

Screening Out Innovation

Vertical Merger Principles and the FTC's Misapplication in the Illumina-GRAIL Case

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Executive Summary

This report addresses the appropriate antitrust standards for vertical mergers. It first provides an overview, and then analyzes a specific application to the Federal Trade Commission's (FTC) current challenge of Illumina-GRAIL's recently consummated merger, one of the few such mergers actually litigated in decades. We draw on our broad experience at the FTC and with antitrust enforcement in health care—both in and out of government—as well as our extensive scholarly work on the law and economics of antitrust and competition law.

Part I discusses the economic and legal principles underlying sensible vertical merger enforcement that the FTC should apply. Economic analysis is essential to evaluate potential exclusion to protect competition, not merely competitors. Yet, economic theory alone cannot establish sound antitrust rules for vertical mergers.¹

In contrast to horizontal mergers that combine substitutes and generate upward pricing pressure absent efficiencies or competitive responses, vertical mergers that combine complements can generate downward pricing pressure through the elimination of double marginalization (EDM), even without efficiencies. Two firms in a vertical chain setting prices independently will both mark up their price above marginal cost. The result is that consumer prices are higher, and both output and joint profits are lower than if a vertically integrated firm, with the ability and incentive to eliminate this inefficient double margin, coordinated the pricing decisions.

Moreover, no body of empirical evidence supports a presumption against vertical mergers based on structure or any other grounds. Rather, both economic theory and evidence show that the incentives from vertical mergers to engage in anti-competitive foreclosure or raising rivals' costs (RRC) and the pro-competitive elimination of double marginalization create opposing, and inherently intertwined, effects on prices.² Consistent with theory, the recent and limited empirical literature estimating the unilateral price effects of vertical mergers finds evidence of both EDM and RRC, with effects on consumer welfare described as pro-competitive to mixed.

Theoretical and empirical economics have not defined precisely either the relation between vertical mergers and innovation or a robust relationship between horizontal or vertical structure and innovation.³ In horizontal product mergers, structural considerations have been deemphasized in favor of an effects-based analysis. In some circumstances, for example, when there are very high concentration levels and a minimum number of firms, indicators of market structure may still serve as a useful proxy. In horizontal innovation markets, in which firms compete to produce a future product or technology, no such assumptions can be made. Even in the case of a merger with only two direct competitors, there is no broad theoretical or empirical consensus.

¹ See *infra* II.A.

² See *infra* II.B.

³ See *infra* II.C.

Unlike horizontal product mergers, in pure vertical product mergers, concentration in either the upstream or downstream markets remains unchanged, and any theoretical or empirical link between structure and effects are limited to nonexistent. Thus, the same structural evidence relevant to evaluate horizontal product mergers does not allow inferences about the likely effects of vertical product mergers. This limitation applies *a fortiori* to vertical innovation mergers, as any theoretical or empirical relationship between vertical structure and innovation is more tenuous than in a horizontal innovation merger or a vertical product merger. As a result, reliance on any assumption or inferences from structure should be even less significant.

A broad consensus exists that vertical mergers frequently generate merger-specific efficiencies, reflecting the many empirical studies consistent with the pro-competitive transactions cost approach to vertical contracting generally and vertical mergers in particular.⁴ While some of this literature has examined settings without market power, vertical integration can address the problems of opportunism from asset specificity and incomplete contracting that exist regardless of market power. There is robust evidence that vertical integration mitigates these problems of holdup and other forms of contractual opportunism in ways that arms-length contracting does not, and that a failure to address the potential for contractual opportunism causes firms to be less willing to invest ex-ante, including in innovation.

Importantly, even vertical mergers that raise the prices downstream rivals pay for inputs can simultaneously reduce prices to consumers. Similar tradeoffs apply to the evaluation of innovation effects. Vertical mergers can improve the parties' incentives to innovate and lead others to produce complementary innovation and new products that use related technologies, while simultaneously reducing potential competitors' investment in substitutes. A theory or allegation that the latter anti-competitive outcome is possible tells us nothing about the rate of innovation or the effect on dynamic consumer welfare. Moreover, these ambiguous effects must also be compared to the empirically documented, pro-competitive, and widespread use of vertical integration to support investments subject to opportunistic holdup in the presence of incomplete contracts and asset specificity.

Thus, the economic literature, existing legal framework, and history of government merger enforcement show that the evaluation of vertical mergers requires a careful and evidence-based weighing of opposing effects. The unilateral price effects of vertical mergers include the elimination of pricing externalities that produce both downward and upward pricing pressure, and the government's own vertical merger guidelines require the contemporaneous consideration of these effects.

Part II applies these core economic and legal arguments to evaluate the merits of the FTC's current challenge to the Illumina-GRAIL merger. At bottom, the FTC's complaint fails to support its theory of standalone harm to potential competition through foreclosure. Not only is the structural evidence upon which it relies largely irrelevant to this innovation

⁴ See *infra* II.D.

market case, but also the most probative evidence of purpose, power, and effect uniformly appears to favor Illumina.⁵

Even if the FTC feels compelled to push the bounds of antitrust enforcement, precedent while one of us was FTC Chairman—which also considered a number of important health care cases (e.g., *Cytec Corp. / Digene Corp.*⁶ and *Genzyme Corporation / Novazyme*⁷)—reveal that the current case, unlike the FTC’s prior cases, appears to rest on theory divorced from economic realities and evidence.⁸ This available evidence strongly supports pro-competitive explanations for the transaction, which include not just the elimination of double marginalization, but also economizing on transaction costs to accelerate regulatory approval as well as dynamic economies of scope.⁹ Finally, even if the facts did lend support to the FTC’s theory, Illumina’s proposed remedy appears more than sufficient to mitigate the competitive harm that the FTC alleges.¹⁰

The FTC, in its administrative complaint,¹¹ and the Complaint Counsel, in its pretrial brief,¹² fail to address the hard tradeoffs that exist in vertical merger cases, tradeoffs that are even more difficult in an innovation market. To us, armed only with a highly speculative theory about a reduction of potential competition through foreclosure in a pre-commercial market, the FTC has inexplicably singled out a vertical merger that produces both downward pricing pressure from the elimination of double marginalization and verifiable and merger-specific efficiency justifications. Relatively reliable predictions of the size of the EDM incentive can be derived from the current supply contract between Illumina and GRAIL, as well as the size of the ad valorem royalty on GRAIL’s revenues that will be paid to Illumina under the contract that existed prior to the merger. In contrast, the data on margins and diversions necessary to produce reliable predictions about the unilateral effects of a merger that will cause upward pricing pressure in the future do not exist here. Moreover, there does not appear to be either evidence or theory to support the FTC’s speculative claims of harm to innovation.

With no basis in law or economics, the Complaint Counsel’s brief in effect trivializes both the vertical and innovation aspects of this market and attempts to draw inferences from the structure of the upstream market as if this were a horizontal merger among leading competitors and therefore presumptively illegal. To add insult to injury, the FTC treats the two inherent unilateral incentives in a vertical merger asymmetrically, contrary to economic

⁵ See *infra* III.A.

⁶ Press Release, Fed. Trade Comm’n, FTC Seeks to Block Cytec Corp’s Acquisition of Digene Corp. (June 24, 2002), <http://www.ftc.gov/news-events/press-releases/2002/06/ftc-seeks-block-cytec-corps-acquisition-digene-corp>.

⁷ Press Release, Fed. Trade Comm’n, *FTC Closes Its Investigation of Genzyme Corporation’s 2001 Acquisition of Novazyme Pharmaceuticals, Inc.* (Jan. 13, 2004), <https://www.ftc.gov/news-events/press-releases/2004/01/ftc-closes-its-investigation-genzyme-corporations-2001>.

⁸ See *infra* III.B.

⁹ See *infra* III.C.

¹⁰ See *infra* III.D.

¹¹ FTC Administrative Complaint, In the Matter of Illumina, Inc. and GRAIL, Inc., Docket No. 9401, (Complaint).

¹² Complaint Counsel’s Pre-Trial Brief, In the Matter of Illumina, Inc. and GRAIL, Inc., Docket No. 9401, August 13, 2021 (P-T Brief).

logic. The incentives for EDM are both empirically supported and close in time, whereas the potential and size of any incentives for input foreclosure are both speculative and more distant. At bottom, the FTC Complaint Counsel's case fails to incorporate basic economic concepts such as discounting to present value or calculating expected benefits and harms, choosing to rely solely on speculative harms, distant in time and therefore heavily discounted, while simultaneously ignoring closer in time benefits with more empirical support.

The implications for antitrust law are therefore stark. If the Complaint Counsel's approach is adopted, we see no limiting principle to prevent the FTC or any antitrust plaintiff from asserting the possibility of theoretical future harm unsupported by evidence as a sufficient basis for enjoining a vertical merger. Adoption of this approach would impose a de facto per se prohibition of vertical mergers whenever the FTC perceives the upstream firm as dominant and theoretically capable of foreclosure at some future time.

The potential effect on consumers is even more striking. A primary reason for the vertical merger between Illumina and GRAIL is to ensure that Illumina's substantial resources and expertise accelerate the commercial use of GRAIL's Galleri Multi-Cancer Early Detection (MCED) test. The FTC's Administrative Complaint notes that MCED tests "can potentially avert [approximately] 100,000 cancer-related deaths" for each year of testing.¹³ Whether one simply counts the number of excess deaths that elimination of even a short delay in using GRAIL's first-to-market MCED test would avoid, or whether one ties these excess deaths to economic calculations based on the value of a statistical life, the near-term consumer gains from avoiding these excess deaths likely will dwarf the present value of any losses from the speculative decreases in price competition years in the future. Furthermore, consumers who would most benefit from the near-term effects of this merger will achieve no benefits from the FTC's actions. The thousands of individuals whose lives would be saved if the merger succeeds will not be alive to benefit from "more competition" in some distant future.

An additional point is worth stressing. While, as noted, the FTC's challenge to Illumina's acquisition of GRAIL lacks adequate foundation in established antitrust economics and law, we understand that antitrust enforcement, both generally and at the FTC, is in flux. Until recently, there was bipartisan consensus, with broad political support—reflected in the relevant government enforcement agencies, the courts, and the academy—that antitrust should focus on the welfare of consumers, guided by the best available economic analysis and evidence. That consensus produced the current legal standards, which we apply in discussing vertical mergers in general and the FTC's recent challenge to Illumina-GRAIL in particular.

The consensus about the propriety of current antitrust standards is now gone. Antitrust is in the news headlines, with growing calls for dramatic changes, including in merger enforcement. At the FTC, a new majority promotes a return to what is said to be a bygone golden era. Indeed, the President of the United States recently decried a 40-year

¹³ Complaint ¶4.

antitrust “experiment failed,” which he attributed to the influence of scholars such as the late Robert Bork.¹⁴ Because some readers are likely not as immersed in antitrust law and history as we are (we have written both together¹⁵ and separately¹⁶ on the issues that the President’s remarks raise), we discuss them here briefly.

The view that Bork and a small cadre of scholars from the University of Chicago captured antitrust law is simply wrong. Although then-Professor Bork and others associated with Chicago were very important to antitrust history, including for persuasively attacking many of the excesses of the 1960s and 1970s, those associated with Harvard, especially the late Phillip Areeda and current Supreme Court Justice Stephen Breyer, had as much if not more of an impact on antitrust doctrine and practice in recent years.¹⁷

Consider one of the most important, and basic attributes of a market system—low prices. Both Professor Areeda¹⁸ and then-Judge Breyer¹⁹ were important in restricting the ability of antitrust law to punish a company for harming its competitors through price reductions. While advocates of reverting to the status quo ante, who call themselves the “neo-Brandeisians,” disagree, both they and American consumers may ultimately end up paying a high price. As Professor Herbert Hovenkamp of the University of Pennsylvania, another non-Chicago scholar and the author of the leading antitrust treatise, which he once wrote with Professor Areeda, has said:

The neo-Brandeisian attack on low prices as a central antitrust goal is going to hurt consumers, but it is going to hurt vulnerable consumers the most. ... As a result, to the extent that it is communicated in advance, it could spell political suicide. Setting aside economic markets, a neo-Brandeis approach whose goals were honestly communicated could never win in an electoral market, just as it has never won in traditional markets.²⁰

¹⁴ Remarks by President Biden Atat Signing of Anan Executive Order Promoting Competition in the American Economy (July 9, 2021), <https://www.whitehouse.gov/briefing-room/speeches-remarks/2021/07/09/remarks-by-president-biden-at-signing-of-an-executive-order-promoting-competition-in-the-american-economy/>.

¹⁵ See, e.g., Bruce H. Kobayashi & Timothy J. Muris, *Chicago, Post-Chicago, and Beyond: Time to Let Go of the 20th Century*, 78 ANTITRUST L.J. 505 (2012).

¹⁶ See, e.g., Timothy J. Muris & Jonathan E. Nuechterlein, *Chicago and Its Discontents*, 87 U. CHI. L. REV. 495 (2020).

¹⁷ See William Kovacic, *The Intellectual DNA of Modern U.S. Competition Law for Dominant Firm Conduct: The Chicago/Harvard Double Helix*, 2007 COLUM. BUS. L. REV. 1, 7-8 (noting that “no judge more consistently for defendants or authorized opinions with greater impact in narrowing the zone of antitrust liability than Stephen Breyer, a Carter appointee and former colleague of Areeda and Turner at Harvard” who “more than any other commentators, catalyzed the retrenchment of liability standards and motivated a more general and fundamental reassessment of doctrine governing dominant firms”).

¹⁸ See Phillip Areeda & Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697 (1975).

¹⁹ See *Barry Wright Corp. v. ITT Grinnell Corp.*, 724 F.2d 227, 231-32 (1st Cir. 1983).

²⁰ Herbert Hovenkamp, *Is Antitrust’s Consumer Welfare Principle Imperiled?* 45 J. CORP. L. 101, 130 (2019).

As we argue below, the FTC's case threatens another core goal of antitrust law—innovation—but the upshot is the same. We disagree with the radical changes proposed and, thus far, so do the courts. Accordingly, we apply the modern standards. Under these standards, the Illumina case is an outlier that should fail.

Finally, even were the neo-Brandeisians correct to view antitrust law to go beyond their narrow view of the consumer welfare standard, history suggests that no concerns should be more pressing for the public than health and safety.²¹ By these criteria, the FTC has even more reason to drop its challenge to a transaction that is geared toward saving lives, improving community health, and advancing scientific progress, all goals that are properly contained within the consumer welfare standard.

²¹ See HERBERT HOVENKAMP, *THE OPENING OF AMERICAN LAW: NEOCLASSICAL THOUGHT, 1870-1970* 243-62 (2015) (discussing the history of health, safety, and morals as early exceptions to liberty of contract).

I. Introduction: Economic and Legal Principles

Modern antitrust analysis draws upon economic theory and empirical evidence to formulate legal rules that promote consumer welfare and competition. This section discusses that development in four parts.

- The first explains that, like most forms of vertical integration, economic theory makes clear that vertical mergers can have both anti-competitive and pro-competitive effects, which makes further empirical study essential to calibrate antitrust rules.
- The second part discusses how vertical mergers can include both a) downward pricing pressure through the elimination of double marginalization and b) upward pricing pressure through foreclosure incentives. These effects are interrelated and must be considered together when determining whether the vertical merger will harm competition.
- The third part shows that the empirical literature strongly suggests that vertical mergers rarely result in higher prices or reduced quantities, and that market structure alone provides little guidance how vertical mergers could harm innovation.
- The fourth part analyzes the economic literature’s identification of numerous efficiencies that can justify vertical integration, such as reduced transaction costs and dynamic efficiencies.

A. Theoretically, Vertical Mergers Generate Opposing Unilateral Price and Innovation Effects

Under modern competition policy, business conduct that increases integration or concentration—whether horizontally or vertically, by concerted or unilateral action—does not necessarily violate antitrust law.²² Instead, consumers must be harmed, typically through higher prices, reduced supply, or diminished innovation or rivalry. With exclusionary conduct, a reduction in consumer welfare usually implies the successful foreclosure of rivals from inputs or customers to increase market power.²³ A crucial insight of modern antitrust law is that foreclosure is not enough. For example, even if a vertical merger were to harm a rival, equilibrium average prices to consumers can fall and consumer welfare can rise; such a transaction is pro-competitive under the antitrust laws.²⁴

²² See generally Timothy J. Muris, *Improving the Economic Foundations of Competition Policy*, 12 GEO. MASON L. REV. 1 (2003) (discussing modern antitrust’s rejection of what were once the prevailing doctrines concerning horizontal concentration and vertical integration).

²³ See Thomas G. Krattenmaker & Steven C. Salop, *Anticompetitive Exclusion: Raising Rivals’ Costs to Achieve Power over Price*, 96 YALE L.J. 209 (1986); see also Bruce H. Kobayashi & Timothy J. Muris, *Chicago, Post-Chicago, and Beyond: Time to Let Go of the 20th Century*, 78 ANTITRUST L.J. 147, 160–163 (2012).

²⁴ See Gopal Das Varma & Martino DeStefano, *Equilibrium Analysis of Vertical Mergers*, 65 ANTITRUST BULL. 445 (2020); Francine LaFontaine and Margaret Slade, *Vertical Integration and Firm Boundaries: The Evidence*, 45 J. Econ. Lit. 629, 680 (2007).

To ensure that antitrust law “protect[s] competition, and not competitors,”²⁵ economic analysis about the consumer welfare effects is necessary. As one of us has noted, “[t]he rationality of our antitrust system requires continuing efforts to make this process of adaptation well-informed by refinements in economic theory and empirical research.”²⁶ With vertical integration, one of the fundamental theorems of microeconomics, which also constitutes a first principle of antitrust law’s differential treatment of vertical as opposed to horizontal conduct, is that generally “[c]ombining substitutes is bad, and combining complements is good, unless demonstrated otherwise.”²⁷

In contrast to horizontal mergers that combine substitutes and generate unilateral upward pricing pressure in the absence of entry or compensating marginal cost efficiencies,²⁸ vertical mergers combine complements and generate downward pricing pressure through unilateral incentives to eliminate double marginalization—even in the absence of marginal cost, transaction cost, or dynamic efficiencies.²⁹ As the agencies explain in their recently released revised Vertical Merger Guidelines (VMG), “[d]ue to the elimination of double marginalization, mergers of vertically related firms will often result in the merged firms incurring lower costs for the upstream input than the downstream firm would have paid absent the merger,” given that “the merged firm will have access to the upstream input at cost, whereas often the downstream firm would have paid a price that included a markup.”³⁰ As such, through EDM, vertical mergers can embody inherent unilateral incentives to reduce prices and benefit consumers.³¹

Examples of businesses using vertical integration and vertical contracting to eliminate double marginalization abound in familiar products such as the production and sale of gasoline. There is credible evidence that states’ misguided passage of retail divorcement laws, which prohibit refiners from owning and operating retail gas stations, raised costs,

²⁵ *Brunswick Corp v. Pueblo Bowl-O-Mat*, 429 U.S. 477, 488 (1977).

²⁶ Timothy J. Muris, *Improving the Economic Foundations of Competition Policy*, 12 *GEO. MASON L. REV.* 1, 29 (2003). See also 4A PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 1000b (5th ed. 2021) (“So a necessary but not sufficient condition for competitive harm from vertical integration is market power in at least one of the two market levels involved.”).

²⁷ See Daniel P. O’Brien, *The Antitrust Treatment of Vertical Restraints: Beyond the Possibility Theorems*, in *THE PROS AND CONS OF VERTICAL RESTRAINTS* 40 (2008).

²⁸ See, e.g., Carl Shapiro, *The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years*, 77 *ANTITRUST L. J.* 701 (2010); Gregory J. Werden, *A Robust Test for Consumer Welfare Enhancing Mergers among Sellers of Differentiated Products*, 44 *J. INDUS. ECON.* 409 (1996).

²⁹ Firms producing complementary inputs in a vertical chain set prices to maximize their profits without considering the demand and profit reducing effects on complementary producers in the vertical chain. Because independent firms ignore this vertical pricing externality, each firm marks up their price above marginal cost, and the equilibrium prices are higher and equilibrium output is lower than where the firms coordinate to eliminate the vertical pricing externality. Vertical mergers produce incentives for EDM because the merged firm will have the ability and incentive to internalize the pricing externality and eliminate the double markup. Joseph J. Spengler, *Vertical Integration and Antitrust Policy*, 58 *J. POL. ECON.* 347 (1950). As O’Brien notes, this is “precisely opposite of the outcome that arises under the frequently used Cournot oligopoly model of horizontal competition with substitute products. Under Cournot oligopoly, joint pricing raises price; under Cournot complements, it lowers price.” O’Brien, *supra* note 27.

³⁰ U.S. Dep’t of Justice and Fed. Trade Comm’n, *Vertical Merger Guidelines* 11 (2020) [hereinafter *VMG*].

³¹ See Das Varma & DeStefano, *supra* note 24.

reduced station hours, and increased prices to consumers, consistent with a loss of EDM.³² Two FTC economists recently estimated the price effects from voluntary disintegration by gasoline refiners in two states, finding, that exiting retailing eliminated downward price pressure from EDM by about 1.2 cents per gallon, while eliminating upward pricing pressure from RRC by a similar magnitude, leaving the retail price of gasoline effectively unchanged.³³ Given these results, the choice to exit retailing was not based on the unilateral price effects, but on the considerations studied in the transactions cost literature. Finally, the legal evolution of the treatment of maximum resale price maintenance, a contractual solution to achieve EDM, also illustrates the importance of EDM in gasoline retailing.³⁴

The prior example illustrates that EDM is not the only pricing incentive of a vertical merger. Modern antitrust economics also recognizes that vertical integration, including mergers, can generate incentives to foreclose rivals from inputs or customers to gain increased power over price through diversion of the harmed rivals' sales, reducing consumer welfare.³⁵ As the new guidelines highlight, “[a] vertical merger may diminish competition by allowing the merged firm to profitably use its control of the related product to weaken or remove the competitive constraint from one or more of its actual or potential rivals in the relevant market.”³⁶ Notwithstanding the few government cases, the FTC regularly considers such foreclosure theories when reviewing vertical mergers.³⁷ Of course, while anti-competitive foreclosure is theoretically possible with vertical mergers, in practice any alleged future diversions could turn out to be small, due to product differentiation, as we discuss below in analyzing the Illumina-GRAIL merger.

Much ink has been spilled to outline rigorous (and sometimes not so rigorous) theoretical models demonstrating the possibility of either pro- or anti-competitive effects (or both) flowing from vertical mergers, with the hope to show *a priori* whether the incentives for EDM or foreclosure are generally stronger.³⁸ Unsurprisingly, this theoretical literature is inconclusive regarding which incentives are likely to dominate. As the leading antitrust

³² See Lafontaine & Slade, *supra* note 24 at 676 (findings in Table 17).

³³ See Daniel Hosken & Christopher Taylor, *Vertical Disintegration: The Effect of Refiner Exit From Gasoline Retailing on Retail Gasoline Pricing*, FTC Working Paper No. 344 (July 2020); see also J. Howard Beales III & Timothy J. Muris, *The Foundations of Franchise Regulation: Issues and Evidence*, 2 J. CORP. FIN. 157 (1995) (discussing how eliminating vertical control over required gasoline volumes raised prices).

³⁴ See *Atlantic Richfield Co. v. USA Petroleum Co.*, 495 U. S. 328, 343 (1990) (applying Antitrust Injury doctrine to preclude gas station owner and plaintiff's recovery of damages for a maximum RPM claim that was a per se violation of the antitrust laws); *State Oil v. Kahn*, 522 U.S. 3 (1997) (maximum RPM not per se illegal and should be evaluated under the rule of reason). In both cases, the Court cited several commentators identifying procompetitive effects of vertical maximum price fixing from EDM, including, PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 340.30b, 378, n.24 (1988 Supp.); Blair & Harrison, *Rethinking Antitrust Injury*, 42 VAND. L. REV. 1539, 1553 (1989); Frank H. Easterbrook, *Maximum Price Fixing*, 48 U. CHI. L. REV. 886, 887–890 (1981).

³⁵ See Krattenmaker & Salop, *supra* note 23; Steven C. Salop & Daniel P. Culley, *Potential Competitive Effects of Vertical Mergers: A How-To Guide for Practitioners*, Georgetown Law Faculty Publications and Other Works 1392 (2014).

³⁶ *Id.* at 4.

³⁷ See Commentary on Vertical Merger Enforcement, Federal Trade Commission at 9-11 (December 2020).

³⁸ See the discussion in Section 2.A and 2.B *infra*.

treatise has explained, “there is no comparable theoretical basis for dealing with vertical mergers” as with horizontal mergers.³⁹ As such, most commentators agree that whether vertical mergers are likely to harm competition, and under what circumstances, are ultimately empirical questions.⁴⁰ Accordingly, the legal rules governing vertical mergers depend on the empirical economic literature and the facts of individual cases.

B. The Unilateral Effects in Vertical Mergers Can Produce Both Downward and Upward Price Pressure; Therefore, They Must Be Considered Together

As explained above, an important reason that the theoretical literature about unilateral price effects cannot discern the general welfare effects of vertical mergers is the simultaneous and opposing generation of downward pricing pressure from the elimination of double marginalization and the generation of upward pricing pressure from raising rivals’ costs. Moreover, the size of the EDM is itself an important determinant of the strength of the RRC incentive.⁴¹ Large pre-merger upstream margins increase the size of the potential EDM, which in turn will cause larger reduction in rivals’ demand (a demand shift) and incentives to lower rivals’ costs (LRC) that offset the diversion-based raising rivals’ cost incentives.⁴² Depending on the curvature of demand, there even can be net incentives to lower rivals’ costs.⁴³

Also, as noted above, even when rivals’ input prices increase, the effects of EDM can still reduce average downstream prices to consumers. Because of this interdependence between the size of EDM and RRC incentives, the two effects cannot be evaluated in isolation and then combined to determine their net effect accurately. The economic analysis used in some quarters that treats RRC and EDM as separable ignores demand shifts and the resulting LRC incentive and therefore can generate inaccurate price predictions.⁴⁴

These considerations explain why the 2020 Vertical Merger Guidelines treat EDM as a unilateral price effect to be assessed alongside RRC incentives, and why EDM is not treated as an efficiency. In particular, the VMGs specifically recognize that:

The elimination of double marginalization is not a production, research and development, or procurement efficiency; it arises directly from the alignment of economic incentives between the merging firms. Since the same source drives any

³⁹ 4A PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 1000a (5th ed. 2021).

⁴⁰ Gregory S. Crawford, et al, *AT&T/Time Warner and Antitrust Policy Toward Vertical Mergers*, CPI ANTITRUST CHRON, 2, 3 (July 2019).

⁴¹ See Das Varma & DeStefano, *supra* note 24.

⁴² *Id.* See also Gloria Sheu & Charles Taragin, *Simulating Mergers in a Vertical Supply Chain with Bargaining*, ___ RAND J. ECON. ___ (forthcoming 2021); Yongmin Chen, *On Vertical Mergers and Their Competitive Effects*, 32 RAND J. ECON. 667 (2001).

⁴³ Das Varma & DeStefano, *supra* note 24 at 454 (presenting an example of linear downstream demand where LRC dominates RRC, resulting in an equilibrium price increase to rivals, and an example with logit downstream demand where the opposite is true).

⁴⁴ *Id.* at 456.

incentive to foreclose or raise rivals' costs, the evidence needed to assess those competitive harms overlaps substantially with that needed to evaluate the procompetitive benefits likely to result from the elimination of double marginalization.⁴⁵

The treatment of EDM as a unilateral pricing effect is highly material for the procedures used in merger enforcement. When reviewing horizontal mergers, courts and agencies typically consider efficiencies only as defenses used to rebut the plaintiff's prima facie case, and thus relevant only after the burden to demonstrate anti-competitive harm has been met.⁴⁶ As explained above, a similar approach to evaluating vertical mergers that treats EDM as an efficiency and not part of the plaintiff's prima facie case would generate inaccurate, upwardly biased predictions of net upward pricing pressure and anti-competitive harm. The vertical merger guidelines reject this flawed approach by correctly treating both the downward pricing pressure associated with EDM and the upward pricing pressure associated with RRC as part of the plaintiff's burden to show competitive harm. Should EDM incentives dominate, the government has failed to meet its burden to show harm to competition.⁴⁷

Moreover, the accurate evaluation of the unilateral price effects of vertical mergers requires that regulators analyze both RRC and EDM, respectively, as simultaneous and as opposing evidence-based incentives for upward and downward pricing pressure. That is, the predictions of net pricing pressure are not to be made up or assumed. Rather, such predictions must be derived from real-world data, such as observed margins and diversions, and analyses that account for market realities, such as contracts, and the use of non-linear pricing that would affect these incentives. This requirement would apply to pre-merger predictions about EDM, RRC, and the combined net effect on prices. Indeed, the VMGs state:

To the extent practicable and appropriate, the Agencies will use the same set of facts and assumptions to evaluate both the potential harm from a vertical merger and the potential benefits of the elimination of double marginalization, and will focus on evaluating conduct that would be most profitable for the merged firm as a whole.⁴⁸

⁴⁵ VMG at 11.

⁴⁶ *United States v. Baker Hughes Inc.*, 908 F.2d 981 (D.C. Cir. 1990). The Complaint Counsel's Brief erroneously applies this framework to vertical mergers: "Particularly in the vertical merger context, cognizable efficiencies and elimination of double marginalization ("EDM") ... may, in certain cases, produce procompetitive effects to be balanced against any competitive harm. It is Respondents' burden to establish that these countervailing factors eliminate the anticompetitive harm set out in the government's prima facie case as Respondents are best positioned to have evidence relating to such factors." P-T Brief at 29. For an economic critique of this approach, see Louis Kaplow, *Efficiencies in Merger Analysis*, 83 ANTITRUST L. J. 557, 558 (2021): "official protocols regarding the proper conduct of efficiency analyses violate core maxims of rational decision making ... How can the analysis of anticompetitive effects and merger efficiencies be sequential and separated when the information is often intertwined ...").

⁴⁷ The Vertical Merger Guidelines explicitly state that EDM "tend[s] to lessen the risks of competitive harm," as well as "reduc[e] the risk of coordinated effects." VMG at 11.

⁴⁸ VMG at 5.

C. Empirical Evidence on the Effect of Vertical Mergers and Vertical Integration Does Not Support an Anti-Competitive Presumption

As one of us explained almost two decades ago, “[i]t is now widely accepted in law and economics that, in most situations, vertical restraints or vertical mergers do not harm consumers.”⁴⁹ Or, as our colleagues concluded more recently, there is little empirical basis to believe that vertical mergers cause anti-competitive foreclosure: “While vertical integration can certainly foreclose rivals in theory, there is only limited empirical evidence supporting that finding in real markets.”⁵⁰ Hovenkamp concurs, stating of vertical mergers that “of the theories [of harm] offered here the anticompetitive concerns are exaggerated, in some cases imagined; in other cases they are very difficult to prove; and in all cases the conditions under which anticompetitive harm is likely are rather strict.”⁵¹ Indeed, the FTC’s own economists have confirmed that “there is a paucity of support for the proposition that vertical restraints/vertical integration are likely to harm consumers.”⁵²

In fact, the empirical evidence overwhelmingly supports the view that most vertical mergers are pro-competitive.⁵³ Of two frequently cited economic studies that analyze the empirical evidence concerning vertical integration, Francine Lafontaine of the University of Michigan and Margaret Slade of the Vancouver School of Economics conclude that “consistent with the large set of efficiency motives for vertical mergers that we have described so far, the evidence on the consequences of vertical mergers suggests that consumers mostly benefit.”⁵⁴ Another study, with James C. Cooper of Scalia Law School as lead author, emphasizes that “[m]ost studies find evidence that vertical restraints/vertical integration are procompetitive.”⁵⁵ As yet another commentator has explained, “the empirical literature on [resale price maintenance and exclusive territories], vertical integration, and non-linear contracting suggests that these practices have been used to mitigate double marginalization and induce demand increasing activities by retailers. With few exceptions, the literature does not support the view that these practices are used for anticompetitive reasons.”⁵⁶

Importantly, these conclusions remain true today, proving to be consistent with subsequent economic research.⁵⁷ The recent empirical evidence on vertical integration confirms the just

⁴⁹ Timothy J. Muris, *Looking Forward: The Federal Trade Commission and the Future Development of U.S. Competition Policy*, 2003 COLUM. BUS. L. REV. 359, 397.

⁵⁰ Global Antitrust Institute, Comment Letter on Federal Trade Commission’s Hearings on Competition and Consumer Protection in the 21st Century, Vertical Mergers 8–9 (Geo. Mason Law & Econ. Research Paper No. 18-27, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3245940.

⁵¹ 4A PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 1003 (5th ed. 2021).

⁵² James C. Cooper, Luke M. Froeb, Daniel O’Brien & Michael G. Vita, *Vertical Antitrust Policy as a Problem of Inference*, 23 INT’L J. OF INDUS. ORG. 639, 648 (2005).

⁵³ 4A PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 1003 (5th ed. 2021).

⁵⁴ Lafontaine & Slade, *supra* note 24 at 663.

⁵⁵ Cooper et al., *supra* note 52 at 658.

⁵⁶ Daniel P. O’Brien, *The Antitrust Treatment of Vertical Restraints: Beyond the Possibility Theorems*, in THE PROS AND CONS OF VERTICAL RESTRAINTS 76 (2008),

⁵⁷ Tad Lipsky, Joshua D. Wright, Douglas H. Ginsburg, John M. Yun, DOJ/FTC Draft 2020 Vertical Merger Guidelines Comment of the Global Antitrust Institute, Antonin Scalia Law School, George Mason University,

discussed simultaneous and intertwined nature of the incentives for both EDM and RRC. Various studies show net gains to downstream consumers *even when downstream competitors of the vertically integrated firm face higher input prices*. For example, a recent study on the effects of vertical integration between cable distributors and regional sports networks concluded that “on average across 26 [regional sports networks], we find that there would be a statistically significant positive effect on consumer welfare from vertical integration, despite the incentives for foreclosure that it would create.”⁵⁸ Moreover, a survey of the recent empirical literature using credible causal designs to evaluate the effect of vertical mergers found that nearly all studies that identified foreclosure effects showed no corresponding decline in consumer welfare—evidence strongly consistent with the concurrent existence of pro-competitive EDM.⁵⁹

To be sure, some dispute that the body of empirical evidence cited above supports the strong empirical consensus surrounding vertical mergers.⁶⁰ Indeed, Marissa Beck of Charles River Associates and Fiona Scott-Morton of Yale University, who conducted a critical examination of the empirical consensus discussed above, disagree that such evidence supports the inference that vertical mergers are generally benign. While not disputing the ubiquitous and generally pro-competitive nature of vertical integration and vertical restraints, they note that the older literature cited above examine studies that do not or cannot produce credible evidence on the welfare effects of mergers.⁶¹ Moreover, the studies reviewed do not represent either a random selection of vertical mergers or a representative sample of mergers that would raise antitrust concerns.⁶²

Note that finding robust evidence of transactions cost explanations of vertical integration and vertical mergers is highly relevant here. First, while some of the studies are based on market settings that are unlikely to raise antitrust concerns, many evaluate such settings.

George Mason Law & Economics Research Paper No. 20-03 (2020), available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3534352.

⁵⁸ See Crawford, et al, *supra* note 40 (discussing G.S. Crawford, R.S. Lee, M.D. Whinston & A. Yurukoglu, *The Welfare Effects of Vertical Integration in Multichannel Television Markets*, 86 *ECONOMETRICA* 891 (2018)). See also Hosken and Taylor (2020), *supra* note 33 (finding both effects when refiners voluntarily exited gasoline retail).

⁵⁹ Lipsky et al, *supra* note 57.

⁶⁰ See, e.g., Marissa Beck & Fiona Scott Morton, *Evaluating the Evidence of Vertical Mergers*, *REV. INDUS. ORG.* (forthcoming 2021) available at <https://doi.org/10.1007/s11151-021-09832-z>.

⁶¹ *Id.*

⁶² Economists have used retrospective studies to examine the effects of mergers. The vast majority of these studies have examined horizontal mergers. See, e.g., JOHN E. KWOKA, *MERGERS, MERGER CONTROL, AND REMEDIES: A RETROSPECTIVE ANALYSIS OF U.S. POLICY* (2015). Moreover, the retrospective analyses that examine post-merger effects of a merger can only be performed on consummated mergers. In addition, credible studies also require a control group, and data covering the pre and post-merger period. As a result, the set of studied mergers are not representative, and it is often improper to make inferences regarding the effectiveness or laxity of enforcement, or use of such evidence to form presumptions. Dennis W. Carlton, *Why We Need to Measure the Effect of Merger Policy and How to Do It*, *_ COMP. POLICY INT'L* 77 (2009), Michael Vita & F. David Osinski, *John Kwoka's Mergers, Merger Control, and Remedies, A Critical Review*, 82 *ANTITRUST L.J.* 362 (2018). As noted elsewhere, the number of vertical merger retrospectives is limited. Importantly, if it is true that antitrust enforcement policy against vertical mergers has erred to allow too many mergers during the past 40 years, examples of anti-competitive vertical mergers should be numerous.

Moreover, explanations based on asset specificity, incomplete contracts, and the detrimental effect of post-contractual opportunism on *ex ante* investment remain relevant to the oligopolistic markets where antitrust concerns are more plausible. Thus, when there is little or no evidence of net upward pricing pressure, these well-documented and pro-competitive explanations will provide a more plausible explanation for vertical integration and vertical mergers than theories of foreclosure.

Finally, the transaction cost literature has implications for the treatment of efficiencies. This literature, as well as the vertical merger guidelines, explicitly recognize the different costs and performance of arms-length contracts as compared to vertical integration, including mergers. The VMGs importantly note that a “single firm able to coordinate how these assets are used may be able to streamline production, inventory management, or distribution, or create innovative products in ways that would have been hard to achieve through arm’s length contracts.” This language cautions against an interpretation of efficiencies that makes it highly unlikely that they will be credited.⁶³

Beck and Scott-Morton also dispute descriptive classifications used to describe recent studies of the net effects of vertical mergers based on modern empirical techniques as overwhelmingly pro-competitive. Even so, they would still classify eight of the 14 studies (half of 28 studies in an expanded sample) reviewed in Lipsky, et al. as showing evidence of benefits.⁶⁴ They conclude that “[t]aken as a whole, the evidence they provide on the change in welfare due to vertical mergers is decidedly mixed, and should certainly not be used as a basis for a presumption that most vertical mergers are pro- competitive or harmless.”⁶⁵ But these individual classifications are beside the point most relevant for the law. What is clear and not controversial is that far more empirical work is needed before there is

⁶³ See, e.g., Brian Facey et al., *Mind the Gap: Merger Efficiencies in the United States and Canada*, 32 ANTITRUST 64, 66 (2018) (“In the United States, the efficiencies defense generally lands like a dubious alibi— necessarily considered but very seldom credited.”). The Complaint Counsel’s brief adopts this dubious approach, asserting that, “Respondents fail to establish that the claimed acceleration efficiency is merger specific because they provide no evidence that acceleration is ‘likely to be accomplished’ with the Proposed Acquisition and ‘unlikely to be accomplished in the absence of either the proposed merger or another means having comparable anticompetitive effects.’” Horizontal Merger Guidelines § 10. For example, GRAIL could likely accomplish this result by other means such as the hiring of employees with relevant expertise or the retention of third-party consultants.” P-T Brief at 106-7. In other cases, where the assumption of zero transactions costs supports them, the Complaint Counsel Brief recognizes the existence of positive transactions costs and incomplete contracts: “Accordingly, it is difficult, if not impossible, today for either Illumina or MCED test developers to draft sufficient contractual terms to protect against competitive harms over the next twelve years.” *Id* at 114. For a critical analysis of this approach, see Kaplow, *supra* note 46, and the discussion at the end of Section III.D *infra*.

⁶⁴ Beck & Scott Morton, *supra* note 60, Table 1. For example, the Crawford et al. study, *supra* note 40, discussed above finding “that there would be a statistically significant positive effect on consumer welfare from vertical integration” is classified by Lipsky, et al., *supra* note 57, as “mixed to positive,” where Beck and Scott Morton, classify the results as “mixed” because it “identifies settings where vertical integration results in foreclosure and those where it results in efficiencies.”

⁶⁵ Beck & Scott Morton, *supra* note 60, at 1.

sufficient reason to craft precise legal presumptions for when vertical mergers may or may not cause anti-competitive harm.⁶⁶

That includes the use of any structural presumption when evaluating vertical mergers. While the 2010 Horizontal Merger Guidelines retained but deemphasized the use of structural screens, the 2020 VMGs do not contain any structural screens.⁶⁷ As the court in *AT&T* explained, whereas “[i]n the typical horizontal merger case under Section 7, the Government [puts] forward statistics to show that the proposed ‘merger would produce a firm controlling an undue percentage share of the relevant market, and would result in a significant increase in the concentration of firms in that market,’” in vertical mergers “the ‘familiar’ horizontal playbook is of little use.”⁶⁸ In evaluating a vertical merger, the antitrust agencies may not avail themselves of presumptions based solely on structural evidence, but must instead evaluate other evidence concerning the merger’s purpose, power, or effect.⁶⁹

To be sure, “[w]hile the government cannot use a short cut to establish a presumption of anticompetitive effect through statistics about the change in market concentration, because vertical mergers produce no immediate change in the relevant market share,”⁷⁰ structural evidence may be used with other evidence to support a *prima facie* vertical merger case when either the harm to rivals, or harm to consumers, is in an actual product market. Specifically, in challenges where, as is typical, the consumer harm alleged involves either higher prices or reduced quantities—that is, harm to existing or potential rivals in an actual market—the number of firms and market shares can be meaningfully calculated to define markets or derive rough estimates of diversion ratios.⁷¹ This information, together with data on the merging firms’ margins, can be used to infer the merged firm’s ability to exercise power over the price of actual products. Nevertheless, while antitrust law has of course long proscribed anti-competitive conduct that diminishes innovation, alleging harm to competition in non-actual, future “innovation” markets is substantially more speculative,⁷² with allegations concerning harms in *future product markets* falling outside the bounds of normal antitrust law entirely.⁷³

⁶⁶ See e.g., Francine Lafontaine & Margaret E. Slade, *Presumptions in Vertical Mergers: The Role of Evidence*, REV. INDUS. ORG. (forthcoming 2021) at 1, available at <https://doi.org/10.1007/s11151-021-09831-0>: (“We conclude that while some vertical mergers may raise concerns, the evidence at this point does not provide sufficient guidance to develop presumptions that are related to strictly vertical issues.”); Beck & Scott Morton, *supra* note 60, at 2: (“However, in our view the economic literature demonstrates a variety of effects of vertical integration- including foreclosure and efficiencies-that justify examining vertical transactions on their merits rather than making general assumptions about their competitive effects.”).

⁶⁷ See VMGs (no structural presumption or safe harbor).

⁶⁸ See also *U.S. v. AT&T*, 310 F.Supp.3d 161, 192 (2018), *aff’d* 916 F.3d 1029 (2019).

⁶⁹ *Id.* See also Sheu & Taragin, *supra* note 42.

⁷⁰ *U.S. v. AT&T*, 916 F.3d 1029, 1032 (D.C. Cir. 2019).

⁷¹ For a recent discussion of this type of potential competition in merger analysis, see John M. Yun, *Are We Dropping The Crystal Ball? Understanding Nascent & Potential Competition in Antitrust*, 104 MARQ. L. REV. 613 (2021).

⁷² 3B AREEDA & HOVENKAMP, ¶ 777d (5th ed. 2021) (noting that “[i]nnovation markets are highly uncertain until such time as innovations are actually brought to market.”).

⁷³ See *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195 (2d Cir. 1981), *cert denied*, 455 U.S. 1016 (1982).

Once more, economics provides the basis for discerning the proper legal constraints in bringing standalone innovation market claims. Notwithstanding decades of heated debate rooted in a dispute between two of the 20th century’s greatest economists, Kenneth Arrow⁷⁴ and Joseph Schumpeter,⁷⁵ there is still no credible causal evidence linking market structure and innovation. This debate has led some to postulate an “inverted-U hypothesis” where R&D intensity is greatest in moderately concentrated industries.⁷⁶ Yet, notwithstanding extensive empirical research and an ongoing debate in the literature, as Carl Shapiro of the University of California, Berkeley, summarizes:

The inverted U-shape relationship between market concentration and innovation has not held up well under scrutiny, especially after correcting for industry differences in technological opportunity and for the endogeneity of product market structure.⁷⁷

Simply put, the empirical relationship between competition and innovation remains inconclusive.⁷⁸ For this reason, when theories of harm involve a product market not yet in existence, structural evidence will not be probative whether the business conduct will create market power in that market—let alone support any kind of *de jure* or *de facto* structural presumption. Nevertheless, and importantly, structural evidence may help determine the likelihood of harmful foreclosure in actual products. For example, in an exclusionary conduct case that involves input foreclosure in an actual upstream product market with harm to consumers in a downstream innovation market, structural evidence could be probative whether there was substantial foreclosure upstream, but not instructive whether power over price was gained downstream.

D. Vertical Mergers Can Drive Cognizable and Merger-Specific Transaction Cost and Dynamic Efficiencies

Lowering transaction costs is a common justification for vertical behavior, including complementary product mergers.⁷⁹ Scholars have long recognized that the relative costs of using the price system and arms-length transactions explain the boundaries of economic organizations.⁸⁰ Thus, firms may find integration a rational strategy not just to overcome

⁷⁴ Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in THE RATE AND DIRECTION OF INVENTIVE ACTIVITY 609, 622–24 (Richard R. Nelson ed., 1962).

⁷⁵ JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY (1942).

⁷⁶ Carl Shapiro, *Competition and Innovation: Did Arrow Hit the Bull’s Eye?* in THE RATE AND DIRECTION OF INVENTIVE ACTIVITY REVISITED at 380 (Josh Lerner & Scott Stern, eds., 2012). See also Philippe Aghion, Nick Bloom, Richard Blundell, Rachel Griffith, & Peter Howitt, *Competition and Innovation: An Inverted-U Relationship*, 120 Q. J. ECON. 701 (2005).

⁷⁷ Shapiro, *supra* note 76.

⁷⁸ Richard J. Gilbert, *Competition and Innovation*, in ISSUES IN COMPETITION LAW AND POLICY (W. Dale Collins ed., 2008).

⁷⁹ Professor Williamson won his Nobel Prize largely for his contributions to this literature. See OLIVER WILLIAMSON, THE ECONOMIC INSTITUTIONS OF CAPITALISM 86 (1985) (arguing for vertical integration to economize transaction costs like hold-up and noting that “comprehensive integration—backward into materials, laterally into components, and forward into distribution—is widely believed to be the organizational means by which complex products and services are created, produced, and efficiently brought to market”).

⁸⁰ See Ronald H. Coase, *The Nature of the Firm*, 4 ECONOMICA 386 (1937).

high markups for inputs, but also to avoid problems of adverse selection, opportunism, and the like.⁸¹ Moreover, another crucial insight of law and economics is that regulation and regulatory approvals can impose substantial transaction costs on private parties.⁸²

There is extensive evidence that reducing transaction costs explains the choice to integrate vertically in many mergers. As MIT Sloan Economics Professor Michael Whinston summarizes:

[A]s early as 1987, Joskow could write that ‘[t]his work generally provides strong empirical support for the importance of transactions cost considerations, especially the importance of asset specificity in explaining vertical relationships.’ Developments since have not changed this conclusion.⁸³

Indeed, as George Mason University’s Tad Lipsky and colleagues point out, the economic literature “has demonstrated, both theoretically and empirically, that the decision whether to contract or to vertically integrate is often driven by the relatively high costs of contracting as well as by concerns regarding the enforcement of contracts, and opportunistic behavior.”⁸⁴ While the literature in this area is complex, the prevailing view regarding vertical integration remains, as Lafontaine and Slade note, that “most of the evidence is supportive of the importance of transaction costs.”⁸⁵

In addition, vertical integration can also improve incentives for innovation,⁸⁶ and vertical mergers can improve coordination between upstream and downstream firms.⁸⁷ This is especially true for general purpose technologies (GPTs) used as inputs in many downstream sectors. These sectors can contain a) multiple competing firms, b) firms that produce products that are downstream complements to the products produced by the vertical integrated firm, and c) firms that use the GPT but do not compete with firms outside the sector. Examples of GPTs would include Illumina’s next generation DNA sequencing (NGS) technology, discussed below, as well as semiconductors and computers. GPTs can embody both vertical and horizontal innovational complementarities.⁸⁸ Vertical complementarities consist of innovation in downstream applications of the GPT, as our discussion of Illumina-GRAIL will illustrate.

⁸¹ Oliver E. Williamson, *The Vertical Integration of Production: Market Failure Considerations*, 61 AM. ECON. REV. 112 (1971).

⁸² See generally Paul L. Joskow, *Transaction Cost Economics, Antitrust Rules, and Remedies*, 18 J. L. ECON. & ORG. (2002) (noting that transaction cost economic theory has been extended beyond firms and markets to aid understanding of government entities).

⁸³ See, e.g., Michael E. Whinston, *On the Transaction Cost Determinants of Vertical Integration*, 19 J. L. ECON. ORG. 1 (2003).

⁸⁴ Lipsky et al., *supra* note 46.

⁸⁵ Lafontaine & Slade, *supra* note 24.

⁸⁶ See, e.g., Timothy F. Bresnahan & Manuel Trajtenberg, *General Purpose Technologies: Engines of Growth?* 65 J. ECONOMETRICS 83 (1995).

⁸⁷ *Id.*

⁸⁸ *Id.*

This literature shows that arms-length market transactions do not internalize these innovational complementarities. In particular, arms-length transactions between the GPT and its downstream users may result in “too little, too late” innovation.⁸⁹ In such settings, vertical integration can allow for better information flows, better coordination, and for the internalization of innovation complementarities that cannot be achieved easily, if at all, through arms-length contracting.⁹⁰

There is considerable and longstanding empirical evidence of pro-competitive uses of both vertical mergers and vertical contracting to facilitate innovation.⁹¹ Indeed, as Timothy F. Bresnahan and Jonathan D. Levin of Stanford University have noted:

A wide range of economically important innovations depend on complementary but distinct inventions. Computers would not be particularly valuable without applications software, to take one famous example. New products are more valuable if process innovations allow them to be produced cheaply. The invention of mass production itself would have been much less valuable without transportation technologies that permitted large plants to serve geographically dispersed customers.⁹²

Contrary to an increasingly popular view that the consumer welfare standard only concerns price and quantity, transaction costs and dynamic efficiencies form an essential part of modern antitrust analysis. Specifically, antitrust enforcement regularly incorporates transaction cost efficiencies in analyzing the merits of business conduct to avoid legal errors that harm consumers.⁹³ On dynamic efficiencies, as one of us has explained, rather than the straitjacket of static competition, “antitrust law ... seek[s] to promote innovation and enhance consumer welfare.”⁹⁴ Moreover, the ability of dynamic considerations to justify alleged anti-competitive conduct is not only a longstanding general antitrust principle,⁹⁵ but also one of FTC merger enforcement.⁹⁶

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ See, e.g., Henry Ogden Armour & David J. Teece, *Vertical Integration and Technological Innovation*, 62 REV. ECON. & STAT. 470 (1980) (finding that “vertical integration can enhance innovation through the sharing of technological information common to separate stages of an industry, through facilitating the implementation of new technology when complex interdependencies are involved, and through the formulation of more astute research objectives” as well as “a strong and statistically significant relationship between vertical integration and technological innovation in the U.S. petroleum industry for the period 1954-1975”).

⁹² Timothy F. Bresnahan and Jonathan D. Levin, *Vertical Integration and Market Structure*, SIEPR Discussion Paper No. 11 (March 2012).

⁹³ See Dennis W. Carlton, *Transaction Costs and Competition Policy*, 73 INT’L J. INDUS. ORG. 1 (2019); Dennis W. Carlton & Bryan Keating, *Antitrust, Transaction Costs, and Merger Simulation with Nonlinear Pricing*, 58 J.L. & ECON. 269 (2015); Dennis W. Carlton & Bryan Keating, *Rethinking Antitrust in the Presence of Transaction Costs: Coasian Implications*, 46 REV. INDUS. ORG. 307 (2015).

⁹⁴ Timothy J. Muris, *Competition and Intellectual Property Policy: The Way Ahead*, Before American Bar Association Antitrust Section, Fall Forum 2 (Nov. 15, 2001), at <http://www.ftc.gov/speeches/muris/intellectual.htm> (hereinafter *The Way Ahead*).

⁹⁵ See, e.g., *Broadcast Music, Inc. v. Columbia Broadcasting System, Inc.*, 441 U.S. 1 (1979).

⁹⁶ See, e.g., Statement of Chairman James C. Miller III, *General Motors Corp.*, 103 F.T.C. 386, 387-88 (1984), https://www.ftc.gov/sites/default/files/documents/commission_decision_volumes/volume103/ftc_volume_decision_103_january_-_june_1984pages_374-497.pdf.

II. The Principles Applied: FTC's Challenge Is Extraordinarily Weak

The FTC's challenge to Illumina's acquisition of GRAIL does not apply these economic and legal principles appropriately. To begin with, the FTC has challenged the transaction solely on the theory that it will reduce competition in an innovation market through foreclosure without beginning to meet the evidentiary thresholds such a claim requires. Moreover, the purported evidence of Illumina's so-called "market share" is as incoherent as it is irrelevant, while the probative evidence of the transaction's purpose, power, and effect do not demonstrate a likelihood of anti-competitive harm.

These conclusions, should not surprise the FTC; they are completely consistent with its not-too-distant precedents in *Genzyme Corporation / Novazyme Pharmaceuticals, Inc.* and *Cytec Corp. / Digene Corp.* In fact, the evidence suggests that an Illumina-GRAIL transaction will have a number of cognizable pro-competitive benefits, not least saving lives by bringing new technologies to market more quickly, as Illumina's acquisition of Verinata shows. Finally, even if the FTC was convinced that its ephemeral harms somehow outweighed the transaction's benefits, Illumina's remedy is more than sufficient to protect consumers in light of agency policy, practice, and precedent. The FTC's case simply lacks foundation.

A. The FTC's Case

Illumina is a leading provider of next generation DNA sequencing platforms, which, in the FTC's description, include both NGS equipment and designated consumables like cells, cartridges, and reagents.⁹⁷ GRAIL researches and develops NGS-based oncology tests, including a multi-cancer early detection test, branded as Galleri, which uses a liquid biopsy method to examine fragments of DNA in the bloodstream to identify cancerous cells at very early stages. In developing Galleri, GRAIL relied upon NGS platforms to analyze the DNA in the blood samples to determine whether a patient has mutations or other biomarkers associated with any of the cancers analyzed by the MCED test. This test is not approved by the Food and Drug Administration (FDA) and is currently not covered by commercial insurance or Medicare.⁹⁸ Illumina founded GRAIL in 2015, which in 2017 was spun out as a standalone company, with Illumina retaining an approximately 14.5 percent equity stake after the spinoff. On September 20, 2020, Illumina signed an Agreement and Plan of Merger with GRAIL to acquire the remaining voting shares. The acquisition was completed on August 18, 2021.⁹⁹

⁹⁷ Complaint p. 2.

⁹⁸ The test is currently being sold, on a limited basis, under a Clinical Laboratory Improvement Amendments waiver through a partnership with Providence Health System. See *GRAIL Announces First Health System to Offer Galleri Novel Multi-Cancer Early Detection Blood Test*, BLOOMBERG (March. 2, 2021), <https://www.bloomberg.com/press-releases/2021-03-02/grail-announces-first-health-system-to-offer-galleri-novel-multi-cancer-early-detection-blood-test>. It is not surprising that the FTC's complaint, issued presumably with full knowledge of this test, labels the relevant market as "pre-commercial."

⁹⁹ See *Illumina Completes Deal for Life-Sciences Firm Grail Despite FTC Antitrust Challenge*, WALL ST. J., (August 19, 2021), available at <https://www.wsj.com/articles/illumina-completes-deal-for-life-sciences-firm-grail-despite-ftc-antitrust-challenge-11629320260>. The FTC originally challenged the Illumina's acquisition of GRAIL in federal court to obtain a preliminary injunction. See Complaint, *Federal Trade Commission v. Illumina, Inc.*, No.

On March 30, 2021, the FTC filed an administrative complaint, alleging that the merger would reduce competition “in the market for the research, development, and commercialization of MCED tests.”¹⁰⁰ Its theory of harm centered on the prospect of foreclosure: “Illumina will gain the incentive to foreclose or disadvantage firms that pose a significant competitive threat to GRAIL and to limit the competitiveness of any MCED product that Respondents expect to compete closely with Galleri.”¹⁰¹ As the complaint explains, “Illumina’s NGS platforms are an essential input for the development and commercialization of MCED tests,” and “Illumina accounts for the vast majority of NGS instrument and reagent sales in the United States, and its platforms produce more than 90 percent of the world’s sequencing data.”¹⁰² Through this foreclosure strategy, the FTC believes that “[a]s the likely leader in the U.S. MCED test market and firm with the largest market share, GRAIL would recapture a substantial portion of sales from any disadvantaged downstream MCED-testing rival”¹⁰³—purportedly creating power over price and harming consumers.

B. The FTC Fails to Show Harm to Competition

The FTC’s claims about “potentially increasing prices and reducing the choice and quality of MCED tests” disguise what is in reality a theory on the fringes of antitrust law—standalone harm to innovation through future exclusion of hypothetical competitors in a pre-commercial market. To be sure, the existence of the upstream NGS platform market means that the FTC’s theory of foreclosure implicates an actual product market. But the locus of consumer harm is an “innovation market” defined by FTC as the “the research, development, and commercialization of MCED tests.”¹⁰⁴ By identifying both GRAIL and the MCED market as “pre-commercial,” the FTC’s complaint clearly concedes this crucial point.¹⁰⁵ Moreover, as discussed above, alleging speculative harm to future competitors in a pre-commercial market through foreclosure is not the same as showing harm to competition.

The FTC is, of course, entitled to allege harm to future competition within the confines of an “innovation market.” But certain conditions apply, including the legal and economic principles described above, which rightly impose a high evidentiary bar. Specifically, the FTC is *not* entitled to rely on any alleged likelihood of competitive harm in the innovation

1:21-cv-00873-RC (D.D.C. Apr. 1, 2021). Following a transfer to the Southern District of California, the European Commission announced that it would be investigating the transaction upon referrals from several member states. *See* Press Release, European Commission, https://ec.europa.eu/commission/presscorner/detail/en/MEX_21_1846 (Apr. 19, 2021). Because of the EC action, the FTC authorized dismissal of its federal lawsuit, continuing to pursue its case through FTC administrative litigation that began on August 24.

¹⁰⁰ Complaint p. 12.

¹⁰¹ *Id.* at 6.

¹⁰² *Id.* at 3.

¹⁰³ *Id.* at 24.

¹⁰⁴ *Id.* at 12.

¹⁰⁵ *Id.* at 8, 24.

market for MCED tests in light of the lack of any general understanding of the relationship between market structure and innovation—a deficit the FTC does not even begin to attempt to remedy regarding this particular industry.¹⁰⁶ Nonetheless, it anoints GRAIL as “the likely leader in the U.S. MCED test market and firm with the largest market share,” such that it “would recapture a substantial portion of sales from any disadvantaged downstream MCED-testing rival.” Yet, in the *very next paragraph*, the FTC admits that “market shares do not yet exist.”¹⁰⁷

Nor does simply counting firms in anyway buttress the FTC’s case. In fact, the FTC has even provided for a safe harbor when, as is the case here, there are at least three firms with independent research and development efforts.¹⁰⁸ While the FTC may attempt to rely (even if spuriously) on structure to suggest that Illumina has a high enough share in the NGS platform market to pursue a strategy of raising rivals’ costs, that does not show harm to competition downstream.

The FTC may attempt to rely on other evidence about the purpose, power, or effect of an Illumina-GRAIL transaction to prove its case. Importantly, while such evidence is typically available when analyzing consummated transactions, the effects of Illumina’s existing partial stake in GRAIL reveal evidence akin to that of performance, and thus are highly relevant to assess the effects of a full merger, especially given the FTC’s view that even firms with minority stakes can exercise *de facto* control to anti-competitive ends.¹⁰⁹ If the FTC’s concerns were justified, Illumina, as the sole and later partial owner of GRAIL,¹¹⁰ may have already had the incentive and ability to harm GRAIL’s rivals. And yet, the MCED market has continued to develop since Illumina founded GRAIL, and the FTC offers no credible evidence of anti-competitive behavior by Illumina to date.¹¹¹ This suggests that the FTC’s

¹⁰⁶ See P-T Brief at 3, asserting that “[t]he more companies competing to win this innovation race, “the greater the chances of new discoveries that lead to more accurate, more effective, and more cost-effective earlier detection tests being developed.”” As discussed previously in Section II.C, this assertion is not supported by economic theory or evidence.

¹⁰⁷ *Id.* at 24.

¹⁰⁸ “Absent extraordinary circumstances, the Agencies do not challenge a competitor collaboration on the basis of effects on competition in an innovation market where three or more independently controlled research efforts in addition to those of the collaboration possess the required specialized assets or characteristics and the incentive to engage in R&D that is a close substitute for the R&D activity of the collaboration.” DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST GUIDELINES FOR COLLABORATIONS AMONG COMPETITORS 26-27 (April 2000).

¹⁰⁹ See, e.g., Federal Trade Commission, Notice of Proposed Rulemaking: Premerger Notification, Reporting and Waiting Period Requirements, 85 Fed. Reg. 77053, 77061 (Dec. 1 2020) (excluding from a proposed *de minimis* HSR filing exemption transactions in which the acquirer also holds more than one percent of any competitor of the issuer).

¹¹⁰ Illumina currently owns 14.9 percent of the equity shares of GRAIL, and under its current agreement would be owed an ad valorem royalty on any future sales that GRAIL makes. Both the partial ownership stake and the royalty would generate benefits from and future sales that were diverted to GRAIL.

¹¹¹ In a heavily redacted portion of their pre-trial brief, Complaint Counsel argues that “[w]hen Illumina has become vertically integrated in the past, it has reevaluated its supply relationships with downstream competitors in ways consistent with the change in incentives that will result from Illumina’s acquisition of GRAIL. Perhaps the most relevant example is when Illumina wholly owned GRAIL, before spinning it off to outside investors in 2017.” P-T Brief at 92. After the redactions, the Complaint Counsel presents one likely

theory of incentives is at best incomplete and at worst wrong—failing properly to consider, as will be discussed further below, Illumina’s strong long-run interests to promote investments that produce complementary uses of its flagship NGS platform.¹¹²

This direct—as opposed to structural, or indirect—evidence of market power is equally troubling for the FTC’s theory of harm. Specifically, Illumina’s acquisition of Verinata provides strong empirical evidence of past conduct to help infer the effects of a GRAIL transaction. Like GRAIL, Verinata engaged in research and development for a new medical test—non-invasive prenatal testing (NIPT)—and relied upon NGS products from Illumina as inputs into this NIPT innovation market. As in the GRAIL case, the FTC staff received complaints that, post-merger, Illumina could exercise market power in NGS products to foreclose Verinata’s rivals and reduce potential NIPT competition downstream. Yet, precisely the opposite occurred. Not only did Illumina’s prices of consumables to NIPT customers fall, where RRC incentives would appear, they fell relative to prices of consumables to firms in non-NIPT sectors where Illumina does not have a downstream presence and RRC incentives could not operate.¹¹³

In addition, sales by downstream rivals have exceeded Verinata’s, and the NIPT market has prospered—facts inconsistent with Illumina engaging in a strategy of raising rivals’ costs to use foreclosure, reduce output, and stifle the market’s development. It is much more

inference: that the redacted text shows, namely, that Illumina was “simply acting as any standalone profit-maximizing firm would” and following its unilateral incentives by weighing the expansion of its sequencing business “against the impact on Illumina’s own downstream sales when it determines its strategy.” *Id.* at 95. The brief then suggests that the mere creation of unilateral incentives created by a vertical merger is strong evidence that the merger violated the antitrust laws: “it is only that Illumina is spurred to do this *through* acquisition that runs afoul of the law.” *Id.* As we discuss throughout this report, evidence that Illumina followed its unilateral incentives by changing input prices for NGS services and consumables fails to support the Complaint Counsel’s position. Changes in the downstream prices due to a vertical merger or vertical disintegration can be in a different direction from changes in the input price. *See* Section II.B, *supra*. And the redacted portions of Complaint Counsel’s brief cannot contain evidence on changes in downstream prices because this evidence does not exist given that there were no sales of MCED tests until earlier this year, and there are still no sales in what will be the ultimate, key market, with FDA and insurance company approval. Moreover, Illumina’s pricing after its purchase of Verinata in 2013, discussed directly below, is inconsistent with attempts by Illumina to engage in RRC by raising input prices to Verinata’s downstream competitors.

¹¹² Complaint Counsel argues that future profit pools will shift away from the provision of NGS services and consumables towards proprietary clinical service testing providers, giving Illumina/GRAIL strong incentives to engage in foreclosure. P-T Brief at 87-91. This evidence is inconsistent with Complaint Counsel’s assumption that future MCED test providers are unlikely to have viable substitutes for Illumina’s NGS platforms, and that even if a provider with a competing NGS platform enters, relationship specific investments will lock in users to Illumina’s NGS services. Complaint Counsel asserts that “[g]iven its monopolist position as the sole supplier of NGS instruments and reagents to MCED test developers, Illumina can dictate the terms of its customer agreement. ... As a result, whatever terms Illumina wants to impose, its customers must accept.” P-T Brief at 68. In our experience, there are few durable monopolies, but if Illumina has one, it would not accept declining profits over time. Moreover, as a durable monopolist, any motivation for the merger would almost certainly be pro-competitive, to obtain efficiencies and to eliminate EDM. There would be no need to purchase GRAIL to raise prices.

¹¹³ Illumina’s Proposed Re-Acquisition of GRAIL, Inc., Vertical Foreclosure and Efficiencies Analysis 2 (Jan. 26, 2021).

plausible that Illumina’s incentives were to facilitate both the upstream product market competition and downstream innovation competition that ultimately developed.

These inconsistent facts illustrate the shortcomings of relying solely on unilateral incentives in this case. One explanation of why Illumina did not act on its ability and incentive to foreclose rival downstream producers of NIPT products is that the antitrust model used by the FTC is too narrow or simply wrong.¹¹⁴ This narrow focus fails to consider the negative effects of foreclosure on Illumina’s long-term strategic goals:

[Illumina] has no incentive and no intention to diminish the competitiveness of any customer, including those that are or may be developing NGS-based screening tests. A hypothetical foreclosure strategy would result in significant harm to the merged firm in the form of lost sales and lost goodwill.¹¹⁵

Some of these lost future sales will be from those who switch to other platforms. Some will be from promising projects that never start.

The proper economic analysis in this case parallels the robust theoretical and empirical work on the economics of franchise contracts. In many states without enforceable franchise termination statutes, franchisors have the legal ability to terminate franchisees at will.¹¹⁶ In those states, franchisors have a short-term incentive, and ability, to terminate opportunistically non-shirking, profitable franchises to expropriate their up-front investments in market discovery and development.¹¹⁷

Nevertheless, examples of mass-franchisee termination are rare, and use of the short-term incentive and ability to engage in opportunism lacks support empirically.¹¹⁸ Moreover, states that effectively regulate franchisors’ ability to terminate franchisees have lower measures of franchise activity.¹¹⁹ In contrast, a more robust theory that considers the long-term incentives of franchisors easily explains the empirical evidence. As Klein and Saft note:

¹¹⁴ The Nobel Prize-winning economist Ronald Coase noted this as a general problem with economic models of competition, famously noting that “if an economist finds something—a business practice of one sort or other—that he does not understand, he looks for a monopoly explanation. And as in this field we are very ignorant, the number of ununderstandable practices tends to be rather large, and the reliance on a monopoly explanation, frequent.” Ronald Coase, *Industrial Organization: A Proposal for Research*, in *Economic Research: Retrospect and Prospect*, Volume 3, POLICY ISSUES AND RESEARCH OPPORTUNITIES IN INDUSTRIAL ORGANIZATION, V. Fuchs, ed. (1962).

¹¹⁵ Proposed Acquisition by Illumina, Inc. of GRAIL, Inc., Non-Invasive Prenatal Testing Market Analysis 13 (Dec. 31, 2020).

¹¹⁶ Jonathan Klick, Bruce H. Kobayashi, and Larry E. Ribstein, *Federalism, Variation, and State Regulation of Franchise Termination*, 3 ENT. BUS. L. J. 355 (listing states with statutes that regulate franchisor’s ability to terminate or not renew contracts with franchisees, and reviewing the economic literature and evidence).

¹¹⁷ Benjamin Klein, *Transaction Costs Determinants of ‘Unfair’ Contractual Arrangements*, 70 AM. ECON. REV. 356 (1980).

¹¹⁸ Benjamin Klein and Lester Saft, *The Law and Economics of Franchise Tying Contracts*, J. L. & ECON. 345, 356-7 (1985).

¹¹⁹ Klick, et al., *supra* note 116, Jonathan Klick, Bruce H. Kobayashi, and Larry E. Ribstein, *The Effect of Contract Regulation on Franchising*, 168 J. INST. THEO. ECON. 38 (2012).

The franchisor is not likely to terminate franchisees merely to confiscate their sunk investments opportunistically because franchisors must be concerned about their reputations when attempting to sell additional franchise locations. Even when the franchise chain is mature and additional franchise sales are unlikely, it may not be in the interest of the franchisor to unfairly terminate all franchisees. [footnote omitted] The present discounted value of the higher cost of running an entirely vertically integrated operation (compared to a franchise operation) may be greater than the franchisor's hold-up potential.¹²⁰

In fact, the Verinata acquisition provides strong evidence of Illumina's myriad pro-competitive reasons to acquire innovative firms like GRAIL. Illumina's ordinary course documents about Verinata revealed a dynamic company seeking to expand the uses for its core NGS products by facilitating—not stifling—complementary innovation downstream. Specifically, Illumina's strategy was to further its core strategic objective: to enable the work and growth of its NGS customer base to expand Illumina's opportunities to sell profitable NGS instruments and consumables.¹²¹

Unlike the instant transaction, with Verinata, Illumina had additional means to foreclose competition through the use of Verinata's IP portfolio—which would have increased the likelihood of successful exclusionary conduct. Nonetheless, there was no indication that Illumina abused its IP rights. To the contrary, not only did Illumina settle an infringement suit brought against a Verinata competitor, it served as a one-stop shop for NIPT licensing and thereby reduced transaction costs associated with patent disputes that had hitherto hindered innovation involving NIPT.¹²²

C. Relevant Precedent

The Federal Trade Commission's precedent more than supports the above analysis. While one of us chaired the FTC, it evaluated *Cytc Corp. / Digene Corp.*, a vertical merger in the health care industry instructively distinct from the facts at issue here. Cytc Corp. and Digene Corp. were near-monopolists in the respective and complementary markets for U.S. liquid-based Pap tests and DNA-based tests for HPV.¹²³ As explained:

The means by which the combined Cytc firm could harm rivals were well defined. The theory was that Digene would no longer support liquid Pap test suppliers who

¹²⁰ Klein and Saft, *supra* note 118.

¹²¹ See Proposed Acquisition by Illumina, Inc. of GRAIL, Inc., Non-Invasive Prenatal Testing Market Analysis at 24 (Dec. 31, 2020).

¹²² Proposed Acquisition by Illumina, Inc. of GRAIL, Inc., Non-Invasive Prenatal Testing Market Analysis 21-22 (Dec. 31, 2020); see also Timothy J. Muris, *Bipartisan Patent Reform and Competition Policy*, AM. ENTER. INST. REPORT (May 2017).

¹²³ Press Release, Fed. Trade Comm'n, FTC Seeks to Block Cytc Corp's Acquisition of Digene Corp. (June 24, 2002), <http://www.ftc.gov/news-events/press-releases/2002/06/ftc-seeks-block-cytc-corps-acquisition-digene-corp>.

were rivals to Cytoc in obtaining the FDA approval necessary for use of the Digene product in combination with the rival's products.¹²⁴

Specifically, the FTC alleged that consumer harms included reduced actual and potential competition in the liquid Pap test market with the merged firm using foreclosure to raise the costs not only of Cycte's sole liquid Pap test competitors, but also those of potential rivals. Facing a daunting legal challenge, the parties ultimately abandoned the transaction.

The contrast with Illumina's acquisition of GRAIL is stark. First, the theories of harm at issue in *Cytoc Corp. / Digene Corp.* concerned a reduction of both actual competition and competition for an actual product from potential rivals—as opposed to the FTC's pure innovation theory in this case. That is, the FTC alleged that the vertical merger would reduce competition in an actual product market—liquid Pap tests—as opposed to an innovation market—namely, pre-commercial MCED tests under development.

Moreover, crucial to the FTC's case was structural evidence of Cytoc and Digene's market power: Cytoc had a 93 percent share in the liquid Pap test market, which cast considerable doubt on whether competition could counter the downstream effects of a foreclosure strategy. As discussed above, however, in challenging Illumina's acquisition of GRAIL, the FTC cannot rely on any structural evidence to buttress its foreclosure theory because, unlike in *Cytoc*, it alleges harm only to future competition given that “no MCED test is currently commercialized.”¹²⁵

The Muris Commission addressed a standalone innovation competition theory in *Genzyme Corporation / Novazyme Pharmaceuticals, Inc.* and, despite stronger facts, came to the opposite conclusion of the FTC in GRAIL. In *Genzyme*, the FTC considered whether the consummated merger between Genzyme and Novazyme would either reduce or facilitate the pace and scope of research into pharmaceutical products for a life-threatening medical condition affecting infants and young children for which no treatment presently existed—that is, whether the merger would reduce competition to create a then non-existent product.¹²⁶ Given the lack of an established link between increased concentration and the likely pace of innovation to develop future products, the fact that Genzyme and Novazyme may have been the only two firms developing a treatment did not show by itself that their merger was anti-competitive.¹²⁷ Rather than examine market structure, the FTC analyzed

¹²⁴ Timothy J. Muris, *Principles for a Successful Competition Agency*, 72 U. CHI. L. REV. 165, 185 (2005).

¹²⁵ FTC Complaint, ¶ 39. See also the discussion of the FTC's *Genzyme* case and the vertical innovation literature in Section II.D *supra*.

¹²⁶ Press Release, Fed. Trade Comm'n, *FTC Closes Its Investigation of Genzyme Corporation's 2001 Acquisition of Novazyme Pharmaceuticals, Inc.* (Jan. 13, 2004), <https://www.ftc.gov/news-events/press-releases/2004/01/ftc-closes-its-investigation-genzyme-corporations-2001>.

¹²⁷ Timothy J. Muris, Chairman, Fed. Trade Comm'n, Statement In the Matter of Genzyme Corporation/Novazyme Pharmaceuticals, Inc. 2–6 (Jan. 13, 2004), available at <https://www.ftc.gov/system/files/attachments/press-releases/ftc-closes-its-investigation-genzyme-corporations-2001-acquisition-novazyme-pharmaceuticals-inc./murisgenzymestmt.pdf> [hereinafter Muris *Genzyme* Statement] (“An analysis based on the specific facts of this case is necessary for assessing the likely effects of the *Genzyme/Novazyme* merger on the pace of innovation for therapies for Pompe disease and

the merger’s actual effects (that is, its performance), which presented “no evidence that the merger had reduced R&D spending on either the Genzyme or the Novazyme program or slowed progress along either of the R&D paths.”¹²⁸

The nature of the two companies and the merger agreement were important to the Commission’s decision. Genzyme had nearly \$1 billion in sales and almost 70 times the number of employees as did Novazyme, a company with no revenues from product sales. Although the latter was the only other company still trying to develop a treatment, its progress was at a fairly early stage, showing promising results only in trials with mice. Crucially, the company’s founder and chief scientific officer had two children with the disease, and his willingness to participate in the merged company appeared to demonstrate his belief that this was the best, and fastest, path to success. It was also important to the decision that the merger agreement placed Novazyme shareholders both inside and outside of Genzyme with strong incentives “to blow the whistle—and possibly litigate—if Genzyme failed to pursue the promise of the Novazyme technology.”¹²⁹

While the theory of harm in *Genzyme* was vague at best, the benefits certainly were not. The research and development at issue in that case was to find a treatment for a horrible life-threatening medical condition affecting infants and young children known as Pompe’s disease, a genetic disorder caused by an enzyme deficiency. The two other research programs into potential treatments were abandoned following human trials because the replacement enzymes required could not be produced at sufficient scale.¹³⁰ After careful consideration, the unsubstantiated claims of harm simply could not justify unwinding a consummated merger that “on balance [] is likely to be procompetitive, and thus patients’ lives are more likely to be saved by this merger than to be put at risk.”¹³¹

The core lessons of *Genzyme* apply directly to Illumina’s acquisition of the GRAIL shares it does not own already. As in *Genzyme*, the FTC considers a standalone theory whereby the purported anti-competitive harm is in a “pre-commercial” innovation market.¹³² For this reason, like *Genzyme*, the FTC cannot rely on structural evidence to show anti-competitive harm, but instead must examine other evidence related to the purpose, power, and effect of the transaction.¹³³ Importantly, unlike *Genzyme*, which was an investigation of a consummated merger allegedly to monopoly, any prediction of effects in the innovation

therefore on patient welfare. As I have noted, neither economic theory nor empirical research supports an inference regarding the merger’s likely effect on innovation (and hence patient welfare) based simply on observing how the merger changed the number of independent R&D programs. Rather, one must examine whether the merged firm was likely to have a reduced incentive to invest in R&D, and also whether it was likely to have the ability to conduct R&D more successfully.”)

¹²⁸ Muris, *Genzyme* statement at 16.

¹²⁹ Muris, *Genzyme* statement at 16.

¹³⁰ Muris, *Genzyme* statement at 15.

¹³¹ Muris, *Genzyme* statement at 20.

¹³² Complaint ¶ 47.

¹³³ *U.S. v. AT&T*, 916 F.3d 1029, 1032 (D.C. Cir. 2019).

market at issue here cannot be based on such a theory.¹³⁴ The economic basis for the FTC's concerns in *Genzyme Corporation* was thus far more serious than in the GRAIL case. Whereas there is an extensive theoretical literature, albeit inconclusive, on how head-to-head rivalry—as opposed to market structure—can drive innovation competition, empirical evidence and game-theory models of foreclosure in the context of potential competition are scarce.¹³⁵

D. Illumina-GRAIL Presents Cognizable Pro-Competitive Benefits

Whereas the evidence of competitive harm from an Illumina-GRAIL transaction is scant, evidence of cognizable procompetitive benefits abounds. GRAIL currently purchases NGS products under a long-term supply agreement, and the merger will incentivize a combined Illumina-GRAIL to eliminate double marginalization, and therefore set a lower price for its MCED. Additionally, eliminating the ad valorem royalty Illumina receives from GRAIL for its net sales of cancer tests and services also will eliminate double marginalization that will lower prices and increase output.¹³⁶ Post-merger, GRAIL will not have to pay Illumina the ad valorem royalty on future sales owed under an existing agreement—thus giving it an additional marginal incentive to lower prices. Relative to the typical merger, the instant transaction thus provides multiple forms of downward pricing pressure from EDM that must be analyzed with the FTC's alleged incentives to foreclose potential competition for MECED tests.

As noted above, the VMGs require that “[t]o the extent practicable and appropriate, the Agencies will use the same set of facts and assumptions to evaluate both the potential harm from a vertical merger and the potential benefits of the elimination of double

¹³⁴ Carl Shapiro is critical of the FTC decision in the case. *See* Shapiro, *supra* note 76 at 368, 394-8. In contrast to the Commission's decision, he suggests that Genzyme and Novazyme were engaged in a race for FDA marketing exclusivity under the Orphan Drug Act, and that the merger slowed innovation both for Genzyme's first to treatment, as well as through the repositioning of Novazyme's development as a second-to-market improvement drug. This is not the forum for a detailed rebuttal, but the Muris statement considered the “race” theory in detail, rejected it, relying on evidence, including that discussed in the text regarding the structure and nature of the parties and the merger agreement, that Shapiro ignores. Moreover, the Commission dissenter, cited approvingly by Shapiro, relied largely on a structural presumption that economic theory, with which Shapiro agrees in principle, rejects in innovation mergers. Finally, disagreement over what inferences can be made based on the observed effects of a consummated merger illustrates the difficulty in predicting innovation effects prospectively, and Shapiro relies in part on evidence that occurred after the Commission's decisions. Even on a theoretical basis, races to innovate based on winner take all patents, or in this case FDA marketing exclusivity, can result in excess resources to innovation as well as innovation not timed optimally. *See, e.g.*, Partha Dasgupta and Joseph E. Stiglitz, *Uncertainty, Industrial Structure, and the Speed of R&D*, 11 BELL J. ECON. 1 (1980); Yoram Barzel, *Optimal Timing of Innovation*, 50 REV. ECON. STAT. 348 (1968).

¹³⁵ For example, the Department of Justice's scrutiny of the abandoned merger between Applied Materials and Tokyo Electron was focused on harm to innovation involved “competition eliminated by the merger, particularly with respect to the development of equipment for next-generation semiconductors.” Press Release, *Applied Materials Inc. and Tokyo Electron Abandon Merger Plans After Justice Department Rejected Their Proposed Remedy*, DOJ Antitrust Division (Apr. 27, 2015), <https://www.justice.gov/opa/pr/applied-materials-inc-and-tokyo-electron-ltd-abandon-merger-plans-after-justice-department>.

¹³⁶ For a discussion of the downstream pricing effect of Ad Valorem Royalties, see Gerard Llobet & Jorge Padilla, *The Optimal Scope of the Royalty Base in Patent Licensing*, 59 J. L. & ECON. 45 (2016).

marginalization, and will focus on evaluating conduct that would be most profitable for the merged firm as a whole.”¹³⁷ One can estimate the size of the Illumina/GRAIL’s EDM incentive from the pre-merger long-term supply contract between Illumina and GRAIL, as well as the size of the ad valorem royalty on GRAIL’s revenues that would have been paid to Illumina under the contract that existed prior to the merger. In contrast, given the pre-commercial nature of the relevant MCED market, the data on margins and diversions necessary to produce reliable predictions about the merger’s unilateral effects do not exist. Moreover, the benefits from EDM will occur close in time, while any speculative harms from RRC are far in the future and would have to be discounted to present value in any analysis of the net effects.

As discussed earlier,¹³⁸ while “arms-length market transactions” between the GPT and its downstream users result in “too little, too late” innovation, a merger allows the integrated firm to internalize innovation spillovers and increase innovation.¹³⁹ Such vertical integration can allow for better information flows and better coordination, by which vertically integrated firms internalize innovation complementarities that would become innovation externalities under arms-length contracting.¹⁴⁰ The result is improved incentives to invest in and capture R&D synergies, as combining Illumina’s expertise in sequencing and bioinformatics with GRAIL’s expertise in data science and software development improves both levels of the vertical chain.¹⁴¹ The effects will not be limited to the MCED tests sector and imitative innovation, but would spill over into multiple sectors that use Illumina’s GPT as an input to produce both new and complementary products where no incentives to foreclose exist. Moreover, product differentiation and the production of new products can allow a vertical merger to create dynamic efficiencies, resulting in complementary or new, unrelated innovations.¹⁴²

The formation of GRAIL by Illumina is a striking example of the complementary innovation of vertical integration on innovation. In 2013, Illumina acquired Verinata Health and its non-invasive prenatal test, which tests the mother’s blood to detect chromosomal abnormalities in the fetus. Illumina researchers, studying what were thought to be false positive signals regarding abnormalities in the fetus, discovered that the Verinata Verifi NIPT test had instead discovered circulating tumor DNA fragments circulating in the mother’s bloodstream. This discovery led directly to Illumina’s founding of GRAIL. Put

¹³⁷ VMG at 5.

¹³⁸ See Section II.D, *supra*.

¹³⁹ Bresnahan & Trajtenberg (1995).

¹⁴⁰ For an recent application of the Bresnahan & Trajtenberg hypothesis, see Chemyu Yang, Vertical Structure and Innovation: A Study of the SoC and Smartphone Industries, 51 RAND J.ECON. 739 (2020) (simulation of a hypothetical merger between Qualcomm and HTC would improve incentives for innovation).

¹⁴¹ Vertical Foreclosure and Efficiencies Analysis, *supra* note 113 at 55.

¹⁴² *Id.* at 25-26. One primary shortcoming of the existing literature on dynamic competition and innovation is that it tends to focus on horizontal competition and to equate “more competition” with “more innovation” and generally ignores complementary innovation and the production of variety. See Shapiro, *supra* note 134 at 374. There are a few exceptions, discussed below in Section 2.C., *infra*. The production of differentiated or complementary products would present significantly different theoretical effects. Moreover, the production of new differentiated products can be of great value. See, e.g., Hausman, Valuation of New Goods under Perfect and Imperfect Competition, in *The Economics of New Goods*, Bresnahan and Gordon, eds (1996).

another way, Illumina/Verinata's NIPT tests formed the basis for the invention of a new product in a different downstream sector, in this case MCED testing.

Transaction cost efficiencies are prominent. As noted above, Illumina founded GRAIL and continued to hold a controlling share. The initial decision to allow outside investment that diluted Illumina's stake in GRAIL allowed it to operate as a smaller and more flexible entity.¹⁴³ GRAIL could take more risk, focus on innovation, and attract both monetary and human capital.¹⁴⁴

As GRAIL moves from research and development to commercialization, the company faces different challenges that vertical integration with Illumina, which has superior knowledge and experience, can help solve. These challenges include clinical testing, FDA approval, commercialization, production at scale, and insurance acceptance.¹⁴⁵ Yet, the FTC is currently deterring GRAIL—and setting a dangerous precedent for firms like it—from adjusting its scope optimally based on changing circumstances over the firm's life cycle. By preventing GRAIL from reducing transaction costs (through efficient Coasian adjustments to the size, scope, and organization of the firm), the FTC is likely inducing higher costs, higher prices, and less innovation.

Indeed, much like *Genzyme*, the core pro-competitive benefit here is in facilitating innovation to save lives. As Illumina CEO Francis deSouza stated in a May 2021 *Wall Street Journal* op-ed:

Illumina formed GRAIL to combine our passion to fight cancer with our culture of innovation and our will to pursue large challenges to better human health. GRAIL built a large laboratory, advanced the science, collected data and conducted clinical research to move from this exciting idea and achieve proof of concept. In doing so, the new company developed a blood test that can screen for more than 50 types of cancer, 45 of which have no other current screening test. We announced last year our intent to reunite with GRAIL to make this cancer-screening test widely available, accessible and affordable, accelerating the test's broad adoption and saving tens of thousands of lives."¹⁴⁶

Specifically, according to the FTC's administrative complaint, the widespread adoption and use of GRAIL's MCED tests have the potential to save tens of thousands of lives, which, when using U.S. government estimates of the value of a statistical life, saves billions of dollars across the economy.¹⁴⁷ The faster its adoption, the better off patients will be. And

¹⁴³ See, e.g., Thom Lambert, *Bad Blood at the FTC*, TRUTH ON THE MARKET, (June 9, 2021), <https://truthonthemarket.com/2021/06/09/bad-blood-at-the-ftc/>

¹⁴⁴ *Id.*

¹⁴⁵ Vertical Foreclosure and Efficiencies Analysis, *supra* note 113 at 56 (Jan. 26, 2021).

¹⁴⁶ Francis deSouza, *FTC Imperils a Cancer Breakthrough*, WALL ST. J. (May 6, 2021).

¹⁴⁷ See Thomas J. Kniesner & W. Kip Viscusi, *The Value of a Statistical Life*, in *The Oxford Research Encyclopedia of Economics and Finance* (2019), <https://oxfordre.com/economics/view/10.1093/acrefore/9780190625979.001.0001/acrefore-9780190625979-e-138> Estimates of the value of a statistical life for the United States are around \$10 million

this estimate does not include benefits to consumers from the peace of mind with an even larger number of correct negative tests.

As noted above, these benefits will occur much sooner than the speculative and distant in time harms the FTC alleges. Even if there was some probability of lower prices in the distant future, the benefits from avoiding any such harm would have to be discounted heavily relative to the near-term benefits from accelerating the widespread use of GRAIL's MCED test. The FTC, in its administrative complaint and in the Complaint Counsel's Pre-Trial Brief, makes no attempt to discount these distant harms to present value. Moreover, those most harmed by an antitrust-generated delay will not be alive to benefit from any lowering of prices of MCED tests in the future.

Because the pro-competitive purposes behind Illumina's Verinata acquisition have largely been realized, that acquisition also provides strong empirical evidence that an Illumina-GRAIL transaction will provide verifiable benefits.¹⁴⁸ As discussed above,¹⁴⁹ the market has expanded, with Verinata's shares of both sales and tests falling since the acquisition.

Moreover, there is direct evidence that Illumina has not acted on incentives to raise rivals' costs. As also noted above, input prices of consumables to firms in the downstream NIPT section have fallen post-merger, both absolutely and relative to firms in non-NIPT sectors where Illumina does not sell downstream.¹⁵⁰

Finally, the efficiencies associated with vertical integration also appear to be merger-specific, based on the unique knowledge and experience of Illumina and the well-documented asset specificity between GRAIL's Galleri MCED test and Illumina's NGS platform.¹⁵¹ As Illumina's acquisition proposal notes:

No NGS-based cancer screening test has been submitted for regulatory approval, and no blood-based cancer screening test of any kind has ever achieved Medicare or private payor coverage. Illumina has the depth of experience, expertise and capabilities, developed over many years as a pioneer in sequencing, to minimize the risks of delays.¹⁵²

(\$2017). Even a small acceleration in the widespread adoption of GRAIL's first to market MCED tests could save thousands of lives. Specifically, the FTC's administrative complaint states that the widespread adoption and use of MCED tests have the potential to save 100,000 lives per year. Using a conservative value of a statistical life estimate of \$5 million, the increase in consumer surplus would be \$5 billion per 1,000 lives saved. This rough estimate suggests even a small delay in the widespread adoption and use of GRAIL's first to market MCED tests would decrease consumer surplus enormously from unnecessary deaths.

¹⁴⁸ Illumina's Proposed Re-Acquisition of GRAIL, Inc., Non-Invasive Prenatal Testing Market Analysis 6-24 (Dec. 31, 2020).

¹⁴⁹ See Section II.D, *supra*.

¹⁵⁰ Proposed Acquisition by Illumina, Inc. of GRAIL, Inc., Non-Invasive Prenatal Testing Market Analysis 13 (Dec. 31, 2020).

¹⁵¹ See also P-T Brief at 103-5.

¹⁵² See Vertical Foreclosure and Efficiencies Analysis, *supra* note 113 at 3, Part II.B.

The Complaint Counsel ignore these points, summarily dismissing the efficiencies as neither verifiable nor merger-specific:

GRAIL could likely accomplish this result by other means such as the hiring of employees with relevant expertise or the retention of third-party consultants. ... Respondents also fail to explain adequately why GRAIL could not gain this expertise through partnership with a company other than Illumina, or through an agreement with Illumina outside of the Proposed Acquisition.¹⁵³

These arguments illustrate the same dubious analysis that Nobel Laureate Professor Ronald Coase confronted in his seminal 1937 article, “The Nature of the Firm.”¹⁵⁴ Coase noted that analyses assuming zero transactions costs, and thus the equivalence of arm’s length contracts and coordination within a firm, could not explain the boundaries of a firm or even why firms exist at all.¹⁵⁵ The economics profession, in the 80-plus years since Coase’s seminal article, has abandoned such dubious assumptions when studying the real world marketplace.¹⁵⁶ As explained above, so have the VMGs.¹⁵⁷ But not the Complaint Counsel.

E. The Proposed Remedy Is More than Sufficient

This case should be dismissed. The FTC’s theories alleging standalone harms to future competition through foreclosure lack support either in the factual record or in Commission precedent, which suggests a very small expected value of anti-competitive harms, while Illumina points to substantial and cognizable efficiencies.

If, somehow, the FTC could instead demonstrate that Illumina’s recent acquisition of the GRAIL shares it does not own already would harm consumers, it would still need to prove that Illumina’s contractual commitments to its downstream customers protect consumers inadequately. Specifically, Illumina has offered irrevocable long-term supply agreements to current and future customers developing or selling NGS-based oncology tests to ensure they are not foreclosed from use of its DNA sequencing platform. As the Department of Justice’s (DOJ) Antitrust Division recently makes clear in its merger remedies manual, such standalone behavioral relief is sufficient when: “(1) a transaction generates significant efficiencies that cannot be achieved without the merger; (2) a structural remedy is not possible; (3) the conduct remedy will completely cure the anticompetitive harm, and (4) the remedy can be enforced effectively.”¹⁵⁸

Illumina’s acquisition of GRAIL coupled with these contractual commitments satisfy these conditions, which are rather strict relative to typical agency practice. First,

¹⁵³ See P-T Brief at 106-7.

¹⁵⁴ Coase, *supra* note 80.

¹⁵⁵ *Id.*

¹⁵⁶ See Section II.D, *supra*, Kaplow, *supra* note 46 at 564-75.

¹⁵⁷ As noted above, the VMGs importantly note that a “single firm able to coordinate how these assets are used may be able to streamline production, inventory management, or distribution, or create innovative products in ways that would have been hard to achieve through arm’s length contracts.”

¹⁵⁸ DEP’T OF JUSTICE, MERGER REMEDIES MANUAL 16 (2020).

Illumina/GRAIL argue that eliminating both double marginalization and a sizable ad valorem royalty on revenues amounts to elimination of double marginalization of a magnitude greater than \$2 billion over 10 years.¹⁵⁹ With this significant and immediate EDM, the FTC is clearly wrong in claiming that “[to] the extent that Acquisition results in any elimination of double-marginalization, Respondents cannot demonstrate that such a reduction in margin would offset the likely harm of the Acquisition.”¹⁶⁰ The EDM benefits plus the benefits from the acceleration of the widespread use of the GRAIL MCED more than likely outweigh the present value of any future reduction in prices generated from the FTC’s hypothesized lost innovation. These are surely substantial benefits the FTC should not forsake in light of Illumina’s remedy.

Moreover, standalone theories alleging harm to innovation through foreclosure do not support structural relief. Because there is no link established between market structure and innovation, regulators have no sound basis to determine what level of market de-concentration, and therefore divestiture, would preserve competition.¹⁶¹ If remedies must be “no more intrusive than necessary to cure the competitive harm,”¹⁶² then the necessary factual predicate for fashioning proper structural remedies—namely, which assets must be divested to preserve competition—does not exist in these innovation cases. The fact that Illumina’s acquisition of the GRAIL shares it does not own already is a vertical merger compounds these difficulties, and it is unclear how the FTC would determine which assets need to be divested to prevent substantial foreclosure without sacrificing the merger’s benefits. For this reason, a behavioral remedy similar to Illumina’s contractual commitments would likely be the only apparent remedy. Even in horizontal innovation mergers like *Genzyme*, devising a structural remedy would have been a difficult task.¹⁶³ Indeed, based on our personal extensive experience and confirmatory research, we can identify *no* instances in which the Commission has imposed structural relief on a vertical merger that posed standalone innovation concerns.

Illumina’s proposed remedy would also prevent possible consumer harm. As the FTC surely knows, behavioral remedies are the default method to address foreclosure concerns in vertical mergers. The FTC continues to use supply agreements of the kind that Illumina has entered, or is the process of finalizing, with the known Illumina customers developing cancer screening tests in the U.S.¹⁶⁴ This practice is well founded; in its study of merger remedies, the FTC recognized that supply agreements can “provide the buyer with the ability to compete immediately in situations in which competition might otherwise be delayed or less effective” and that “this was the typical outcome in matters that involved supply agreements.”¹⁶⁵

¹⁵⁹ Answer, *Federal Trade Commission v. Illumina, Inc.*, at 12–13, No. 1:21-cv-00873-RC (D.D.C. Apr. 1, 2021).

¹⁶⁰ Complaint, at 25.

¹⁶¹ See *infra* Section II.C.

¹⁶² DEP’T OF JUSTICE, MERGER REMEDIES MANUAL 3 (2020).

¹⁶³ See generally Muris *Genzyme* Statement, at 21.

¹⁶⁴ See, e.g., In the matter of Northrop Grumman and Orbital ATK, Comm’n File No. 1810005 (Dec. 4, 2018).

¹⁶⁵ FED. TRADE COMM’N, THE FTC’S MERGER REMEDIES 2006-2012 A REPORT OF THE BUREAU OF COMPETITION AND ECONOMICS 27 (Jan. 2017).

The facts here are no exception. The proposed remedy is unlike supply agreements that the agencies have rejected, such as those raising material horizontal concerns.¹⁶⁶ Moreover, Illumina’s contractual remedies seek to assure current and future downstream users of its services that they will be treated similarly to other non-vertically integrated downstream users. Because the vast majority of those uses will not involve products that compete with Illumina-owned downstream products and services, the agreement provides both a reliable reference point to contracts not affected by foreclosure incentives. The Illumina contractual remedy thus solves the problem of price determination that would have afflicted a supply agreement where all of the covered parties were subject to incentives for engaging in strategies to raise rivals’ costs.¹⁶⁷

Finally, Illumina’s supply agreement includes both contractual and market-based mechanisms to ensure effective enforcement. First, the Illumina contractual remedies, such as regular audits and ex-ante arbitration provisions, demonstrate its commitment to prevent the differential treatment of firms with products that compete with Illumina in downstream markets. With these commitments, Illumina cannot increase the prices to engage in foreclosure without raising its input prices to *all* users of the NGS platform. Because most of these downstream uses will not compete with an Illumina-owned downstream application, Illumina will not have the incentive to raise its downstream users’ costs because of its ownership of GRAIL, Verinata, or any downstream product that uses its NGS platform. Second, Illumina has already successfully extended other long-term, substantially similar supply agreements with a number of laboratory services customers, including with its most likely potential competitors in blood cancer testing.¹⁶⁸ Thus, supply agreements of the kind contemplated by the remedy here are already in use in the industry, and have not caused any material enforcement concerns.

Complaint Counsel argues that Illumina’s supply agreements are inadequate and fall far short of meeting their burden to show that a proposed remedy will effectively preserve competition in the relevant market. As noted above, the Complaint Counsel’s brief conveniently assumes a world of zero transactions costs when denying the merger specificity of Illumina’s EDM and transactions cost efficiencies.¹⁶⁹ When the assumption of zero transactions costs does not support its argument, Complaint Counsel’s Brief suddenly pivots to recognize the existence and importance of positive transactions costs and incomplete

¹⁶⁶ Press Release, Dep’t of Justice, Justice Department Reaches Settlement with Anheuser-Busch InBev and Grupo Modelo in Beer Case (Apr. 19, 2013), <https://www.justice.gov/opa/pr/justice-department-reaches-settlement-anheuser-busch-inbev-and-grupo-modelo-beer-case>. Complaint, *United States v. Anheuser-Busch InBev SA/NV*, Case No. 1:13-cv-00127 (Jan. 31, 2013).

¹⁶⁷ The same issue of dynamic price determination is one reason that the regulation of prices, as well as regulatory and antitrust duties to deal fail to produce efficient outcomes. *See, e.g.*, Bruce H. Kobayashi & Joshua D. Wright, *Antitrust and Ex-Ante Sector Regulation*, in *THE GLOBAL ANTITRUST INSTITUTE REPORT ON THE DIGITAL ECONOMY* (2020).

¹⁶⁸ Answer, *Federal Trade Commission v. Illumina, Inc.*, at 4, No. 1:21-cv-00873-RC (D.D.C. Apr. 1, 2021) (“Some of Illumina’s largest oncology customers have signed agreements on similar terms and stated that these binding commitments address any concerns they may have had regarding the merger.”).

¹⁶⁹ See note 63, *supra*.

contracts, stating: “Accordingly, it is difficult, if not impossible, today for either Illumina or MCED test developers to draft sufficient contractual terms to protect against competitive harms over the next twelve years.”¹⁷⁰

III. Conclusion

In challenging Illumina’s acquisition of GRAIL, the Federal Trade Commission has picked the wrong vertical merger to use as an example of a new enforcement program in this area. While some vertical mergers may well prove harmful, the FTC’s theory in this case is premised upon harm to competition in a pre-commercial innovation market through alleged foreclosure. Neither economic evidence nor FTC precedent condone the use of structural evidence to demonstrate power over price in these circumstances. Rather, the relevant evidence about the purpose, power, and effect of the transaction, in all major respects, points to the merged firm’s incentive and ability to produce cognizable benefits that will help consumers in the most important way conceivable: bringing to market new technologies that will save lives.

¹⁷⁰ P-T Brief at 114.

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