through contract prohibitive. This made vertical integration, and then discriminating in favor of or cross-subsidizing its unregulated affiliated long distance and customer equipment businesses, necessary to exploit this market power and harm consumers.[27] These also explain why a divestiture would improve economic performance—the monopoly in question at the time, local telephone service, would remain regulated to prevent monopoly pricing.

B. US v. AT&T, 2018-19: The Time-Warner merger

The Department of Justice's alleged harm in the AT&T/Time Warner merger was that either side would enhance its bargaining power because it could recoup losses if it failed to cut a deal with others. For example, following the merger, Time Warner's HBO would be in a better position to deal with cable companies because were such deals to fall through, more people would subscribe to AT&T's video or mobile service, or DirecTV's video service. This would enhance

[26] Faulhaber pointed out that both vertical theories, discrimination and cross-subsidization, require that the regulator be unable to police such conduct. For discrimination, the market has to be able to ascertain that the regulated firm's vertical affiliate has higher quality, but the regulator is unable to determine that such quality is the result of favoring the affiliate over rivals in the quality or timeliness of connections. In the case of cross-subsidization, the regulatory must be ineffective at monitoring cost but effective at raising price to cover cost. GERALD FAULHABER, TELECOMMUNICATIONS IN TURMOIL: TECHNOLOGY AND PUBLIC POLICY (1987).

[27] Brennan, *supra* note 22.

HBO's bargaining power, leading to higher payments for its carriage, which would ultimately be borne by consumers. DOJ lost at trial and in its appeal to the D.C. Circuit.[28]

Under a Coase Theorem approach, the central question would be why a vertical merger between AT&T and Time Warner would be necessary to bring about these harms. DOJ might, for example, have specified one of the harms listed in the previous section regarding difficulty in negotiating payments or risk of opportunistic exploitation of specific investments. It could then have provided the documentary or industry-expert evidence necessary to support the claim that such harms applied.[29] DOJ did not make these arguments, suggesting it did not perceive a need to do so.[30]

Unfortunately, Judge Richard Leon, the trial judge who ruled against DOJ, did not fault it for failing to establish the existence of relevant transaction costs that require a merger to bring about anticompetitive harm.[31] Rather, his decision was based on four main points. The first was that the theory of harm rested on markets for video programming and delivery that were rapidly becoming obsolete, because of streaming service on the programming side and increased use of mobile platforms on the delivery side.[32] Second—and I'm not sure this was really contested—Judge Leon devoted considerable time to arguing that under U.S. merger law, harms had to be likely or probable, and not just possible.[33]

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[28] *Supra* n 1.

[29] One could respond by saying that litigation on this question would boil down to prior biases. I am uncomfortable with that degree of pessimism regarding the potential for relevant fact-finding, but others with more litigation experience will have to assess if I am too optimistic in response.

[30] Arguments about why transaction costs precluded profitable anticompetitive conduct without a merger were also absent in the Federal Communications Commission's objection to Comcast's 2010 acquisition of NBC-Universal, absent assorted non-discrimination conditions.

[31] FCC Comcast/NBC-U Order (2011), *supra* n. 2.

[32] US v AT&T, *supra* n. 1, 310 F.Supp.3d 161, 171-77, 244 (2018).

[33] *Id.* at 189-94. The relevant statute, the 1914 Clayton Act (15 U.S.C. 18), prohibits mergers that "may be substantially to lessen competition, or to tend to create a monopoly." The language alone suggest that the harm has to be substantial but that the merger only "may" bring it about. Under legal doctrines based on the meanings of the words at the time the statute was written, whether a merger need by "likely" or "probable" to lead to harm may be a more open question than I had realized.

Judge Leon's third, and to me most problematic, justification was that changes to bargaining power was irrelevant here because refusal to deal was not a credible threat.[34] The last argument, and the one to which Judge Leon devoted the most space in his opinion, was objection to the assumptions and data used in the empirical study presented by DOJ's expert economist.[35] While Judge Leon did not base his ruling on a presumption that vertical mergers need not be harmful, he did not hold DOJ to showing that the merger was necessary to carry out that harm.

Moreover, not only might a prior deal between AT&T and Time Warner be feasible in a way a deal between the "old" AT&T and an independent long-distance telephone provider would not. Such a deal need not be necessary. Suppose HBO offered its services to AT&T or DirecTV under an industry-standard per subscriber contract. Then, it would similarly recapture profits if it failed to cut a subsequent deal with cable companies and consumers switched to AT&T or DirecTV as a consequence. As the transaction costs of entering into per subscriber contracts are hardly prohibitive, a vertical merger as such would not be necessary to enhance bargaining power.

A vertical merger could more effectively change bargaining threat points and extract market power beyond what per subscriber contracts could accomplish.[36] That is, the quantitative comparison that needs to be made regards the incremental harm, not assuming, as was the case here, that absent the merger there is no harm. That assumption is tantamount to claiming that transaction costs are prohibitive—even when, as the per-subscriber fee example shows, no transaction

[34] *Id*. at 201-14, 243-49. The role of threat points that would not have been a profitable outcome of a bargain was raised in the commentary during and after the merger. Judge Leon found that a change in the profits to AT&T if HBO fails to cut a deal with, say, Comcast are irrelevant, because HBO would find it more profitable than not to deal with Comcast. For support of the Department of Justice's position that out-of-equilibrium beliefs regarding profits if a bargain fails to go through matter, *see* Brief for 27 Antitrust Scholars as Amici Curiae in Support of Neither Party, United States v. AT&T, Inc., No. 18-5214 (D.C. Cir. Sept. 26, 2018). For the opposite view, *see* Brief Amici Curiae of 37 Economists, Antitrust Scholars, and Former Government Antitrust Officials in Support of Appellees and Supporting Affirmance, United States v. AT&T, Inc., No. 18-5214 (D.C. Cir. Sept. 26, 2018). The standard Nash bargaining model on how to divide the gains from reaching agreement is based on the relative position of the bargainers if they fail to reach an agreement, even though in equilibrium they will agree. Whether that model should be rejected because of its reliance on out-of-equilibrium beliefs is and perhaps remains a matter for experimental and empirical evidence.

[35] US v AT&T, *supra* n. 1, 310 F.Supp.3d 161, 216-41 (2018).

[36] A referee pointed out that threat points can be changed by contracts with third parties, making them "really odd" as a concept.

need be necessary. High transaction cost ought not to be assumed. A pure vertical merger case should not be made absent compelling evidence that those costs are high.

The evidentiary consequences of this observation should not be overlooked. If one assumes without proof that the transaction costs of achieving anticompetitive effects without a merger are prohibitive, then the absence of such effects prior to the merger is of no interest. However, if transaction costs are not prohibitive, then the absence of such effects is evidence against the proposed theory of harm. Without examining transactions costs, therefore, one cannot dismiss inferring the absence of future harm from an absence of present harm.

VI. RELEVANCE TO "RAISING RIVALS' COSTS"

It should be a truism that to raise a rival's cost, one has to raise the price of an input used to make the rival's product or a complement that increases the value of the rival's product. In turn, this entails creating market power that does not exist before in the market for that input or complement.[37] This requires one of four explanations.

Change in motivation. One is that perhaps an entity has market power but lacks the profit incentive to exercise it. While one might argue that for, say, a purchase of a non-profit hospital or college by a profit-maximizing entity, motivation change is not likely to be at issue in pure vertical mergers.[38]

Evasion of a price control. This was essentially the theory behind the first U.S. v. AT&T case described above, which led to the vertical separation of AT&T's local telephone service

[37] Timothy Brennan, *Understanding 'Raising Rivals' Costs'*, 33 ANTITRUST BULL. 95 (1988). The idea was originally presented in Steven Salop and David Scheffman, Raising Rivals' Costs, 73 AMERICAN ECON. REV. PAPERS AND PROCEEDINGS 267 (1983). Recently released proposed merger guidelines include references to raising rivals' costs, primarily through foreclosure of access to inputs. U.S. DEP'T OF JUSTICE & FED. TRADE COMM, DRAFT VERTICAL MERGER GUIDELINES 4-6 (2020). What remains unaddressed in those guidelines are that to have an anti-competitive effect, the vertical merger has to either increase market power at one stage or the other in the vertical chain, or to enable the exercise of market power that could not be exercised without the merger. Brennan *id. supra* n. 14, and *infra* n. 39 and 40 were written to argue the first claim. This article argues the second.

[38] I am certainly interested in hearing examples of whether a vertical merger was challenged on the basis of a motivation change. The theory that horizontal mergers that eliminate a "maverick" may be based on a change in motivation regarding propensity to collude as well as changing circumstances that change incentives. *See* U.S. DEP'T OF JUSTICE & FED. TRADE COMM, HORIZONTAL MERGER GUIDELINES 2.1.5 (2010).

monopolies from its operations in increasingly competitive long distance, equipment, and information service markets. Such cases require a price control to evade, and thus are likely to be unusual within the set of potential vertical antitrust cases.

Complement market monopolization. This entails going beyond a relationship between single firms in each market to reaching beyond that market, for example, by instituting exclusive dealing contracts across enough of a retailing market so rivals at the manufacturing level cannot sell their wares.[39] As this involves expanding across a set of competitors within an antitrust market, this does not pertain to pure vertical mergers.[40]

Discriminatory conduct. The fourth possibility is that firm might be able to profit through price discrimination or other preferential arrangements between particular buyers and sellers. For example, the theory of harm in the AT&T/Time Warner merger is that the initial preferential dealing between the merging parties will enhance subsequent bargains leading to higher prices. While price discrimination is often beneficial because charging low prices to some increases output, it can be harmful in input markets, where one buyer's demand increases the higher is the price charged to the other buyer.[41]

Discriminatory conduct is the category of "raising rivals' costs" that pertains in vertical mergers. In such mergers, market power at one or both levels is presumed. The question is what a plaintiff needs to prove its relevance. This requires not only showing how discriminatory conduct could be harmful, but establishing that vertical merger is necessary to evade transaction

[39] Timothy Brennan, *Saving Section 2: Reframing U.S. Monopolization Law*, in THE POLITICAL ECONOMY OF ANTITRUST 417 (Vivek Ghosal & Johan Stennek eds. 2007); Brennan, *supra* note 14.

[40] As consideration of transaction costs would change the focus of vertical merger cases, the complement market monopolization concept would change the focus of monopolization cases, for two related reasons. First, it would focus attention on entry and competitive conditions in the market for the input or complement rather than the market that includes the rivals. Second, it shows that proving in advance that the perpetrator has to have a monopoly before it can monopolize, or equivalently that it has dominance that it can abuse, is not only irrelevant but counterproductive. The more secure is the alleged perpetrator's market power or dominant position, the less likely it is that the exclusionary conduct is necessary to secure that dominance. *Id*.; Brennan, *supra* note 25; Timothy Brennan, *Getting Exclusion Cases Right: Intel and Beyond*, CPI ANTITRUST CHRONICLE 2 (December 2011).

[41] Michael Katz, *The Welfare Effects of Third-Degree Price Discrimination in Intermediate Good Markets*, 77 AMERICAN ECON. REV. 154 (1987); Fabian Herweg & Daniel Mueller, *Price Discrimination in Input Markets: Downstream Entry and Efficiency*, 2 J. ECON. & MANAGEMENT STRATEGY 773 (2012); Daniel P. O'Brien, *The Welfare Effects of Third-Degree Price Discrimination in Intermediate Good Markets: The Case of Bargaining*, 45 RAND J. ECON. 92 (2014); Hyunchul Kim & Seung-Gyu Sim, *Price Discrimination and Sequential Contracting in Monopolistic Input Markets*, 128 ECON. LETTERS 39 (2015).

costs that prevent the parties from making arrangements to profit jointly from that exercise of market power. As the prevalence of per subscriber contracts in the video programming industry exemplifies, this is far from clear, as such contracts enhance the bargaining power of the programmer in its negotiations with video distributors that compete with those who have previously signed these agreements.

VII. BURDEN OF PROOF: THE HORIZONTAL-VERTICAL COMPARISON

The Coasian door swings both ways.

Steve Salop[42]

It is important to note that, as Salop observed, the arguments about the necessity of transaction costs to justifying vertical merger apply to procompetitive as well as anticompetitive benefits. For example, a common argument supporting vertical integration is avoidance of double marginalization, that is, that separate vertically-related firms with market power will set their collective prices too high because neither takes into account the reduction in demand each imposes on the other. Avoiding this effect leads to prices for the combined outcome being lower. However, getting this right via contract involves the same bargaining and uncertainty problems that were described above in the context of anticompetitive conduct.

A vertical merger is taking place for some reason, leading to the question of why one would require proving transaction costs with regard to harms but demand less proof with regard to benefits. The root question, however, should not be whether the application of transaction costs is asymmetric regarding costs and benefits, that is, whether transaction costs are more or less likely to require merger to achieve vertical benefits than to create or enhance market power. Rather, it is whether recognizing the importance of transaction costs would support a view that vertical mergers are inherently less threatening to competition than horizontal mergers. This raises the question of why the burden on plaintiffs should be greater when challenging a vertical merger than when challenging a horizontal one. Two justifications follow; the second particularly from a Coase Theorem/transaction cost perspective.

[42] Steve Salop, Statement, Federal Trade Commission Hearings on Competition and Consumer Protection in the 21st Century, Nov. 1, 2018, Washington, DC; https://www.ftc.gov/system/files/documents/public_events/1415284/ftc_hearings_session_5_transcript_11-1-18.pdf at 4.

A. Upward vs. downward pricing pressure

A fundamental tenet of antitrust enforcement with regard to horizontal mergers is that, along with facilitating market-wide collusion, a horizontal merger will predictably lead to higher prices. This "upward pricing pressure" or UPP effect is that pre-merger, a firm that raises price cannot capture the profits its competitors get as demand is diverted to them.[43] If the firm mergers with a competitor, it retains the profits from those diverted sales, and thus has an additional incentive to raise price.

The mathematics behind this result depend specifically on the assumption that, by definition, the firms in a horizontal merger supply substitutes. When Firm A and Firm B's products are substitutes, an increase in the price of A's product increases demand for B's. If B has some market power, that is, if B's product's price is above its marginal cost, then that boost in demand creates profits for B. Assuming there's no way for B to reward A for raising the price of its product—that is, transaction costs are high—a horizontal merger creates a direct incentive for each firm to raise the price of its product.

For vertical mergers, the firms supply complements rather than substitutes to each other. This means that the predictable effect is in reverse. One would get "downward pressure"[44] on prices because when one firm raises price the price for its product, demand for the other complementary product falls. If the price of that complement exceeds its marginal cost, that fall in demand reduces the complement suppliers' profits. A vertical merger means that the firm would take that those losses into account, reducing the incentive to raise price. The familiar version of this is the double marginalization effect described above. Consequently, on the basis of economic theory, a presumption of innocence is stronger for vertical mergers that create downward pricing pressure than for horizontal mergers that create upward pricing pressure.

[43] Farrell and Shapiro, *supra* n. 13.

[44] As O'Brien recently put it, "[J]ust as a merger between two substitutes in a concentrated market puts upward pressure on price, a merger between two complements in concentrated markets puts downward pressure on certain prices. The math is actually identical except for the sign of the diversion ratio, which is positive in the case of substitutes and negative in the case of complements." Daniel O' Brien, Statement, Federal Trade Commission Hearings on Competition and Consumer Protection in the 21st Century, Nov. 1, 2018, Washington, DC; https://www.ftc.gov/system/files/documents/public_events/1415284/ftc_hearings_session_5_transcript_11-1-18.pdf at 40.

B. Illegality of incipient conduct

The above discussion did not directly invoke transaction costs, either in general or relative to transaction costs that otherwise impede anticompetitive conduct. However, the theme of this paper is that transaction costs are relevant in ways that have been essentially unrecognized. The specific issue involves the degree to which the relevant conduct the merger would enable would be illegal outside the merger.

In horizontal mergers, the conduct in question generally involves inter-firm price fixing by either the merging parties (unilateral effects) or market collusion (coordinated effects). This conduct is generally illegal either *per se* or only after passing a rule-of-reason test. If so, the transaction costs of engaging in this conduct via contract are high and prohibitive in the case of *per se* illegality. Such conduct, to be permissible, would require the umbrella of a permitted merger. Hence, in horizontal contexts, one can presume that the merger reduces transaction costs associated with harmful conduct.

The situation is quite different with pure vertical mergers. In that context, the conduct in question generally follows from a presumption that the merger will lead to discrimination in pricing, service quality, or access between the merging party and its rivals, for example, exclusive dealing. At least in the U.S., exclusive dealing or other preferential conduct has not been *per se* illegal for decades; it may even be beneficial.[45] Therefore, one cannot presume that but for the merger, vertically-related firms could not could not engage in the allegedly anticompetitive conduct by contract—or as we saw with the per subscriber contract example in the AT&T/Time Warner merger, whether any contract is necessary.

In sum, in comparing the basic effects of horizontal and vertical merger, not only does the former create an incentive to raise price while the latter creates an incentive to lower price. Be-

[45] Howard Marvel, *Exclusive Dealing*, 25 J. L. & ECON. 1 (1982); G. Frank Mathewson & Ralph Winter, *The Competitive Effects of Vertical Agreements: Comment*, 77 AMERICAN ECON. REV. 1057 (1987); Ralph Winter, *Presidential Address: Antitrust Restrictions on Single-Firm Strategies*, 42 CANADIAN J. ECON. (2009).

cause enabling the conduct of concern in horizontal mergers is likely to be if not necessarily illegal, while the conduct of concern in pure vertical mergers is not, the transaction costs of reaching vertical agreements without merger are less likely to be presumptively prohibitive.[46]

C. Assessing proposed vertical presumptions

Baker *et al*. argue for a number of presumptions of illegality regarding vertical merger enforcement.[47] Such a position could be consistent with that here, in that one could argue for such presumptions but that presumptions should be even stronger for horizontal mergers. Were that their contention, the relevant consideration would not be for vertical mergers as such but that the government should find it easier to block any merger.[48]

That would be an interesting argument, but their argument is that the antitrust enforcement system is erroneously failing to hold vertical mergers to account to the same degree it holds horizontal mergers to account. Of the principles Baker *et al*. propose, the one most at odds with the argument here is their second, particularly its second part:

> [The agencies should] Decline to presume that vertical mergers benefit competition in the oligopoly markets that typically prompt agency review, nor set a higher evidentiary standard based on such a presumption.[49]

Without going into more detail, their other principles, particularly considering the full range of potential harms and looking at the necessity of merger for both harms as well as benefits, are less objectional.

To examine this argument more concretely, it is worthwhile to consider their seven recommended presumptions.[50] Some are not objectionable. Their third says that if one of the parties

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[46] A referee puts it even more strongly, suggesting that where anticompetitive outcomes can be achieved via contract, vertical mergers are presumptively competitive, as they invite antitrust scrutiny that contracts do not.

[47] Baker et al., *supra* note 3.

[48] Kaplow has discussed considerations regarding the optimal burden of proof of liability. Louis Kaplow, *On the Optimal Burden of Proof*, 119 J. POLITICAL ECONOMY 1104 (2011). I do not address that here, only whether the presumption of innocence and hence the strength of evidence, whatever it may be, should be higher from vertical mergers than for horizontal mergers.

[49] Baker et al., *supra* note 3 at 12.

[50] *Id*. at 16-17.

“has a substantial probability of entering into the other firm’s concentrated market,” the merger should be presumed harmful. In that case, the merger is really harmful, involving elimination of potential competition, and it should be treated as such. The fourth and fifth say that if a party to the vertical merger is an upstream or downstream “maverick” that prevents the exercise of market power, the merger is presumably harmful. No argument in principle there. Their sixth states a presumption of concern if the vertical merger allows evasion of regulation, which as discussed above was the basis for the 1970’s antitrust case against AT&T. Their seventh and last, a presumption against vertical mergers involving “dominant platforms,” is substantially based on a concern regarding potential entry.

Their first two presumptions differ from the point here. They essentially say that the vertical merger is necessary to exercise market power in terms of access to upstream or downstream complements. These presumptions implicitly assume that but for the vertical merger, the parties could not fully exercise the power they have prior to the merger in their individual markets. My argument is that such a contention should be proven rather than assumed. Estimates of harm from the merger should be of the incremental harm given that market power, not implicitly assuming that but for the merger, no market power would be exercised.

VIII. CONCLUDING OBSERVATIONS

The central point here is not that pure vertical mergers are benign. Rather, it is that insufficient attention is given to the relevance of such mergers to the harms that are alleged. The Coase Theorem is an instructive guide to the necessity of high transaction costs for ownership to matte. Developing evidence to show the existence of such transaction costs should be central in vertical merger cases, rather than assumed away.

Comparing the U.S. v. AT&T monopolization case of the 1980s to the 2018-19 U.S. v AT&T case against its vertical merger with Time Warner brings out the role of transaction costs. Notably, in ruling against the Department of Justice on the 2018 merger, Judge Richard Leon did not mention a requirement to find such high transaction costs, supporting the need on all sides to take Coase seriously. Also, the harm alleged in the theory of the case, that this merger would make it less costly for Time Warner to walk out of bargains with video distributors that compete with AT&T, is created at least qualitatively by standard per-subscriber programming contracts.

As such cases and vertical relationships generally come under the "raising rivals' cost framework," pure vertical mergers pertain primarily in settings where the theory of harm is based on a distinctive relationship between one (among many) sellers and one (among many) buyers. While theories of harm along those lines may apply to a vertical merger, the strength of evidence to meet a burden of proof regarding harm should be higher for vertical mergers than horizontal mergers. Not only do the former lead to "downward pricing pressure" while the latter lead to "upward pricing pressure," but horizontal mergers will avoid higher transaction costs than vertical mergers. The conduct at issue in vertical mergers is generally not illegal, while joint pricing or price collusion by competitors, the concern in horizontal mergers, generally is illegal.

This difference does not rule out the possibility that pure vertical mergers can be harmful. There remains a question where the potential benefits of accuracy in vertical merger enforcement are worth the costs to potential plaintiffs and businesses from trying to achieve that accuracy. If one places a great deal of value on simplicity and certainty in antitrust, perhaps pure vertical mergers should be *per se* legal.[51] Doing so could reduce uncertainty and the need for enforcers and business to expend resources trying to determine if, when, and with what probability pure vertical mergers are illegal.

APPENDIX: PRESUMPTION OF INNOCENCE, STANDARD OF LIABILITY, AND STRENGTH OF EVIDENCE

Let I be the "presumption of innocence," that is, the pre-trial probability that the defendant is guilty or, in the civil context, liable. Let B be the "burden of proof", that is, the minimum probability after trial of guilt or liability after trial that the finder of fact needs to reach a verdict of guilt or liability. One can use Bayes' Rule to show that:

$$\frac{BI}{[1-B][1-I]} = \frac{P(E|G)}{P(E|{\sim}G)}$$

where $P(E \mid G)$ is the probability of observing the evidence at trial if the defendant were guilty (or liable), and $P(E \mid {\sim}G)$ is the probability of observing the evidence at trial if the defendant

[51] Timothy Brennan, *Is Complexity in Antitrust a Virtue? The Accuracy-Simplicity Tradeoff*, 59 ANTITRUST BULL. 827 (2014). If advances in understanding of potential harms from pure vertical mergers warrant, and one believes that the current balance of burdens excessively benefits defendants, perhaps defendants in horizontal merger cases should have to overcome presumptions while plaintiffs retain the burden of proof in those vertical cases.

were innocent. This ratio defines "strength of evidence" in the text. The larger is the presumption of evidence, the greater the strength of evidence required.[52]

Here is the derivation. In a trial (or any inferential setting), what we want to know is the likelihood that the hypothesis is true given the data available. If here the hypothesis is that the defendant is guilty—call that *G*, and the data available is the evidence—call that *E*—the probability *P* of *G* given *E* or, in the language of probability, conditioned on *E* is $P(G \mid E)$. This in turn is the chance that both G and E are true, divided by the probability that E is true.

The inferential problem is that we do not know the probability of guilt given the evidence directly. All we know is what the chance would be that we would have observed the set of evidence we saw if the defendant were guilty—$P(E \mid G)$, in this notation—and the chance that we would have seen the same evidence if the defendant were innocent—$P(E \mid {\sim}G)$, where $\sim G$ means "not guilty". This is largely because how sure we are that the defendant is guilty after observing the evidence depends crucially on how we sure we were of guilt prior to observing the evidence. The probabilistic relationship, known as Bayes' Rule, allows one to incorporate these prior beliefs. That rule in this context is

$$P(G|E) = \frac{P(E|G)P(G)}{P(E|G)P(G) + P(E|{\sim}G)P({\sim}G)}\ .$$[53]

Let $P({\sim}G)$ be *I*, the pre-litigation presumption of innocence, implying that $P(G)$, the pre-litigation presumption of guilt, is $1 - I$. We can then translate Bayes' Rule in the litigation context to tell us that the evidence, given the pre-litigation presumption of innocence, leads to a probability that the person is guilty, P(G | E) is at least as great as the required burden of proof, *B*.

$$B \le \frac{P(E|G)[1-I]}{P(E|G)[1-I] + P(E|{\sim}G)I}\,.$$

After some algebra, one gets

$$\frac{P(E|G)}{P(E|{\sim}G)} \ge \frac{BI}{[1-B][1-I]}.$$

[52] I derived this initially not out of any particular application to antitrust. Rather, in teaching the economics of law, I came up with it to deal with the inconsistency between a juror being asked to presume innocence and the reasonable inference that if the person is on trial, one would rationally expect a high probability of guilt unless the police and prosecutors are doing a terrible job in identifying criminals. However, regardless of a juror's prior beliefs regarding guilt or innocence, in principle he or she could judge whether the strength of evidence provided in a trial meets a ratio high enough to meet a given burden of proof given a presumption of evidence, whether or not he or she initially shares that *ex ante* presumption or *ex post* likelihood of guilt.

[53] For the mathematically inclined, Bayes' Rule is not difficult to prove. It depends on two relationships. One is that the probability of A conditioned on B, P(A|B), is the probability that both A and B are true divided by the probability that just B is true. The other is that the probability of A being true, P(A), is the probability that both A and B are true plus the probability that both A and ~B are true.

The expression on the left is the precise meaning of "strength of evidence" here: the ratio of the chance that one would have observed evidence at trial were the defendant guilty to the chance of observing that evidence, were the defendant innocent. [54,]

Some examples may be useful. Suppose one interprets a high presumption of innocence and burden of proof as hallmarks of criminal law. If the presumption of innocence and the burden of proof were both .9 or 90%, the chance of observing that evidence if the defendant is guilty has to be at least 81 times the chance of observing that evidence if the defendant were innocent.[55] At perhaps the other extreme, from civil law, if the presumption of innocence was only 50/50 and one interpreted "preponderance of the evidence" as only a 50% chance of guilt, the right hand side of the above expression would be only 1—the evidence has to be only more likely to be observed with guilt than with innocence.[56]

This relationship is the formal basis of the observation in the paper that if one has a lower probability of harm from a vertical merger than a horizontal merger, the required strength of evidence—the above ratio of conditional likelihoods of observing the evidence—needs to be stronger for vertical mergers.[57]

[54] This result is not original. Scurich and John, *supra* note 12, display (but do not derive) this result, using this notation, as

$$\frac{B}{1-B} = \frac{P(E|G)}{P(E|{\sim}G)}\,\frac{1-I}{I}.$$

This is also a common way of expressing Bayes' Rule as how one transforms a prior "odds" ratio, here of guilt to innocence, to a "posterior" odds ratio, that is, after the evidence is observed. Kaplow has provided an extensive general discussion of the role of likelihood ratios in meeting burdens of proof. Louis Kaplow, *Likelihood Ratio Tests and Legal Decision Rules*, 16 AMERICAN L. & ECON. REV. 1 (2014).

[55] If B = I = .9, 1 – B = 1 – I = .1, so the expression on the right in the above equation equals [.9][.9]/[.1][.1] = .81/.01 = 81.

[56] If B = I = .5, the expression on the right in the above equation equals [.5][.5]/[.5][.5] = .25/.25 = 1.

[57] Specifically, the derivative of the minimum strength of evidence ratio with respect to an increase in the presumption of innocence I will be

$$\frac{d\left(\frac{BI}{[1-B][1-I]}\right)}{dI} = \frac{B}{[1-B][1-I]^2} > 0$$