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Technology Mergers and the Market for Corporate Control

Geoffrey A. Manne

Samuel Bowman

Dirk Auer

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Geoffrey A. Manne (President & Founder, International Center for Law & Economics), Samuel Bowman (Director of Competition Policy, International Center for Law & Economics), and Dirk Auer (Senior Fellow, International Center for Law & Economics)

ABSTRACT

Several high-profile academic articles and reports claim to have identified important gaps in current merger enforcement rules, particularly with respect to tech and pharma acquisitions involving nascent and potential competitors—so-called "killer acquisitions" and "kill zones." As a result of these perceived deficiencies, scholars and enforcers have called for tougher rules, including the introduction of lower merger filing thresholds and substantive changes, such as the inversion of the burden of proof when authorities review mergers and acquisitions in the digital platform industry. Meanwhile, and seemingly in response to the increased political and advocacy pressures around the issue, U.S. antitrust enforcers have recently undertaken several enforcement actions directly targeting such acquisitions.

As this paper discusses, however, these proposals tend to overlook the important tradeoffs that would ensue from attempts to decrease the number of false positives under existing merger rules and thresholds. While merger enforcement ought to be mindful of these possible theories of harm, the theories and evidence are not nearly as robust as many proponents suggest. Most importantly, there is insufficient basis to conclude that the costs of permitting the behavior they identify is greater than the costs would be of increasing enforcement to prohibit it.

TABLE OF CONTENTS

I. INTRODUCTION

The antitrust policy world has fallen out of love with corporate mergers. After decades of relatively *laissez faire* enforcement, spurred in part by the emergence of Chicago School economics,[1] a growing number of policymakers and scholars are calling for tougher rules to curb corporate acquisitions. But these appeals are premature. There is currently little evidence to suggest that mergers systematically harm consumer welfare. More importantly, scholars fail to identify alternative institutional arrangements that would capture the anticompetitive mergers that evade prosecution without disproportionate false positives and administrative costs. Their proposals thus fail to meet the requirements of the error-cost framework.

There are multiple reasons for the antitrust community's about-face. These include concerns about rising market concentration,[2] labor market

[1] *See, e.g.*, Jonathan B. Baker, *Recent developments in economics that challenge Chicago school views*, 58 ANTITRUST L.J. 645, 655 (1989) ("Over the past fifteen years, the courts and enforcement agencies have created Robert Bork's antitrust paradise. Antitrust has adopted the Chicago School's efficiency analysis and the Chicago School's conclusions about the effects of business practices."). Note that, in many ways, the Chicago and late-Harvard views are somewhat similar when it comes to mergers, both schools of thought might thus have influenced this loosening of merger policy. *See, e.g.*, Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. Penn. L. Rev. 925, 937-938 (1979) ("The change in thinking that has been brought about by the Chicago school is nowhere more evident than in the area of vertical integration. Kaysen and Turner, writing in 1959, advocated for- bidding any vertical merger in which the acquiring firm had twenty percent or more of its market. Areeda and Turner, writing in 1978, express very little concern with anticompetitive effects from vertical integration. In fact, as between a rule of per se illegality for vertical integration by monopolists and a rule of per se legality, their preference is for the latter.").

[2] *See, e.g.*, Germán Gutiérrez & Thomas Philippon, *Declining Competition and Investment in the U.S.* 1 (NBER, Working Paper No. 23583, 2017) ("The U.S. business sector has under-invested relative to Tobin's Q since the early 2000's. We argue that declining competition is partly responsible for this phenomenon."). *Contra*, Esteban Rossi-Hansberg, Pierre-Daniel Sarte & Nicholas Trachter, *Diverging Trends in National and Local Concentration* 1 (NBER Macroeconomics Annual, Working Paper No. 25066, 2018) ("Using US NETS data, we present evidence that the positive trend observed in national product-market concentration between 1990 and 2014 becomes a negative trend when we focus on measures of local concentration. We document diverging trends for several geographic definitions of local markets. SIC 8 industries with diverging trends are pervasive across sectors. In these industries, top firms have contributed to the amplification of both trends. When a top firm opens a plant, local concentration declines and remains lower for at least 7 years. Our findings, therefore, reconcile the increasing national role of large firms with falling local concentration, and a likely more competitive local environment.").

monopsony power,[3] and large corporations undermining the very fabric of western democracy.[4] But, of these numerous (mis)apprehensions, one has received the lion's share of scholarly and political attention. A growing number of voices argue that existing merger rules fail to apprehend competitively significant mergers that either fall below existing merger filing thresholds or affect innovation in ways that are, allegedly, ignored by current rules.[5] FTC Commissioner Rohit Chopra, for instance, asserted recently that too many transactions avoid antitrust scrutiny by falling through the cracks of Hart-Scott-Rodino Improvements Act of 1976 ("HSR") premerger notification thresholds.[6] As a result, Chopra claims, "[t]he FTC ends up missing a large number of anticompetitive mergers every year."[7]

These fears are particularly acute in the pharmaceutical and tech industries where several high-profile academic articles and reports claim to have identified important gaps in current merger enforcement rules, particularly with respect to acquisitions involving nascent and potential competitors.[8] Some of these gaps are purported to arise in situations that

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[3] *See, e.g.*, José Azar, Ioana Marinescu, Marshall Steinbaum & Bledi Taska, *Concentration in U.S. labor markets: Evidence from online vacancy data*, 66 LABOUR ECON. (NBER, Working Papers No. 101886, 2020) ("These indicators suggest that employer concentration is a meaningful measure of employer power in labor markets, that there is a high degree of employer power in labor markets, and also that it varies widely across occupations and geography.").

[4] *See, e.g.*, TIM WU, THE CURSE OF BIGNESS: ANTITRUST IN THE NEW GILDED AGE 9 (2018) ("We have managed to recreate both the economics and politics of a century ago—the first Gilded Age—and remain in grave danger of repeating more of the signature errors of the twentieth century. As that era has taught us, extreme economic concentration yields gross inequality and material suffering, feeding an appetite for nationalistic and extremist leadership. Yet, as if blind to the greatest lessons of the last century, we are going down the same path. If we learned one thing from the Gilded Age, it should have been this: The road to fascism and dictatorship is paved with failures of economic policy to serve the needs of the general public.").

[5] *Infra*, Section VI.

[6] Rohit Chopra, *Statement of Commissioner Rohit Chopra*, 85 FED. REG. 231, 77052 (2020) ("Adequate premerger reporting is a helpful tool used to halt anticompetitive transactions before too much damage is done. However, the usefulness of the HSR Act only goes so far. This is because many deals can quietly close without any notification and reporting, since only transactions above a certain size are reportable.").

[7] *Id.*

[8] *See* Collen Cunningham et al., *Killer Acquisitions*, 129 J. POL. ECON. 649, 671 (2021); Sai Krishna Kamepalli, Raghuram Rajan & Luigi Zingales, *Kill Zone* 49 (Nat'l Bureau of Econ. Research, Working Paper No. 27146, 2020); DIGITAL COMPETITION EXPERT PANEL, UNLOCKING DIGITAL COMPETITION 46 (Mar. 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf [https://perma.cc/8PFE-VHED]; Stigler Center for the Study of the Economy and the

would normally appear to be procompetitive:

> Established incumbents in spaces like tech, digital payments, internet, pharma and more have embarked on bids to acquire features, businesses and functionalities to shortcut the time and effort they would otherwise require for organic expansion. We have traditionally looked at these cases benignly, but it is now right to be much more cautious.[9]

As a result of these perceived deficiencies scholars and enforcers have called for tougher rules, such as the introduction of lower merger filing thresholds and substantive changes. These substantive changes notably include inverting the burden of proof when authorities review mergers and acquisitions in the digital platform industry.[10] Meanwhile, and seemingly in response to the increased political and advocacy pressures around the issue, U.S. antitrust enforcers have recently undertaken several enforcement actions directly targeting such acquisitions.[11]

State, *Stigler Committee on Digital Platforms, Final Report* 234 (2019), https://www.publicknowledge.org/wp-content/uploads/2019/09/Stigler-Committee-on-Digital-Platforms-Final-Report.pdf [https://perma.cc/MJV9-PHLD]; Australian Competition & Consumer Commission, *Digital Platforms Inquiry, Final Report* 76 (2019), https://www.accc.gov.au/system/files/Digital%20platforms%20inquiry%20-%20final%20report.pdf [https://perma.cc/C7QT-6UD4]; *see also* Jacques Crémer, et al., *Competition Policy For The Digital Era Final Report* 120 (2019), https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf [https://perma.cc/UHX3-TR53] [hereinafter "Crémer Report"].

[9] Cristina Caffarra, et al., "*How Tech Rolls": Potential Competition and "Reverse" Killer Acquisitions*, 2 ANTITRUST CHRON. 1, 1 (2020), https://www.competitionpolicyinternational.com/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions/ [https://perma.cc/A5Z9-NS8U].

[10] As far as jurisdictional thresholds are concerned, *see, e.g.*, Crémer Report, *supra* note 8, at 10 ("Many of these acquisitions may escape the Commission's jurisdiction because they take place when the start-ups do not yet generate sufficient turnover to meet the thresholds set out in the EUMR. This is because many digital startups attempt first to build a successful product and attract a large user base while sacrificing short-term profits; therefore, the competitive potential of such start-ups may not be reflected in their turnover. To fill this gap, some Member States have introduced alternative thresholds based on the value of the transaction, but their practical effects still have to be verified."). As far as inverting the burden of proof is concerned, *see id.* at 11 ("The test proposed here would imply a heightened degree of control of acquisitions of small start-ups by dominant platforms and/or ecosystems, to be analysed as a possible strategy against partial user defection from the ecosystem. Where an acquisition is plausibly part of such a strategy, the notifying parties should bear the burden of showing that the adverse effects on competition are offset by merger-specific efficiencies.").

[11] *See* FTC Press Release, *FTC Sues to Block Procter & Gamble's Acquisition of Billie, Inc.* (Dec. 8, 2020), https://www.ftc.gov/news-events/press-

As this paper discusses, these proposals tend to overlook the important tradeoffs that would ensue from attempts to decrease the number of false positives under existing merger rules and thresholds. While merger enforcement ought to be mindful of these possible theories of harm, the theories and evidence are not nearly as robust as many proponents suggest. Most importantly, there is insufficient basis to conclude that the costs of permitting the behavior they identify is greater than the costs would be of increasing enforcement to prohibit it.[12]

Our work draws from two key strands of economic literature that are routinely overlooked (or summarily dismissed) by critics of the status quo. For a start, as Frank Easterbrook argued in his pioneering work on *The Limits of Antitrust*, antitrust enforcement is anything but costless.[13] In the case of merger enforcement, not only is it expensive for agencies to detect anticompetitive deals but, more importantly, overbearing rules may deter beneficial merger activity that creates value for consumers. Indeed, not only are most mergers welfare-enhancing, but barriers to merger activity have been shown to significantly, and negatively, affect early company investment.[14]

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releases/2020/12/ftc-sues-block-procter-gambles-acquisition-billie-inc [https://perma.cc/5SW6-JJS3]; DOJ Press Release, *Justice Department Sues to Block Visa's Proposed Acquisition of Plaid* (Nov. 5, 2020), https://www.justice.gov/opa/pr/justice-department-sues-block-visas-proposed-acquisition-plaid [https://perma.cc/7J9U-3SF5]; FTC Press Release, *FTC Files Suit to Block Edgewell Personal Care Company's Acquisition of Harry's, Inc*. (Feb. 3, 2020), https://www.ftc.gov/news-events/press-releases/2020/02/ftc-files-suit-block-edgewell-personal-care-companys-acquisition [https://perma.cc/T4JH-X7ET]; FTC Press Release, *FTC Challenges Illumina's Proposed Acquisition of PacBio* (Dec. 17, 2019), https://www.ftc.gov/news-events/press-releases/2019/12/ftc-challenges-illuminas-proposed-acquisition-pacbio [https://perma.cc/A8M7-37DB]; DOJ Press Release, *Justice Department Sues to Block Sabre's Acquisition of Farelogix* (Aug. 20, 2019), https://www.justice.gov/opa/pr/justice-department-sues-block-sabres-acquisition-farelogix [https://perma.cc/3ZYY-BTXQ].

[12] *See, e.g.*, Prepared Remarks of Commissioner Noah Joshua Phillips, *Reasonably Capable? Applying Section 2 to Acquisitions of Nascent Competitors, Antitrust in the Technology Sector: Policy Perspectives and Insights From the Enforcers Conference* (Apr. 29, 2021), https://www.ftc.gov/system/files/documents/public_statements/1589524/reasonably_capable_-_acquisitions_of_nascent_competitors_4-29-2021_final_for_posting.pdf [https://perma.cc/GR7D-JDTW] ("Some would-be reformers view M&A as fundamentally predatory and wish to "level the playing" field for smaller, less competitive, or more sympathetic businesses by throwing as much sand in the gears as possible. But their Harrison Bergeron vision of competition, handicapping successful businesses, will not so much level the field as tilt the scales dramatically in favor of the government, handing tremendous power to regulators, sapping American competitiveness, and hitting Americans in their pocketbooks.").

[13] Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, 3–4 (1984).

[14] For vertical mergers the welfare-enhancing effects are well-established. *See, e.g.*, Francine Lafontaine & Margaret Slade, *Vertical Integration and Firm*

Boundaries: The Evidence, 45 J. ECON. LIT. 629, 677 (2007) ("In spite of the lack of unified theory, over all a fairly clear empirical picture emerges. The data appear to be telling us that efficiency considerations overwhelm anticompetitive motives in most contexts. Furthermore, even when we limit attention to natural monopolies or tight oligopolies, the evidence of anticompetitive harm is not strong."). *See also*, Global Antitrust Institute, *Comment Letter on Federal Trade Commission's Hearings on Competition and Consumer Protection in the 21st Century, Vertical Merger*, Geo. Mason Law & Econ. Research Paper No. 18-27, 8–9 (2018), https://ssrn.com/abstract=3245940 [https://perma.cc/YY8R-HG6U] ("In sum, these papers from 2009-2018 continue to support the conclusions from Lafontaine & Slade (2007) and Cooper et al. (2005) that consumers mostly benefit from vertical integration. While vertical integration can certainly foreclose rivals in theory, there is only limited empirical evidence supporting that finding in real markets. The results continue to suggest that the modern antitrust approach to vertical mergers 9 should reflect the empirical reality that vertical relationships are generally procompetitive."). Along similar lines, empirical research casts doubt on the notion that antitrust merger enforcement (in marginal cases) raises consumer welfare. The effects of horizontal mergers are, empirically, less well documented. *See, e.g.*, Robert W. Crandall & Clifford Winston, *Does Antitrust Policy Improve Consumer Welfare? Assessing the Evidence*, 17 J. ECON. PERSP. 3, 20 (2003) ("We can only conclude that efforts by antitrust authorities to block particular mergers or affect a merger's outcome by allowing it only if certain conditions are met under a consent decree have not been found to increase consumer welfare in any systematic way, and in some instances the intervention may even have reduced consumer welfare."). While there is some evidence that horizontal mergers can reduce consumer welfare, at least in the short run, *see, e.g.*, Gregory J. Werden, et al., *The Effects of Mergers on Price and Output: Two Case Studies from the Airline Industry*, 12 MGMT. DECIS. ECON. 341 (1991), the long-run effects appear to be strongly positive. *See, e.g.*, Dario Focarelli & Fabio Panetta, *Are Mergers Beneficial to Consumers? Evidence from the Market for Bank Deposits*, 93 AM. ECON. REV. 1152, 1152 (2003) ("We find strong evidence that, although consolidation does generate adverse price changes, these are temporary. In the long run, efficiency gains dominate over the market power effect, leading to more favorable prices for consumers."). *See generally* Michael C. Jensen, *Takeovers: Their Causes and Consequences*, 2 J. ECON. PERSP. 21 (1988). Some related literature similarly finds that horizontal merger *enforcement* has *harmed* consumers. *See* B. Espen Eckbo & Peggy Wier, *Antimerger Policy Under the Hart-Scott-Rodino Act: A Reexamination of the Market Power Hypothesis*, 28 J.L. & ECON. 119, 121 (1985) ("In sum, our results do not support the contention that enforcement of Section 7 has served the public interest. While it is possible that the government's merger policy has deterred some anticompetitive mergers, the results indicate that it has also protected rival producers from facing increased competition due to efficient mergers."); B. Espen Eckbo, *Mergers and the Value of Antitrust Deterrence*, 47 J. FINANCE 1005, 1027–28 (1992) (rejecting "the market concentration doctrine on samples of both U.S. and Canadian mergers. By implication, the results also reject the effective deterrence hypothesis. The evidence is, however, consistent with the alternative hypothesis that the horizontal mergers in either of the two countries were expected to generate productive efficiencies"). Regarding the effect of mergers on investment, *see, e.g.*, Gordon M. Phillips & Alexei Zhdanov, *Venture Capital Investments and Merger and Acquisition Activity Around the World*, NBER, Working Paper No. 24082 (Nov. 2017), https://ssrn.com/abstract=3082265 [https://perma.cc/Y7XP-AZU9] ("We examine the relation between venture capital (VC) investments and mergers and

Second, critics are mistaking the nature of causality. Scholars routinely surmise that incumbents use mergers to shield themselves from competition. Acquisitions are thus seen as a means of eliminating competition. But this overlooks an important alternative. It is at least plausible that incumbents' superior managerial or other capabilities (i.e., what made them successful in the first place) make them the ideal purchasers for entrepreneurs and startup investors who are looking to sell. This dynamic is likely to be amplified where the acquirer and acquiree operate in overlapping lines of business. In other words, competitive advantage, and the ability to profitably acquire other firms, might be caused by business acumen rather than anticompetitive behavior. Additionally, significant and high-profile M&A activity involving would-be competitors may thus be the procompetitive byproduct of a well-managed business, rather than anticompetitive efforts to stifle competition. Critics systematically overlook this possibility. Indeed, Henry Manne's seminal work on *Mergers and Market for Corporate Control*[15] – the first to argue that mergers are a means of applying superior management practices to new assets – is almost never cited by contemporary researchers in this space. Our paper attempts to set the record straight.

With this in mind, our paper proceeds as follows. Section I argues that calls to reform merger enforcement rules and procedures should be analyzed under the error-cost framework. Accordingly, the challenge for policymakers is not merely to minimize type II errors (i.e., false acquittals), which have been a key area of focus for recent scholarship, but also type I errors (i.e., false convictions) and enforcement costs. This is particularly important in the field of merger enforcement, where authorities need to analyze vast numbers of transactions in extremely short periods of time.

Section II focuses on claims that the presence of large tech platforms in a given market chills the investments of rivals. The section argues that these alleged harms are largely hypothetical, but that addressing them

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acquisitions (M&A) activity around the world. We find evidence of a strong positive association between VC investments and lagged M&A activity, consistent with the hypothesis that an active M&A market provides viable exit opportunities for VC companies and therefore incentivizes them to engage in more deals."). And increased M&A activity in the pharmaceutical sector has not led to decreases in product approvals; rather, quite the opposite has happened. *See, e.g.*, Barak Richman, et al., *Pharmaceutical M&A Activity: Effects on Prices, Innovation, and Competition*, 48 LOYOLA U. CHI. L.J. 787, 799 (2017) ("Our review of data measuring pharmaceutical innovation, however, tells a different story. First, even as merger activity in the United States increased over the past ten years, there has been a steady upward trend of FDA approvals of new molecular entities ("NMEs") and new biological products ("BLAs"). Hence, the industry has been highly successful in bringing new products to the market.").

[15] *See generally* Henry G. Manne, *Mergers and the Market for Corporate Control*, 73 J. POL. ECON. 110 (1965).

would entail far-reaching reforms. Indeed, because incumbents can, allegedly, use vertical integration and mergers to deter rivals' investments, potential solutions would effectively prevent large incumbents from operating in adjacent markets—thus preventing new entry, potential synergies, economies of scale, and network effects. This is a hefty price to pay for harms that are anything but established.

Section III discusses claims that antitrust authorities should pay more attention to mergers that may eliminate firms' potential competitors—i.e., firms that do not currently compete with the acquirer, but that *may* do so in the future. We argue that this would inappropriately shift the focus of antitrust investigations towards hypothetical harms, thus forcing enforcers to undertake enforcement action based on unknowable factors.

Section IV focuses on the question of "killer acquisitions" whereby incumbents allegedly purchase rivals in order to discontinue their competing innovations (*e.g.*, R&D pipelines that overlap with those of the incumbent). Although there is some evidence that these mergers occur in the pharmaceutical industry – but no evidence that they occur in the tech sector – it is also clear that they are exceedingly rare. Given this, and the fact that no promising heuristics have been found to identify these mergers ex-ante, it is unlikely that authorities could prosecute them in a cost-effective manner.

Section V puts forward a series of case studies that show the numerous difficulties that would arise from attempts to prosecute the harms identified in the previous sections. The case studies focus on Facebook's acquisition of Instagram, Google's purchase of Android, as well as mergers in the mechanical ventilator market.

Section VI argues that the policy changes that have been suggested to address mergers highlighted as potentially problematic would entail a series of social costs that would undermine their usefulness. This is notably the case of ex-post merger reviews, lowered transaction filing thresholds, and attempts to shift the burden of proof in certain merger proceedings.

Overall, this analysis leads us to conclude that, while scholars have raised valid concerns, they have not suggested alternative institutional arrangements to address them that would lead to better overall outcomes. All legal enforcement systems are imperfect, and it is not enough to justify changes to the system that some imperfections can be identified.[16] Indeed, it could be that antitrust doctrine currently condones practices that harm

[16] *See* Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 J.L. ECON. 1, 22 (1969) ("The view that now pervades much public policy economics implicitly presents the relevant choice as between an ideal norm and an existing "imperfect" institutional arrangement. This nirvana approach differs considerably from a comparative institution approach in which the relevant choice is between alternative real institutional arrangements.").

innovation, but that there is no cost-effective way to reliably identify and deter this harmful conduct. For instance, as we discuss below, a recent paper estimates that between 5.3% and 7.4% of pharmaceutical mergers are "killer acquisitions."[17] But even if that is accurate, it suggests no tractable basis on which those acquisitions can be differentiated ex ante from the 92.6% to 94.7% that are presumptively competitively neutral or procompetitive. A reformed system that overly deters these acquisitions in order to capture more of the problematic ones is not necessarily an improvement. Further, while many of the arguments suggesting that the current system is imperfect are well-taken, claims of systemic problems are not always as robust as proponents suggest. This further weakens the case for policy reform because any potential gains from such reforms are likely far less certain than they are often claimed to be.

II. ANTITRUST AND THE ERROR-COST FRAMEWORK

Every year, firms around the world spend trillions of dollars on corporate mergers, acquisitions, and R&D investments.[18] Most of the time, these are benign, often leading to cost reductions, synergies, new or improved products, and lower prices for consumers.[19] For smaller firms, the possibility of being acquired can be vital to making a product worth developing.

There are also instances, however, when M&A activity enables firms to increase their market power and reduce output. Therein lies the fundamental challenge for antitrust authorities: among these myriad transactions, investments, and business decisions, is it possible to effectively sort the wheat from the chaff in a way that leads to net improvements in efficiency and competition, and ultimately consumer welfare? In more concrete terms the question is: are there rules and standards that enforcers can use to filter out anticompetitive practices

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[17] Cunningham et al., *supra* note 8, at 692 ("Given these assumptions and estimates, what would the fraction ν of pure killer acquisitions among transactions with overlap have to be to result in the lower development of acquisitions with overlap (13.4%)? Specifically, we solve the equation $13.4\% = \nu \times 0 + (1 - \nu) \times 17.5\%$ for ν which yields $\nu = 23.4\%$. Therefore, we estimate that 5.3% ($= \nu \times 22.7\%$) of all acquisitions, or about 46 ($= 5.3\% \times 856$) acquisitions every year, are killer acquisitions. If instead we assume the non-killer acquisitions to have the same development likelihood as non-acquired projects (19.9%), we estimate that 7.4% of acquisitions, or 63 per year, are killer acquisitions.").

[18] *See Value of Mergers and Acquisitions (M&A) Worldwide From 1985 to 2020*, STATISTA (Jan. 15, 2021), https://www.statista.com/statistics/267369/volume-of-mergers-and-acquisitions-worldwide/ [https://perma.cc/SM2B-555C]; *see Gross Domestic Spending on R&D*, OECD (last visited Apr. 29, 2021), https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm [https://perma.cc/TVK4-DJUB].

[19] *See supra* note 14.

while allowing beneficial ones to follow their course? And if so, can this be done in a timely and cost-effective manner?[20]

A. The Use of Filters in Antitrust

This filtering question appears to be a herculean task, but has, in fact, been considerably streamlined, and vastly improved, by the emergence of the error-cost framework, itself a byproduct of pioneering advances in microeconomics and industrial organization.[21] The error-cost framework is designed to enable authorities to focus their limited resources on that conduct most likely to have anticompetitive effects.[22] In practice, this is done by applying several successive filters that separate potentially anticompetitive practices from ones that are likely innocuous.[23] Depending on this initial classification, practices are then submitted to varying levels of scrutiny ranging from *per se* prohibitions to presumptive legality.[24]

Of the thousands of M&A transactions that take place each year around the world, antitrust authorities must be notified of only a few, and fewer still are subject to in-depth reviews.[25] For instance, in both the U.S. and the EU, only deals that meet certain transaction values and/or revenue thresholds require merger notifications.[26] Accordingly, U.S. antitrust authorities receive somewhere in the vicinity of 2000 merger filings per

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[20] Running the antitrust system is itself a cost to society.

[21] *See, e.g.*, Olivier E. Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 AM. ECON. REV. 18, 32 (1968); *see also,* Easterbrook, *supra* note 13, at 3; Henry G. Manne, *supra* note 15; *see generally* William M Landes & Richard A Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937 (1980).

[22] *Id.*

[23] *Id.* at 17 ("The task, then, is to create simple rules that will filter the category of probably-beneficial practices out of the legal system, leaving to assessment under the Rule of Reason only those with significant risks of competitive injury.").

[24] *Id.* at 15 ("They should adopt some simple presumptions that structure antitrust inquiry. Strong presumptions would guide businesses in planning their affairs by making it possible for counsel to state that some things do not create risks of liability. They would reduce the costs of litigation by designating as dispositive particular topics capable of resolution.").

[25] *See Number of Merger and Acquisition Transactions Worldwide from 1985 to 2021*, STATISTA (May 14, 2021), https://www.statista.com/statistics/267368/number-of-mergers-and-acquisitions-worldwide-since-2005/ [https://perma.cc/W5D2-5BR2].

[26] *See* 15 U.S.C. § 18(a) (1976); *see also*, FTC Premerger Notification Office Staff, *HSR Thresholds Adjustments and Reportability for 2020*, FTC COMPETITION MATTERS (Jan. 31, 2020), https://www.ftc.gov/news-events/blogs/competition-matters/2020/01/hsr-threshold-adjustments-reportability-2020 [https://perma.cc/T95C-5K9B]; *see also* Council Regulation 139/2004, 2004 O.J. (L 24) 1, 22 (EC).

year, while the European Commission usually receives a few hundred.[27] Typically less than 5% of these mergers are ultimately subjected to in-depth reviews.[28] These cases are selected by applying yet another set of filters that include: looking at the relationship between the merging firms (horizontal, vertical, conglomerate); calculating market shares and concentration ratios; and checking whether transactions fall within several recognized theories of harm.[29]

Similar filtering mechanisms apply to other forms of conduct.[30] For instance, incumbent firms routinely decide to enter adjacent markets or adopt strategies that might incidentally reduce competition in markets where they are already present.[31] As with mergers, authorities and courts apply a series of filters/presumptions to home in on those practices most likely to cause anticompetitive harm.[32] Firms with low market shares are deemed less likely to possess market power (and thus less likely to harm competition); vertical agreements are widely seen as being less problematic than horizontal ones; and vertical integration is widely regarded as procompetitive absent other accompanying factors.[33]

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[27] *See* F.T.C. & U.S. Dep't of Justice, *Hart-Scott-Rodino Annual Report Fiscal Year 2020, Appendix A*, (2021); *see also* European Commission, *Merger Statistics, 21 September 1990 to 31 December 2020* (2021), https://ec.europa.eu/competition/mergers/statistics.pdf [https://perma.cc/SSU9-WT3L].

[28] *See* F.T.C. & U.S. Dep't of Justice, *id*; *see also* European Commission, *id.*

[29] *See* U.S. Dep't of Justice & F.T.C., *Horizontal Merger Guidelines* (2010), https://www.justice.gov/sites/default/files/atr/legacy/2010/08/19/hmg-2010.pdf [https://perma.cc/F5YJ-GXP3]; U.S. Dep't of Justice & F.T.C., *Vertical Merger Guidelines* (2020), https://www.ftc.gov/system/files/documents/reports/us-department-justice-federal-trade-commission-vertical-merger-guidelines/vertical_merger_guidelines_6-30-20.pdf [https://perma.cc/UY8L-JJKC]; Commission Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings, 2008 O.J. (C 265) 6, 25.

[30] *See* F.T.C. & U.S. Dep't of Justice, *Antitrust Guidelines for the Licensing of Intellectual Property* 15 (Jan. 12, 2017).

[31] *See id.*

[32] *See id.* ("The existence of a horizontal relationship between a licensor and its licensees does not, in itself, indicate that the arrangement is anticompetitive. Identification of such relationships is merely an aid in determining whether there may be anticompetitive effects arising from a licensing arrangement."); *see also* European Commission, *Communication from the Commission—Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings*, O.J. C. 45, 7–20 (Feb. 24, 2009).

[33] *See* F.T.C. & U.S. Dep't of Justice, *supra* note 29; *see also Commission Guidelines on Vertical Restraints*, 2010 O.J. (C 130) 1, 46, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010XC0519(04)&from=EN [https://perma.cc/F9JE-A38N].

This system is certainly not perfect and filtering cases in this manner inevitably lets some anticompetitive practices fall through the cracks.[34] Indeed, the error-cost framework is premised on the recognition of this eventuality.[35] Nevertheless, the strengths of this paradigm arguably outweigh its weaknesses. "If presumptions let some socially undesirable practices escape, the cost is bearable. . . . One cannot have the savings of decision by rule without accepting the costs of mistakes."[36]

Today's antitrust apparatus is administrable,[37] somewhat predictable,[38] and, in the case of merger enforcement, it ensures that deals are reviewed in a relatively timely manner.[39] The contours of this system have profound ramifications for substantive antitrust policy. Potential reforms need to account for the tradeoffs inherent to this vision of antitrust enforcement (between false positives and false negatives, between timeliness and thoroughness, and so on). Accordingly, the relevant policy question is not whether existing provisions allow certain categories of potentially harmful conduct to go unchallenged. Instead, policymakers should ask whether there is a better set of filters and heuristics that would enable authorities and courts to prevent previously unchallenged anticompetitive conduct without overburdening the system or disproportionately increasing false positives. In short, antitrust enforcers must avoid the so-called "nirvana fallacy" of believing that *all* errors can be eliminated, and existing policies should thus always be weighed against alternative institutional arrangements (as opposed to merely identifying instances where they lead to false negatives).[40]

B. Calls for a Reform of Merger Enforcement Rules and Thresholds

A growing body of economic literature has identified potential inadequacies in both the U.S. and EU merger control regimes, as well as the antitrust rules that govern the business practices of digital platforms

[34] Easterbrook, *supra* note 13, at 13.

[35] *Id.*

[36] *Id.* at 15.

[37] It requires only limited government resources to function, compared to, for example, a system that reviews every merger in detail.

[38] Companies can self-assess whether their mergers are *likely* to be struck down by authorities and adapt their investment decisions accordingly.

[39] Even in-depth merger investigations are typically concluded within months, rather than years.

[40] *See* Demsetz, *supra* note 16, at 1 ("The view that now pervades much public policy economics implicitly presents the relevant choice as between an ideal norm and an existing "imperfect" institutional arrangement. This nirvana approach differs considerably from a comparative institution approach in which the relevant choice is between alternative real institutional arrangements.").

(notably vertical integration and tying).[41] These critiques focus on ways in which incumbents might prevent nascent or potential rivals from introducing innovative new products and services that could disrupt their existing businesses.[42] In short, this recent economic literature purports to show how incumbents might use their dominant market positions to reduce innovation.[43]

For instance, recent empirical research purports to show that mergers of pharmaceutical companies with overlapping R&D pipelines result in higher project termination rates, thus reducing innovation and, ultimately, price competition.[44] These are referred to as "killer acquisitions."[45] Others have argued that killer acquisitions also occur in the tech sector, although the empirical evidence offered to support this second claim is much weaker, because it does not differentiate between legitimate, efficient discontinuations of acquired products and the elimination of potential competitors.[46] Acquisitions of nascent and potential competitors undertaken with the intention of reducing competition have also been described as "killer acquisitions," even if the acquisitions do not involve products being discontinued.[47]

Along similar lines, it is sometimes argued that large tech firms create

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[41] *See generally* Cunningham et al., *supra* note 8; Zingales et al., *supra* note 8, at 85; Kevin A Bryan & Erik Hovenkamp, *Antitrust Limits on Startup Acquisitions*, 56 REV. INDUS. ORG. 615, 617 (2020); Mark A. Lemley & Andrew McCreary, *Exit Strategy* 81 (Stanford L. and Econ. Working Paper No. 542, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3506919 [https://perma.cc/V8LE-NR9W].

[42] *See, e.g.*, Bryan & Hovenkamp, *Antitrust Limits on Startup Acquisitions*, *supra* note 41, at 616; Cunningham et al., *supra* note 8, at 650; Lemley & McCreary, *supra* note 41, at 81; Zingales et al., *supra* note 8, at 11–12.

[43] *See, e.g.*, Bryan & Hovenkamp, *Antitrust Limits on Startup Acquisitions*, *supra* note 41, at 616; Cunningham et al., *supra* note 8, at 650; Lemley & McCreary, *supra* note 41, at 81; Zingales et al., *supra* note 8, at 11–12.

[44] Cunningham et al., *supra* note 8, at 652.

[45] *See id.* at 650 ("We argue that an incumbent firm may acquire an innovative target and terminate the development of the target's innovations to preempt future competition. We call such acquisitions 'killer acquisitions,' as they eliminate potentially promising, yet likely competing, innovation.").

[46] *See, e.g.*, Axel Gautier & Joe Lamesch, *Mergers in the Digital Economy*, INFO. ECON. & POL'Y (2000) ("There are three reasons to discontinue a product post acquisition: the product is not as successful as expected, the acquisition was not motivated by the product itself but by the target's assets or R&D effort, or by the elimination of a potential competitive threat. While our data does not enable us to screen between these explanations, the present analysis shows that most of the startups are killed in their infancy.").

[47] John M. Yun, *Potential Competition, Nascent Competitors, and Killer Acquisitions*, 18 THE GLOB. ANTITRUST INST. REP. ON THE DIGIT. ECON. 652, 652–53 (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3733716 [https://perma.cc/NLJ6-EF9M].

so-called "kill zones" around their core businesses.[48] Some scholars assert that incumbent digital platforms might seek to foreclose rivals in adjacent markets by "copying" their products, or by using proprietary datasets that tilt the scales in their favor.[49]

All of these practices are said to harm innovation by deterring competitors from investing in innovations that compete with incumbents.[50] And the overarching theme of the above research is that existing antitrust doctrine is ill-equipped to handle these practices, or, at the very least, that antitrust law should be enforced more vigorously in these settings.

But while the above research identifies important and potentially harmful conduct that cannot be dismissed out of hand, it is important to recognize its inherent limitations when it comes to informing normative policy decisions. Indeed, there is a vast difference between identifying *categories of conduct* that *sometimes* harm consumers, and being able to isolate *individual* instances of anticompetitive behavior.[51] The above is merely a restatement of the error-cost framework, which highlights that the existence of false negatives is not a *sufficient* condition for increased intervention:

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[48] *See* Zingales et al. *supra* note 8, at 40.

[49] *See, e.g.*, Kevin Caves & Hal Singer, *When the Econometrician Shrugged: Identifying and Plugging Gaps in the Consumer-Welfare Standard*, 26 GEO. MASON L. REV. 395, 396 (2018) ("Or imagine the platform was appropriating or 'cloning' app functionality into its basic service. The only potential harm in this instance would be that independent edge providers would be encouraged to exit or discouraged from entering in future periods. In theory, edge providers might be discouraged to compete in the app space given what they perceive to be a slanted playing field.").

[50] *See, e.g.*, Cunningham, et al., *supra* note 8, at 694.

[51] And even then, it is important to distinguish conduct that harms consumers overall from conduct that merely harms certain parameters of competition while improving others. In other words, antitrust law should prohibit conduct when the category it belongs to is generally harmful to consumers and/or when harmful occurrences of that conduct can readily be distinguished. *See, e.g.*, Eric Fruits, et al., *Static and Dynamic Effects of Mergers: A Review of the Empirical Evidence in the Wireless Telecommunications Industry*, GLOBAL FORUM ON COMPETITION, OECD DIRECTORATE FOR FIN. & ENTER. AFF. (Dec. 6, 2020) 18, https://one.oecd.org/document/DAF/COMP/GF(2019)13/en/pdf [https://perma.cc/23RD-44VW] ("Studies that do not consider these [non-price] effects are incomplete for purposes of evaluating the mergers' consumer welfare effects, and [are] all-too-easily used by advocates to misleadingly predict negative consumer outcomes. This is not necessarily a criticism of the studies themselves, which generally do not make comprehensive policy conclusions. The reality is that it is exceptionally difficult to comprehensively study even price effects, such that a well-conducted study of price effects alone is a valuable contribution to the literature. Nevertheless, in the context of evaluating prospective transactions, the results of such studies must be discounted to account for their exclusion of non-price effects.").

> The fact—if it can be proved—that there were some false negatives does not imply that there has been underenforcement with respect to the optimal level of enforcement. In other words, in the digital space the argument can be made that an optimal merger policy on average leads to ex-post "underenforcement". Moreover, even if the level of enforcement has been lower than optimal, one must be careful not to swing to the opposite side, especially in high-tech industries. The chilling effect on innovation could be significant.[52]

Instead, it must always be the case that a change to the standards of government intervention to prevent more of these false negatives with its inherent tradeoffs, ultimately increases social welfare overall.[53]

Take the example of Google. The company has acquired at least 270 companies over the last two decades.[54] It has been argued that some of Google's acquisitions, including those of YouTube, Waze and DoubleClick, may have been anticompetitive.[55] However, the real test for regulators is whether they could reliably identify which of Google's 270 acquisitions are actually anticompetitive *and* do so under a decision rule that causes less harm to consumers from false positives than is caused by the current false negatives.[56] If the anticompetitive mergers are such a tiny percentage of total mergers, and if identifying them *a priori* is difficult, then a precautionary principle strategy that results in many false positives would likely not merit the benefits from blocking one or two anticompetitive mergers.

Indeed, but for Google and Facebook's investments in YouTube and Instagram it is far from clear that a mere "video-hosting service" or "photo-sharing app" would have grown into the robust competitor that advocates assume. Apart from the potential synergies arising from the combination of these products with the acquiring companies' other products,[57] corporate control by the acquiring company may lead to these firms being better managed. This concept of M&A as creating a "market for corporate control" adds an important new dimension to the understanding of the tradeoffs involved in merger control.[58]

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[52] Luís Cabral, *Merger Policy in Digital Industries*, CEPR Discussion Paper No. DP14785 (May 2020) at 12, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3612854 [https://perma.cc/4M55-R38W].

[53] *See* Carl Shapiro, *Antitrust in a Time of Populism*, 61 INT'L J. INDUS. ORG. 714, 741 (2018).

[54] *See id.* at 740.

[55] *Id.*

[56] *Id.*

[57] For example, YouTube's search and recommendations engines being developed by Google, the world's leading Internet search company, or Instagram's ad platform being integrated with Facebook's.

[58] *See* Henry G. Manne, *supra* note 15, at 117–119.

These anticompetitive theories of harm can be separated into three broad categories: (1) large incumbents have become so dominant in their primary markets that venture capitalists decline to fund startups that compete head-on, reducing potential competition; (2) large incumbents acquire potential competitors or non-competitor startups so as to reduce the competition along several dimensions, and (3) that incumbents purchase competitors to shut down their overlapping innovation pipelines (i.e., killer acquisitions).

With this in mind, applying the error-cost framework should lead policymakers to carefully consider the following questions when evaluating the merits and policy implications of economic research in this space:

1. Do the papers advancing these theories identify *categories of conduct* that, on average, harm consumer welfare?

2. If not, do the papers identify additional factors that would enable authorities to infer the existence of anticompetitive effects in *individual cases*?

3. If so, would it be feasible for authorities to add these factors to their analysis (in terms of time and resources)?

4. Finally, would prohibiting these practices at an individual or category level prevent efficiencies that would otherwise outweigh these anticompetitive harms? And could these efficiencies be analyzed on a case-by-case basis?

In addition to these error-cost-related questions, it is also necessary to question whether the results of these studies are relevant outside of the specific markets that they examine, and whether they give sufficient weight to countervailing procompetitive justifications. In the sections that follow we explain why several of these academic theories fall short on these dimensions.

III. IS THERE A "KILL-ZONE" IN TECH MARKETS?

One of the most significant allegations that has been leveled against large tech firms is that their very presence in a market may hinder investments, entry, and innovation.[59] Several observers have expressed concern that large incumbents in the technology industry are behaving anticompetitively by serving as an innovation bottleneck.[60]

[59] *See* Zingales et al., *supra* note 8, at 33.

[60] *Id.* at 40.

The strongest expression of this kill-zone idea, at least in the economic literature, stems from a working paper by Sai Krishna Kamepalli, Raghuram Rajan, and Luigi Zingales.[61] The paper makes two important claims, one theoretical and one empirical.[62] From a theoretical standpoint, the authors argue that the prospect of an acquisition by a dominant platform deters consumers from joining rival platforms, and that this in turn hampers the growth of these rivals.[63] The authors then test a similar hypothesis empirically.[64] They find that acquisitions by a dominant platform (i.e., Google or Facebook) decreases investment levels and venture capital deals in markets that are "similar" to that of the target firm.[65]

As we explain below, however, both findings are premised upon significant assumptions about the way in which competition develops in the digital space, and these assumptions are of questionable reliability. Moreover, the authors neglect the costs and risks of the policy reforms that they suggest to address these issues, which may be significant. As we discuss, similar problems plague the rest of the limited literature advancing this argument. It is noteworthy that the influence of these ideas in the policy realm is vastly outsized relative to the strength and quality of the research that underlies it.

A. Assessing the Evidence on Start-up Investment

We begin by assessing whether the evidence that anticompetitive conduct, especially in mergers, is impeding the ability of new firms to enter and compete with incumbents. This is the primary underlying theory of harm suggesting the need for invigorated enforcement to prevent such "kill zones."[66] A close look at the evidence suggests, whatever the strength of these concerns in theory, they are not observed in practice.

First, the supposed "kill-zone" effect does not appear to have led to aggregate reductions in entrepreneurial activity, even if it may in principle lead to displacements.[67] On the contrary, by most conventional measures, entrepreneurial activity in the tech sector has grown healthily in the presence of increasing M&A activity by large incumbents.[68] Indeed, these may be related.

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[61] *Id.*

[62] *Id.* at 40.

[63] *Id.*

[64] *Id.*

[65] *Id.*

[66] *See id.*

[67] *See id.*

[68] *See generally Tech Startup M&As, 2018 Report*, MIND THE BRIDGE: CRUNCHBASE 1,

Startups generally have two methods for achieving liquidity for their shareholders: IPOs or acquisitions.[69] According to the latest data from Orrick and Crunchbase, between 2010 and 2018 there were 21,844 acquisitions of tech startups for a total deal value of $1.193 trillion.[70] By comparison, according to data compiled by Jay R. Ritter, a professor at the University of Florida, there were 331 tech IPOs for a total market capitalization of $649.6 billion over the same period.[71] As venture capitalist Scott Kupor said in his testimony before the FTC, "these large players play a significant role as acquirers of venture-backed startup companies, which is an important part of the overall health of the venture ecosystem."[72]

Moreover, acquisitions by large incumbents are known to provide a crucial channel for liquidity in the venture capital and startup communities. While at one time the source of the "liquidity events" required to yield sufficient returns to fuel venture capital was evenly divided between IPOs and mergers, today that ratio has moved to roughly 20 and 80 percent, respectively.[73] As investor and serial entrepreneur Leonard Speiser said recently, "if the DOJ starts going after tech companies for making acquisitions, venture investors will be much less likely to invest in new startups, thereby reducing competition in a far more harmful way."[74]

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https://s3.amazonaws.com/cdn.orrick.com/files/MTBCrunchbaseTechStartupMAs2018.pdf [https://perma.cc/6GNW-T5Z9]; *see also* Gary Dushnitsky & D Daniel Sokol, *Mergers, Antitrust, and the Interplay of Entrepreneurial Activity and the Investments That Fund It*, AVAILABLE AT SSRN, 7 (2021) ("First, we have seen growth in the number of liquidity events over the past fifteen years, partially reflecting the overall increase in investment activity during the time period. Moreover, the number of Mergers & Acquisitions (M&A) significantly outnumbers that of IPOs each year. In any given year, there are at least fivefold more M&A events than there are IPOs. While less frequent, IPOs tend to take place at higher valuations, with the average IPO valuation hovering below $0.5B through most of the period and peaking above $2B more recently. Average M&A activity involves much lower valuations.").

[69] *Id.*

[70] *Id.*

[71] Jay R. Ritter, *Technology Stock IPOs*, UNIV. OF FLA. (June 21, 2021), https://site.warrington.ufl.edu/ritter/files/IPOs-Tech.pdf [https://perma.cc/9W6K-ZWGD].

[72] Hearings on Competition and Consumer Protection in the 21st Century, *Multi-Sided Platforms in Action*, FTC, at 53:58 (Oct. 15, 2018), https://www.ftc.gov/news-events/audio-video/audio/multi-sided-platforms-action [https://perma.cc/SM74-QB5J].

[73] *Id.* at 187–88; *see also*, Dushnitsky & Sokol, *supra* note 68, at 8. The authors' data also suggest a 20-80 split between IPOs and M&A, respectively.

[74] Leonard Speiser (@leonardspeiser), TWITTER (Jun. 11, 2019, 4:59 PM), https://twitter.com/leonardspeiser/status/1138566502250999809 [https://perma.cc/2BW4-KEH4].

Thus, regulatory intervention that reduces the likelihood of reaching a profitable exit could reduce the incentive for venture capitalists to invest in startups and may inhibit new business formation. A research paper by Gordon Phillips and Alexei Zhdanov analyzed data on venture capital investments and mergers and acquisitions activity in forty-eight countries to study this relationship rigorously:

> Our evidence shows increases in VC [i.e., venture capital] activity after pro-takeover laws. VC activity grows by about 40-50% more from pre-law periods to post-law periods in countries that enact pro-takeover laws versus those that do not. . . . This evidence provides support for our hypothesis that M&A and VC markets are connected and improvements in M&A legislation spill over to VC markets by creating more viable exit opportunities for VC firms. [75]

The authors conclude by noting that M&A activity encourages venture capital investments, entrepreneurship and growth, "[a]s many start-ups rely on VC funding and venture capitalists rely on acquisitions for subsequent exits."[76]

Similarly, a large scale empirical study by Tiago Prado and Johannes Bauer shows that startup acquisitions by big tech companies led to significant short-term increases in venture capital activity.[77] Their findings explicitly undercut those of Zingales and his co-authors, thus rejecting the existence of "kill-zones" in tech markets.

Moreover, while venture capital may be relatively small in total size – $130.9 billion in 2018[78] – the market punches above its weight in terms of its effect on the broader economy. According to the National Venture Capital Association, "venture capital investments amounted to less than 0.2% of U.S. GDP in 2010," but "revenues from venture-backed

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[75] Phillips & Zhdanov, *supra* note 14, at 3.

[76] *Id.* at 29.

[77] Tiago Prado & Johannes Bauer, *Effects of Big Tech Acquisitions on Start-up Funding and Innovation* 5 (Quello Center Working Paper No. 04-21, 2021) ("The two-way fixed effects estimation revealed that the global, total number of VC deals in an industry segment increased by 20.2% on average in the four quarters following a big tech start-up acquisition. By constraining our analysis to acquisitions that targeted start-up companies based in the United States, we found an average increase of 21.1% in the total number of VC deals, and of 30.7% in the total amount of VC funding in the four quarters following a big tech start-up acquisition. By using the difference-in-differences dynamic estimation setup for investigating the existence of causal effects, we found an average increase of 4.9% in the total number of VC deals worldwide in the quarter of the acquisition in the industry segment that received the acquisition.").

[78] Press Release, Pitchbook, US Venture Capital Investment Reached $130.9 Billion in 2018, Surpassing Dot-Com Era (Jan. 10, 2019) (https://pitchbook.com/media/press-releases/us-venture-capital-investment-reached-1309-billion-in-2018-surpassing-dot-com-era [https://perma.cc/3AWJ-EPUH]).

companies accounted for 21% of U.S. GDP and 11% of private sector employment."[79] In recent years, about 60% of all IPOs were VC-backed companies.[80] A research paper from Stanford University found that venture capital backed public companies account for 44% of the research and development spending of U.S. public companies (even though they only represent a fifth of the market capitalization).[81]

Changing competition standards with the intention of reducing the number of tech acquisitions would therefore risk disabling the mechanism that currently provides roughly two-thirds of the liquidity for startups and one-fifth of GDP. Perhaps some other set of market conditions might provide a more optimal set of incentives for entrepreneurs but advocates of changes have yet to compellingly demonstrate why their preferred vision for the economy is superior to the status quo. Further, large platforms may further boost startup creation by enabling the targeted advertising that many startups need to acquire customers.[82]

Moreover, even the so-called "kill zones" may *actually* be highly innovative and procompetitive. As even the Crémer Report opines:

> There may indeed be cases in the digital realm where a dominant acquirer buys up innovative targets but later shuts down the relevant innovation. This is, however, not the typical scenario. Frequently, the project of the bought-up start-up is integrated into the "ecosystem" of the acquirer or into one of their existing products. Such acquisitions are different from killer acquisitions as the integration of innovative complementary services often has a plausible efficiency rationale. In these cases, the theory of harm becomes more complex.[83]

Thus, although some of the innovative developments that originate from outside of a dominant firm are brought within that firm, it is not done so to *kill* those innovations but to *integrate* them into existing service offerings. There are certainly benefits and costs to this approach—one benefit being that a firm with large scope, scale, and amount of capital can help introduce new innovations to a ready consumer base. But, no matter what, it's simply a mistake to say that acquisitions *kill* innovation; at worst, they transform the way the production of innovation is undertaken. For instance, it is common for entrepreneurs to explicitly include acquisition

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[79] Brief for National Venture Capital Association as Amicus Curiae supporting the Appellants at 3, Rapid Litig. Mgmt. v. CellzDirect, Inc., 827 F.3d 1042 (2016).

[80] Ritter, *supra* note 71, at Table 4.

[81] Will Gornall & Ilya A. Strebulaev, *The Economic Impact of Venture Capital: Evidence from Public Companies* 1 (Stan. Univ. Graduate Sch. of Bus., Working Paper No. 3362, 2015), https://www.gsb.stanford.edu/faculty-research/working-papers/economic-impact-venture-capital-evidence-public-companies [https://perma.cc/ZXZ2-JS5G].

[82] *See* Kupor, *supra* note 2, at 185–86.

[83] Crémer Report, *supra* note 8, at 117–18.

by an incumbent as part of their "exit" strategy when they are discussing their business plan with potential investors.[84] Insofar as startups may avoid directly competing with the core product offerings of large incumbents, they also consider how their technology might fit into an incumbent's broader platform or ecosystem (and therefore make their companies ripe for acquisition).[85] One startup co-founder described how some startups "identify what's missing in someone's portfolio and they build a company around it," noting that "[m]any startups build their companies around an exit strategy."[86] There are even comprehensive guides available online for founders who want to better understand the acquisition strategies of the most acquisitive tech giants.[87] The upshot is that big tech acquisitions provide significant incentives to launch startup companies, and their overall effect on tech innovation is thus much more complex than a static snapshot might suggest.

B. The "Kill-Zones" Theory and Evidence

Returning to Zingales et al.'s paper, let us start with the authors' theoretical model.[88] The model's underlying that the prospect of acquisition by a big tech platform dissuades so-called "techies" from trying new digital services (because they believe the technology will ultimately be incorporated into an incumbent's ecosystem) and that this prevents new platforms from gaining traction.[89]

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[84] *Id.* at 111.

[85] *See id.*

[86] Val Stepanova, *Startup Acquisitions: What's Grace Got To Do With It?*, CRUNCHBASE (Jun. 18, 2018), https://about.crunchbase.com/blog/startup-acquisitions-exit-strategy/ [https://perma.cc/TX5V-WRWA].

[87] *See, e.g.*, *Conner Forrest, The M&A strategies of 10 tech giants: A founder's guide to selling your startup*, TECHREPUBLIC (May 29, 2015), https://www.techrepublic.com/article/the-m-a-strategies-of-the-top-10-tech-companies/ [https://perma.cc/B33A-2T42].

[88] Sai Krishna Kamepalli, Raghuram Rajan, and Luigi Zingales, *Kill Zone*, HARV. L. SCH. F. ON CORP. GOVERNANCE (Mar. 26, 2020), https://corpgov.law.harvard.edu/2020/03/26/kill-zone/ [https://perma.cc/F8EU-6B7T].

[89] *Id.* ("Consider the decision of techies [i.e., early adopters]. They care primarily about the fundamental technical quality of the platform. However, they also engage deeply in any technology, so they have high switching costs (of learning every minor aspect of any platform they adopt). If techies expect two platforms to merge, they will be reluctant to pay the switching costs and adopt the new platform early on, unless the new platform significantly outperforms the incumbent one. After all, they know that if the entering platform's technology is a net improvement over the existing technology, it will be adopted by the incumbent after merger, with new features melded with old features so that the techies' adjustment costs are minimized. Thus, the prospect of a merger will dissuade many techies from trying the new technology.

This hinges upon the central assumption that early adopters of new platforms – called "techies" in the authors' parlance – face high switching costs because of their desire to learn these platforms in detail.[90] But it seems facially contradictory to claim both that "techies" have the highest switching costs and that they switch the most. Unfortunately, this key behavioral assumption drives the results of the theoretical model, and the paper presents no evidence to support its presence in real-world settings.

Similarly, the authors assume that "techies" would incur lower adoption costs if they remained on the incumbent platform and waited for the rival platform to be acquired (at which point they could adopt the rival service at lower cost).[91] However, they do not provide any real-world examples to support this assumption and anecdotal evidence seems to cut in the opposite direction. Take the example of Facebook's acquisition of Instagram.[92] Under the authors' model, existing Facebook users would have faced lower adoption costs if they decided to join Instagram after its acquisition by Facebook, rather than adopting it before the merger.[93] Nothing in the history of that merger suggests that this is accurate, however.[94] Indeed, the cost of learning to use Instagram does not appear to have been affected by the merger. To this day, the two services mostly remain separate (e.g., they are accessed by separate apps with entirely distinct user interfaces).[95] Skeptics may counter that, after the merger, existing Facebook users could login to Instagram simply using their Facebook credentials.[96] However, this idea is hampered by, at least, two flaws. First, this is possible for many other apps that are in no way related to Facebook: Spotify, Fortnite and TikTok, to cite but a few.[97] Second,

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By staying with the incumbent, however, they reduce the stand-alone value of the entering platform.").

[90] *Id.*

[91] *Id.*

[92] *See generally Facebook to Acquire Instagram*, FACEBOOK (Apr. 9, 2012), https://about.fb.com/news/2012/04/facebook-to-acquire-instagram/ [https://perma.cc/AQ6M-J265].

[93] Zingales et al., *supra* note 8, at 3.

[94] *See generally Facebook to Acquire Instagram*, *supra* note 92.

[95] *See, e.g.*, Julia Chan, *Top Apps Worldwide for July 2020 by Downloads*, SENSORTOWER (Aug. 5, 2020), https://sensortower.com/blog/top-apps-worldwide-july-2020-by-downloads [https://perma.cc/YR9T-DEWM] (showing the apps are two separate services and remain distinct as evidenced by their separate download rates).

[96] *See* INSTAGRAM, https://www.instagram.com/accounts/emailsignup/?hl=en [https://perma.cc/68KU-CUQP] (last visited Apr. 28, 2021) (user may login or sign up with Facebook credentials).

[97] *See* SPOTIFY, https://www.spotify.com/us/signup/ [https://perma.cc/YH32-JEX4] (last visited Ap. 28, 2021) (user may login or sign up with Facebook credentials); *see also*, EPIC GAMES, https://www.epicgames.com/id/register/customized?loginSubheading=Connexion&regSubheading=Inscription&productName=fortnite&lang=fr&redirectUrl=https%3A

even if this were not possible, the costs imposed upon users are negligible.[98] Contrary to the authors' assumption that their switching costs are *higher*, this is especially true for the "techies" whose activities drive the proposed model.[99] In short, the authors present no evidence to support this critical (and counterintuitive) assumption.

Because of these unrealistic assumptions, the authors' theoretical conclusions appear of little relevance to the underlying reality of the platform industry. Indeed, there is little to suggest that techies join new platforms at a sub-optimal rate and thus fail to generate positive externalities for later adopters.[100]

This discrepancy between the model and reality is not surprising. Throughout economic history, scholarly portrayals of externalities have repeatedly been at odds with the realities of underlying markets.[101] For instance, Arthur Cecil Pigou famously predicted that externalities precluded the creation of privately-operated lighthouses.[102] However, as Ronald Coase pointed out, the British lighthouse system at the time was private.[103] Along similar lines, it was argued that externalities prevented the emergence of markets for bee pollination, as bees can fly where they desire and so private investors would be unable to ensure a return.[104] This too was debunked.[105] Elinor Ostrom famously showed that economic agents often – although not always – found ways to solve the tragedy of

%2F%2Fwww.epicgames.com%2Ffortnite%2Ffr%2Fhome&client_id=cd2b7c19c9734a2ab98dc251868d7724&noHostRedirect=true [https://perma.cc/7BQG-KEFS] (last visited Ap. 28, 2021) (user may login or sign up with Facebook credentials); TIK TOK, https://www.tiktok.com/en/ [https://perma.cc/V7ML-K4XM] (last visited Ap. 28, 2021) (user may login or sign up with Facebook credentials). This was not possible for Instagram at the time of the Facebook merger, but it could well have become so at a later point in time. *See* Dan Frommer, *Here's How To Use Instagram*, BUS. INSIDER (Nov. 1, 2010, 11:01 AM), https://www.businessinsider.com/instagram-2010-11?IR=T#type-in-the-usual-information-choose-a-user-photo-etc-2 [https://perma.cc/5E3G-CS7M].

[98] Zingales et al., *supra* note 8, at 3 (emphasis added).

[99] *Id.*

[100] *Id.*

[101] *See, e.g.*, ARTHUR C. PIGOU, ECONOMICS OF WELFARE, 183–84 (4th ed. 1938).

[102] *See id.*

[103] *See* Ronald H. Coase, *The Lighthouse in Economics*, 17 J. L. & ECON. 357, 360 (1974).

[104] *See* J. E. Meade, *External Economies and Diseconomies in a Competitive Situation*, 62 ECON. J. 54, 56 (1952).

[105] Steven N. S. Cheung, *The Fable of the Bees: An Economic Investigation*, 16 J. L. & ECON. 11, 13 (1973) ("[I]t will be shown that the observed pricing and contractual arrangements governing nectar and pollination services are consistent with efficient allocation of resources.").

the commons.[106] Finally, in the mid-to-late 1980s, it was argued that network effects – not superior quality – explained the victory of the QWERTY keyboard layout over the DVORAK alternative. This too was thoroughly debunked.[107] In short, there is a long intellectual history of theoretical externality claims not holding up in practice. Sai Krishna Kamepalli, Raghuram Rajan and Luigi Zingales' working paper offers little to suggest that their theoretical model avoids this trap.[108]

The empirical analysis put forward in the paper is also unreliable for policymaking purposes. The authors conclude that:

> We collect data on the number of deals and dollar amounts invested by the venture capitalist in specific sectors, after major acquisitions by Facebook and Google are announced. We find that normalized VC investments in start-ups in the same space as the company acquired by Google and Facebook drop by over 40% and the number of deals falls by over 20% in the three years following an acquisition. In comparison, a similar calculation for other acquisitions in the software industry suggests that normalized VC investments in start-ups in the same space as the company acquired goes up (not down) by over 40 percent, while the number of deals goes up slightly in the three years following an acquisition.[109]

Unfortunately, these results are derived from the analysis of only nine transactions.[110] Although this does not necessarily invalidate the results, it does suggest that they should be interpreted with some degree of circumspection by policymakers.

Similarly, the empirical data upon which the paper relies may be prone to selection bias. The authors arbitrarily limit their analysis to Facebook and Google acquisitions that exceeded a $500 million threshold.[111] As the authors themselves concede, however, markets go through product cycles where venture capital investments peak and then decline as the market matures.[112] This raises an important question: is it

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[106] The tragedy of the commons can be defined as a situation where the lack of property rights encourages economic agents to overconsume common pool resources. *See* ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 2–7 (1990).

[107] *See generally* Stan J. Liebowitz & Stephen E. Margolis, *The Fable of the Keys*, 33 J.L. & ECON. 59 (1990).

[108] *See generally* Zingales et al., *supra* note 8.

[109] Zingales et al., *supra* note 8, at 4–5 (emphasis added).

[110] *Id.* at 38–39.

[111] *Id.* at 23 ("We select all the software companies purchased by Facebook and Google for more than $500M. There are 9 acquisitions that satisfies these criteria: 7 by Google and 2 by Facebook.").

[112] *Id.* at 27 ("The pre-trend decline in the relative number of deals is not surprising. In early stages, the VC investment rounds are more frequent (Gompers,

conceivable that a merger's size is a proxy for market maturity? If so, one would want to know the size of mergers in *both* the control and treated groups. Unfortunately, the article merely reported that the nine mergers in the treatment group were worth between $625 million and $19 billion.[113]

But even if one were to assume that the authors' theoretical and empirical findings are correct, the paper still does not make a strong case to reform existing antitrust rules. That is, the paper does not provide evidence that existing antitrust regimes fail to achieve an optimal error-cost balance.

The main problem is that the paper has indeterminate welfare implications. Indeed, as the authors note, the declines in investment in spaces adjacent to the incumbent platforms occurred during a time of rapidly rising venture capital investment (both in terms of the number of deals and dollars invested). It is entirely plausible that venture capital merely shifted to other sectors, as opposed to being reduced. From a consumer welfare perspective, such a shift may be irrelevant. And if the incumbent platforms successfully integrated the technology of acquired companies, then consumers benefit from seeing the innovation deployed at scale, as well as whatever innovations may come from the displaced investment.

This is a similar dynamic to one of the results in another paper by Wen and Zhu, which studies the effect of Google developing a native app for Android that competes with a segment of third-party developers.[114] The study finds that developers shift efforts to unaffected markets rather than completely exiting software development:

> [A]fter Google's entry threat increases, affected developers reduce innovation and raise the prices for the affected apps. Once Google enters, the developers reduce innovation and increase prices further. However, app developers' incentives to innovate are not completely suppressed; rather, they shift innovation to unaffected and new apps.

1995). As firms mature, rounds become less frequent: hence a decline in the raw number of deals.").

[113] *Id.* at 39.

[114] *See* Wen Wen & Feng Zhu, *Threat of Platform-Owner Entry and Complementor Responses: Evidence from the Mobile App Market*, 40 STRAT. MGMT. J. 1138, 1142 (2019) ("[W]e find that relative to unaffected developers' apps in the same category, app developers vulnerable to Google's entry threat reduce innovation on affected apps by 5.1% and increase these apps' prices by 1.8%. They do not, however, abandon the platform; rather, when the entry is imminent, they shift innovation efforts to unaffected markets, manifested in a 4% increase in updates on existing apps and a 3% to 10% increase in the introduction of new apps. Consistent with our hypothesis, developers that have popular products being affected by an entry threat react differently from other affected developers: they increase innovation by 7.8% for affected apps and 15% for unaffected apps.").

> Given many apps already offering similar features, Google's entry may reduce social inefficiency.[115]

In other words, a variety of effects, often running in different directions, attend Google's decision to incorporate a feature into Android that was previously handled by third-party app providers.[116]

Thus, when considering a larger view of welfare effects, consumers may be better off in another way: potential innovation. Firms that successfully build and sell apps for Android develop generalized skills and techniques for their operation, such that they can reuse their expertise to build apps in subsequent app niches. In this sense, developers are incentivized not only to build apps, but to continually discover future niches that meet consumer demand, resulting in a higher total level of innovative behavior. As the authors necessarily conclude, "[i]t would be premature to draw any policy conclusion on antitrust enforcement based solely on our model and our limited evidence."[117]

IV. MERGERS AND POTENTIAL COMPETITION

Scholars have also posited more direct effects from acquisitions of startups or nascent companies by incumbents in technology markets.[118] In general, these effects boil down to competition effects and innovation effects:

> Nascent competitor acquisitions have two distinct but related theories of harm. The first theory of harm is the potential loss of future competition between the nascent competitor and the acquirer. The second theory of harm is the potential loss of innovation. A nascent competitor acquisition may produce harmful innovation effects by reducing investment in the nascent competitor's innovation, potentially delaying the innovation or causing it to fail.[119]

As suggested, the two theories are related and not perfectly separable.[120] But, in general, with respect to the competition concerns of

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[115] *Id.* at 1138 (emphasis added).

[116] *Id.*

[117] *See* Zingales et al, *supra* note 8, at 5.

[118] *See* Jay Ezrielev, *An Economic Framework for Assessment of Innovation Effects of Nascent Competitor Acquisitions* 1 (Mar. 22, 2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3810486 [https://perma.cc/J794-2R5A].

[119] *Id.* at 2.

[120] To the extent possible we discuss these "competition" theories of harm in this section. *See* infra Section III. We discuss the "innovation" theories of harm in the next. See *infra* Section IV.

nascent company acquisitions, scholars have made two primary claims.[121] One claim is that antitrust authorities should pay more attention, and apply stricter standards, to mergers that may prevent competition between the incumbent acquirer and the nascent, potential competitor.[122] Similarly, some scholars have voiced fears that competition between leader and laggard incumbents may cause the former to purchase promising complementary startups that would otherwise enable the laggard to catch up, thus decreasing the extent of competition that would have occurred between incumbents if the laggard had been able to make the acquisition.[123]

While these effects are surely possible in theory, it is another matter whether either the risk (or the effect) is large enough to warrant heightened concern and whether the ability to differentiate beneficial from detrimental acquisitions is large enough to ensure against costly errors. There is little reason to think either of these is the case:

> "Nascent competitor" acquisitions tend to add useful new features to products consumers already love, eliminate little or no current competition, supply the acquired firm's users with far greater support and innovation, and provide a valuable exit ramp for investors, encouraging future investments in innovation. Consumer harm is at best speculative. And most importantly, critics have identified no instances in which meaningful competition has been lost or consumers harmed.[124]

And, as this section explains, seeking to address the putative issues created by such transactions would place tremendous – and probably insurmountable – informational burdens upon antitrust authorities.

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[121] *See, e.g.*, C. Scott Hemphill & Tim Wu, *Nascent Competitors*, 168 U. PA. L. REV. 1879, 1879 (2020).

[122] *Id.* ("A nascent competitor is a firm whose prospective innovation represents a serious threat to an incumbent. Protecting such competition is a critical mission for antitrust law, given the outsized role of unproven outsiders as innovators and the uniquely potent threat they often pose to powerful entrenched firms. In this Article, we identify nascent competition as a distinct analytical category and outline a program of antitrust enforcement to protect it. We make the case for enforcement even where the ultimate competitive significance of the target is uncertain, and explain why a contrary view is mistaken as a matter of policy and precedent.").

[123] *See* Bryan & Hovenkamp, *Antitrust Limits on Startup Acquisitions*, *supra* note 41, at 615; Kevin A Bryan & Erik Hovenkamp, *Startup Acquisitions, Error Costs, and Antitrust Policy*, 87 U. CHI. L. REV. 331, 331 (2020).

[124] Jonathan Jacobson and Christopher Mufarrige, *Acquisitions of "Nascent" Competitors*, THE ANTITRUST SOURCE 1, 1 (Aug. 2020).

A. Acquisitions of Potential Competitors

A first theory of harm is the idea that incumbents might acquire rivals that do not *yet* compete head-on with them in order to reduce the competitive pressure they will face in the future.[125] For instance, in his paper, *Potential Competition and Antitrust Analysis: Monopoly Profits Exceed Duopoly Profits*, Steven Salop argues that:

> Acquisitions of potential or nascent competitors by a dominant firm raise inherent anticompetitive concerns. By eliminating the procompetitive impact of the entry, an acquisition can allow the dominant firm to continue to exercise monopoly power and earn monopoly profits. The dominant firm also can neutralize the potential innovation competition that the entrant would provide.[126]

This intuition is further elaborated and distinguished from the killer acquisitions literature by Cristina Caffarra, Gregory Crawford, and Tommaso Valletti:

> What seems to be more frequent are cases where the acquisition may effectively extinguish the standalone effort of the buyer to expand in a particular space because the target immediately provides it with those capabilities. . . .
>
> . . . [T]hese acquisitions are often evaluated internally in terms of 'buy vs build.' Which is to say that there is often an alternative path to expanding into a particular space through the acquisition: with sprawling capabilities, competences, and limitless internal funding, buyers are often already on the way to building a functionality themselves.[127]

Along similar lines, Michael Katz has argued that competition authorities should pay closer attention to mergers that involve *potential* competitors than is currently the case:

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[125] *See generally* Steven C. Salop, *Potential Competition and Antitrust Analysis: Monopoly Profits Exceed Duopoly Profits* 6 (Geo. Univ. L. Ctr., Working Paper, 2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3839631 [https://perma.cc/9DBF-36QD].

[126] *Id.* at 6; *see also* Shapiro, *supra* note 53, at 739–40 ("One promising way to tighten up on merger enforcement would be to apply tougher standards to mergers that may lessen competition in the future, even if they do not lessen competition right away. In the language of antitrust, these cases involve a loss of potential competition. One common fact pattern that can involve a loss of future competition occurs when a large incumbent firm acquires a highly capable firm operating in an adjacent space.").

[127] Caffarra et al., *supra* note 9, at 6.

> The entrant's need to acquire complementary assets and attain a strong growth path may allow an incumbent to identify and acquire a potential rival before it has entered into direct competition with the incumbent, or while the entrant still has a very small share of the market in which the incumbent competes.[128]

Finally, Massimo Motta and Martin Peitz conclude that mergers are anticompetitive whenever startups could pursue the acquired project in the counterfactual setting.[129]

While all of these papers have undeniable academic merit, from a policy standpoint they suffer from important blind spots that significantly limit their usefulness in designing antitrust merger policy.

1. Restrictive Assumptions

First and foremost, the above theories rest upon several restrictive assumptions that are not certain to occur in real-world settings—in fact, some of these assumptions are antithetical to common portrayals of competition in both the pharmaceutical and tech industries. To understand this objection it is useful to take a step back and examine the assumptions underpinning fears that mergers will reduce potential competition.

All of the above theories rest on a central premise: in a given market, monopoly profits generally exceed joint duopoly profits.[130] This allegedly makes it profitable, and mutually advantageous, for an incumbent to protect its monopoly position by preemptively acquiring potential rivals:

> [B]ecause monopoly profits exceed competitive profits, the deck is stacked against them. The dominant firm's incentive to spend is greater than the entrant's because the dominant firm is spending to protect its monopoly profits while the entrant is spending to achieve the lesser, competitive duopoly profits.[131]

This assumption has four important corollaries that are mostly overlooked in the literature, however, and that tend to undermine the claimed policy implications.

First, anticompetitive mergers are, by definition, possible (under the above theories; see below for a potential exception to this principle) only

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[128] Michael L Katz, *Big-tech Mergers: Innovation, Competition for the Market, and the Acquisition of Emerging Competitors*, 54 INF. ECON. & POL'Y 9 (2020).

[129] Massimo Motta & Martin Peitz, *Big Tech Mergers*, INF. ECON. & POL'Y 4 (2020) ("To understand the likely effects of any given acquisition, it is crucial to identify the likely counterfactual to that acquisition. Indeed, it is straightforward that whenever the startup has the ability to pursue its project, the merger will be anticompetitive.").

[130] *See* Salop, *supra* note 125, at 22.

[131] *Id.* at 3 (emphasis added).

when the acquired rival could effectively challenge the incumbent.[132] But these are, of course, only *potential* challengers; there is no guarantee that any one of them could or would mount a viable competitive threat.[133] While potential competitors are important constraints on existing markets, they do not generally offer the same degree of constraint as *actual* competitors.[134] As such, any analysis of the implications of a merger involving a potential competitor would have to incorporate the probability of competition.[135]

High-quality analysis of the effects of potential competition are few and far between, but, according to at least one literature review, a potential competitor may have between one-eighth to one-third the effect on competition as an actual competitor.[136] And the strength of this competitive constraint also depends on the firms' perceptions: If both the incumbent and the rival heavily discount the probability of entry, then potential competition is unlikely to affect their behavior.[137]

Second, and less obviously, it must be the case that the rival can hope to share only duopoly profits, as opposed to completely overthrowing the incumbent (or taking a significantly larger share of the market than the incumbent).[138] When this is not the case—for instance because competition is "for the market"—then monopoly maintenance fails to explain a rival's decision to sell. Indeed, there is no asymmetry between the incumbent and the rival. The monopolist cannot profitably pay more to acquire a rival than the revenue the latter could expect to earn by

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[132] *Id.* at 6.

[133] *See id.*

[134] *Id.*

[135] *See* Dissenting Statement of Commissioner Joshua D. Wright, *In the Matter of Nielsen Holdings N.V. and Arbitron Inc.*, FTC File No. 131-0058 (Sep. 20, 2013), at n.3 ("Nevertheless, competitive effects in actual potential competition cases still are more difficult, on balance, to assess than typical merger cases because the agency must predict whether a party is likely to enter the relevant market absent the merger. It is because of this uncertainty and the potential for conjecture that the courts and agencies have cabined the actual potential competition doctrine by, for instance, applying a heightened standard of proof for showing a firm likely would enter the market absent the merger.") (*citing* B.A.T. Indus., 104 F.T.C. 852, 926-28 (1984) (applying a "clear proof" standard)).

[136] *See Mergers That Eliminate Potential Competition*, RESEARCH HANDBOOK ON THE ECONOMICS OF ANTITRUST LAWS 111 (Einer Elhauge, ed. 2012) ("All twelve studies [of airline markets] find that potential competition results in lower prices by incumbent carriers, in ten cases by statistically significant amounts. Except as noted below, the amounts range between one quarter of one percent to about two percent, and in all cases are less than the amount of the price decline from one additional actual competitor, specifically, from one eighth to one third as large.").

[137] *Id.*

[138] Salop, *supra* note 125, at 27.

remaining independent. In other words, monopoly maintenance alone will not give rise to advantageous deals.[139]

Following this same logic, acquisitions to preempt competition are even more improbable if both the incumbent and the rival believe that they are most likely to dominate the market so that ex-post market shares would be heavily skewed in their favor.[140] In short, the above theories have little or no significance when the rival and incumbent do not expect to share the market if they competed head on.

Scholars tend to assume that these factors are present in most digital and pharmaceutical mergers, but that assumption ignores several counterarguments.[141] For instance, it is worth noting that, because of network externalities, competition for the market is widely considered to be the norm in precisely the digital markets that the above theories focus on.[142] And if this is true, then there is no counterfactual scenario where incumbents and rivals could share duopoly profits, and these anticompetitive theories of harm thus falter. This casts significant doubts on these theories' usefulness for policymaking purposes.

Likewise, several acquisitions involve firms that cannot reasonably be expected to compete with incumbents, and vice versa. In other words, there is no guarantee that dominant firms in one market can always outcompete rivals in adjacent spaces—otherwise, we would all be using Microsoft's Internet browser and search engine and Google+ would be the world's leading social network.[143] The upshot is that authorities cannot (and should not) assume that, in the counterfactual setting, incumbents would necessarily enter and prosper in adjacent markets.

Similarly, these theories assume that acquisitions of potential competitors by dominant firms should never be approved absent extreme circumstances. The reason, primarily, is the assumed presence of other routes to accomplish the merger's ends, such as acquisition of the acquiree

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[139] This is merely a corollary of Salop's own model. *Id.*

[140] Again, this is a corollary of Salop's model. In this setting, it is no longer a given that the profits the incumbent could earn from anticompetitive acquisition exceed those that the rival could earn from competing.

[141] Salop, *supra* note 125, at 24.

[142] *See, e.g.*, Crémer Report, *supra* note 8, at 5 ("In markets where network externalities and returns to scale are strong, and especially in the absence of multi-homing, protocol and data interoperability, or differentiation, there might be room in the market for only a limited number of platforms. The consequences for competition policy are twofold. First, to provide incentives to supply goods and services on reasonable conditions and to innovate, it is essential to protect competition 'for' the market."); *see also* DIGITAL COMPETITION EXPERT PANEL, *supra* note 8, at 4 ("In many cases, digital markets are subject to 'tipping' in which a winner will take most of the market.").

[143] Dirk Auer & Geoffrey Manne, *Antitrust Dystopia and Antitrust Nostalgia*, GEO. MASON L. REV. (forthcoming 2021).

by other potential acquirers, acquisition by the dominant incumbent of other potential acquirees, or development by the dominant incumbent of its own equivalent capabilities.[144]

Under current U.S. law, such a potential competitor acquisition requires showing "(i) that [the potential competitor] has available feasible means for entering the . . . market other than by [the challenged acquisition]; and (ii) that those means offer a substantial likelihood of ultimately producing deconcentration of that market or other significant procompetitive effects."[145] According to Salop, however, "[f]or acquisitions by dominant platforms, […] this bar is set far too high. Instead, the law should apply an anticompetitive presumption with a high rebuttal burden to such acquisitions of nascent of potential competitors."[146]

But this is a purely structural view, focused entirely on the extent of concentration in a given market, not the possibility that any given acquirer might be able to extract greater value than any other. Yet it is not clear that there is any basis for this assumption. Although it is convenient in theoretical modeling to assume that similarly situated firms have equivalent capacities to realize profits, in reality firms vary greatly in their capabilities, and their investment and other business decisions are dependent on the firm's managers' expectations about their idiosyncratic abilities to recognize profit opportunities and take advantage of them—in short, they rest on the firm managers' ability to be entrepreneurial.[147] Potential and actual competitors alike are unlikely to presume to operate with the same entrepreneurial capacity in any given circumstance as existing market leaders. Once again, this is why neglect of the market for

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[144] Of the six reasons given by Salop for adopting a presumption against dominant firm/nascent competitor acquisitions, all but the "monopoly profits are greater than duopoly profits" reason are of this sort. *See* Salop, *supra* note 125, at 12–16.

[145] United States v. Marine Bancorporation, 418 U.S. 602, 633 (1974). Subsequent cases have refined this standard to require proof that "1. the relevant market is oligopolistic; 2. absent the acquisition, the acquiring firm would have entered the market in the near future either *de novo* or through acquisition of a little company; and 3. such entry by the acquiring firm carried a substantial likelihood of ultimately producing deconcentration of the market or other significant procompetitive effects." Alberta Gas Chemicals Ltd. v. E.I. Du Pont de Nemours & Co., 826 F.2d 1235, 1254–55 (3d Cir. 1987) (Becker, J., dissenting) (quoting Tenneco, Inc. v. FTC, 689 F.2d 346, 352 (2d Cir. 1982)).

[146] Salop, *supra* note 125, at 12.

[147] *See, e.g.*, David J. Teece, *A Capability Theory of the Firm: An Economics and (Strategic) Management Perspective*, 53 N.Z. ECON. PAPERS 1, 5 (2017) ("Economists see the industry supply curve as nothing other than the sum of individual firm supply curves. This construct is convenient, especially when coupled with an assumption of firm-level homogeneity . . . . [However, i]n adopting this path, economists read out of the theory of the firm not only an affirmative role for the manager but also any role for entrepreneurship." (citation omitted)).

corporate control and a myopic focus on product markets can be misleading.

Third, Salop's model also assumes that future entry is not possible after an entrant has been acquired—that a monopolist must buy a potential duopolist only once to protect its monopoly profits.[148] But this is, at best, a special case, not a generalizable presumption. Except where, perhaps, extremely strong intellectual property rights preclude other firms from replicating the functions of the first potential duopolist, there is little reason to expect that removal of a *single potential competitor* is tantamount to removal of *potential competition overall.* If every time a potential competitor is purchased a new one can enter with similar capabilities and technology, the calculus changes considerably. It certainly may no longer be the case that monopoly profits, *minus the purchases of every potential competitor*, exceed duopoly profits.

This may mean that this kind of behavior encourages the *overproduction* of potential competitors, in fact.[149] Because there are excess monopoly profits to be obtained by being acquired, would-be potential competitors should be more profitable in these scenarios than their expected profitability from duopoly competition would make them. This may reinforce the previous dynamic, where defensive acquisitions by monopolists draw more entrants into the market and may lead to more aggregate innovation if new entrants create more innovation.

By the same token, this would change the calculus, increasing the expected profits of the new entrant from duopoly profits to duopoly profits plus a share of the delta between duopoly and monopoly profits—and, correspondingly, reduce the incumbent's expected profits from "monopoly profits" to "monopoly profits minus this delta." Once again, there is simply no basis to assume that the incumbent's expectations outweigh the new entrants'.

Fourth, the above models also tend to ignore, or at least underplay, the likelihood of efficiencies stemming from mergers involving potential competitors. For instance, Salop argues that:

> The dominant firm may be able to achieve the benefits with its own investment. Moreover, this alternative route does not simply apply to acquisitions of nascent direct competitors, but also to the acquisition of complementary or vertically adjacent nascent or potential competitors. If the acquisition target has a key product feature, the acquiring firm generally would create its own version absent the merger. The only merger-specific efficiency then might be the dominant firm more quickly rolling out the feature, not the product

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[148] *See* Salop, *supra* note 125, at 6.

[149] *See, e.g.*, Jean Tirole, *Competition and the Industrial Challenge for the Digital Age* 10 (Toulouse Sch. of Econ., Working Paper, 2020) ("[T]he entrant makes money out of the threat to compete with the incumbent and 'ransoms' the latter.").

> improvement generally. Of course, this is a much smaller efficiency benefit. It also leaves out the fact that the nascent competitor might have rolled out the feature with an alternative partner, or that the dominant firm could have licensed the feature instead.[150]

While this is certainly *possible*, we simply do not know how often Salop's objection is correct (i.e., acquisition by an incumbent provides only small, incremental efficiencies), versus how often the target company would not find an alternative buyer and would go out of business absent the transaction, or the acquirer would not develop its own version of a product/service. As we explain in Section V, through a series of case studies, the latter is far more likely than critics tend to assume.

Finally, an acquired firm may be more valuable to the incumbent competitor (and its value may be better known to the incumbent competitor) than the firm could ever be on its own or owned by another firm because of the incumbent's superior managerial capabilities.[151] "What is special about many acquisitions is that the 'giant' is not simply 'killing' a potential rival but rather acquiring a technology that complements the incumbent's assets.

2. Consumer Welfare

Related to the previous points, potential competition does *not* always increase consumer welfare.[152] Indeed, while the presence of potential competitors might increase price competition, it can also have supply side effects that cut in the opposite direction. For example, as Nobel laureate Joseph Stiglitz observes, a monopolist threatened by potential competition may invest in socially wasteful R&D efforts, entry-deterrence mechanisms, and it may operate at lower than optimal scale in anticipation of future competitive entry.[153] In other words, the analysis of R&D

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[150] Salop, *supra* note 125, at 15–16 (footnotes omitted).

[151] Henry G. Manne, *supra* note 15, at 118. ("Managers of a competing firm, unlike free-wheeling individual participants in the market for corporate control, almost automatically know a great deal of the kind of information crucial to a take-over decision.").

[152] *See, e.g.*, Joseph E Stiglitz, *Potential Competition May Reduce Welfare*, 71 AM. ECON. REV. 184, 184–89 (1981).

[153] *Id.* at 184–85; *see also*, Partha Dasgupta & Joseph Stiglitz, *Uncertainty, Industrial Structure, and the Speed of R&D*, 11 BELL J. ECON. 1, 1 (1980) ("This paper studies the nature and consequences of competition in R&D and the relationship between this form of competition and competition in the product market, by focusing on comparisons of speed of research, number of independent research laboratories, and level of risk undertaken. Among the results: competition in the current product market reduces the level of innovation (relative to monopoly); competition in R&D increases the level of innovation, possibly beyond the socially optimal level. Under

competition differs significantly from standard price competition, so much so that structural presumptions are no longer an appropriate touchstone for antitrust enforcement.[154]

3. Workability

There are also pragmatic objections to the above theories. The reforms proposed by these scholars would compel antitrust authorities and courts to make increasingly speculative assessments concerning the counterfactual setting of proposed acquisitions. Counterfactual analysis is the bedrock of antitrust merger enforcement.[155] However, this exercise becomes exponentially more complicated as enforcers are asked (i) to look further into future, and (ii) to forecast the trajectories or firms that are more distantly related.

In simple terms, it is far easier to determine whether a merger between McDonalds and Burger King would lead to increased hamburger prices in the short run than it is to determine whether a gaming platform – like Steam or the Epic Games Store – might *someday* compete with video or music subscription platforms, such as Netflix or Spotify.[156]

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certain conditions, it pays a monopolist to preempt potential competitors, thereby enabling the monopoly

to persist. Market equilibrium may entail excessively fast research with insufficient risk-taking."); *see also* Partha Dasgupta & Joseph Stiglitz, *Industrial Structure and the Nature of Innovative Activity*, 90 ECON J. 266, 289 (1980) ("There may be excessive duplication of research effort in a market economy in the sense that industry-wide R & D expenditure exceeds the socially optimal level even though cost-reduction is lower. In particular, an industry may be characterized by a very low degree of concentration (i.e., a large number of firms) and at the same time engage in a great deal of social waste."); *see* Claude d'Aspremont & Alexis Jacquemin, *Cooperative and Noncooperative R & D in Duopoly with Spillovers*, 78 AM. ECON. REV. 1133, 1136 (1988) (arguing that the presence of R&D spillovers may affect the socially optimal degree of competition in innovation markets: "For large spillovers, such that $\beta > 0.5$, the amount of research which is the closest to the social optimum is the one achieved by firms' cooperating in both output and research, and the most distant, the one obtained by noncooperative behavior.").

[154] Stiglitz, *id.*, at 185.

[155] *See, e.g.*, John M. Yun, *Are We Dropping the Crystal Ball? Understanding Nascent & Potential Competition in Antitrust*, 104 MARQ. L. REV. 613, 637 (2021).

[156] Nielsen Holdings N.V., FTC No. 131-0058, 2013 WL 5348551, at 21 (Sept. 20, 2013) (Wright, Comm'r dissenting) (footnote omitted). ("[I]t is inherently more difficult in future market cases to define properly the relevant product market, to identify likely buyers and sellers, to estimate cross-elasticities of demand or understand on a more qualitative level potential product substitutability, and to ascertain the set of potential entrants and their likely incentives. Although all merger review necessarily is forward looking, it is an exceedingly difficult task to predict the competitive effects of a transaction where there is insufficient evidence to reliably answer these basic questions upon which proper merger analysis is based.").

Accordingly, it is not that the above models are *necessarily* wrong, but rather that applying them to practical cases would require antitrust enforcers to estimate mostly unknowable factors.

Unfortunately, these difficulties might ultimately prove insurmountable, especially if authorities are asked to operate below current merger filing thresholds, as many of the above papers suggest doing. For instance, many of the firms purchased by large tech companies have not yet brought a single product to market: indeed, this was the case when Google purchased Android.[157] In turn, this makes it harder to predict whether the acquired firm might have grown into a competitor absent the merger.[158]

Proponents often attempt to mask these difficulties by citing the example of *past* mergers where the underlying products/services ultimately became competitors—Facebook's acquisition of Instagram is routinely cited.[159] However, using previous cases to argue that current enforcement leads to false negatives (i.e., authorities allow mergers between companies whose products became substitutes after the merger) is inherently prone to hindsight bias.

Take the examples provided by Carl Shapiro in his 2018 paper, "Prominent examples include Google's acquisition of YouTube in 2006 and DoubleClick in 2007, Facebook's acquisition of Instagram in 2012 and of the virtual reality firm Oculus CR in 2014, and Microsoft's acquisition of LinkedIn in 2016."[160] In the case of Facebook, the social

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[157] *See, e.g.*, John Callaham, *Google Made Its Best Acquisition Nearly 16 Years Ago: Can You Guess What It Was?*, ANDROID AUTH. (May 21, 2021), https://www.androidauthority.com/google-android-acquisition-884194/ [https://perma.cc/7VLY-5K47] ("Google asked to meet the co-founders of Android in January 2005 to see if they could help the company. In a second meeting later that year, the Android co-founders showed off a prototype of their mobile OS to Google's Larry Page and Sergey Brin. It was apparently good enough because Google quickly offered to acquire Android. How much did Google buy Android for? The official documents state it was a mere $50 million.").

[158] This problem is often glossed over by proponents of tougher enforcement. *See, e.g.*, Hemphill & Wu, *supra* note 121, at 1881 ("Blocking or deterring too many acquisitions would be undesirable. However, the significance of this concern should not be exaggerated, for our proposed approach is very far from a general ban on the acquisition of unproven companies. We would discourage, at most, acquisition by the firm or firms most threatened by a nascent rival. Profitable acquisitions by others would be left alone, as would the acquisition of merely complementary or other nonthreatening firms."). The key problem is that in many, perhaps even most, cases it will be extremely challenging for authorities to determine whether an incumbent is threatened by a given "nascent competitor." *Id.*

[159] *See, e.g.*, Shapiro, *supra* note 53, at 740.

[160] *Id.*

media company has made at least ninety-two acquisitions since 2007.[161] In the case of Google, the company has acquired more than 270 companies over the last two decades.[162] Of these hundreds of acquisitions, Shapiro identifies four that were potentially anticompetitive.[163]

However, the fact that these services would become competitors was far from clear at the time the acquisitions. It was not obvious in 2006 that video streaming would ultimately compete with search engines in the market for online advertising. Indeed, it was only a year later that Google started placing ads on YouTube.[164] Moreover, at the time of the merger, it was not clear that YouTube was even a commercially viable service, let alone that the video streaming market would become the huge success that it is today, with YouTube as the leading service.[165] The New York Time's coverage of the deal neatly illustrates this uncertainty.[166] Some famous industry observers even scoffed at the deal. Mark Cuban notably wrote a piece titled "I still think Google is crazy."[167]

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[161] Tim Wu & Stuart A. Thompson, Opinion, *The Roots of Big Tech Run Disturbingly Deep*, N.Y. TIMES (June 7, 2019), https://www.nytimes.com/interactive/2019/06/07/opinion/google-facebook-mergers-acquisitions-antitrust.html [https://perma.cc/VY2X-KRDX].

[162] *Id.*

[163] Shapiro, *supra* note 53, at 740.

[164] *See, e.g.*, Nicholas Jackson, *Infographic: The History of Video Advertising on YouTube*, THE ATLANTIC (Aug. 3, 2011), https://www.theatlantic.com/technology/archive/2011/08/infographic-the-history-of-video-advertising-on-youtube/242836/ [https://perma.cc/R9KQ-PB48].

[165] Kevin Allison & Aline Van Duyn, *Google To Buy YouTube for $1.65bn*, FIN. TIMES (Oct. 9, 2006), https://www.ft.com/content/5818fb64-579b-11db-be9f-0000779e2340 [https://perma.cc/7AHP-VCCR] ("In spite of YouTube's popularity there have been questions about the sustainability of the company in light of the large amount of illegally copied material viewed on the site and limited advertising revenues to date.").

[166] Andrew Ross Sorkin & Jeremy W. Peters, *Google to Acquire YouTube for $1.65 Billion*, N.Y. TIMES (Oct. 9, 2006), https://www.nytimes.com/2006/10/09/business/09cnd-deal.html [https://perma.cc/24Q9-NDAA] ("The deal will also greatly benefit YouTube, which would have Google's vast resources to help it navigate some sticky legal issues. Copyrighted videos often find their way onto YouTube's pages despite efforts by the site to prevent it. YouTube could also benefit from a Google alliance as it tries to develop new software to prevent copyright infringement. These copyright issues have led some in the technology industry to compare YouTube to Napster, the song file-sharing service that eventually had to shut down after a protracted legal fight with the recording industry.").

[167] Mark Cuban, *I Still Think Google Is Crazy :)*, BLOG MAVERICK (Oct. 9, 2006), https://blogmaverick.com/2006/10/09/i-still-think-google-is-crazy/ [https://perma.cc/F8QZ-Z2EY] ("It will be interesting to see what happens next and what happens in the copyright world. I still think Google Lawyers will be a busy, busy bunch. I don't think you can sue Google into oblivion, but as others have mentioned, if Google gets nailed one single time for copyright violation, there are going to be

Moreover, the market for online advertising (which is where the merger might, arguably, have reduced competition) was merely an afterthought at the time of the deal. For instance, an article in the Guardian surmised that:

> YouTube is yet to develop a way to attract significant revenue. One possibility is that users could be required to sit through brief advertisements before viewing certain clips. Mr. Hurley was non-committal on this, merely saying the companies would be exploring "lots of options."[168]

Along similar lines, if Google and Facebook hadn't invested in YouTube and Instagram, it is far from clear that a mere "video-hosting service" or "photo-sharing app" would have grown into the competitor that advocates assume. For instance, coverage at the time of the YouTube acquisition sometimes stressed how the Google acquisition might contribute tremendously towards YouTube's success:

> Mr. Hurley predicted that Google's financial resources would help to build a business model able to attract media companies keen to publicise licensed clips and to avoid a possible mountain of copyright litigation. "We'll have the resources to build systems so that copyright holders can benefit from the site," he said.[169]

A counterexample would be the history of Snapchat. Facebook tried to acquire Snapchat for $3 billion in 2013, but Snapchat CEO Evan Spiegel rebuffed Mark Zuckerberg and decided to remain an independent company (and eventually IPO).[170] As a public company, Snapchat has been

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more shareholder lawsuits than Doans has pills to go with the pile on copyright suits that follow. Think maybe how Google discloses what they perceive the copyright risk to be in the SEC filings might be an interesting read?"); *see* Allison & Van Duyn, *supra* note 165 ("In spite of YouTube's popularity there have been questions about the sustainability of the company in light of the large amount of illegally copied material viewed on the site and limited advertising revenues to date.").

[168] Andrew Clark, *Google Nets YouTube in $1.65bn Takeover*, GUARDIAN (Oct. 10 2006), https://www.theguardian.com/business/2006/oct/10/searchengines.citynews [https://perma.cc/2PSE-VV5Z]; *see also* Michael Arrington, *Google Has Acquired YouTube*, TECHCRUNCH (Oct. 9, 2006, 3:25 PM), https://techcrunch.com/2006/10/09/google-has-acquired-youtube/ [https://perma.cc/MG8G-AMA6].

[169] Clark, *supra* note 168.

[170] *See* Evelyn M. Rusli & Douglas MacMillan, *Snapchat Spurned $3 Billion Acquisition Offer from Facebook*, WALL ST. J. (Nov. 13, 2013, 1:44 PM), https://www.wsj.com/articles/BL-DGB-30794 [https://perma.cc/D5UG-GRSS]; *see also* Jeff Bercovici, *Facebook Tried to Buy Snapchat for $3B in Cash. Here's Why*, FORBES (Nov. 13, 2013, 2:57 PM),

moderately successful—with a market capitalization around $38 billion at time of writing—but it has not successfully unseated Facebook ($800 billion market cap) or Google ($1.1 trillion market cap) in the digital advertising market.[171]

4. Error Costs

Of course, the real test for regulators is not just identifying possibly anticompetitive mergers but being able to do so in a cost-effective manner. For example, one might ask whether regulators could successfully have identified the two allegedly anticompetitive mergers out of Google's 270 acquisitions and, under an error cost analysis,[172] done less harm to consumers with false positives than false negatives. If anticompetitive mergers are a tiny percentage of total mergers – and identifying them *a priori* is difficult – then a precautionary principle strategy that results in many false positives for enforcement would likely not merit the benefits from blocking one or two anticompetitive mergers.

The intuition behind our argument is simple: the desirability of implementing a given legal test is not just a function of (i) the test's accuracy, (ii) the cost of administering it, and (iii) the respective costs of false positives and false negatives. It also critically depends upon the prevalence of the conduct that adjudicators are attempting to tackle.

Consider two hypothetical settings. Imagine that 10,000 tech mergers occur each year and that, of these, either 1,000 or 2,500 are anticompetitive with the remainder as procompetitive or competitively neutral. Suppose further that authorities can either attempt to identify anticompetitive mergers with 75% accuracy, or perform no test at all (i.e., let all mergers go through unchallenged). If there are 1,000

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https://www.forbes.com/sites/jeffbercovici/2013/11/13/facebook-wouldve-bought-snapchat-for-3-billion-in-cash-heres-why/?sh=4dff19943dea [https://perma.cc/95KS-D3QT].

[170] Caitlin Huston, *Snap's Market Cap Surpasses Twitter, Hershey*, MARKETWATCH (Mar. 3, 2017, 8:40 AM), https://www.marketwatch.com/story/snaps-market-cap-has-surpassed-twitter-hershey-2017-03-02 [https://perma.cc/SH89-Q6MP]; Anita Balakrishnan, *Snap Closes up 44% After Rollicking IPO*, CNBC (Mar. 2, 2017, 4:09 PM), https://www.cnbc.com/2017/03/02/snapchat-snap-open-trading-price-stock-ipo-first-day.html [https://perma.cc/M76F-R9VU].

[171] Caitlin Huston, *Snap's Market Cap Surpasses Twitter, Hershey*, MARKETWATCH (Mar. 3, 2017, 8:40 AM), https://www.marketwatch.com/story/snaps-market-cap-has-surpassed-twitter-hershey-2017-03-02 [https://perma.cc/96RT-4VVZ]; Anita Balakrishnan, *Snap Closes up 44% After Rollicking IPO*, CNBC (Mar. 2, 2017, 4:09 PM), https://www.cnbc.com/2017/03/02/snapchat-snap-open-trading-price-stock-ipo-first-day.html [https://perma.cc/7CPP-VAFE].

[172] *See* Easterbrook, *supra* note 13, at 16.

anticompetitive mergers, applying the test would result in 7,500 correct decisions and 2,500 incorrect ones (2,250 false positives and 250 false negatives). And "doing nothing" would lead to 9,000 correct decisions and 1,000 false negatives. But suppose the number of anticompetitive deals increased to 2,500. Applying the test would then lead to the same number of incorrect decisions as not applying it (1,875 false positives and 625 false negatives, versus 2,500 false negatives). And the advantage would tilt towards applying the test if anticompetitive mergers were even more widespread.

This hypothetical example holds a simple lesson for policymakers: the rarer the conduct that they are attempting to identify, the more accurate their identification method must be, and the more costly false negatives must be relative to false positives. Which leads us to a third critical factor that that is often overlooked in the economic literature, namely the question of merger-specific efficiencies. The issue here is twofold. First, while many of the above papers attempt to quantify the harms that might stem from increased market power (due to a merger), they routinely assume away the possibility of efficiencies. Second, even when they do accept the importance of efficiencies, scholars tend to overlook the fact that they are notoriously difficult to identify and quantify[173]—even (or perhaps especially) for the merging parties.[174]

The inability to effectively identify and measure merger-related efficiencies has ramifications as far as the optimal antitrust policy is concerned. Indeed, just as hypothetical future harms weigh in favor of tougher antitrust enforcement, so hypothetical efficiencies cut in the opposite direction.

Perhaps more problematically, moves to focus on potential competition are deeply intertwined with the idea that the burden of proof should be shifted in tech merger proceedings. Defendants would thus bear the responsibility of proving that their merger generates efficiencies for consumers. As a report published by the Stigler Center at Chicago Booth puts it:

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[173] *See, e.g.*, Katz, *supra* note 128, at 5. ("The assumption that the merged firm has to choose one or the other technology is consistent with my *focus on effects that arise when mergers do not generate productive efficiencies*."); *see also*, Motta & Peitz, *supra* note 129, at 14. ("[W]e think that both the question of where to place the burden of proof, and what the standard of proof is, need some rethinking. […] We submit that a fortiori merger policy would benefit from a re-versal of the burden of proof in case one of the merging parties has an entrenched dominant position, as it is the case for some of the big tech firms. The merging parties would then need to provide evidence that either the merger does not raise any significant competitive issue . . . or that expected efficiency gains . . . are sufficiently strong to justify the acquisition.").

[174] *See id.* at 11; Geoffrey A. Manne, *Error Costs in Digital Markets*, *in* GLOBAL ANTITRUST INSTITUTE REPORT ON THE DIGITAL ECONOMY 33, 36–37 (Joshua D. Wright & Douglas J. Ginsburg eds., 2020).

> These specific merger regulations should require merging firms to demonstrate that the combination will affirmatively promote competition. This shifting of the burden of proof from the government (to prove harm) to the parties (to prove benefit) will assist the DA by placing the job of demonstrating efficiencies on the parties, who have a greater ability to know what they are.[175]

Likewise, Steven Salop surmises that:

> The analysis contained in these points leads to the conclusion that there should be an intrusive legal standard: when the dominant firm (or leading firm in a highly concentrated market) proposes to acquire a unique potential entrant (or one of only a small number), the law should apply a strong anticompetitive presumption with a high rebuttal burden placed on the acquiring firm.[176]

As we explain below, such a move would prove highly unfortunate.[177] Moving the focus of investigations towards hypothetical harms and benefits effectively shifts antitrust analysis away from tangible factors, such as actual overlaps between merging parties, industry barriers to entry and the current state of competition in an industry. In turn, this dramatically increases the discretion afforded to adjudicators. Under these proposals, antitrust authorities have a discretionary veto over every single tech merger—no matter how small or insignificant. The error-cost consequences of such a shift would be considerable. "[P]lacing the burden of proof on the merging parties would correspond to an enormous shift in approval rates, and the (limited) benefit of cancelling a few anti-competitive mergers would come at a (very high) cost of reduced efficiency gains and innovation incentives."[178]

B. Acquiring Out-Of-Market Innovators

While the previous section has focused on claims that incumbents might acquire their future competitors, scholars have also voiced concerns about acquisitions that involve neither actual nor potential competitors. The thrust of these arguments stems from research by Kevin Bryan and Erik Hovenkamp.[179] The authors find that one of two incumbents

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[175] MKT. STRUCTURE AND ANTITRUST SUBCOMM., THE UNIV. OF CHI. BOOTH SCH. OF BUS., DRAFT REPORT 89–90 (2019), https://www.judiciary.senate.gov/imo/media/doc/market-structure-report%20-15-may-2019.pdf [https://perma.cc/4HE2-MR2K]; *see also* Motta & Peitz, *supra* note 129, at 14.

[176] Salop, *supra* note 125, at 16.

[177] *See infra* Section VI.C.

[178] Cabral, *supra* note 52, at 10.

[179] *See* Bryan & Hovencamp, *supra* note 41, at 615, 616.

acquiring a startup's complementary technology could harm competition between them—even if the startup does not compete with either incumbent.[180] The underlying intuition is that the leading incumbent might purchase the technology in order to cement its dominant position *vis à vis* the laggard.[181] This arguably reduces competition compared to one of two counterfactuals: one where the laggard purchases the startup, and another where the startup licenses its technology to both incumbents.[182] Indeed, both counterfactual outcomes lead to lower differentiation between the incumbents, thus boosting competition between them.[183] According to the authors, antitrust law overlooks these potential harms, thereby negatively affecting the diffusion, rate and direction of startup innovation.[184] In short, they argue society is better off when dominant platforms do not acquire startups because those firms could either be acquired by rivals or license their technology to the entire market.[185]

Yet stating the problem in those terms immediately reveals an oversight in the authors' reasoning: Why should we assume that those are the proper counterfactuals? Ignored scenarios include the possibility that the leading firm is dominant precisely because of its ability to identify promising startups and incorporate their technology in its products and services—superior management, in a nutshell.[186] The counterfactual to a dominant firm acquisition might thus be that the startup goes unnoticed and that its product never makes it to market. Along similar lines, there is

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[180] *Id.* at 616 ("There is no assumption that the startup would enter the product market absent an acquisition; the theory of harm assumes only that the relevant technology may influence competition and consumer welfare based on how its diffusion influences product quality levels." (footnote omitted)).

[181] *Id.* at 617 ("Under a laissez-faire regime, the leading incumbent continues to buy startups partially to keep the laggard from reducing differentiation.").

[182] *Id.* ("To that end, we focus mainly on intervention in the form of a compulsory licensing requirement, although we also consider a policy that would preemptively block the dominant firm from acquiring a startup. In all cases, the resulting equilibrium involves both incumbents gaining access to the startup technology, usually because the laggard acquires the startup and then strikes a licensing deal with the leader. Unsurprisingly, the impact on static consumer welfare is always positive, since there is greater diffusion.").

[183] *Id.*

[184] *Id.* at 616–17 ("Through this model, we consider three dimensions of efficiency in startup acquisitions. First, once a technology exists, is it licensed to the set of incumbents that maximize either consumer surplus or total welfare? Second, if technology is endogenous, does the startup work on the right technology component? Third, if the startup works on the right technology, does it invest an efficient amount in total R&D? That is, we are concerned with the *diffusion*, the *direction*, and the *rate* of startup activity. Our results indicate that, under laissez-faire acquisition rules, startup behavior will be inefficient in all three dimensions.").

[185] *Id.* at 617.

[186] *See* Henry G. Manne, *supra* note 15, at 113.

no reason to believe that licensing agreements or acquisition by a laggard are always a realistic prospect. Sometimes the startup's technology will not lend itself to license agreements—for example, because of weak appropriability.[187] Other times, the laggard might not have the necessary capital to purchase the startup or conclude a license agreement. It is also wrong to assume the leading incumbent will necessarily remain a leader without the acquisition. Indeed, it is at least plausible that a laggard may develop its own technology in-house, and that absent the leader's acquisition, it is the laggard that would dominate the market and benefit from reduced competition.

Usually this would not be an issue. Models always simplify reality by assuming away certain factors.[188] And our proposed counterfactuals are themselves mere possibilities. However, because the authors' model relies on very narrow assumptions, there is no telling whether the probability of anticompetitive harm in actual cases is closer to one or to zero. Yet, as explained below, the authors' normative proposal would effectively amount to a blanket ban on acquisitions by large platforms. A finding that anticompetitive harm is *plausible* (as opposed to evidence that big tech acquisitions are on balance detrimental to society) is hardly sufficient evidence to warrant such a far-reaching reform. Finally, the authors' model excludes all merger-specific efficiencies, such as potential economies of scale, network effects and synergies between the merging parties. In short, while acquisition by a leading incumbent might indeed reduce welfare under the authors' model, it is far from clear to what extent this result applies in real-world settings.

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[187] It has long been argued that patent protection might provide insufficient appropriability in some industries. *See, e.g.*, Wesley M. Cohen et al., *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (Or Not)* 24 (Nat'l Bureau of Econ. Rsch., Working Paper No. 7552, 2000). When that is the case, licensing might not be a feasible option for firms (and sharing proprietary information might ultimately lead to the expropriation of inventions). *See, e.g.*, *id.* ("Overall, our findings suggest that patents are still not the major mechanism for appropriating returns to innovations in most industries. Instead, we find that the key appropriability mechanisms in most industries are secrecy, lead time and complementary capabilities (see Figures 1 and 2). In fact, the major change compared to the "pre-reform" Yale survey is the rise in the reported importance of secrecy. Of all the appropriability mechanisms, however, secrecy lends itself the least to R&D spillovers.").

[188] *See, e.g.*, MILTON FRIEDMAN, *The Methodology of Positive Economics*, *in* ESSAYS IN POSITIVE ECONOMICS 3, 24 (1953) ("We can regard the hypothesis as consisting of two parts: first, a conceptual world or abstract model simpler than the 'real world' and containing only the forces that the hypothesis asserts to be important; second, a set of rules defining the class of phenomena for which the 'model' can be taken to be an adequate representation of the 'real world' and specifying the correspondence between the variables or entities in the model and observable phenomena.").

This problem is particularly acute when looked at from an error-cost perspective. Compared to other proposals that would urge authorities to focus on acquisitions involving (potentially) overlapping products lines, banning non-competing mergers would entail strict scrutiny of *any* acquisition involving a large tech platform, however small or distantly removed from the incumbent's business the acquired startup may be.[189] As the authors put it:

> The best approach intervenes when (a) the acquirer is highly dominant; and (b) the acquired technology could plausibly have an appreciable impact on competition if it is used exclusively by the acquirer. An additional possibility is that intervention could be contingent on an established pattern of buying promising startups and then declining to license rivals.[190]

Leaving aside potential ambiguities in the authors' proposal – such as references to "highly" dominant companies and an "appreciable" impact of competition – the fundamental question is whether banning all (or most) mergers by "dominant" platforms is preferable to letting most of them go unchallenged. The authors recognize this much.[191] As things stand, however, there is simply no evidence to suggest that big tech's acquisitions are on balance harmful to society. In short, while Bryan and Hovenkamp's paper is important economic research and anticompetitive harm is certainly plausible, banning almost all big tech acquisitions in order to hone in on the subset of mergers where incumbents cement their market positions seems disproportionately expensive.[192] This is compounded by the fact that, as with much of the literature on innovation-reducing mergers, the authors' theory of harm is entirely hypothetical: it

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[189] Bryan & Hovenkamp, *Antitrust Limits on Startup Acquisitions*, *supra* note 41, at 632.

[190] Bryan & Hovenkamp, *Antitrust Limits on Startup Acquisitions*, *supra* note 41, at 632. The authors somewhat refined this test in a later publication. *See* Bryan & Hovenkamp, *Startup Acquisitions, Error Costs, and Antitrust Policy*, *supra* note 123, at 352 ("Here we focus on three relevant criteria: (a) the market power of the acquirer and the concentration of its product market; (b) the commercial significance of the startup technology and its potential utility to the acquirer and its rivals; and (c) the acquirer's past practices involving similar acquisitions, such as whether previously acquired technologies were licensed to rival incumbents.").

[191] Bryan & Hovenkamp, *Startup Acquisitions, Error Costs, and Antitrust Policy*, *supra* note 123, at 333 ("To be sure, in most startup acquisitions, it is probably not possible to precisely predict the transaction's but-for impact on commerce. . . . These acquisitions may have significant adverse effects in the aggregate, even if it is difficult to assess how any particular transaction would influence the marketplace. Consequently, society may benefit from a policy that permits limited intervention based on reasonably ascertainable evidence, even if this carries some risk of false positives." (footnotes omitted)).

[192] *Id.*

rests on a number of restrictive assumptions that have not (yet) been shown to play out in real world settings.

V. KILLER ACQUISITIONS AND THE MARKET FOR CORPORATE CONTROL

Another theory of harm from nascent competitor mergers centers primarily on these mergers' effects on innovation. Such mergers – what some scholars have dubbed, "killer acquisitions" – are those in which "an incumbent firm may acquire an innovative target and terminate the development of the target's innovations to preempt future competition."[193] Such acquisitions, it is argued, may reduce innovation and thus also competitiveness, particularly in the pharmaceutical and tech sectors.[194] These killer acquisitions are effectively a subset of the potential competitor mergers discussed in Section III. Indeed, according to Colleen Cunningham and her co-authors, "[i]mportantly, some degree of acquirer-target overlap is necessary for the killer acquisition motive to exist."[195]

It is important to note that, despite frequent claims to the contrary, competition authorities today are keenly aware of the potential innovation effects of certain mergers.[196] Between 2004 and 2014, for instance, the FTC alleged harm to innovation in 54 out of the 164 mergers in which it intervened.[197] The question is whether the "killer acquisitions" theory improves or worsens enforcers' efficacy in addressing innovation harms in merger reviews and enforcement actions.

The specificity of killer acquisitions is that an incumbent acquires a rival *in order to discontinue* its competing R&D efforts or its own.[198] Economic theory suggests that this may occur because of two contributing forces.[199] The first is that monopoly profits are larger than the joint duopoly profits that both firms could earn together.[200] Accordingly a

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[193] *See* Cunningham et al., *supra* note 8, at 650.

[194] *Id.* at 696.

[195] *Id.*

[196] *See* Joshua D. Wright, *Antitrust Provides a More Reasonable Regulatory Framework than Net Neutrality*, Geo. Mason Law and Economics, SSRN, (Aug. 15, 2017) at 11, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3020068 [https://perma.cc/DD6V-JQ7M] (*citing* Richard J. Gilbert & Hillary Greene, *Merging Innovation into Antitrust Agency Enforcement of the Clayton Act*, 83 GEO. WASH. L. REV. 1919, 1931–32 (2015)).

[197] *Id.*

[198] Cunningham et al., *supra* note 8, at 650.

[199] *Id.* at 651.

[200] *Id.*; *see also*, Salop, *supra* note 125, at 7 ("The fact that a monopolist's profits normally exceed a market's total duopoly profits explains why a dominant firm has the incentive to destroy nascent competitors and deter potential competitors. By doing so, the dominant firm can preserve its monopoly power and monopoly profits. This

competing R&D project is, other things equal, more valuable to an incumbent monopolist (who could purchase the R&D project to maintain its monopoly profits) than for a rival seeking to enter the market (who could at best hope for a share of the duopoly profits, *if* it cannot hope to overthrow the incumbent entirely). Absent this, both parties would likely be unable to reach a mutually advantageous deal as the rival's R&D pipeline might be more valuable to itself than to the incumbent.

Second, killer acquisitions theory assumes that incentives to innovate decrease with the number of firms in the market.[201] Otherwise, there would be no reason to believe the elimination of a competing R&D pipeline would lower innovative output. Together these two forces provide both the alleged *motive* (monopoly maintenance) and *effect* (reduced R&D output) of killer acquisitions. Neither of these underlying intuitions is new, however, and the effect that market structure might exert on innovation has been subjected to significant theoretical and empirical scrutiny.[202] Despite this, theories of anti-innovation mergers have gained

observation similarly explains the incentive to acquire nascent or potential competitors or reach agreements with them that reduce or eliminate that competition.").

[201] This is merely a restatement of Arrow's replacement effect. *See, e.g.*, Cunningham et al., *supra* note 8, at 649 ("This is a general, well-known result, the monopolist's disincentive created by his preinvention monopoly profits" (Arrow, 1962). We show that this disincentive to innovate can be so strong that an incumbent firm may acquire an innovative start-up simply to shut down the start-up's projects and thereby stem the "gale of creative destruction" of new inventions (Schumpeter, 1942)."). *See also* Kenneth Arrow, *Economic Welfare and the Allocation of Resources for Invention*, *in* THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 609, 622 (Univ. Nat'l Bureau Comm. for Econ. Rsch., Comm. on Econ. Growth of the Soc. Sci. Rsch. Couns. ed., 1962) https://www.nber.org/system/files/ chapters/c2144/c2144.pdf [https://perma.cc/YRB4-W75D] ("The only ground for arguing that monopoly may create superior incentives to invent is that appropriability may be greater under monopoly than under competition. Whatever differences may exist in this direction must, of course, still be offset against the monopolist's disincentive created by his preinvention monopoly profits.").

[202] Richard Gilbert surveys the econometric literature concerning the effect of industry structure on innovation. *See* RICHARD J. GILBERT, INNOVATION MATTERS: COMPETITION POLICY FOR THE HIGH-TECHNOLOGY ECONOMY 116 (2020). He concludes that the relationship between both is indeterminate. *See id.* ("Table 6.1 summarizes the conclusions from these interindustry studies for the effects of competition and industry structure on innovation. Unfortunately, these studies do not reach a consensus, other than to note that innovation effects can differ dramatically for firms that are at different levels of technological sophistication. Although some studies find a positive relationship between measures of innovation and competition (alternatively, a negative relationship between innovation and industry concentration), others find that the relationship exhibits an inverted-U, with the largest effects at moderate levels of industry concentration or competition, and at least one study reports a negative relationship between competition (measured by Chinese import penetration) and innovation (measured by citation-weighted patents and R&D

increasing prominence over the past couple of years. This is particularly true in the tech sector, where critics have taken aim at the large number of acquisitions made by digital platforms.[203] But it is also due to the publication of several empirical papers that purport to confirm Arrow's replacement effect theory, and which might thus give antitrust enforcers stronger reasons to challenge tech acquisitions.[204] The empirical results of these papers are far from unequivocal, however, and enforcers should thus interpret their findings with an appropriate amount of circumspection.

More importantly, while their empirical rigor is commendable, these works generally pay insufficient attention to error-cost considerations. This weakens their relevance for policymaking purposes. As with the potential competition theories discussed above, it is not that the theories are impossible or that such killer acquisitions have never reliably been empirically observed;[205] rather, the issue is whether such theories are operationalizable in a way that can likely improve antitrust enforcement.

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investment). One consistent finding is that an increase in competition has less of a beneficial effect, and may have a negative effect, on innovation incentives for firms that are far behind the industry technological frontier."). *See also* Ronald L. Goettler & Brett R. Gordon, *Does AMD Spur Intel to Innovate More?*, 119 J. POL. ECON. 1141, 1141 (2011) ("Consistent with Schumpeter, we find that the rate of innovation in product quality would be 4.2 percent higher without AMD present, though higher prices would reduce consumer surplus by $12 billion per year. Comparative statics illustrate the role of product durability and provide implications of the model for other industries."); Mitsuru Igami, *Estimating the Innovator's Dilemma: Structural Analysis of Creative Destruction in the Hard Disk Drive Industry, 1981–1998*, 125 J. POL. ECON. 798, 798 (2017) ("The results suggest that despite strong preemptive motives and a substantial cost advantage over entrants, cannibalization makes incumbents reluctant to innovate, which can explain at least 57 percent of the incumbent-entrant innovation gap."); Elena Patel & Nathan Seegert, *Does Market Power Encourage or Discourage Investment? Evidence From the Hospital Market*, 63 J.L. ECON. 667, 667 (2020) ("We find a negative relationship between competition and investment. In particular, hospitals in concentrated markets increased investment by 5.1 percent ($2.5 million) more than firms in competitive markets in response to tax incentives. Further, firms' investment responses monotonically increased with market concentration.").

[203] *See, e.g.*, Henry G. Manne, *supra* note 15, at 117.

[204] *See, e.g.*, Cunningham et al., *supra* note 8, at 651.

[205] *Id.* at 649. Notably, one of the most likely observed instances of a true "killer acquisition" occurred in the pharmaceutical industry: Eli Lilly's acquisition of Genentech in 1978. *See* Cabral, *supra* note 52, at 4 ("Eli Lilly's acquisition of Genentech's patent provides a good example of a preemptive strategy. Before any other pharma giant got into the insulin market, the incumbent acquired the patent for the new, revolutionary product discovered by Genentech. The threat of synthetic insulin was quite clear.").

A. Acquiring Out-Of-Market Innovators

Much of the regained interest in the effect that mergers exert on innovation can be traced to the publication of a highly influential paper by Colleen Cunningham, Song Ma, and Florian Ederer.[206] The authors analyzed thousands of pharmaceutical mergers and concluded that between 5.3% and 7.4% of them were killer acquisitions.[207]

From a policy standpoint, the big question is what weight antitrust authorities, courts and legislators should give these findings. Stated differently, does the paper provide sufficient evidence to warrant a reform of existing merger filing thresholds and review standards? Several important notes of caution are in order, which strongly counsel decisionmakers to proceed with care. For a start, these findings may not be relevant outside of the pharmaceutical industry. Second, it is unclear how these anticompetitive acquisitions could be detected ex ante. Third, killer acquisitions have uncertain effects on innovation. Fourth, product discontinuations are far more important than critics assume. Fifth, post-merger performance dips are largely misunderstood. Finally, it is mostly inappropriate to draw inferences from merger valuations.

1. Relevance Outside of the Pharmaceutical Industry

To start, the study's industry-specific methodology means that it may not be a useful guide to understand tech sector acquisitions. One reason is that drug development is highly regulated.[208] As a result, all drugs must go through several development milestones that include clinical trials and market authorization procedures.[209] These usually take years to complete.[210] Accordingly, incumbent drug companies have a fairly accurate picture of the competitive landscape within a multi-year timespan.[211] In other words, it is generally straightforward to identify

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[206] Cunningham et al., *supra* note 8, at 649.

[207] *Id.* at 654; *see also, id*. at 655 ("[W]e find that projects acquired by an incumbent with an overlapping drug are 23.4% less likely to have continued development activity compared to drugs acquired by non-overlapping incumbents").

[208] *See* Abbvie, *How Long Do Clinical Trials Take?*, CLINICAL TRIALS AND ME (Apr. 3, 2018), https://www.clinicaltrialsandme.com/resources/how-long-do-clinical-trials-take/ [https://perma.cc/8SZ8-843N].

[209] *See, e.g.*, FDA, *Step 3: Clinical Research*, U.S. FDA (Apr. 1, 2018), https://www.fda.gov/patients/drug-development-process/step-3-clinical-research [https://perma.cc/CL4N-2RXN]

[210] *Id.*; *see also*, Abbvie, *supra* note 208.

[211] *See* Yun, *Potential Competition, Nascent Competitors, and Killer Acquisitions*, *supra* note 47, at 662 n.35 ("The study of substitutability in the pharmaceutical industry is relatively straightforward because there are set categories of pharmaceutical substitutability including the therapeutic class and the mechanism

substitute products.[212] This is not the case for digital markets where products are highly differentiated and where the way consumers use a given platform can evolve rapidly (unlike the pharmaceutical sector where drugs go through trials and receive authorizations for *a specific treatment*).[213] For example, when Facebook acquired Instagram and WhatsApp, it was not entirely clear whether either of these services might one day become competitors to the main Facebook platform.[214] The upshot is that, in the tech sector, neither acquirers nor regulators can be as readily presumed able to identify potential competitors.

2. Detecting Killer Acquisitions

A second important note of caution is that, even if one assumes that the findings regarding killer acquisitions in the pharmaceutical sector are correct and that they apply with equal force in the tech sector, as some official reports have, it is unclear that they warrant a departure from the *status quo*.[215] Indeed, according to the authors' findings, "killer acquisitions" represent only a small fraction – 5.3% to 7.4% – of the pharmaceutical acquisitions studied.[216] But antitrust enforcers operate under uncertainty.[217] Thus, the critical policy question is whether the subset of anticompetitive deals can be identified ex-ante. And, if not, is there a heuristic that would enable enforcers to identify more of these problematic transactions without producing excessive false positives?

Unfortunately, the main heuristic identified by the authors is arguably of little use for policy purposes. The authors focus on the effect that overlapping R&D pipelines have on project discontinuations.[218] In the case of non-overlapping mergers, acquired projects continue 17.5% of the time, while this number is 13.4% when there are overlapping pipelines.[219] The authors argue that this gap is evidence of killer acquisitions, where incumbents acquire rivals to discontinue their competing R&D

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of action. Thus, we can more reliably use functional substitutability to proxy for market-based substitutability—that is, how consumers actually behave. For other differentiated products, including almost all the products from large technology platforms, this assessment is not as straightforward.").

[212] *Id.*

[213] *Id.*

[214] *See, e.g.*, Case No. COMP/M.7217 Facebook/WhatsApp, 2014 O.J. (L 24) 1; *see also* Anticipated Acquisition by Facebook Inc. of Instagram Inc., ME/5525/12 (OFT Aug. 22, 2012).

[215] DIGITAL COMPETITION EXPERT PANEL, *supra* note 8, at 49.

[216] *See* Cunningham et al., *supra* note 8, at 692.

[217] *Id.* at 653.

[218] *Id.* at 656.

[219] *See id.* at 691–92.

pipelines.[220] But this misses the bigger picture: under the author's numbers and definition of "killer acquisition," a vast majority of overlapping acquisitions are perfectly benign and prohibiting them would thus have important social costs.

The authors skirt this issue by basing their cost-benefit analysis on the assumption that prohibiting overlapping acquisitions would lead to the same project development rate as when no mergers take place (rather than the non-overlapping acquisitions project development rate, for example).[221] But this assumption is plucked out of thin air. It ignores potential selection effects: the projects that are acquired in the author's sample may be qualitatively different than the ones that continue independently. In other words, the alternative to a "killer acquisition" might well be bankruptcy, rather than the baseline project-continuation rate.[222] For instance, even non-overlapping acquisitions have a lower development rate than the baseline where no acquisition takes place.[223] In short, the authors base their cost-benefit analysis on an unrealistic counterfactual.[224]

Using "overlapping acquisitions" as a heuristic for antitrust decision-making would be even more problematic in the tech sector. Indeed, as explained above, it is much harder to determine whether tech products and R&D projects overlap. For a start, it is easier to quickly redeploy assets (called "pivoting" in the VC sphere) than it is in the pharmaceutical sector (drugs need to go through new clinical trials in order to be approved for different uses).[225] Moreover, the way that consumers use a given service can rapidly evolve.[226] This may explain why, when reviewing tech mergers, antitrust authorities often struggle to determine whether firms are competitors and whether they are likely to become ones in the near future.[227]

Another potential heuristic would be to look at the size of the payments made by incumbents to acquire their rivals. As is the case with

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[220] *Id.* at 696.

[221] *Id*. at 693 ("Consider first the case in which acquisitions of overlapping projects are no longer allowed and that all such projects instead have the same development probability (19.9%) as non-acquired projects (47.5%of all projects.").

[222] *Id.*

[223] *Id*. at 691–94.

[224] Demsetz, *supra* note 16, at 1 ("The view that now pervades much public policy economics implicitly presents the relevant choice as between an ideal norm and an existing "imperfect" institutional arrangement. This nirvana approach differs considerably from a comparative institution approach in which the relevant choice is between alternative real institutional arrangements.").

[225] FDA, *supra* note 209.

[226] *See* Yun, *Potential Competition, Nascent Competitors, and Killer Acquisitions*, *supra* note 47, at 661–62.

[227] *Id.* at 662.

reverse-patent settlements, the underlying intuition is that larger-than-expected payments may conceal attempts to preserve monopoly rents.[228] However, even if authorities could infer whether the acquisition price for a target's assets was larger than expected, it would still prove almost impossible to determine whether these "large" valuations are driven by the expectation of significant synergies or an incumbent maintaining its monopoly position.

3. Innovation-related Effects

The challenge goes beyond identifying potential killer acquisitions. There are several problems with describing this kind of behavior as harmful. The first is that killer acquisitions (and other mergers) could *increase* innovation by boosting the returns to innovation, as acknowledged by Cunningham et al.[229]

Consider two possible outcomes for a new product: outcome one is to compete with the incumbent, reducing the *total* rents (i.e., profits) available to the incumbent and the new entrant, as well as the rents available to the incumbent because of lost sales to the new entrant. The second is to be acquired and shut down, preserving the total rents available to the incumbent. In the latter case, the amount the incumbent should be willing to pay will be approximately equal to the expected lost rents in the competitive scenario. The more significant the expected price reductions in the competitive scenario, the larger the premium the incumbent should be willing to pay. That means that, in many cases the buyout premium should exceed the expected value of competing for the entrant, raising the returns to their innovation.

It is widely accepted that the prospect of acquisition is an important channel for investors in startups to make a return, along with IPOs.[230] Between 2010 and 2018 there were 21,844 acquisitions of tech startups for a total deal value of $1.193 trillion.[231] By comparison, according to one

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[228] *See, e.g.,* Aaron Edlin et al., *The Actavis Inference: Theory and Practice*, 67 RUTGERS U. L. REV. 585, 586 (2015).

[229] *See* Cunningham et al, *supra* note 8, at 654–655 ("[T]he overall effect on social welfare is ambiguous because these acquisitions may also increase ex ante incentives for the creation of new drug projects. . . ."); *see also* Igor Letina, Armin Schmutzler & Regina Seibel, *Killer Acquisitions and Beyond: Policy Effects on Innovation Strategies*, (Univ. of Zurich Dep't of Econ., Working Paper 1 2020).

[230] *See Final Report on the FTC Hearings on Competition & Consumer Protection in the 21st Century: The Weakness of Interventionist Claims*, INTERNATIONAL CENTER FOR LAW AND ECONOMICS, 99–100 (2019), https://laweconcenter.org/wp-content/uploads/2019/07/Concluding-Comments-The-Weaknesses-of-Interventionist-Claims-FTC-Hearings-ICLE-Comment-11.pdf [https://perma.cc/JLB4-SNKZ].

[231] *Tech Startup M&As 2018 Report*, *supra* note 68, at 7.

comprehensive data analysis, there were 331 tech IPOs for a total market capitalization of $649.6 billion over the same period.[232] Research by Gordon Phillips & Alexei Zhdanov analyzing venture capital investments and M&A activity in forty-eight countries found that pro-takeover laws are associated with t increased VC investment.[233] Likewise, empirical research by Tiago Prado and Johannes Bauer concludes that the prospect of acquisition by a big tech firm leads to increased VC activity by enabling founders and VCs to earn a return on their investments.[234] Because of factors like this, the error costs of overenforcement in acquisitions may be substantial. Thus, regulatory intervention that reduces the likelihood of reaching a profitable exit could reduce the incentive for venture capitalists to invest in startups and may inhibit new business formation.

Second, the "killer acquisitions" literature assumes that rivals cannot expect to overthrow incumbents or that they are risk averse. A business will not allow itself to be sold for less than the value it expects from competing. If the rival expects to become a monopolist, then the incumbent could only acquire it, profitably, if it can deploy the rivals' assets more efficiently.[235] It may be argued that businesses or their owners are loss-averse, and so will be willing to accept a smaller guaranteed payoff to risking a larger but uncertain payoff from competing. In this case, it may be socially optimal for them to take the risk and compete despite this preference. But this risk aversion runs both ways and should deter a company from forming and/or attracting investment, as well. The increased certainty of being able to profit from an investment should counteract would-be entrepreneurs' risk aversion, increasing company formation and investment.

The third reason is that in most cases there is nothing stopping a third company from copying the acquired company's product. This may not be the case in industries where patent protections limit the ability of non-owners to copy specific innovations. An incumbent may buy a company with patents that replicate the performance of the incumbent's own patented products in order to reliably control the market in whatever it is that product does.[236] However, in a market like software where patent

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[232] Ritter, *supra* note 71, at Table 4.

[233] Phillips & Zhdanov, *supra* note 14, at 29.

[234] Prado & Bauer, *supra* note 77, at 5 ("We demonstrate a feasible empirical strategy to assess the effects of big tech acquisitions on start-up funding. The results do not provide evidence of a negative short-term effect. They are compatible with suggestions that big tech acquisitions are one of the mechanisms used by venture capitalists to realize a return on investment. Making such acquisitions more difficult may result in less VC investment (e.g., Cabral, 2021).").

[235] *See, e.g.*, Henry G. Manne, *supra* note 15, at 110.

[236] *See* Cunningham et al., *supra* note 8, at 681 ("Consistent with our predictions, we find that if the relevant acquirer patents are near expiration, the decrease in development associated with acquisition appears to be mitigated.").

protections range from weak to non-existent, there is little to stop another company from copying the functions of an acquired product.[237] Indeed, this is precisely the behavior found in Cunningham et al: the likelihood of a "killer acquisition" is greater the longer the patent term of the acquiring company.[238]

4. A Better Understanding of Product Discontinuations

Even if one ignores potential incentives to innovate, product discontinuations *can* improve consumer welfare. Ascertaining the welfare effect of discontinuations ultimately boils down to identifying the counterfactual to a merger. As John Yun writes:

> For instance, an acquisition that results in a discontinued product is not per se evidence of either consumer harm or benefit. The answer involves comparing the counterfactual world without the acquisition with the world with the acquisition. The comparison includes potential efficiencies that were gained from the acquisition, including integration of intellectual property, the reduction of transaction costs, economies of scope, and better allocation of skilled labor.[239]

One of the reasons why R&D project discontinuation may be beneficial is simply down to cost savings. R&D is expensive—individual pharmaceutical (and tech) firms routinely spend literally billions of dollars, up to 27.8% of their revenue, each year on R&D, and developing a new drug has an estimated median cost of $985.3 million.[240] Cost-cutting, notably as it concerns R&D, is thus a critical part of pharmaceutical and tech companies' businesses. For instance, several reports by McKinsey conclude that recent M&A activity in the pharmaceutical sector is largely driven by firms seeking to improve their

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[237] *Id.*

[238] *See id.*

[239] Yun, *Potential Competition, Nascent Competitors, and Killer Acquisitions*, *supra* note 47, at 660–61; *see also*, Yun, *Are We Dropping the Crystal Ball? Understanding Nascent & Potential Competition in Antitrust*, *supra* note 155, at 636 ("How do we determine 'good' from 'bad' in the realm of antitrust? We base it on the consumer welfare standard. More specifically, however, we base it on a comparison between two counterfactuals: (1) a world with the merger and (2) a world without the merger. It is the differential between these two unobservable outcomes that ultimately determines the 'effect' of the merger.").

[240] *See* Edwin Elmhirst & Amy Brown, *Roche and Lilly Most Vested in Research*, EVALUATE VANTAGE (Jul. 3, 2020), https://www.evaluate.com/vantage/articles/data-insights/other-data/roche-and-lilly-most-vested-research [https://perma.cc/V4NH-MS89]; Oliver J. Wouters, Martin McKee & Jeroen Luyten, *Estimated Research and Development Investment Needed to Bring a New Medicine to Market, 2009-2018*, 323 [J]AMA 844, 844–53 (2020).

productivity.[241] In short, pharmaceutical companies do not just compete along innovation-related parameters – though these are obviously important – but also on more traditional grounds such as cost rationalization.[242] Accordingly, as the above reports suggest, pharmaceutical mergers are often about applying an incumbent's superior managerial efficiency to the acquired firm's assets—through operation of the market for corporate control.[243] This cost-cutting (and superior project selection) ultimately enables companies to offer lower prices, thereby benefitting consumers and increasing their incentives to invest in R&D in the first place (by making successfully developed drugs more profitable). In that sense, Henry Manne's seminal work relating to mergers and the market for corporate control sheds at least as much light on pharmaceutical and tech mergers as the killer acquisitions literature.[244] And yet it is hardly ever mentioned in modern economic literature on this topic.

Cunningham et al. do not entirely ignore these considerations, although their arguments for dismissing them are far from airtight.[245] For

[241] Gayane Gyurjyan et al., *Rethinking Pharma Productivity*, MCKINSEY & COMPANY (Jan. 9, 2017), https://www.mckinsey.com/industries/life-sciences/our-insights/rethinking-pharma-productivity [https://perma.cc/S3LK-U7J5] ("The recent boom in M&A in the pharma industry is partly the result of attempts to address short-term productivity challenges. An acquiring or merging company typically designs organization-wide integration programs to capture synergies, especially in costs. Such programs usually take up to three years to complete and deliver results."); *see also* Philipp Cremer et al., *Maximizing Efficiency in Pharma Operations*, MCKINSEY & CO. (Apr. 1, 2009), https://www.mckinsey.com/business-functions/operations/our-insights/maximizing-efficiency-in-pharma-operations [https://perma.cc/ZU47-5MYK] ("Maximizing the efficiency of production labor and equipment is one important way top-quartile drugmakers break out of the pack. Their rates of operational-equipment effectiveness are more than twice those of bottom-quartile companies (Exhibit 1), and when we looked closely we found that processes account for two-thirds of the difference.").

[242] Donald Drakeman & Nektarios Oraiopoulos, *The Risk of De-Risking Innovation: Optimal R&D Strategies in Ambiguous Environments*, 62 CAL. MGMT. REV. 42, 58–59 (2020).

[243] *See, e.g.*, Donald Drakeman & Nektarios Oraiopoulos, *The Risk of De-Risking Innovation: Optimal R&D Strategies in Ambiguous Environments*, 62 CAL. MGMT. REV. 42, 58–59 (2020) (arguing that small biotech firms are more effective when it comes to pharmaceutical research, suggesting that large players are better at product development: "Corporate R&D teams in large experienced companies may be the best in the world at managing product development pathways, but in highly ambiguous environments they are often inclined to make decisions based on today's knowledge, much of which will change in unpredictable ways."). In turn, this suggests that pharmaceutical mergers enable specialization within the pharmaceutical industry, with different types of players brining their comparative advantages to bear on different parts of the pharma R&D cycle. *Id.*

[244] *See* Manne, *supra* note 15, at 252.

[245] *See* Cunningham et al., *supra* note 8, at 696 ("Alternative interpretations, such as optimal project selection, delayed development, the redeployment of

instance, the authors claim that higher discontinuation rates for overlapping acquisitions are unlikely to be driven by technology redeployment.[246] Their argument is that acquirers' post-acquisition drugs are not more similar to the target's than their pre-acquisition ones—suggesting that acquirers do not apply the target's technology to their own drugs.[247] But this assertion assumes that technological redeployment leads to chemically similar drugs—something that is not self-evident. For example, process patents (often referred to as "secondary patents" in the pharmaceutical industry) may be valuable regardless of the underlying drug to which they are applied, and research suggests that they might be particularly important for owners of well-established drugs (i.e., incumbents in economic terms).[248] Acquirers might also be purchasing know-how and other capabilities that are applicable to both the target and

technological or human capital, and salvage acquisitions, do not explain our results [i.e., the discrepancy between discontinuations in overlapping and non-overlapping mergers].").

[246] Cunningham et al., *supra* note 8, at 696.

[247] *See* Cunningham et al., *supra* note 8, at 688 ("Contrary to a redeployment explanation, drugs initiated by acquirer firms after the acquisition of a drug are not significantly more similar to the acquired overlapping drug than preacquisition projects.").

[248] *See, e.g.*, Amy Kapczynski, Chan Park & Bhaven Sampat, *Polymorphs and Prodrugs and Salts (Oh My!): An Empirical Analysis of "Secondary" Pharmaceutical Patents*, 7 PLOS ONE 1, 1–2 (2012) ("We distinguish between patents with any secondary claims, and those with only secondary claims and no chemical compound claims (''independent'' secondary patents)."). For instance, incumbent pharmaceutical companies might seek acquire "secondary" patents, thus relying on non-chemical compound features to extend the patent protection of their drugs—and this, in turn, might increase incentives to innovate for pharmaceutical companies. *Id.* We find that secondary claims are common in the pharmaceutical industry. *Id.* We also show that independent secondary patents tend to be filed and issued later than chemical compound patents, and are also more likely to be filed after the drug is approved. *Id.* When present, independent formulation patents add an average of 6.5 years of patent life (95% C.I.: 5.9 to 7.3 years), independent method of use patents add 7.4 years (95% C.I.: 6.4 to 8.4 years), and independent patents on polymorphs, isomers, prodrug, ester, and/or salt claims add 6.3 years (95% C.I.: 5.3 to 7.3 years). *Id.* We also provide evidence that late-filed independent secondary patents are more common for higher sales drugs."). *Id.*; *See also* Chie Hoon Song & Jeung-Whan Han, *Patent Cliff and Strategic Switch: Exploring Strategic Design Possibilities in the Pharmaceutical Industry*, 5 SPRINGER PLUS 5–6 (2016) ("The acquisition of secondary patents, obtaining features other than the main active drug ingredient (such as crystalline forms of the original compound, methods of use or formulations), can create a solid portfolio covering different aspects of the drug. . . . Accordingly, secondary patents encompass inventions directed to the incremental improvement of the primary patent and would permit the innovator-company to maintain the market share, even if the generic producers try to enter the market by contesting the validity of the primary patent.").

acquirer's otherwise dissimilar molecules.[249] In short, while the absence of chemical similarity is not irrelevant, it is far from dispositive.

The same is true when the authors claim that discontinuations are not driven by either human capital redeployment or salvage acquisitions (i.e., transactions where the purchaser is merely acquiring the assets of an otherwise defunct company).[250] Their assertion is based on to two main findings. First, many target-firm inventors leave the merged entity after an acquisition—excluding human capital redeployment according to the authors.[251] Second, overlapping acquisitions do not, on average, involve lower valuations.[252] The authors thus believe they are not "salvage acquisitions," which in their opinion should entail lower valuations.[253] But neither of these two points is dispositive either.

For a start, the authors' focus on "inventors" and their patents is telling. Many people can be listed on a patent, yet not all of them would be expected to continue patenting after a merger.[254] For example, a startup's top management is often listed on patents,[255] but if they subsequently oversee commercialization within the merged entity, one would expect their patent filing rate to drop. In other words, when a startup is acquired, its managers may subsequently move to management

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[249] *See, e.g.*, Christopher Hulme & Vijay Gore, *Multi-component Reactions: Emerging Chemistry in Drug Discovery from Xylocain to Crixivan*, 10 CURRENT MEDICINAL CHEMISTRY 51 (2003) ("Easily automated one-pot reactions, such as the Ugi and Passerini reactions, are powerful tools for producing diverse arrays of compounds, often in one step and high yield. Despite this synthetic potential, the Ugi reaction is limited by producing products that are flexible and peptide-like, often being classified as 'nondrug-like'. This review details developments of new, highly atom-economic MCR derived chemical methods, which enable the fast and efficient production of chemical libraries comprised of a variety of biologically relevant templates.").

[250] *See* Cunningham et al., *supra* note 8, at 654.

[251] *Id.* at 690.

[252] *Id.* at 654.

[253] *Id.* at 691.

[254] U.S. PATENT & TRADEMARK OFFICE, https://www.uspto.gov/web/offices/pac/mpep/s2109.html [https://perma.cc/G6W5-VWBH] (last modified Jul. 25, 2020, 6:21:41 PM).

[255] *See, e.g.*, Leadership Team, PALLEON PHARMS., https://palleonpharma.com/about/ [https://perma.cc/AJP9-RYNN] (last visited June 3, 2021); *and* U.S. Patent No. 20,190,023,786 (filed Jan. 12, 2017) (listing the CEO of Palleon Pharmaceuticals on a recent patent application). The same is true for other pharmaceutical companies. *See, e.g.*, *Leadership*, ATEA PHARMS., https://ateapharma.com/about-us/our-team/ [https://perma.cc/S28S-LR2U] (last visited June 3, 2021); *and* U.S. Patent No. 10,946,033 (filed Jan. 12, 2017) (listing the CEO of Atea Pharmaceuticals on a recent patent application); *see also Our People*, FOG PHARMA, https://fogpharma.com/#people [https://perma.cc/4XT5-SJKC] (last visited June 3, 2021); *and* U.S. Patent No. 20,200,247,858 (filed Sept. 7, 2018) (listing the CEO of Fog Pharma on a recent patent application).

positions,[256] cease to work on actual R&D, or move to smaller firms where they remain productive in terms of R&D.[257]

More broadly, there appears to be a significant degree of specialization within the pharmaceutical industry, driven by the comparative advantages of these different entities. For instance, small biotech companies are often responsible for most of the early research, while larger pharmaceutical companies focus on later stage development, commercialization, and regulatory approval.[258]

Against this backdrop, there are important reasons for certain observed merger activity in innovative industries other than those related to the development process itself. Mergers are often an efficient way for innovative firms to increase research and production capacity and to obtain the specific resources necessary for commercialization and distribution of their innovations.[259] And mergers among innovative firms can also enable them to combine their R&D resources, learn from each other, and coordinate their investment decisions.[260] But particularly in mature,

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[256] *See, e.g.*, Lars Schweizer, *Organizational Integration of Acquired Biotechnology Companies Into Pharmaceutical Companies: The Need for a Hybrid Approach*, 48 ACAD. MGMT. J. 1065, 1066 (2005) ("Of course, being part of the structure of a large pharmaceutical company also changed firm culture in the other cases and led to perceived destruction of the entrepreneurial spirit. This experience made most of the top managers at Sugen, SyStemix, and GTI leave the companies.").

[257] Cunningham et al., *supra* note 8, at 669 ("More than half of the companies originate only one drug over this period, and 70% originate two or fewer . . . , which aligns with common perceptions of drug development: small firms initiate innovative drug projects, some of which are subsequently developed by large, commercialization focused incumbent firms (Cockburn 2004).").

[258] *See, e.g.*, Richman, et al., *supra* note 14, at 801 (empirical research suggesting that biotech firms, as opposed to larger pharmaceutical companies, are receiving a growing share of new FDA drug approvals) ("The locus of innovation is shifting from inside large firms to smaller start-ups and to firms operating in nontraditional geographic markets and complementary product markets. As a result, the pharmaceutical industry appears to be in significant structural transition, and the surge of acquisitions reflects that transition."); s*ee also*, Richard Murphy, *Are Startups 5x Better at R&D Than Big Pharma?*, BAY BRIDGE BIO, https://www.baybridgebio.com/blog/rd_bigpharma_startup.html [https://perma.cc/Q7AY-NG5S] (last visited Jun. 9, 2021) ("We see that a smaller and smaller share of new drugs come from big pharma. Big pharma and large biotech companies have discovered 10-12 new approved drugs a year for the past decade. Small companies developed 10-15 new approved drugs a year until the last few years, where they have rapidly increased the number of approved drugs coming from their labs.").

[259] Joanna Shepherd, *Consolidation and Innovation in the Pharmaceutical Industry: The Role of Mergers and Acquisitions in the Current Innovation Ecosystem*, 21 J. HEALTH CARE L. & POL'Y 1, 12–13 (2018) [hereinafter Shepherd, *Consolidation and Innovation in the Pharmaceutical Industry*].

[260] Joanna Shepherd, *Understanding Innovation Markets in Antitrust Analysis*, TRUTH ON THE MKT. (Mar. 30, 2017),

innovative industries – where the next step in increasing productivity may entail both significant investment as well as the complex coordination of diversified and specialized firms engaged in interrelated R&D – a broad range of firm sizes and specialized functions may be important to the industry's continued advancement.[261]

The limited increase in consolidation that comes from a merger, in other words, may be important not only for optimizing innovation *within* the merging firms, but it may also be key to facilitating innovation throughout an industry. "In industries in which most innovation originates externally . . . analyses should be less concerned with mergers' impacts on internal innovation, and more focused on whether consolidation will increase demand for externally-sourced innovation and, ultimately, increase aggregate drug innovation."[262] For similar reasons, these firms sometimes even have long-term contractual relationships that formalize this allocation of tasks.[263] A large share of pharmaceutical projects result from long-term alliance agreements between incumbents ("clients"), and smaller firms ("R&D partners").[264] Generally, the partner conducts most of the research (such as screening compounds), while the client is responsible for later-stage development (such as clinical trials) and manufacturing.[265]

This also adds an additional layer of complexity. Not only do pharmaceutical alliance agreements formalize the specialization that might otherwise spontaneously take place in these markets, but they often

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https://truthonthemarket.com/2017/03/30/understanding-innovation-markets-in-antitrust-analysis-ag-biotech-symposium/ [https://perma.cc/6QC8-3QLX] [hereinafter Shepherd, *Understanding Innovation Markets in Antitrust Analysis*].

[261] *See generally* Shepherd, *Consolidation and Innovation in the Pharmaceutical Industry*, *supra* note 259, at 1.

[262] *See* Shepherd, *Understanding Innovation Markets in Antitrust Analysis*, *supra* note 260.

[263] David T. Robinson & Toby E. Stuart, *Financial Contracting in Biotech Strategic Alliances*, 50 J. L. & ECON. 559, 578 (2007).

[264] *Id.* at 560.

[265] *Id.* at 564 ("In the alliances we examine, the R&D partner identifies and/or validates drug targets, which are then further developed in collaboration with the client. In some of the partnerships, the biotech partner will also screen compounds against targets and thus transfer lead development compounds to the client. Although biotech firms continue to expand downstream in the drug development chain, the client in the partnerships we examine typically conducts animal testing, clinical trials, large-scale manufacturing, and sales and marketing. One can view this relationship as one in which the pharmaceutical client and the biotech firm engage in joint production: most alliances in biotechnology are vertical transactions in which there is an upstream-downstream division of effort between the biotech firm and the client in the deal. Alternatively, another way to view this relationship is that the pharmaceutical firm acts in a dual role as investor and consumer: as an investor it uses equity participation and payments for sponsored research to finance drug discovery. As a consumer, it takes the R&D firm's output and uses it in the further development of a drug.").

involve project-termination rights that avoid opportunistic behavior by R&D partners, and thus boost ex-ante investments.[266] Out of the 125 pharmaceutical alliances studied by David Robinson and Toby Stuart, thirty-eight include client termination clauses in case of a change in control over the partner.[267] This is mainly done to prevent spillovers from the client to one of its rivals—and thus provides a potential efficiency explanation for higher discontinuation rates in the case of overlapping mergers, one that Cunningham et al. ignore.[268] In other words, the possibility of project terminations and subsequent asset reallocations is sometimes a necessary a condition for R&D projects to be financed in the first place because they reduce the scope for opportunistic behavior.[269]

5. Post-Merger Performance Dips

Along similar lines, several scholars have pointed out that pharmaceutical mergers may lead to dips in the R&D performance of acquired inventors that may struggle to successfully integrate themselves into the merged entity.[270] One extensive empirical study concludes that integration is particularly disruptive for those scientists that lose the most social status within the newly combined entity.[271]

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[266] *Id.* at 581 ("The right to terminate a project is a key strategic consideration in many theories of financial contracting. Termination rights are central in Bolton and Scharfstein (1990) and Hart and Moore (1998), in which the outside financier's ability to shut down the entrepreneur's project at some intermediate stage (before unobservable cash flows arrive) reduces the entrepreneur's incentive to consume private benefits. In addition, Noldeke and Schmidt (1995, 1998) study how the allocation of option rights can alleviate holdup problems when contracts are incomplete.").

[267] *Id. a*t 583.

[268] *Id.* ("The example provided in Table 9 clarifies the motivation for such termination rights: if one of the client's competitors acquires the alliance partner, the client's competitive position could be jeopardized. The competitive position of a partner firm is less threatened by a change in control.").

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

[270] Cunningham et al., *supra* note 8, at 656.

[271] Srikanth Paruchuri, Atul Nerkar & Donald C. Hambrick, *Acquisition Integration and Productivity Losses in the Technical Core: Disruption of Inventors in Acquired Companies*, 17 ORGANIZATION SCIENCE 545 (2006) ("We hypothesize that the productivity of corporate scientists of acquired companies is generally impaired by integration, but that some scientists experience more disruption than others. In particular, acquisition integration will be most disruptive, leading to the most severe productivity drops, for those inventors who have lost the most social status and centrality in the combined entity. . . . Results are strongly in line with our theorized expectations.").

If these findings are accurate, then post-merger dips in R&D performance may be consistent with long-term human capital redeployment, starting with a short-term output dip immediately after an acquisition, or simply with reduced R&D output being an unfortunate by-product of a merger's other goals.[272] In both cases, Paruchuri and his co-authors speculate that inventor disruption is more likely when the merging firms are more closely related:

> Specifically, the only way to recoup the premium paid for an acquisition is to do something with the company that it could not or would not do on its own. This will most likely entail integrating some or all of the acquired firm's activities with those of the acquirer in a quest for synergies. Unfortunately, however, integration is highly disruptive for the acquired entity and creates organizational trauma, resulting in capability damage or even destruction.[273]

More generally, all of the empirical papers cited above convey a sense that the pharmaceutical industry is highly cyclical. Small firms innovate – potentially with large firm backing – and projects then move to either a commercialization stage (where firms cease innovating) or a termination stage (for, example because the project is late or not promising enough). As explained above, these evolutions may coincide with M&A activity (with potential consequences for the R&D productivity of employees).[274] That such an outcome might be more common for overlapping mergers is also not particularly surprising. Who better to handle the distribution of a new drug or to use the target's assets for other purposes than a firm that operates in the same segment of the industry?

6. What Can We Infer from Merger Valuations

Returning to Cunningham et al., the authors' valuation point is also misleading and, taken literally, could undermine their broader "killer acquisitions" findings. The fact that overlapping mergers do not entail lower valuations does not automatically imply they are not "salvage acquisitions." Bargaining always takes place within a range.[275] While it is true that the maximum valuation should be lower in the case of salvage acquisitions, it is equally plausible that targets hold out for higher offers when overlapping acquirers are involved (as they might, presumably, be willing to pay more for the target's assets). The point is that there is no

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[272] *Id.*

[273] *Id.* at 557.

[274] *See* Robinson & Stuart, *supra* note 263, at 583.

[275] *See, e.g.*, Abhinay Muthoo, *A Non-Technical Introduction to Bargaining Theory*, 1 WORLD ECONOMICS-HENLEY ON THAMES 145, 148, 161 (2000) (discussing the various factors that might affect the strength of bargaining positions).

reason to believe that any one of these, or a multitude of other factors, should ultimately dominate. Furthermore, the fact that there is no statistically significant difference between overlapping and non-overlapping valuations also undermines the "killer acquisitions" argument (if one adheres to the authors' logic). If, other things equal, killer acquisitions involve higher valuations,[276] then what should we infer from the fact there is on average no difference between valuations in overlapping and non-overlapping mergers?[277]

The answer, of course, is that reality is complex, and mergers involve a plethora of variables. Constructing a narrative around a web of arbitrarily selected correlations is inherently prone to missing this bigger picture. When all is said and done, the authors thus provide compelling evidence that R&D project discontinuations are more frequent for overlapping transactions than non-overlapping ones,[278] and that they are also more frequent for non-overlapping transactions than in the absence of mergers.[279] Killer acquisition is one possible explanation for these conclusions, but far from the only one and it notably fails to explain the discrepancy between discontinuations in non-overlapping mergers (where killers acquisitions are, by definition, impossible) and in the absence of mergers.[280]

Put together, acquisitions that bear the hallmarks of "killers" are therefore not clearly anticompetitive even in their own right because they increase the total amount and reliability of returns to entry and because they cannot effectively prevent any firm from competing. At best they can buy incumbents time to improve their own product (another pro-competitive effect).

B. Killer Acquisitions in the Tech Sector

A natural extension of Cunningham et al.'s killer acquisitions work is to question whether mergers of this sort also take place in the tech industry. Interest in this question is driven by the prominent place that digital markets currently occupy in competition policy discussion, but also by the significant number of startup acquisitions that take place in the tech

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[276] Salop, *supra* note 125, at 14 ("[A] higher bid by the dominant firm could well reflect a market power premium, that is, the value of the dominant firm of using the acquisition to maintain its market power by keeping the potential entrant out of the hands of other bidders that would use the acquisition to increase competition.").

[277] Taken at face value, this finding would also undermine plans to use the value of a merger as a proxy for likely anticompetitive harm. *See, e.g.*, Hemphill & Wu, *supra* note 121, at 1882 ("Alternatively, intent might be revealed through conduct, such as paying too much for a rival. . . .").

[278] *See* Cunningham et al. *supra* note 8, at 692.

[279] *Id.*

[280] *Id.*

industry.[281] Existing studies provide scant evidence that killer acquisitions are a common occurrence in these markets, however. This is not surprising. Unlike the pharmaceutical industry, where drugs must go through a lengthy and visible regulatory pipeline before they can be sold,[282] incumbents in digital industries will likely struggle to identify their closest rivals and prevent firms from rapidly pivoting to seize new commercial opportunities. As a result, the basic conditions for killer acquisitions to take place (i.e., firms being in a position to share monopoly profits) are less likely to be present—and it is also harder to design research methods that detect these mergers. The empirical literature on killer acquisitions in the tech sector is still in its infancy. In fact, as things stand, no study directly examines whether killer acquisitions actually take place in digital industries (i.e., whether post-merger project discontinuations are more common in overlapping than non-overlapping tech mergers).

In one of the only empirical papers on this topic, Axel Gautier and Joe Lamesch look at 175 acquisitions by Amazon, Apple, Facebook, Google, and Microsoft.[283] The authors observe that acquired firms' products were discontinued in 60% of these mergers.[284] On this basis the authors conclude that "the possibility of killing acquisitions cannot be leaved [sic] aside and it is important that competition authorities take into account the competitive potential of these young startups."[285]

As the authors themselves concede, however, their study sheds no light on the occurrence of *killer acquisitions*, as opposed to mere product discontinuations.[286] Indeed, the paper does not show that incumbents' acquisitions are discontinued at a higher rate than the competitive baseline, or even that the discontinued mergers disproportionately concerned

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[281] According to data published by the FTC, the GAFAM firms collectively acquire between 40 and 60 firms per, with most of the acquisitions falling below existing merger filing thresholds. *See* F.T.C, *Non-HSR Reported Acquisitions by Select Technology Platforms, 2010-2019: An FTC Study*, 14 (20201).

[282] *See, e.g.*, *How We Develop New Medicines*, GSK, https://www.gsk.com/en-gb/research-and-development/development/how-we-develop-new-medicines/ [https://perma.cc/G6EA-QPPT] (last visited June 3, 2021); *see also Biopharmaceutical Research & Development: The Process Behind New Medicines*, PHRMA (2015), http://phrma-docs.phrma.org/sites/default/files/pdf/rd_brochure_022307.pdf [https://perma.cc/TK4J-GDGG].

[283] Axel Gautier & Joe Lamesch, *Mergers in the Digital Economy*, 54 INFO. ECON. POL'Y 1 (2020)

[284] *Id.* at 8 ("On the basis of these criteria, we identify that 60% of the target firms were discontinued, most of them within a year after the acquisition.").

[285] *Id.* at 11.

[286] *Id.* at 3 ("However, from our data, we cannot screen between the two explanations for product discontinuation: technology acquisition or the elimination of a potential rival.").

overlapping products that may threaten the acquirer's market position.[287] Accordingly, the authors' conclusion that authorities should pay closer attention to mergers that take place below existing notification thresholds appears premature.[288] This is all the more true given that the paper says nothing about the relative benefits and costs of this policy change.[289]

Similar issues also affect other empirical research on this topic. A recent paper by Elena Argentesi and her co-authors, for example, surmises that "merger control enforcement has not proved able so far to cope with several of the new challenges posed by digital markets," and concludes that "[m]ore can and should be done. It might be that this will require a change in the legislation or the establishment of a new regulator."[290]

This conclusion rests mainly on two cases studies, and a more superficial analysis of almost 299 acquisitions by Google, Amazon, and Facebook.[291] The authors collect several descriptive statistics about these transactions and group these mergers by the target firm's main business segment. However, as the authors observe, this is not a good proxy for actual overlaps between the acquirer and target firms' businesses.[292]

While this study sheds a fascinating light on the M&A activities of large tech firms, it says little about the potential occurrence of killer acquisitions. The authors find that a majority of the 299 scrutinized Big Tech acquisitions are spread between communication apps and tools (50), developer tools (40), physical goods and services (51) and AI & analytics (43).[293] Moreover, the study shows that all three of Google, Amazon, and Facebook have, to varying degrees, invested in these sectors.[294] This suggests these acquisitions might be better framed as "moligopoly"

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[287] *Id.* at 10 ("Additional data on the product development and on the relative im- portance of the competitive threat exerted by the startup are needed, but they are not easy to find.").

[288] *Id.* at 11.

[289] *Id.* at 1–11.

[290] Elena Argentesi et al., *Merger Policy in Digital Markets: An Ex-post Assessment*, 17 J. COMPETITION L. & ECON. 95, 131 (2021).

[291] *Id.* at 95–96 ("Finally, we retrospectively examine two important merger cases, Facebook/Instagram and Google/Waze, providing a systematic assessment of the theories of harm considered by the UK competition authorities as well as evidence on the evolution of the market after the transactions were approved."); *see also id.* at 98 ("Over this period, Google has acquired 168 companies, Facebook has acquired 71 companies, and Amazon has acquired 60 companies. . . .").

[292] *Id.* at 99 ("It is not straightforward to assess the nature of these transactions (horizontal, vertical, or conglomerate) on the basis of the available evidence, because the area of economic activity is at most a proxy for actual or potential substitutability. Products may for instance lie in different steps of the value chain or perform different functions.").

[293] *Id.* at 100.

[294] *Id.* at 100–01.

competition – where large platforms compete for control of markets outside of their core business areas – rather than killer acquisitions.[295]

Crucially, there is no sense that these acquisitions face higher termination rates than those made by other acquirers (such as venture capital firms), or that the activities of targets systematically overlap with those of incumbents. There is thus little reason to believe that they were "killer acquisitions," and even less that they ultimately harmed consumers. In fact, the authors even observe that many of the target companies were likely complements, rather than substitutes:

> However, most transactions do not have a clear horizontal element for each of Amazon, Facebook, and Google. Acquisitions target companies spanning a wide range of economic sectors and whose products and services are often complementary to those supplied by Amazon, Facebook, and Google. . . . Transactions that can be characterized as more horizontal in nature would seem to be the minority. [296]

This tends to exclude the killer acquisition theory of harm. The authors supplement this empirical work with two case studies: one concerning Facebook's purchase of Instagram; the other about Google's acquisition of Waze.[297] Crucially, in both cases, the authors fail to reach a conclusion as to whether the underlying merger ultimately harmed consumers,[298] and in the case of the Facebook/Instagram acquisition, the authors concede anecdotal evidence may even cut in the opposite direction.[299]

The bigger picture is that it is extremely difficult, even with hindsight, to determine whether these mergers might have been detrimental to competition and consumers. Perhaps more problematically,

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[295] *See generally* NICHOLAS PETIT, BIG TECH AND THE DIGITAL ECONOMY: THE MOLIGOPOLY SCENARIO (2020).

[296] Argentesi et al., *supra* note 290, at 99–100.

[297] *Id*. at 116–30.

[298] S*ee id.* at 126 (discussing the Facebook/Instagram merger) ("In conclusion, the effect of the Authorities' decision to clear the merger on consumer welfare depend on the balance between likely anticompetitive effects and efficiencies, which in turn heavily depend on the selected counterfactual. There are no elements to identify which counterfactual would have been more likely."); and *see id.* at 130 (discussing the Google/Waze merger) ("Again, understanding whether the merger has ultimately led to welfare loss requires (i) identifying the counterfactual scenario, and (ii) balancing the harmful effects of potential lower competition and the benefits of efficiencies realized thanks to the merger.").

[299] *Id.* at 126 ("However, data suggests that Snapchat has not been able to monetize engagement to the extent that Instagram did, which is perhaps the signal that Facebook's role in the development of Instagram with respect to advertising was significant.").

there are no obvious heuristics to identify mergers that are, on balance, more likely to harm competition.

There have attempts to elucidate some of the unanswered questions. For instance, a paper by Pauline Affeldt and Reinhold Kesler looks at the outcomes of apps after their acquisition by big tech platforms.[300] They find that half of the services are discontinued, while those that remain largely move to a free model, but with more privacy-intrusive permissions required from users.[301] As the authors concede, this does not tell us whether the acquisitions ultimately reduced consumer welfare, as the paper do not identify the counterfactual acquisitions, and it is not clear whether the post-merger outcome leaves consumers better or worse off.

Scholars have also published several theoretical papers concerning potential killer acquisitions in the tech sector. Mark Lemley and Andrew McCreary, for instance, argue that the acquisition of startup companies by large platforms leads to concentration in the tech industry and averts the Schumpeterian competition that would otherwise enable the acquired startups to compete with, and ultimately displace, incumbents.[302] The authors substantiate this claim by citing evidence that acquisitions have gradually gained in importance, relative to IPOs.[303] In other words, in a world without startup acquisitions, the authors believe that far more companies would opt for IPOs and ultimately compete head-on with incumbents.[304]

But the authors gloss over several critical counterarguments. For a start, it is not clear that VC funding would remain at its current levels if exit by acquisition were taken off the table.[305] Put simply, acquisitions

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[300] Pauline Affeldt & Reinhold Kesler, *Big Tech Acquisitions—Towards Empirical Evidence*, 12 J. EUROPEAN COMPETITION L. & PRAC., 472 (2021) ("We find that half of the acquired apps are discontinued, which tend to be smaller, less frequently updated, and less privacy-intrusive than acquired apps that are continued. Following the acquisition by GAFAM, the monetization strategy seems to change as apps become free of charge but request more privacy-sensitive permissions. Compared with the whole Play Store, GAFAM seems to target more attractive apps, e.g., with respect to updating, data collection, and demand.").

[301] *Id.*

[302] *See* Lemley & McCreary, *supra* note 41, at 1 ("In this paper, we argue that this focus on exit, particularly exit by acquisition, is pathological. It leads to concentration in the tech industry, reinforcing the power of dominant firms. It short-circuits the development of truly disruptive new technologies that have historically displaced incumbents in innovative industries. And because incumbents often buy startups only to shut them down, intentionally or not, it means that the public loses access to many of the most promising new technologies Silicon Valley has developed.").

[303] *Id.* at 15–18.

[304] *Id.*

[305] *Id.* at 9. The authors dismiss this out of hand, citing Zingales et al., *supra* note 8.

may offer an exit to early investors in cases where IPOs are not a realistic prospect, thus increasing the incentive to invest in startups in the first place; barriers to market exit have been known to slow investments.[306]

Likewise, it is far from clear that market concentration is a problem in and of itself. For example, economic analysis of the relationship between market structure and innovation suggests there is an ambiguous relationship between both variables, or at the very least one that is not monotonic.[307]

Finally, the authors are dismissive of potential efficiency justifications that may underpin startup acquisitions. The fact that startups routinely opt for acquisition instead of IPOs suggests the former is often more lucrative.[308] While, in some cases, this *could* be due to market power reinforcing effects, in other cases superior efficiency of acquirers (or the inefficiency of targets) may play a larger role. This is almost by definition the case when the acquiring and target firms are not competitors or potential competitors.[309] The managerial efficiency of incumbents[310], economies of scale[311], and complementary dynamic capabilities[312] are but a few potential explanations for these purchases. In short, the authors thus fail to adequately substantiate their claim that startup acquisitions reduce consumer welfare.

To summarize, while studies of this sort may indeed suggest that the clearance of *certain* mergers may not have been optimal, it is hardly a sufficient basis on which to argue that enforcement should be tightened. The reason for this is simple: as explained above, the fact that some

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[306] *See, e.g.*, Philipps & Zhdanov, *supra* note 14; *see also* Prado & Bauer, *supra* note 77.

[307] *See supra* note 202 and accompanying text.

[308] *See* Lemley & McCreary, *supra* note 41, at 32–33.

[309] *See* Joseph Farrell & Carl Shapiro, *Scale economies and synergies in horizontal merger analysis*, 68 ANTITRUST L. J. 685, 686–87 (2000) ("While we cannot speak for the drafters of the Guidelines, a sensible way to understand this practice is that the agencies presume that where the loss of direct competition is slight, the transaction is likely motivated by efficiencies that outweigh that loss, and is thus on balance "beneficial or neutral." Thus a real sympathy to efficiencies is built into the Guidelines from the start.").

[310] Manne, *supra* note 15, at 112.

[311] *See, e.g.*, Bart M Lambrecht, *The timing and terms of mergers motivated by economies of scale*, 72 J. FIN. ECON. 41 (2004) ("This paper analyzes the timing of mergers motivated by economies of scale. We show that firms have an incentive to merge in periods of economic expansion.").

[312] *See, e.g.*, David J Teece, *Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy*, 15 RES. POL'Y 285 (1986) ("This paper attempts to explain why innovating firms often fail to obtain significant economic returns from an innovation, while customers, imitators and other industry participants benefit Business strategy – particularly as it relates to the firm's decision to integrate and collaborate – is shown to be an important factor.").

anticompetitive mergers may have escaped scrutiny and/or condemnation is never a sufficient basis to tighten rules. In order to justify increased enforcement, consideration must be given to increased administrative costs and the number of false convictions likely to arise. As things stand economic research on killer acquisitions in the tech sector does not warrant tougher antitrust enforcement, though it does show the need for further empirical research on the topic.

VI. CASE STUDIES

The doubts expressed in the previous sections are not just theoretical; they are best evidenced by a close investigation of recent legal complaints and commentary surrounding several technology acquisitions. Facebook's acquisitions of Instagram in 2012 (and to a lesser extent of WhatsApp in 2014) has received the most attention of all the major acquisitions by today's leading technology companies, including in the House Committee on the Judiciary's investigation of competition in digital markets and the antitrust complaints lodged by the FTC and forty-six state attorneys general.[313]

Other tech acquisitions have been important in current debates, as well. Among these are Google's acquisitions of Android in 2005, YouTube in 2006, DoubleClick in 2009 and Waze in 2013, all of which were cleared by competition authorities at the time but may, under a mergers regime that was more concerned with preventing the elimination of nascent competition, be challenged if they were attempted today.[314]

In this Section we examine both the Facebook/Instagram deal and the Google/Android deal, highlighting two problems they raise for proposals for a more "killer"-focused merger policy.

The first is that contemporary attempts to identify mergers that appear to be "killer acquisitions" have often focused exclusively on customer-facing product characteristics and ignored the effects of the merger on the acquired product's business model, including ability to monetize and

[313] *See* STAFF OF THE HOUSE COMM. ON THE JUDICIARY, 116TH CONG., INVESTIGATION OF COMPETITION IN DIGITAL MARKETS (2020), available at https://judiciary.house.gov/uploadedfiles/competition_in_digital_markets.pdf?utm_campaign=4493-519 [https://perma.cc/8FSL-Q63B]; *see also*, Complaint for Injunctive and other Equitable Relief, *Fed. Trade Comm'n v. Facebook*, No 1:20-cv-03590, 2021 WL 2643627. (Dec. 9, 2020), available at https://appliedantitrust.com/16_foreclosure/cases_ftc/facebook_ftc2020/1_ddc/facebook_ftc_ddc_complaint2020_12_09.pdf [https://perma.cc/MJW5-S9JY]; *see also*, Complaint, *State of New York, et al. v. Facebook* (1:20-CV-03589) (Dec. 3, 2020), available at https://appliedantitrust.com/16_foreclosure/cases_states/facebook_states2020/facebook_states_ddc_complaint2020_12_09.pdf [https://perma.cc/7PC8-5QQW].

[314] Gautier & Lamesch, *supra* note 283, at 5.

ability to access capital. But these may be critical to a product's success, and these kinds of products are only possible at all because of the possibility of an acquisition that creates a route to profitability.

The second is that, even if one of these mergers was determined *ex post* to have been detrimental to competition, separating it *ex ante* from similar mergers that were procompetitive is a difficult task, and it is far from clear that the net benefits of prohibiting both are greater than the net benefits of allowing both.

Indeed, even with the benefit of hindsight, it is extremely difficult to accurately determine whether a merger ultimately harmed consumers, since the counterfactual may be of Instagram and Android failing to succeed without Facebook and Google's investment, management, and product integrations.

Along similar lines, at the start of the Covid-19 pandemic, several commentators alleged that a mechanical ventilator merger dating back to 2012 was in fact a killer acquisition that might ultimately lead to ventilator shortages, almost ten years down the road. But as our study of the controversy in this Section reveals, the killer acquisition accusations were manifestly inapposite. Yet this did not stop the Justice Department from opening a probe into the transaction in order to verify these claims.[315]

A. Facebook / Instagram and Google / Android

Facebook's acquisition of Instagram in 2012 has become totemic in some people's minds as an example of the failure of the current approach to merger review.[316] Conversely, Google's acquisition of Android in 2005 was one of the most consequential mergers of the early 21st century, but despite bearing many superficial trappings of a killer acquisition, it is rarely considered to be anticompetitive. The following section studies both mergers, and argues that they neatly illustrate the pitfalls of trying to ascertain whether deals involving small companies will harm innovation. While there is certainly reason to believe that both mergers ultimately benefited consumers, the bigger picture is that such an assessment involves tremendous uncertainty, even when the analysis takes place ex-post. Accordingly, attempts to catch innovation-harming mergers will likely raise significant enforcement costs.

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[315] *See, e.g.*, Brent Kendall, *Justice Department Opens Ventilator Antitrust Probe Focused on Medtronic*, WALL ST. J. (Sept. 30, 2020), https://www.wsj.com/articles/justice-department-opens-ventilator-antitrust-probe-focused-on-medtronic-11601497943 [https://perma.cc/5ATC-GDL3].

[316] *See* Yun, *Potential Competition, Nascent Competitors, and Killer Acquisitions*, *supra* note 47.

1. Was Facebook / Instagram Anticompetitive?

It is often said that Instagram's success as a social network has little, if anything, to do with the fact that Facebook owns it.[317] For example, there is very little product integration between the two services.[318] This leads some observers to conclude that, had the deal been blocked, Facebook would face a strong competitor in social media and social media advertising.[319] In turn, this would allegedly have led to better services for users, cheaper advertising on both platforms, and facilitated market entry for new challengers.[320]

These fears were confirmed in some people's minds with the leak of emails from 2012 between Mark Zuckerberg and Facebook's then-Chief Financial Officer, David Ebersman, in which Zuckerberg lays out his rationale for buying Instagram.[321] In the emails, Zuckerberg describes Instagram as a nascent competitor and potential threat to Facebook:

> These businesses are nascent but the networks established, the brands are already meaningful, and if they grow to a large scale they could be very disruptive to us. Given that we think our own valuation is fairly aggressive and that we're vulnerable in mobile, I'm curious if we should consider going after one or two of them.[322]

Ebersman objects that a new rival would just enter the market if Facebook bought Instagram.[323] In response, Zuckerberg argued that, by then, Facebook would have accumulated enough lead-time to ward off these threats.[324]

At the time of the leaks, Randy Picker argued that these emails hinted that the acquisition was essentially about taking out a nascent competitor: "Buying Instagram really was about controlling the window in which the Instagram social mechanic invention posed a risk to Facebook. . . .

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[317] *Id.*

[318] *Id.*

[319] *See* Salop, *supra* note 125, at 7.

[320] *Id.*

[321] Casey Newton & Nilay Patel, *'Instagram Can Hurt Us': Mark Zuckerberg Emails Outline Plan to Neutralize Competitors*, THE VERGE (Jul. 29, 2020), https://www.theverge.com/2020/7/29/21345723/facebookinstagram-documents-emails-mark-zuckerberg-kevin-systrom-hearing [https://perma.cc/Q63P-65C9].

[322] *Id.*

[323] *Id.*

[324] *Id.* ("There are network effects around social products and a finite number of different social mechanics to invent. Once someone wins at a specific mechanic, it's difficult for others to supplant them without doing something different.").

Facebook well understood the competitive risk posed by Instagram and how purchasing it would control that risk."[325]

This is a reasonable interpretation of the internal emails, but it is not without limits. The most important one is that Instagram was not the only company Facebook considered buying.[326] The internal emails cited by Facebook's detractors reveal that the company was also thinking about acquiring Path and Foursquare.[327] If the goal was to neutralize potential competition, why only acquire one of these rivals? And what does it say that the two firms that Facebook *did not* acquire ultimately faltered?[328]

At the very least, this raises the prospect of an alternative story in which Facebook's acquisition of Instagram was mostly about improving both firms' products. This story is consistent with the tremendous growth of both Facebook and Instagram since the acquisition.[329] As John Yun writes:

> At the time of the purchase, Instagram had zero revenue and a handful of employees. Since Facebook's acquisition, Instagram has grown from 30 million users to well over one billion. During the same period, Facebook grew from approximately 900 million users to over two billion users. This substantial expansion in users and output is the complete opposite of what we typically consider an anticompetitive outcome.[330]

In that regard, Mark Zuckerberg's email could be construed as saying that buying Instagram would improve Facebook, and make it good enough to fend off other entrants (and this interpretation is much more consistent with the notion that Facebook chose to acquire one of many promising firms). Indeed, Zuckerberg suggests that new rivals would struggle to steal

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[325] Randy Picker, *The House's Big Tech Hearing: Break Ups Large and Small?*, PROMARKET (Aug. 4, 2020), https://promarket.org/2020/08/04/the-houses-big-tech-hearing-break-ups-large-and-small/ [https://perma.cc/T44K-LAZJ].

[326] Newton & Patel, *supra* note 321.

[327] *Id.*

[328] The Path app was shut down in October 2018. *See, e.g.*, John Russel, *Mobile Social Network Path, Once a Challenger to Facebook, Is Closing Down*, TECHCRUNCH (Sept. 17, 2018), https://techcrunch.com/2018/09/17/rip-path/ [https://perma.cc/RAJ7-6S8J]. The Foursquare app is still active, but its growth has stalled. *See, e.g.*, Basma AlBanna, Mahmoud Sakr, Sherin Moussa & Ibrahim Moawad, *Interest Aware Location-Based Recommender System Using Geo-Tagged Social Media*, ISPRS INT'L J. GEO-INFO (Dec. 2016).

[329] Yun, *Potential Competition, Nascent Competitors, and Killer Acquisitions*, *supra* note 47.

[330] *Id.*

users from Facebook because the platform would already have incorporated new social mechanics.[331]

If this was the rationale – rather than simply trying to kill a nascent competitor – it would be pro-competitive. It is good for consumers if a product makes itself *better* to beat its rivals by acquiring undervalued assets to deploy them at greater scale and with superior managerial efficiency, even if the acquirer hopes that in doing so it will prevent rivals from ever gaining significant market share.[332] Further, despite popular characterization, on its face the acquisition was not about trying to destroy a consumer option, but only to ensure that Facebook was competitively viable in providing that option. Another reasonable interpretation of the emails is that Facebook was wrestling with the age-old make-or-buy dilemma faced by every firm at some point or another.

But suppose eliminating competition from Instagram *was* indeed the merger's sole rationale. Would that necessarily make it anticompetitive? Chief among the objections is that both Facebook and Instagram are networked goods.[333] Their value to each user depends, to a significant extent, on the number (and quality) of other people using the same platform.[334] Many scholars have argued that this can create self-reinforcing dynamics where the strong grow stronger.[335] Such an outcome is certainly not a given, since other factors about the service also matter and networks can suffer from diseconomies of scale, where new users reduce the quality of the network.[336]

This network effects point is central to the reasoning of those who oppose the merger: Facebook purportedly acquired Instagram because Instagram's network had grown large enough to be a threat.[337] With Instagram out of the picture, Facebook could thus take on the remaining smaller rivals with the advantage of its own much larger installed base of users.

However, the network tipping argument could cut both ways. It is plausible that the proper counterfactual was not duopoly competition between Facebook and Instagram, but either Facebook or Instagram offering the other firm's features—only later. In other words, a possible framing of the merger is that it merely accelerated the cross-pollination of social mechanics between Facebook and Instagram—something that

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[331] Newton & Patel, *supra* note 321 ("[I]f we incorporate the social mechanics they were using, those new products won't get much traction since we'll already have their mechanics deployed at scale.").

[332] *See* Manne, *supra* note 15, at 112.

[333] *See* Lemley & McCreary, *supra* note 41, at 11.

[334] *See id.*

[335] *See id.*

[336] *Id.* at 9, 11.

[337] Newton & Patel, *supra* note 321.

would likely prove beneficial to consumers. This finds some support in Mark Zuckerberg's reply to David Ebersman: "Buying them would give us the people and time to integrate their innovations into our core products."[338]

The exchange between Zuckerberg and Ebersman also suggests another pro-competitive justification: bringing Instagram's "social mechanics" to Facebook's much larger network of users. We can only speculate about what "social mechanics" Zuckerberg actually had in mind, but at the time Facebook's photo-sharing functionality was largely based around albums of unedited photos, whereas Instagram's core product was a stream of filtered, cropped single images.[339] Zuckerberg's plan to gradually bring these features to Facebook's users – as opposed to them having to familiarize themselves with an entirely different platform – would likely cut in favor of the deal being cleared by enforcers.

Another possibility is that it was Instagram's network of "influencers" who were the valuable asset. Bringing them onto the Facebook platform would undoubtedly increase its value to regular users. For example, Kim Kardashian, one of Instagram's most popular users, joined the service in February 2012,[340] two months before the deal went through. We can see the importance of a service's most creative users today, as Facebook tries to pay TikTok creators to move to its TikTok clone, Reels.[341] But if this was indeed the rationale, it is a sign of a company confronting fierce competition, rather than one on the cusp of acquiring an unassailable monopoly position. More fundamentally, it suggests that Facebook was always going to come out on top—or, at least, that it thought it would.

At the time, Om Malik, writing for GigaOm, argued that Instagram *was* a nascent competitor of Facebook's: "Facebook was scared shitless and knew that for first time in its life it arguably had a competitor that could not only eat its lunch, but also destroy its future prospects."[342] But he believed that Instagram's value to Facebook was not simply its user base or in stamping out the competitor *per se*, but in its success on mobile, which Facebook singularly lacked:

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[338] *Id.*

[339] *See* FACEBOOK.COM [https://perma.cc/D4FF-JZWW] (last visited Jan. 29, 2021); *see also* INSTAGRAM.COM [https://perma.cc/H77Q-94D5] (last visited Jan. 29, 2021).

[340] *See* INSTAGRAM.COM, *supra* note 339.

[341] *See* Euirim Choi, *Facebook Offers Money to Reel In TikTok Creators*, WALL ST. J. (Jul. 28, 2020), https://www.wsj.com/articles/facebook-seeks-to-reel-in-tiktok-creators-raising-stakes-in-social-media-rivalry-11595928600 [https://perma.cc/ZTL4-4ACR].

[342] Om Malik, *Here Is Why Facebook Bought Instagram*, GIGAOM (Apr. 9, 2012), https://gigaom.com/2012/04/09/here-is-why-did-facebook-bought-instagram/ [https://perma.cc/45C2-KUSZ].

> Facebook is essentially about photos, and Instagram had found and attacked Facebook's achilles [sic] heel—mobile photo sharing. . . . They [Instagram] are growing like mad on mobile, and Facebook's mobile platform (including its app) is mediocre at best. Why? Facebook is not a mobile-first company and they don't think from the mobile-first perspective.[343]

This interpretation leads to a view that seems parsimonious with the available evidence: that the appeal of Instagram was that it employed a promising technology and business model that could help Facebook to overcome crucial weaknesses in its own product.

Instagram may also have benefitted from business model integrations like these. Although its consumer-facing product appears largely unaffected by being owned by Facebook, except for the ability to log in with a Facebook account, on the *advertiser* side the product is deeply integrated with Facebook's advertising platform, Ads Manager.[344] As well as making it easier for advertisers to run campaigns on both Facebook and Instagram, it allows adverts on Instagram to be targeted according to tracking information collected by Facebook across the wider web and other Facebook products.[345]

Apart from just making more money, this may have improved Instagram's service in the eyes of users, if this personalization has meant that its ads feel useful and unobtrusive. These benefits are not trivial: other services, like Twitter, that offer a superficially similar product have struggled with monetization and offering effective ads.[346]

At the time of the Instagram acquisition, some commentators made this point explicitly:

> Instagram had no monetisation strategy—other than a lottery-like exit. This says applying any kind of cost per user ($33 for the theory in vogue) is bogus. Being unable to project any sustainable revenue mechanism makes such a valuation process completely pointless. In Instagram's case, the only way to come up with a price tag was guessing the amount of money a small group of suitors—Facebook, Google and Twitter—might be willing to cough up for Instagram's eyeballs.[347]

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[343] *Id.*

[344] *See Facebook and Instagram Advertising Go Together Like...*, FACEBOOK FOR BUS. (Mar. 4, 2016), https://www.facebook.com/business/news/facebook-and-instagram-ads [https://perma.cc/UZ5G-RTNE].

[345] *Id.*

[346] Argentesi et al., *supra* note 290, at 123.

[347] Frédéric Filloux, *Facebook's Instagram takeover highlights its insecurity*, THE GUARDIAN (Apr. 16, 2012),

Clearly, hindsight has demonstrated that Instagram, which has one of the highest average revenues per user of any social media site, *could* in fact monetize its userbase. But it is noteworthy that this seemed improbable prior to the acquisition

It is also plausible that the deals are understandable within the "market for corporate control" model. Management by Facebook or Google may simply have been superior to alternative management the firms would have had otherwise. One noteworthy illustration of this was Instagram's rapid adoption of a "Stories" feature, copied from Snapchat as it began to win users away from Instagram, the speed of which was reportedly driven by Mark Zuckerberg himself and described by some outlets as a move that "saved" the service.[348]

One former Facebook executive, Mike Hoefflinger, even argued that this demonstration of superior management was itself of value to Facebook, because it would make other firms more willing to be acquired:

> And therein lies the priceless value of the Instagram story: proof of existence that Zuckerberg can turn visions of growth and impact into reality without undue meddling … A clear message to the best builders in the world that if you want to play truly big, come work with Facebook… [The Instagram acquisition] has created an ever-growing gravity for the single most important thing Zuckerberg needs for the success of Facebook in the long term: The desire of the world's best people and their creations to join with him.[349]

Hoefflinger claimed that this made WhatsApp and Oculus more willing to be acquired and allowed Facebook to recruit star executives from other firms.[350]

The upshot is that Facebook's acquisition of Instagram is not the epitome of anticompetitive behavior that critics routinely make it out to be. To the contrary, it is at least plausible that the merger turned Instagram into the highly successful platform that it is today and improved Facebook with new social mechanics.

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https://www.theguardian.com/technology/blog/2012/apr/16/facebook-instagram-takeover [https://perma.cc/4BB6-UHQZ].

[348] *See, e.g.*, Kurt Wagner, *'Stories' Was Instagram's Smartest Move Yet*, VOX (Aug. 8, 2018), https://www.vox.com/2018/8/8/17641256/instagram-stories-kevin-systrom-facebook-snapchat; *see also* Alex Kantrowitz, *Snapchat Was 'An Existential Threat' to Facebook – Until an 18-year-old Developer Convinced Mark Zuckerberg to Invest in Instagram Stories*, BUSINESS INSIDER (Apr. 7, 2020), https://www.businessinsider.com/how-developer-mark-zuckerberg-invented-instagram-stories-copied-snapchat-2020-4 [https://perma.cc/RAM5-K8ET].

[349] MIKE HOEFFLINGER, BECOMING FACEBOOK: THE 10 CHALLENGES THAT DEFINED THE COMPANY DISRUPTING THE WORLD 119 (2017).

[350] *Id.*

2. Was Google / Android Anticompetitive?

Although it receives far less attention in the debate about Big Tech acquisitions than Facebook / Instagram or other acquisitions made by Google, Google's acquisition of Android in 2005 deserves to be thought of as one of the most consequential and important acquisitions in recent history. The deal today would bear many of the superficial hallmarks of a tech killer acquisition: a large, powerful incumbent buying a smaller would-be rival in a market that has the potential to significantly challenge its current business model.[351] Many of the proposals made to curb "killers," discussed below, may have made the deal more difficult or even impossible.

Despite these ambiguities, with hindsight the deal looks remarkably successful. It led to the development of what became one of two leading smartphone operating systems (OSes) in the world, running on roughly 72% of smartphone devices worldwide,[352] and created a viable competitor to Apple's iPhone soon after that product entered – and revolutionized – the market.[353]

Android Inc. was founded in October 2003 and purchased for a reported $50 million by Google in July 2005, eighteen months before the announcement of the iPhone.[354] Unlike Apple's iPhone OS (later renamed iOS), which was designed only to run on Apple iPhones, Android was designed to work on a wide variety of smartphone devices by different manufacturers.[355] Indeed, it was backed during its launch phase by a number of powerful device and component manufacturers (OEMs, for "Original Equipment Manufacturers") and wireless operators that called itself the "Open Handset Alliance," including Motorola, HTC, Qualcomm, Samsung, T-Mobile, and Telefónica.[356]

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[351] *See* Section IV for a discussion of the general features of killer acquisitions.

[352] *See Mobile Operating System Market Share Worldwide, May 2020—May 2021*, STATCOUNTER, https://gs.statcounter.com/os-market-share/mobile/worldwide/#monthly-202005-202105 [https://perma.cc/FYV6-4K53] (last visited June 4, 2021).

[353] Owen Thomas, *Google Exec: Android was "Best Deal Ever,"* VENTUREBEAT (Oct. 27, 2010), https://venturebeat.com/2010/10/27/google-exec-android-was-best-deal-ever/ [https://perma.cc/CRT8-7ZM2].

[354] *See* Callaham, *supra* note 157.

[355] John Callaham, *The History of Android: The Evolution of the Biggest OS in the World*, ANDROID AUTHORITY (May 1, 2021), https://www.androidauthority.com/history-android-os-name-789433/ [https://perma.cc/LA5Y-4CEW].

[356] Philip Trauring, *What Ever Happened to the Open Handset Alliance?*, OFF ON A TANGENT (Mar. 6, 2014), https://trauring.org/what-ever-happened-open-handset-alliance/ [https://perma.cc/S73J-9635].

Unlike Apple's vertically integrated approach, Android was designed to be customizable by handset manufacturers and wireless operators, in order to encourage adoption by firms otherwise worried about becoming commoditized.[357] This customization allowed Android device manufacturers to differentiate their phones from their competitors with different branding (e.g. Motorola's Droid range of phones) and software features (for example, Samsung's Kies software, which enabled file transfer between desktop computers and the smartphones).[358]

The base OS is open source and available for free to OEMs, and the software development kit ("SDK") was made available for free download in November 2007.[359] However, some important software elements – such as Google's Play Store, Gmail, Google Maps, the camera software, and other services – require a license to install, which Google charges for or in exchange of which it imposes other contractual terms (such as a requirement to make Chrome the default browser on the device, or to provide a certain number of OS updates over the lifespan of the device).[360]

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[357] *See* OPEN HANDSET ALLIANCE (June 4, 2021), https://www.openhandsetalliance.com/oha_overview.html [https://perma.cc/9MEY-RKZ9] ("Each member of the Open Handset Alliance is strongly committed to greater openness in the mobile ecosystem. Increased openness will enable everyone in our industry to innovate more rapidly and respond better to consumers' demands.").

[358] *See* Joshua Topolsky, *Motorola DROID Review*, ENGADGET (Oct. 30, 2009), https://www.engadget.com/2009-10-30-motorola-droid-review.html [https://perma.cc/X9FB-R33D]; SAMSUNG, https://www.samsung.com/africa_en/support/kies/ [https://perma.cc/3DJM-ZPNZ] (Last visited Sept. 2, 2021).

[359] Juan Carlos Perez, *Google Releases Android SDK*, MACWORLD, (NOV. 11, 2007), https://www.macworld.com/article/188112/androidsdk.html [https://perma.cc/SF4D-WEES].

[360] *See, e.g.*, Dirk Auer, *Appropriability and the European Commission's Android Investigation*, 23 COLUM. J. EUR. L. 649-50 (2017) ("Noting that Android is mostly distributed as open source software is important in order to draw a distinction between Android and some of its key applications. On the one hand, the source code for Android is distributed freely. . . . In contrast, Google's marquee applications are proprietary. In practice, this means that original equipment manufacturers (OEMs) must obtain Google's consent if they want to preload these applications on the phones they sell.") [hereinafter *Appropriability and the European Commission's Android Investigation*]; *see also*, Jacob Kastrenakes & Russell Brandom, *Google App Suite Costs as Much as $40 Per Phone Under New EU Android Deal*, THE VERGE (Oct. 19, 2018), https://www.theverge.com/2018/10/19/17999366/google-eu-android-licensing-terms [https://perma.cc/2UWE-3MFT] ("A confidential fee schedule shows costs as high as $40 per device to install the 'Google Mobile Services' suite of apps, which includes the Google Play Store. The new fees vary depending on country and device type, and it would apply to devices activated on or after February 1st, 2019. But phone manufacturers may not actually have to shoulder that cost: Google is also offering separate agreements to cover some or all of the licensing costs for companies that choose to install Chrome and Google search on their devices as well, according to a person familiar with the terms.").

Since Android's launch, Google has released its own line of phones (manufactured on license by other OEMs) and some of the original Open Handset Alliance manufacturers have left the smartphone market. Others, most notably Chinese firms like Huawei and Xiaomi, have entered it.[361]

The Android acquisition led to radical business model innovation in the smartphone space. Unlike rival mobile OSes such as iOS, Symbian and Windows Mobile, Android was not primarily based on licensing fees.[362] Instead, Android and the software needed to develop for it was made available for free, albeit with contractual obligations and (later) payments needed for certain Google software.[363]

This model was unique among OSes that eventually gained widespread adoption.[364] Apple does not license iOS to other manufacturers, and its smartphone business model is built around the profitability of the iPhone device and charging for software services provided to iPhone users.[365] Google largely profits from Android users' use of its other services included on the device.[366] The ability to deeply embed Google services within Android – such as making Chrome the default browser and putting a Google Search bar on the home screen by

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[361] *See* Chris Velazco, *How Google's Smartphones Have Evolved Since 2007*, ENGADGET (Oct. 3, 2017), https://www.engadget.com/2017-10-03-a-look-back-at-googles-smartphones.html [https://perma.cc/AVA9-YWUQ]; *see* Team Counterpoint, *Global Smartphone Market Share: By Quarter*, COUNTERPOINT (Apr. 30, 2021), https://www.counterpointresearch.com/global-smartphone-share/ [https://perma.cc/9ALX-8KPL].

[362] *See* Auer, *supra* note 360, *Appropriability and the European Commission's Android Investigation*, at 659–60 ("To summarize, there is a sense that due to low appropriability, there is little scope for substantial investments in apps and mobile Oss as standalone products. Google bypasses this problem because it believes that its investments in apps and the Android OS will translate into greater search engine profits. But Google must ensure that Android users actually opt for Google's profitable services, rather than those of its competitors. The solution is to lock-down its Android platform, thereby nudging users toward its own services.").

[363] *See id.* at 650 ("[O]EMs notably have to agree to Google's *Mobile Application Distribution Agreement* (or MADA). Importantly, these agreements do not include any royalty obligations on the part of OEMs – Google's proprietary applications are given away *free of charge.*").

[364] *See* Dirk Auer, *Making Sense of the Google Android Decision*, ICLE Antitrust & Consumer Protection Research Program White Paper 1, 22 (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3709767 [https://perma.cc/8Q9K-BF8H] [hereinafter *Making Sense of the Google Android Decision*].

[365] *Id.* at 5, 25.

[366] Such as Google Search where users will view and click on Google's embedded search ads, as it does from iPhone users' use of Google's services. *Id.* at 23.

default – and the fact that Google has to pay Apple for default status on iPhones are factors that drive the value of Android to Google.[367]

It is of course possible that Android could have sustained its business model without being integrated with Google's services. But it's clear that the combination in practice did enable Android to maintain a distinctive business model to its competitors, and ultimately helped it eclipse them.[368] It may also have helped it compete with Apple's offering by allowing for more differentiation among devices and pricing, growing the size of the Android userbase for app developers.

Further, one of Android's biggest failings was OS fragmentation resulting from its open source nature, where carriers and OEMs that customized Android for the sake of differentiation did not provide updates to users after Google had released them, because of the cost of customizing updated Android builds for devices that were no longer being sold.[369] This meant that Android devices were frequently left without updates that fixed security flaws or provided new features.[370] Not only did this worsen users' experience, it worsened the position of Android as a whole, as users blamed the whole OS for problems they experienced on a customized device.[371]

But as bad as these problems became, they were probably smaller than the problems that a Google-less Android would have faced. Google

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[367] *See id.* at 25; *see also* Auer, *Appropriability and the European Commission's Android Investigation*, *supra* note 360, at 654.

[368] Auer, *Appropriability and the European Commission's Android Investigation*, *supra* note 360, at 667 ("On the theoretical side, the story of appropriability that was outlined above suggests that Google benefited from a unique advantage that its competitors did not have: its capacity to internalize a higher share of investments in its smartphone OS and apps. Accordingly, it is unlikely that they would have invested to the same extent as Google. On the practical side, Google's significant penetration in the browser, online maps, and mobile operating system markets could be seen as support for the theory that it enjoys some advantage over its competitors-because it can invest more thanks to its higher internalization of benefits. Of course, this intuition would need to be confirmed by comparing investments made by Google to those made by its rivals.").

[369] *See, e.g.*, Auer, *Appropriability and the European Commission's Android Investigation*, *supra* note 360, at 34, ("More fundamentally, the Commission's claim that fragmentation was not a significant threat is at odds with an almost unanimous agreement among industry insiders. For example, while it is not dispositive, a rapid search for the terms "Google Android fragmentation", using the DuckDuckGo search engine, leads to far more nuanced results than those cited in the Commission's decision. Of the ten first results, only one could remotely be construed as claiming that fragmentation was not an issue. The other results paint a very different picture. . . .").

[370] *Id.* at 36.

[371] *See, e.g.*, Jeremy Horwitz, *As iOS 13 Hits 50% Adoption, Android Fragmentation Keeps Getting Worse*, VENTUREBEAT (Oct. 17, 2019), https://venturebeat.com/2019/10/17/as-ios-13-hits-50-adoption-android-fragmentation-keeps-getting-worse/ [https://perma.cc/GGL2-QXQ6].

had significant advantages that helped it to make demands from carriers and OEMs that Android would not have been able to make.[372] In other words, Google was uniquely situated to solve the collective action problem stemming from OEMs' desire to modify Android according to their own idiosyncratic preferences.[373] It used the appeal of its app bundle as leverage to get OEMs and carriers to commit to support Android devices for longer with OS updates.[374] The popularity of its apps meant that OEMs and carriers would have great difficulty in going it alone without them, and so had to engage in some contractual arrangements with Google to sell Android phones that customers wanted.[375] Google was better resourced than Android likely would have been and may have been able to hold out for better terms with a more recognizable and desirable brand name than a hypothetical Google-less Android. In short, though it is of course possible that Android could have succeeded despite the deal having been blocked, it is also plausible that Android became so successful only *because* of its combination with Google. Competition enforcers tasked with identifying and preventing killer acquisitions thus face serious error-cost risk.

3. Can Enforcers Separate the Good from the Bad?

This, of course, raises the question: Can enforcers reliably separate the "good" tech platform acquisitions from the problematic ones?

Instagram grew from roughly 24 million users at the time of the acquisition to over 1 billion users in 2018.[376] Likewise, it earned zero

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[372] Auer, *Making Sense of the Google Android Decision*, *supra* note 364 at 23, 26.

[373] *See id.* at 26 ("[G]oogle withholds the Google Play and Google Search apps from OEMs that distribute "incompatible devices" (i.e. devices that significantly depart from the "standard version" of Android")).

[374] Auer, *Making Sense of the Google Android Decision*, *supra* note 364 at 26. Despite this, fragmentation remains a problem for Android, which has a much higher share of users on old versions of the OS than iPhone users. Id. at 25 ("Finally, both firms attempt to limit the number of software versions with which developers must work (i.e. fragmentation). Apple routinely (and sometimes annoyingly) prompts users to update their devices. It also stops supporting older handsets or older versions of iOS. Meanwhile, Google steers the development of Android so as to ensure that a large number of devices run the "standard" version of Android (notably via antifragmentation agreements with OEMs). However, unlike Apple, it cannot unilaterally coerce users of its ecosystem into adopting its own preferred version of Android.").

[375] *Id.* at 13, 26.

[376] *See* Anticipated Acquisition by Facebook Inc. of Instagram Inc., *supra* note 214, at 8; *see also* Josh Constine, *Instagram Hits 1 Billion Monthly Users, Up From 800M in September*, TECHCRUNCH (June 20, 2018),

revenue at the time of the merger.[377] This might explain why the acquisition was derided at the time as evidence of a tech "bubble," although others did consider it to involve the purchase of a nascent competitor even then, albeit a misguided one.[378]

One round up of commentary about the deal at the time provides an insight into how the deal looked then. Of those commentators who did not dismiss the deal out of hand as a frivolous purchase made during a tech "bubble," many believed that Instagram had the potential to add value to Facebook beyond simply eliminating a competitor.[379] For example, the then-managing editor of the *New Yorker* wrote:

> [Instagram] combines the sharing of a social app with the emotion of a photo album, and sharing plus feelings equals *sharing feelings*—an activity neither Mark Zuckerberg nor his company are known for. . . . If anything, Facebook made a very emotionally mature move by acknowledging something important that it lacks; whether paying for it in cash and stock is ignoble is beside the point. Sometimes we want to talk about things we see outside ourselves. Camera phones have helped refocus our gaze from our navels back onto the world, at least until the next e-mail arrives. And that's a big but important pill for Facebook to swallow.[380]

While many viewed Instagram as a nascent competitor, they also saw procompetitive effects from the deal, and many argued that Facebook's need to adapt to mobile was the most significant driver of the deal, citing Instagram's cleaner mobile user interface for sharing photos, and arguing that users had "flocked" to Facebook's competitors "including Path,

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https://techcrunch.com/2018/06/20/instagram-1-billion-users/ [https://perma.cc/5J9R-LGUW].

[377] Anticipated Acquisition by Facebook Inc. of Instagram Inc., *supra* note 214, at 2.

[378] *See, e.g.*, Charles Arthur, *Instagram and Facebook: The Next Tech Bubble*, THE GUARDIAN (Apr. 10, 2012), https://www.theguardian.com/technology/2012/apr/10/instagram-and-facebook-another-tech-bubble [https://perma.cc/AET4-4QV2]; John Gapper, *Facebook Is Scared of the Internet*, FIN. TIMES (Apr. 11, 2012), https://www.ft.com/content/b9783142-82fe-11e1-ab78-00144feab49a [https://perma.cc/J9L4-L6UN].

[379] Amanda Michel & Amanda Holpuch, *Why Did Facebook Buy Instagram for a Whopping $1bn?*, THE GUARDIAN (Apr. 9, 2012), https://www.theguardian.com/commentisfree/cifamerica/2012/apr/09/facebook-instagram-1bn-storify [https://perma.cc/T2J2-AL6J].

[380] Silvia Killingsworth, *Visual Candy: The Rise of Instagram*, NEW YORKER (Apr. 10, 2012), https://www.newyorker.com/culture/culture-desk/visual-candy-the-rise-of-instagram [https://perma.cc/8Y52-MJDT].

PicPlz, and Instagram."[381] In other words, Facebook needed to successfully shift to mobile before it was too late.[382]

Android, similarly, has experienced phenomenal growth under Google that would have been impossible to predict at the time—indeed, it was far from clear that smartphones would become as significant as they are today in 2005, let alone that Android would be the leading operating system within that market.[383]

The unknowability inherent in these judgements is critical from an antitrust perspective. Antitrust enforcers adjudicate merger proceedings in the face of extreme uncertainty.[384] All possible outcomes have certain probabilities of being true that enforcers and courts have to make educated guesses about, assigning probabilities to potential anticompetitive harms, merger efficiencies, and so on.[385] The uncertainty is magnified in the case of nascent competitor transactions:

> One key consideration with acquisitions of nascent competitors is how to address the uncertainty of both the procompetitive and the anticompetitive effects that *Microsoft* requires us to balance. Uncertainty is present in all merger analysis, because we cannot observe the post-merger world, or the but-for world, or both. But that uncertainty is compounded when one of the merging parties has not yet entered or reached its full potential. Under these circumstances,

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[381] Nicholas Carlson, *Well-Played Zuckerberg: Buying Instagram For $1 Billion Is A Brilliant Move*, BUSINESS INSIDER (Apr. 9, 2012), https://www.businessinsider.com/well-played-zuckerberg-buying-instagram-for-1-billion-is-a-brilliant-move-2012-4 [https://perma.cc/CV6R-ATZC].

[382] *Id.*

[383] S. O'Dea, *Market Share of Mobile Operating Systems Worldwide 2012-2021*, STATISTA (June 29, 2021), https://www.statista.com/statistics/272698/global-market-share-held-by-mobile-operating-systems-since-2009/ [https://perma.cc/3E9W-X3G2].

[384] *See* Thomas A. Piraino Jr., *Regulating Oligopoly Conduct Under the Antitrust Laws*, 89 MINN. L. REV. 9, 40–41 (2004) ("[A]ntitrust cases have become more complicated and less predictable. Proving economic issues requires extensive documentary evidence and endless testimony from economists and other experts. Most judges, and nearly all juries, lack the training necessary to make economic determinations.").

[385] *See* Geoffrey A. Manne & E. Marcellus Williamson, *Hot Docs vs. Cold Economics: The Use and Misuse of Business Documents in Antitrust Enforcement and Adjudication*, 47 ARIZ. L. REV. 609, 611 (2005) ("Because the same economic activity can have desirable or undesirable consequences depending on the economic circumstances, by its nature antitrust analysis is constrained to outlaw not specific conduct, but rather conduct that has specific economic characteristics. Identifying conduct that has or is likely to have an anticompetitive effect is difficult.").

> we cannot even use the state of competition just before the merger as a starting approximation of the world absent the merger.[386]

What was the likelihood that a company with a fraction of Facebook's users (24 million to Facebook's 1 billion), and worth $1 billion, could grow to threaten Facebook's market position? How could authorities know that Google+ (Facebook's strongest competitor at the time) would fail?[387] Or could authorities have known that an independent Android, worth $50 million in 2005, would in a few years end up being many people's main way of accessing the Internet? It is possible, for instance, that Windows Phone – released to much fanfare, with significant investment by Microsoft behind it, and with an existing base of Windows Mobile users to build on – could have succeeded instead, or alongside Android and the iPhone. But it is equally possible that, without Android's competitive threat, Microsoft could have taken longer to roll out its more modern smartphone OS and may have put less effort into doing so. It seems just as likely that, if the iPhone had remained priced highly in this counterfactual scenario, the pressure on Microsoft, Nokia, and other OEMs to innovate would have been less without Android, and outcomes for consumers worse.

At the time of these acquisitions, it simply appeared to be very unlikely that the counterfactuals were of scenarios with greater competition from the acquired firms growing into serious competitors themselves. And it is unclear in hindsight whether this assessment would have been wrong; they really may have been unlikely to succeed without the control and integration that the mergers involved. These outcomes were not just hard to ascertain, they were simply unknowable. And, of course, it is a mistake to assume that competitors truly know enough about their markets, their competitors, future technology, future consumer demand, and the like to have anything approaching certainty about the assumptions they make about prospective mergers. Nor does it make sense to assume that just because an incumbent hopes to earn or maintain monopoly profits, corporate decisionmakers will accurately and effectively take the proper steps to do so. Rather, economic actors are hampered by "imperfect foresight and human inability to solve complex problems containing a host of variables even when an optimum is

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[386] Prepared Remarks of Commissioner Noah Joshua Phillips, *supra* note 12, at 8–9; *see also* Dissenting Statement of Commissioner Joshua D. Wright, *supra* note 135.

[387] *See, e.g.*, Arjunb Kharpal, *Look Who's Admitting That Google+ Is 'Confusing'*, CNBC (Jul 28, 2015), https://www.cnbc.com/2015/07/28/google-plus-confusing-facebook-rival.html [https://perma.cc/3A6Y-Q6Q7] ("Google has halted its pursuit of making Google+ a rival to Facebook with the search giant even admitting that the social service was a little 'confusing' for users.").

definable."[388] As noted above, it is far from clear in the moment whether or not any given company has an appreciable chance of becoming a potential competitor. It is even less clear that corporate actors – including incumbent, dominant firms – are able to recognize them.[389]

This stands in stark contrast to the recommendation of some that intent evidence be used precisely to distinguish procompetitive from anticompetitive nascent competitor acquisitions.[390] For instance, Scott Hemphill and Tim Wu argue that "[e]vidence of an anticompetitive plan is a particularly important guide in this area."[391] They cite Facebook's internal memos regarding Instagram as evidence supporting the assertion that such an approach is sensible[392] and dismiss arguments that, whatever its intent, Facebook's purchase of Instagram may have enabled Facebook to "incubate" Instagram or become itself a more effective competitor.[393]

But intent evidence is not, in fact, generally useful to distinguish such cases, and the risk of false positives is arguably no smaller (and the risk of prejudicial evidence outweighing its probative value is much higher) in the face of such evidence.[394]

> [T]he problem is the fundamental and inextricable disconnect between intent and effect in complex economic systems. And even were it true that courts are capable, generally, of discerning economic effect from an actor's motives, it does not follow that a court would do so consistently or successfully enough to outweigh the extreme prejudice that such an inquiry would entail.[395]

The risk of error may, in fact, be heightened in the case of potential competitor acquisitions precisely because of the importance of such acquisitions for facilitating new entry in the first place.[396] "Indeed, it may

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[388] Armen Alchian, *Uncertainty, Evolution, and Economic Theory*, 58 J. POL. ECON. 211, 212 (1950).

[389] *See* Manne & Williamson, *supra* note 385, at 651, 654; *see also* Prepared Remarks of Commissioner Noah Joshua Phillips, *supra* note 12, at 11 ("Faced with evidence of real and significant consumer gains from the merger, conjecture by executives that competition might have arisen in its absence is simply too speculative to find, in the words of Microsoft, 'the requisite anticompetitive effect' for a Section 2 violation.").

[390] *See, e.g.*, Hemphill & Wu, *supra* note 121, at 1882. ("Such intent might be subjectively expressed through testimony or internal writings. The enforcer or fact-finder essentially borrows a party's expertise to help form a judgment about competitive effects").

[391] *Id.*

[392] *See id.* at 1904.

[393] *See id.* at 1902–03.

[394] *See* Manne & Williamson, *supra* note 385, at 649–50.

[395] *Id.*

[396] *See supra* Section II.A.

well be that nascent or potential competitors engage in strategic behavior to make themselves look like actual or potential competitors in order to make themselves attractive as acquisition targets. But when their intentions and incentives are tested, it may become clear that they lacked the ability to mature into truly viable competitors."[397]

One reason we know that business actors' ability to predict outcomes or bring them about is questionable derives from our knowledge of acquisitions *not* taken, and the consequences.[398] Consider, for example, that Yahoo – the dominant online search provider before Google – twice had the opportunity to buy Google and once had the opportunity to buy Facebook at bargain-basement prices: Google's founders offered their search algorithm to Yahoo in 1998 for "the derisory amount (today) of $1 million" and again in 2002 for $3 billion; Mark Zuckerberg offered up Facebook for $1 billion in 2006.[399] In each instance Yahoo deemed the price too high and opted instead to pursue smaller acquisitions of services like Flickr and Delicious.[400]

At the same time, the history of corporate M&A activity is littered with the carcasses of failed acquisitions that did not bring about the acquirers' hoped-for outcomes.[401] Among the most notorious examples of these are the mergers of Mattel and the Learning Company in 1998, America Online and Time Warner in 2001, eBay and Skype in 2005, NewsCorp and Myspace in 2005, Microsoft and aQuantive in 2007, Google and Motorola in 2012, and Microsoft and Nokia in 2013.[402] Several of these deals could be described as efforts by an incumbent firm to extend its dominance, and indeed in some cases that may well have been the intent. But in none of these instances was it the actual outcome.

Indeed, there is a real irony in the rush to condemn successful mergers, coupled with the convenient amnesia regarding the plethora of failed counterparts:

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[397] Douglas H. Ginsburg & Koren W. Wong-Ervin, *Challenging Consummated Mergers Under Section 2*, COMPETITION POL'Y INT'L (May 3, 2020), https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID3611077_code2061252.pdf?abstractid=3590703&mirid=1 [https://perma.cc/UYJ6-QNVQ].

[398] *See* Sylvain Saurel, *6 Reasons Why Yahoo! Failed*, MEDIUM (Aug. 17, 2019), https://medium.com/swlh/6- reasons-why-yahoo-failed-6004d67e86ff.

[399] *Id.*

[400] *Id.*

[401] *See, e.g.*, Ben Shepherd, *Anti-competitive, or excellent M&A execution?*, LINKEDIN (Dec. 22, 2020), https://www.linkedin.com/pulse/anti-competitive-excellent-ma-execution-ben-shepherd/ [https://perma.cc/XBV3-SS4W].

[402] *Fools Rush In: 37 of the Worst Corporate M&A Flops*, CB INSIGHTS (Oct. 30, 2018), https://www.cbinsights.com/research/merger-acquisition-corporate-fails/ [https://perma.cc/29F5-UQH8].

> The difference between Google buying Doubleclick/Admeld/Invite and Yahoo and Microsoft and their aggressive actions in the area isn't due to anti-competitive concerns, it came down to execution. Microsoft botched Aquantive and sold it for cents on the dollar years later. Yahoo did the same with its acquisitions, it failed to use Overture's advantage and head start over Google in search, and it couldn't integrate its ad technology acquisitions into its core business. . . . So why did Instagram and WhatsApp deliver for Facebook but egroups, Flickr, Tumblr not for Yahoo? Execution. When Google gets execution and integration right it's deemed anti-competitive. See YouTube. When it gets it wrong—no questions are asked by regulators. See Wildfire, Slide, Meebo—a collective $1b of social acquisitions that hit a brick wall almost as soon as the ink dried on the contracts.[403]

It should be noted that, in each of the successful cases, the acquisition may have been important to the acquirer's *competitive* success. The fact that one can identify an advantage to the acquirer from an acquisition does not necessarily mean that the merger granted anticompetitive advantage. This is a crucial and systematically overlooked aspect of the evaluation of the benefits and costs of such acquisitions. And understanding the effects of these sorts of deals on the *business models* of the companies involved, and not just on the feature set, is vital. It is quite possible, for example, that Android simply could not have made sufficient return or ensured sufficient longevity in its then form without the extra layer of Google's services tied into it. If it had had to go without Google's apps, it may have had to pursue a much less successful business model, and perhaps worsened market outcomes overall. Yet the deal could well have been blocked under many proposals designed to prevent "killer acquisitions."

As we note above, the corporate control aspect of this debate is regularly overlooked, but important. This is relevant not only in the case where the acquirer's superior governance may be able to draw greater value out of an acquired company than it would exhibit on its own, but also where the acquired company is important to the acquirer's business model. Imagine a situation where Google would not be able to exist absent the Android acquisition because it became eclipsed by more mobile-adept competitors and lost out on reliable access to mobile devices. In such a case the cost of prohibiting the merger may not be the loss of *Android*, but the loss of *Google*.

Nor is the limit case nearly as far-fetched as it may seem. Indeed, it is surmised by some that Yahoo ultimately failed in significant part because it did not continue to ensure its accessibility by consumers as the

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[403] Shepherd, *supra* note 401.

world moved to mobile.[404] Interestingly, it is precisely Yahoo's early foresight in developing a branded portal to its services that is often identified as the primary determinant of its early success.[405] So it should not be in any way surprising that its apparent failure to ensure continued consumer access was a likely cause of its demise. And yet that seems to have been the case. As one commentator writing about Yahoo's rise and fall put it:

> [Yahoo's] mobile troubles stemmed largely from one problem: unlike Google and Apple, Yahoo had neither a mobile operating system nor a widely used browser of its own. . . . Yahoo lacked a "front door" through which smartphone users might access—and, more to the point, be led to—the company's own services and apps. Google, by contrast, had its Android operating system, which it had begun work on in the mid-two-thousands.[406]

Others echo this analysis.[407] Even in the midst of the great transition to mobile, industry observers noted Yahoo's failure to keep pace. "[T]he

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[404] *See, e.g.*, Matt Ablott, *Has Yahoo Missed the Mobile Bandwagon?*, MOBILE WORLD LIVE (Sep. 7, 2011), https://www.mobileworldlive.com/blog/has-yahoo-missed-the-mobile-bandwagon-1 [https://perma.cc/TB7D-36D8] ("But the key area where Yahoo comes up short is in mobile. While Google has Android and Facebook boasts the world's most downloaded mobile app, Yahoo has never really had a mobile strategy beyond simply repackaging content for the smaller screen.").

[405] *See, e.g.*, *Yahoo! still first portal call*, BBC ONLINE NETWORK (Jun. 5, 1998, 8:54 PM), http://news.bbc.co.uk/2/hi/business/107667.stm [https://perma.cc/VWL3-SDYQ] ("[T]he four-year-old pioneer of portal sites, Yahoo!, is close to hitting 100 million page views a day. . . . [T]he concept of developing one-stop shops of sites where Internet users will want to hang around, portals to everything you need on the Web, is the big idea of 1998."); Dan Tynan, *The History of Yahoo, and How it Went from Phenom to Has-been*, FASTCOMPANY (Mar. 21, 2018), https://www.fastcompany.com/40544277/the-glory-that-was-yahoo [https://perma.cc/C42Y-B5CH] ("At the time, it was competing with search portals like Excite, InfoSeek, and Lycos to provide everything on the net in one place. 'We didn't want to call it a portal, because a portal is a door to somewhere else, and we wanted people to stay there,' says . . . a senior manager in Yahoo's corporate communications department from 1998 to 2001.").

[406] Vauhini Vara, *Why Yahoo Couldn't Adapt to the Smartphone Era*, THE NEW YORKER (Feb. 9, 2016), https://www.newyorker.com/business/currency/why-yahoo-couldnt-adapt-to-the-iphone-era#:~:text=Mayer%20identified%20a%20few%20reasons,small%20number%20of%20apps%20excellent [https://perma.cc/K5AB-MZG2].

[407] *See, e.g.*, Walter Frick, *The Decline of Yahoo in Its Own Words*, HARV. BUS. REV. (Jun. 2, 2016) ("It would be a mistake to treat the frequency with which mobile is mentioned on earnings calls as definitive proof of anything, but the data supports the narrative that Yahoo was late to mobile."), https://hbr.org/2016/06/the-decline-of-yahoo-in-its-own-words [https://perma.cc/6BMC-C2NL]; Denise Lee Yohn, *A Tale of Two Brands: Yahoo's Mistakes vs. Google's Mastery*,

key area where Yahoo comes up short is in mobile. While Google has Android, and Facebook boasts the world's most downloaded mobile app, Yahoo has never really had a mobile strategy beyond simply repackaging content for the smaller screen."[408]

This was not the only *failure* by Yahoo to acquire (or build) a crucial element of the company's business. As one history of Yahoo's rise and fall recounts, when Yahoo was "faced with the decision of whether to stick to their existing strategy of providing a platform for the content and media of other outlets, or acquire a big media company. . . , [it] picked the former, and the mistake had dire consequences . . . ."[409]

The point is that firms themselves, and enforcers even more so, are plagued with uncertainty. Yahoo was obviously capable of making mistakes on its own, but efforts to condemn virtually all platform acquisitions would inevitably amplify such errors. It takes no great effort to imagine critics condemning Yahoo had it taken its missed opportunities with Google and Facebook, nor of cries of the sky is falling before the errors of AOL, Microsoft, et al.'s misguided deals were revealed.[410] To

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KNOWLEDGE@WHARTON (Feb. 23, 2016), https://knowledge.wharton.upenn.edu/article/a-tale-of-two-brands-yahoos-mistakes-vs-googles-mastery/ [https://perma.cc/BE6F-VCZL] ("While many credit Mayer with leading the company's transition to mobile, the shift was born out of necessity to catch up with the world, not out of opportunity to change it. In fact, Yahoo has been operating in reactive mode for the last decade.").

[408] Ablott, *supra* note 404.

[409] Elizabeth Matsangou, *The Tragic Demise of Yahoo, the Internet's First Great Brand*, THE NEW ECON. (Jun. 23, 2016), https://www.theneweconomy.com/business/the-tragic-demise-of-yahoo-the-internets-first-great-brand [https://perma.cc/5W2M-5GBW].

[410] Indeed, in the case of the latter deals, which actually happened, the anticompetitive predictions are on the record. *See, e.g.*, David Balto, *Nokia and Microsoft Alliance Raise Significant Competition Concerns*, HUFFINGTON POST (Oct. 23, 2012, 6:24 PM), https://www.huffpost.com/entry/nokia-microsoft_b_1582227 [https://perma.cc/H32W-A8YM] ("If regulators do not stop Microsoft and Nokia from following this strategy, the immediate impact will likely be higher prices and reduced innovation in mobile platforms. The long-term consequences are also dire—if regulators sanction this type of predatory conduct, monopolists in all high-tech industries will have a blueprint for excluding competitors."); Robert H. Lande, Venable Professor of Law, Univ. of Balt., Statement on Behalf of the American Antitrust Institute at the Hearing on the America Online/Time Warner Merger Before the Committee on Commerce, Science, and Transportation, United States Senate (Feb. 3, 2020) (transcript available at https://www.antitrustinstitute.org/work-product/aai-senate-testimony-questions-aol-time-warner-merger/ [https://perma.cc/8R2C-GLFS]) ("We should distrust a media oligopoly because it is an undue concentration of control in the hands of a few individuals. It should be stressed that this control need not manifest itself as a price rise for the daily newspaper or in AOL's monthly fee. Rather, it could consist of a change in editorial viewpoints, a shift in the relative prominence of links to certain websites, a bias against certain forms of entertainment, or a decision not to cover certain topics because they are not 'newsworthy.' In each of these ways

characterize such mergers as mere efforts to maintain or extend monopoly, or engage in anticompetitive efforts to preclude competitors from obtaining similar firms that might be necessary for their success, neglects an enormous amount of the sort of behavior that causes businesses to fail or succeed.

At the same time, it cannot be said that such a merger would have been a "killer acquisition." And it is important to note that many of the transactions commonly criticized as having this character are more accurately simple vertical mergers.[411] But a great deal of the arguments for preemptively condemning these mergers is rooted in concern over the prospect of entry by a vertical competitor. Ignoring other possibilities, and assuming away the possibility that mergers can lead to significant value creation, would inevitably lead to an incomplete picture.

B. The Medtronic / Covidien "Killer Acquisition"

Medtronic's acquisition of Covidien provides another salient example of the pitfalls associated with pursuing "killer acquisition" theories of harm. The main problem is simple: it is nearly impossible to know what the future will look like (in the case of ex-ante reviews) and what the present would look like absent some event (in the case of ex-post reviews). And because, by definition, corporate mergers entail the elimination of another firm, people will always be tempted to construe small mergers as "killer acquisitions," especially if doing so fits within their broader agendas.[412] Unfortunately, the subsequent interventions can have significant consequences for the firms involved. This is precisely what happened to Medtronic's acquisition of Covidien.[413] Scholars seeking real-world confirmation of their theories pounced upon the merger, despite an apparent lack of basis for their claims, ultimately causing the Justice Department to open a probe into the transaction.[414]

In 2012, Covidien, a large health care products company and medical device manufacturer, purchased Newport Medical Instruments,[415] a small

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mergers could significantly undermine diversity of offerings and, ultimately, consumer choice.").

[411] *See, e.g.*, Mathew Emmanuel Pineda, *Vertical Integration vs. Horizontal Integration: Difference*, PROFOLUS (Jan. 19, 2019), https://www.profolus.com/topics/difference-between-vertical-integration-and-horizontal-integration/#google_vignette [https://perma.cc/G6E8-TUHE].

[412] Marshall Hargrave, *Merger*, INVESTOPEDIA (Mar. 22, 2021), https://www.investopedia.com/terms/m/merger.asp [https://perma.cc/BJ5Y-3H7G].

[413] *See* Kendall, *supra* note 315.

[414] *Id.*

[415] *See* Jaimy Lee, *Covidien Agrees to Buy Newport Medical Instruments*, MOD. HEALTHCARE (Mar. 22, 2012, 1:00 AM),

ventilator developer and manufacturer. (Covidien itself was subsequently purchased by Medtronic in 2015).[416] Eight years later, in the midst of the coronavirus pandemic, the New York Times published an article revisiting the Covidien/Newport transaction and questioning whether it might have contributed to the shortage of ventilators.[417] The article speculated that Covidien's purchase of Newport, and the subsequent discontinuation of Newport's "Aura" ventilator, delayed U.S. government efforts to procure mechanical ventilators until the second half of 2020—too late to treat the first wave of COVID-19 patients.[418]

The article generated considerable interest from various antitrust scholars, who quickly framed the deal as a so-called "killer acquisition."[419] For instance, Cunningham et al. cites the merger as a potential killer acquisition.[420] Unsurprisingly, politicians were also quick to jump on the bandwagon. David Cicilline, the powerful chairman of the House Antitrust Subcommittee, opined that "based on the reporting on this deal, all signs point to the conclusion that this was a killer acquisition."[421] And

https://www.modernhealthcare.com/article/20120322/NEWS/303229950/covidien-agrees-to-buy-newport-medical-instruments [https://perma.cc/B8Z3-XYLF].

[416] *See* Kendall, *supra* note 315.

[417] *See* Nicholas Kulish et al., *The U.S. Tried to Build a New Fleet of Ventilators. The Mission Failed*, N.Y. TIMES (Apr. 20, 2020), https://www.nytimes.com/2020/03/29/business/coronavirus-us-ventilator-shortage.html [https://perma.cc/X8VS-BTXC].

[418] *Id. ("*And then things suddenly veered off course. A multibillion-dollar maker of medical devices bought the small California company that had been hired to design the new machines. The project ultimately produced zero ventilators. That failure delayed the development of an affordable ventilator by at least half a decade, depriving hospitals, states and the federal government of the ability to stock up . . . . Today, with the coronavirus ravaging America's health care system, the nation's emergency-response stockpile is still waiting on its first shipment.").

[419] *See, e.g.*, Florian Ederer (@florianederer), TWITTER (Mar. 29, 2020, 8:14 AM), https://twitter.com/florianederer/status/1244251464521957378 [https://perma.cc/H2EN-S3KW] ("THE ULTIMATE KILLER ACQUISITION. Officials and executives at rival ventilator companies suspected that Covidien had acquired Newport to prevent it from building a cheaper product that would undermine Covidien's profits from its existing ventilator business."); *see also* Einer Elhauge (@elhauge), TWITTER (Mar. 29, 2020, 7:39 AM), https://twitter.com/elhauge/status/1244242674913366018 [https://perma.cc/TQ5K-92SE] ("This might be the ultimate killer acquisition.").

[420] Cunningham et al., *supra* note 8, at 696 ("For example, following recent reports about an alleged killer acquisition in the medical ventilator industry, some FTC officials have called for a retrospective antitrust investigation.").

[421] David Cicilline (@davidcicilline), TWITTER (Mar. 31, 2020, 11:51 AM), https://twitter.com/davidcicilline/status/1245030914062770177 [https://perma.cc/U6XR-45BA].

FTC Commissioner Rebecca Kelly Slaughter quickly called for a retrospective review of the deal.[422]

These interventions raise a crucial issue. The New York Times story opened the door to a welter of hasty conclusions offered to support the ongoing narrative that antitrust enforcement has failed us—in this case quite literally at the cost of human lives. But are any of these claims actually supported? Unfortunately, the competitive realities of the mechanical ventilator industry, as well as a more clear-eyed view of what was likely going on with the failed government contract at the heart of the story, simply do not support the "killer acquisition" story.

There is thus nothing to suggest that the merger materially impaired competition in the mechanical ventilator market, or that it measurably affected the United States' efforts to fight COVID-19.

1. The Mechanical Ventilator Market is Highly Competitive

As explained above, "killer acquisitions" are less likely to occur in competitive markets. A number of reports conclude that there is significant competition in the mechanical ventilator industry.[423] One source cites at least seven large producers.[424] Another report cites eleven large players.[425] The conclusion is further supported by the fact that the five largest producers combined reportedly hold only 50% of the market.[426] In other words, available evidence suggests that none of these firms has anything close to a monopoly position. This intense competition, along with the small market shares of the merging firms, likely explains

[422] *See* Ben Remaly, *Ventilator Merger Scrutinized as Potential "Killer Acquisition"*, GLOB. COMPETITION REV. (Mar. 31, 2020), https://globalcompetitionreview.com/ventilator-merger-scrutinised-potential-killer-acquisition [https://perma.cc/FB8W-4DG5] ("The public reporting on this acquisition raises important questions about the review of this deal. We should absolutely be looking back to figure out what happened.").

[423] *See, e.g.*, Jamie Bell, *The Seven Biggest Medical Ventilator Manufacturers Across the World by Market Share*, NS MED. DEVICES (Mar. 24, 2020), https://www.nsmedicaldevices.com/analysis/seven-ventilator-manufacturers/ [https://perma.cc/9L4A-H5CW]; *see also* DATAM INTELLIGENCE, MECHANICAL VENTILATOR MARKET, SIZE, SHARE, OPPORTUNITIES AND FORECAST, 2020-2028 (2021) (report available at https://www.datamintelligence.com/research-report/mechanical-ventilator-market [https://perma.cc/G9JU-9MNK]).

[424] *Id.*

[425] DATAM INTELLIGENCE, *supra* note 423.

[426] RnR Mkt. Rsch., *Global Ventilators Market—50% Market Share Held by 5 Top Companies*, CISION PR NEWSWIRE (Aug. 21, 2016, 12:45 PM), https://www.prnewswire.com/news-releases/global-ventilators-market---50-market-share-held-by-5-top-companies-591894561.html [https://perma.cc/LJE6-S7FY].

why the FTC declined to open an in-depth investigation into Covidien's acquisition of Newport.[427]

Similarly, following preliminary investigations, neither the FTC nor the European Commission saw the need for an in-depth look at the ventilator market when they reviewed Medtronic's subsequent acquisition of Covidien (which closed in 2015).[428] Although Medtronic did not produce any mechanical ventilators before the acquisition, authorities (particularly the European Commission) could nevertheless have analyzed that market if Covidien's presumptive market share was particularly high.[429] The fact that they declined to do so tends to suggest that the ventilator market was relatively unconcentrated.

2. The Value of the Merger was Too Small

A second strong reason to believe that Covidien's purchase of Newport was not a killer acquisition is the acquisition's value of $103 million.[430] Indeed, if it was clear that Newport was about to revolutionize the ventilator market, then Covidien would likely have been forced to pay significantly more to acquire it (although, as explained above, multiple factors ultimately affect such valuations).

The crux of the "killer acquisition" theory is that incumbents can induce welfare-reducing acquisitions by offering to acquire their rivals for significantly more than the present value of their rivals' expected profits.[431] Because an incumbent undertaking a "killer" takeover expects to earn *monopoly* profits as a result of the transaction, it can offer a substantial premium and still profit from its investment.[432] It is this basic

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[427] FTC, *Early Termination Notice 20120682: Covidien plc; Yasuhiko Sata*, FTC (Apr. 24, 2012), https://www.ftc.gov/enforcement/premerger-notification-program/early-termination-notices/20120682 [https://perma.cc/4SHD-S9JW].

[428] *See id.; see also*, EUROPEAN COMMISSION, MEDTRONIC/COVIDIEN COMPETITION POLICY FORM M.7326 (2014) (available at https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_7326 [https://perma.cc/7UUC-XQWV]).

[429] Guidelines on the Assessment of Horizontal Mergers under the Council Regulation on the Control of Concentrations between Undertakings 2004 O.J. (C 31) 5 (available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004XC0205(02)&from=EN [https://perma.cc/6UBB-JK9R]).

[430] Covidien Pub. Ltd. Co., Annual Report (Form 10-K) (Sept. 27, 2013).

[431] Geoffrey Manne & Dirk Auer, *The Covidien/Newport Merger: Killer Acquisition or Just a Killer Story?*, TRUTH ON THE MKT. (Apr. 3, 2020), https://truthonthemarket.com/2020/04/03/the-covidien-newport-merger-killer-acquisition-or-just-a-killer-story/ [https://perma.cc/4YC4-WWND].

[432] *Id.*

asymmetry that drives the theory.[433] Indeed, as Bryan and Hovenkamp note:

> [Where] a court may lack the expertise to [assess the commercial significance of acquired technology]…, the transaction value… may provide a reasonable proxy. Intuitively, if the startup is a relatively small company with relatively few sales to its name, then a very high acquisition price may reasonably suggest that the startup technology has significant promise.[434]

The strategy only works, however, if the target firm's shareholders agree that share value properly reflects only "normal" expected profits, and not that the target is poised to revolutionize its market with a uniquely low-cost or high-quality product. Relatively low acquisition prices relative to market size, therefore, tend to reflect low (or normal) expected profits, and a low perceived likelihood of radical innovations occurring. We can apply this reasoning to Covidien's acquisition of Newport. For a start, although precise and publicly available figures are hard to come by, one estimate finds that the global ventilator market was worth $2.715 billion in 2012.[435] Another report suggests that the global market was worth $4.30 billion in 2018;[436] still another that it was worth $4.58 billion in 2019.[437] Second, as noted above, Covidien reported to the SEC that it paid $103 million to purchase Newport (a firm that produced only ventilators and apparently had no plans to branch out).[438] Finally, for context, at the time of the acquisition Covidien had annual sales of $11.8 billion overall, and $743 million in sales of its existing "Airways and Ventilation Products."[439]

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[433] *See* Salop, *supra* note 125.

[434] Bryan & Hovenkamp, *Startup Acquisitions, Error Costs, and Antitrust Policy*, *supra* note 123, at 331.

[435] *Rising Global Geriatric Population and Technological Advancements Propel Global Market for Mechanical Ventilators*, TRANSPARENCY MKT. RSCH. (Nov. 27, 2015), https://www.transparencymarketresearch.com/article/mechanical-ventilators-market.htm [https://perma.cc/Z77W-XLFG].

[436] GRAND VIEW RESEARCH, MECHANICAL VENTILATOR MARKET SIZE, SHARE & TRENDS ANALYSIS REPORT, 2021 - 2028 (2021) (report available at https://www.grandviewresearch.com/industry-analysis/mechanical-ventilators-market [https://perma.cc/MT7A-XHD7]).

[437] NEXT MOVE STRATEGY CONSULTING, MECHANICAL VENTILATORS MARKET GLOBAL OPPORTUNITY ANALYSIS AND INDUSTRY FORECAST, 2020–2030 (2021) (report available at https://www.nextmsc.com/report/mechanicalventilators-Market [https://perma.cc/S7PN-HEBA]).

[438] Covidien Pub. Ltd. Co., *supra* note 430; *see also* Kulish et al., *supra* note 417.

[439] Covidien Pub. Ltd. Co., Annual Report (Form 10-K) (Sept. 28, 2012).

If the ventilator market was indeed worth billions of dollars per year, then the comparatively small $108 million paid by Covidien – small even relative to Covidien's own share of the market – suggests that, at the time of the acquisition, it was unlikely that Newport was poised to revolutionize the market for mechanical ventilators (for instance, by successfully bringing its Aura ventilator to market).

The New York Times article claimed that Newport's ventilators would be sold (at least to the U.S. government) for $3,000—a substantial discount from the reportedly then-going rate of $10,000.[440] If selling ventilators at this price seemed credible at the time, then Covidien – *as well as Newport's shareholders* – knew that Newport was about to achieve tremendous cost savings, enabling it to offer ventilators not only to the U.S. government, but to purchasers around the world, at an irresistibly attractive and profitable price.[441] If achievable, Newport thus stood to earn a substantial share of the profits in a multi-billion-dollar industry.

Of course, it is necessary to apply a probability to these numbers: Newport's ventilator was not yet on the market and had not yet received FDA approval.[442] Nevertheless, if the Times' numbers seemed credible at the time, then Covidien would surely have had to offer significantly more than $108 million in order to induce Newport's shareholders to part with their shares. Given the low valuation, however, as well as the fact that Newport produced other ventilators (and continues to do so to this day),[443] there is no escaping the fact that everyone involved seemed to view Newport's Aura ventilator as nothing more than a moonshot with, at best, a low likelihood of success.[444] Crucially, this same reasoning explains why it shouldn't surprise anyone that the project was ultimately discontinued; recourse to a "killer acquisition" theory is hardly necessary.[445]

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[440] *See* Kulish et al., *supra* note 417.

[441] *Id.* ("Ventilators at the time typically went for about $10,000 each, and getting the price down to $3,000 would be tough. But Newport's executives bet they would be able to make up for any losses by selling the ventilators around the world.").

[442] NEWPORT MED. INSTRUMENTS, INC., 510K FORM K121891 (2012) (available at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm?ID=K121891 [https://perma.cc/2TSR-LCN7]).

[443] *Mechanical Ventilation,* MEDTRONIC, https://www.medtronic.com/covidien/en-us/products/mechanical-ventilation.html [https://perma.cc/E5EE-99BD] (last visited Sep. 3, 2021).

[444] *See* Kulish et al., *supra* note 417.

[445] *Id.* ("In 2014, with no ventilators having been delivered to the government . . .. The government agreed to cancel the contract.").

3. Lessons from Covidien's Ventilator Product Decisions

The killer acquisition claims are further weakened by at least four other important pieces of information:

1. Covidien initially continued to develop Newport's Aura ventilator, and continued to develop and sell Newport's *other* ventilators;[446]

2. There was little overlap between Covidien and Newport's ventilators—or, at the very least, they were highly differentiated;[447]

3. Covidien appears to have discontinued production of its own portable ventilator in 2014;[448] and

4. The Newport purchase was part of a billion-dollar series of acquisitions seemingly aimed at expanding Covidien's in-hospital (i.e., not-portable) device portfolio.[449]

For a start, while the Aura line was indeed discontinued by Covidien, the timeline is important. The acquisition of Newport by Covidien was announced in March 2012, approved by the FTC in April of the same year, and closed on May 1, 2012.[450] However, as the FDA's 510(k) database makes clear, Newport submitted documents for FDA clearance of the Aura ventilator months after its acquisition by Covidien (June 29, 2012, to be precise).[451] And the Aura received FDA 510(k) clearance on November 9, 2012—many months after the merger.[452] It would have made little sense for Covidien to invest significant sums in order to obtain FDA clearance for a project that it planned to discontinue (the FDA routinely requires parties to actively cooperate with it, even after 510(k) applications are submitted). Moreover, if Covidien really did plan to

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[446] *See Mechanical Ventilation*, *supra* note 443.

[447] Manne & Auer, *supra* note 431.

[448] *Id.*

[449] *Id.*

[450] *Covidien to Buy Ventilator Maker Newport for $108 Million*, REUTERS (Mar. 22, 2012, 4:10 PM), https://www.reuters.com/article/us-covidien-idUSBRE82L16N20120322 [https://perma.cc/YH7Q-Z3QP]; Mark Hollmer, *Covidien Closes $108M Bid for Newport Medical*, FIERCEBIOTECH (May 1, 2012), https://www.fiercebiotech.com/medical-devices/covidien-closes-108m-bid-for-newport-medical [https://perma.cc/3NC7-KS3R]; Federal Trade Commission, *supra* note 42727.

[451] NEWPORT MED. INSTRUMENTS, INC., *supra* note 442.

[451] *Id.*

[452] *Id.*

discreetly kill off the Aura ventilator, bungling the FDA clearance procedure would have been the perfect cover under which to do so. Yet that is not what it did.

Second, and just as importantly, Covidien (and subsequently Medtronic) continued to sell Newport's other ventilators.[453] The Newport e360 and HT70 are still sold today.[454] Covidien also continued to improve these products: it appears to have introduced an improved version of the Newport HT70 Plus ventilator in 2013.[455] If eliminating its competitor's superior ventilators was the only goal of the merger, then why didn't Covidien also eliminate these two products from its lineup, rather than continue to improve and sell them?

Third, and perhaps the biggest flaw in the killer acquisition story, is that there appears to have been very little overlap between Covidien and Newport's ventilators.[456] This decreases the likelihood that the merger was a killer acquisition.[457] When two products are highly differentiated (or not substitutes at all), sales of the first one are less likely to cannibalize sales of the other.[458] As Cunningham et al. put it:

> Importantly, without any product market overlap, the acquirer never has a strictly positive incentive to acquire the entrepreneur, neither to "Acquire to Kill" nor to "Acquire to Continue." This is because without overlap, acquiring the project does not give the acquirer any gains resulting from reduced competition, and the two bargaining entities have exactly the same value for the project.[459]

A quick search of the FDA's 510(k) database reveals that Covidien has three approved lines of ventilators: the Puritan Bennett 980, 840, and 540 (apparently essentially the same as the Puritan Bennett 560, the plans to which Medtronic recently made freely available in order to facilitate

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[453] Kendall, *supra* note 315.

[454] NEWPORT MED. INSTRUMENTS, INC., 510K FORM K101803 (2010) (available at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm?ID=K101803 [https://perma.cc/CK2D-J346]); NEWPORT MED. INSTRUMENTS, INC., 510K FORM K111146 (2011) (available at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm?ID=K111146 [https://perma.cc/4NLQ-FRHH]); NEWPORT MED. INSTRUMENTS, INC., *supra* note 442.

[455] Dan White, *Full Featured Transport Ventilator in a Very Small Package*, EMS1 (Mar. 14, 2013), https://www.ems1.com/ems-products/medical-equipment/airway-management/articles/full-featured-transport-ventilator-in-a-very-small-package-xiWhuFBbJfNIOgOZ/ https://perma.cc/4PNK-HNVM[].

[456] Manne & Auer, *supra* note 431.

[457] *Id.*

[458] *Id.*

[459] Cunningham et al., *supra* note 8.

production during the current crisis).[460] The same database shows that these ventilators differ markedly from Newport's ventilators (particularly the Aura).[461] In particular, Covidien manufactured primarily traditional, invasive ICU ventilators (except for the Puritan Bennett 540, which is potentially a substitute for the Newport HT70), while Newport made much-more-portable ventilators, suitable for home use (notably the Aura, HT50 and HT70 lines).[462] Under normal circumstances, critical care and portable ventilators are not substitutes.[463] As the WHO website explains, portable ventilators are "designed to provide support to patients who do not require complex critical care ventilators."[464] The conclusion that Covidien and Newport's ventilator were not substitutes finds further support in documents and statements released at the time of the merger.[465] For instance, Covidien's CEO explained that, "This acquisition is consistent with Covidien's strategy to expand into adjacencies and invest in product categories where it can develop a global competitive advantage."[466] And that, "Newport's products and technology complement our current portfolio of respiratory solutions and will broaden our ventilation platform for patients around the world, particularly in emerging markets."[467] In short, the fact that almost all of Covidien and

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[460] U.S. FOOD & DRUG ADMIN., 510(k) Premarket Notification, https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm [https://perma.cc/RW6J-HXMP] (last visited Aug. 31, 2021) (once the site has been reached, put in the search word "Covidien" in the "Applicant Name" field to return Covidien's 501(k) submissions); *see also Medtronic Shares Ventilation Design Specifications to Accelerate Efforts to Increase Global Ventilator Production*, MED. ALLEY (Mar. 30, 2020), https://medicalalley.org/2020/03/medtronic-shares-ventilation-design-specifications-to-accelerate-efforts-to-increase-global-ventilator-production/ [https://perma.cc/E3Q8-4HCY].

[461] *Id.*

[462] GARY WHITE, EQUIPMENT THEORY FOR RESPIRATORY CARE 460 (5th ed. 2014).

[463] *Ventilator, Portable*, WHO (2011), https://www.who.int/medical_devices/innovation/ventilator_portable.pdf?ua=1 [https://perma.cc/5SRW-CJDV].

[464] *Id.*

[465] *Covidien Announces Definitive Agreement to Acquire Newport Medical Instruments, Inc.*, BUS. WIRE (Mar. 22, 2012, 4:00 PM), https://www.businesswire.com/news/home/20120322005909/en/Covidien-Announces-Definitive-Agreement-to-Acquire-Newport-Medical-Instruments-Inc [https://perma.cc/37JS-RQUF].

[466] *Covidien Grabs Newport Medical Instruments for $108 Million*, MASS DEVICE (Mar. 22, 2012), https://www.massdevice.com/covidien-grabs-newport-medical-instruments-108-million/ [https://perma.cc/N9WT-YEPZ].

[467] *Covidien Completes Acquisition of Newport Medical Instruments, Inc.*, BUSINESSWIRE (May 1, 2012), https://www.businesswire.com/news/home/20120501006724/en/Covidien-

Newport's products were not substitutes further undermines the killer acquisition story. It also tends to vindicate the FTC's decision to rapidly terminate its investigation of the merger.[468]

Fourth, it appears that Covidien discontinued production of its *own* competing, portable ventilator (the Puritan Bennett 560) in 2014.[469] The product is reported on the company's 2011, 2012 and 2013 annual reports.[470] Surely if Covidien had intended to capture the portable ventilator market by killing off its competition it would have continued to actually sell its own, competing device. The fact that the only portable ventilators produced by Covidien in 2014 were those it acquired in the Newport deal strongly suggests that its objective in that deal was the acquisition and deployment of Newport's viable and profitable technologies—not the abandonment of them. This, in turn, suggests that the Aura was *not* a viable and profitable technology.[471]

Completes-Acquisition-Newport-Medical-Instruments [https://perma.cc/E6HL-KPMB].

[468] FTC Early Termination Notice, *supra* note 427.

[469] Covidien Pub. Ltd. Co., (Form 10-K), *supra* note 430.

[470] Covidien Pub. Ltd. Co., (Form 10-K), *supra* note 430. The PB540 was launched in 2009; the updated PB560 in 2010. *Puritan Bennett 540, a New Covidien Ventilator With Smart Battery Technology*, MEDGADGET (Mar. 31 2009), https://www.medgadget.com/2009/03/puritan_bennett_540_a_new_covidien_ventilator_with_smart_battery_technology.html [https://perma.cc/FM8Z-KYCL]. The PB520 was the EU version of the device, launched in 2011. *New Mobile Puritan Bennett Ventilator for EU*, MEDGADGET (Jan. 24, 2011), https://www.medgadget.com/2011/01/new_mobile_puritan_bennett_ventilator_for_eu.html [https://perma.cc/8FMN-CD5P]. But in 2014, the PB560 was no longer listed among the company's ventilator products ("Airway & Ventilation, which primarily includes sales of airway, ventilator and inhalation therapy products and breathing systems. Key airway & ventilation products include: the Puritan Bennett™ 840 and 980 ventilators, the Newport™ e360 and HT70 ventilators. . . ."). Covidien Pub. Ltd. Co., (Form 10-K), *supra* note 430. Nor, despite its March 31 and April 1 "open sourcing" of the specifications and software necessary to enable others to produce the PB560, did Medtronic appear to have restarted production, and the company did not mention the device in its March 18 press release announcing its own, stepped-up ventilator production plans. *Correction: Medtronic Continuing to Increase Ventilator Production to Address COVID-19 Pandemic*, MEDTRONIC (Mar. 18, 2020) https://news.medtronic.com/2020-03-18-Correction-Medtronic-Continuing-to-Increase-Ventilator-Production-to-Address-COVID-19-Pandemic [https://perma.cc/J4XN-AG2Z]; *Our Ventilator Specifications. Your Ingenuity*, MEDTRONIC (last visited Jun. 3, 2021), https://www.medtronic.com/us-en/e/open-files.html?cmpid=vanity_url_medtronic_com_openventilator_Corp_US_Covid19_FY20 [https://perma.cc/KMY6-5J9A].

[471] Admittedly we are unable to determine conclusively that either Covidien or Medtronic stopped producing the PB520/540/560 series of ventilators. But our research seems to indicate strongly that this is indeed the case.

Finally, although not dispositive, it seems important to put the Newport purchase into context. In the same year as it purchased Newport, Covidien paid more than a billion dollars to acquire five other companies, all of them primarily producing in-hospital medical devices.[472] That 2012 spending spree came on the heels of a series of previous medical device company acquisitions, apparently totaling approximately four billion dollars.[473]

Although not exclusively so, the acquisitions undertaken by Covidien seem to have been primarily targeted at operating room and in-hospital monitoring and treatment, making the putative focus on cornering the portable (home and emergency) ventilator market an extremely unlikely one. By the time Covidien was purchased by Medtronic the deal easily cleared antitrust review because of the lack of overlap between the company's products, with Covidien's focusing predominantly on in-hospital, "diagnostic, surgical, and critical care" and Medtronic's on post-acute care.[474]

So why was the Aura ventilator discontinued? Although it is almost impossible to know what motivated Covidien's executives, the Aura ventilator project clearly suffered from many problems.[475] The Aura project was intended to meet the requirements of the U.S. Department of Health and Human Services' Biomedical Research and Development Authority.[476] In short, the program sought to create a stockpile of next generation ventilators for emergency situations—including, notably, pandemics.[477] The ventilator would thus have to be designed for events where "mass casualties may be expected, and when shortages of experienced health care providers with respiratory support training, and shortages of ventilators and accessory components may be expected."[478]

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[472] Covidien (Form 10-K), *supra* note 430.

[473] *Covidien Acquisitions Keeps Buying Spree Alive*, IN VIVO (Apr. 23, 2012), https://invivo.pharmaintelligence.informa.com/IV003839/Covidien-Acquisitions-Keeps-Buying-Spree-Alive [https://perma.cc/HUF3-BG6F].

[474] Manne & Auer, *supra* note 431.

[475] *Medtronic Statement Regarding New York Times Article on March 29, 2020*, MEDTRONIC (Mar. 29, 2020), https://news.medtronic.com/2020-03-29-Medtronic-Statement-Regarding-New-York-Times-Article-on-March-29-2020 [https://perma.cc/T2YW-NUK6].

[476] *Advanced Development of Next Generation Portable Ventilators*, SAM.GOV (Sep. 2, 2009), https://sam.gov/opp/20a5c00362b44291906bb5d5644c9276/view#general [https://perma.cc/C6MJ-Z9NU].

[477] Brendon Nafziger, *BARDA Funds Cheap Ventilators for Horror Scenarios*, DOTMED (Sept. 30, 2010), https://de.dotmed.com/news/story/14387 [https://perma.cc/U7H5-HWRZ].

[478] *Advanced Development of Next Generation Portable Ventilators*, *supra* note 476.

The Aura ventilator would thus sit somewhere between Newport's two other ventilators: the e360 (which could be used in pediatric care but not intended for home care use) and the more portable HT70 (which could be used for home care, but not pediatric care).[479] Unfortunately, the Aura failed to achieve this goal.[480] The FDA's 510(k) clearance decision implies that the Aura was not intended for newborns.[481] A press release issued by Medtronic confirms that "the company was unable to secure FDA approval for use in neonatal populations—a contract requirement."[482] And the U.S. Government RFP confirms that this was indeed an important requirement.[483] Newport also seems to have been unable to deliver the ventilator at the low price it had initially forecasted—a common problem for small companies and/or companies that undertake large R&D programs.[484] It also struggled to complete the project within the agreed-upon deadlines.[485] This is supported by a Medtronic press release which explains that it was unable to achieve the production cost and performance requirements specified in the government contract.[486] As Jason Crawford, an engineer and tech industry commentator, put it: "Projects fail all the time. 'Supplier risk' should be a standard checkbox on anyone's contingency planning efforts. This is even more so when you deliberately push the price down to 30% of the market rate. Newport did not even necessarily expect to be profitable on the contract."[487]

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[479] *Id.*; NEWPORT MED. INSTRUMENTS, INC., 510K FORM K101803, *supra* note 454; NEWPORT MED. INSTRUMENTS, INC., 510K FORM K111146 *supra* note 454.

[480] Medtronic, *supra* note 475.

[481] NEWPORT MED. INSTRUMENTS, INC., 510K FORM K121891 (2012) (available at https://www.accessdata.fda.gov/cdrh_docs/pdf12/K121891.pdf [https://perma.cc/BW8G-AJ3K]) (The AURA family of ventilators is applicable for infant, pediatric and adult patients greater than or equal to 5 kg (11 lbs.)).

[482] Medtronic, *supra* note 475.

[483] *Advanced Development of Next Generation Portable Ventilators*, *supra* note 476 ("The device must be able to provide the same standard of performance as current FDA pre-market cleared portable ventilators and shall have the following additional characteristics or features: . . . Flexibility to accommodate a wide patient population range from neonate to adult.").

[484] Medtronic, *supra* note 475.

[485] *Id.*

[486] *Id.* ("Covidien learned that Newport's work on the ventilator design for the Government had significant gaps between what it had promised the Government and what it could deliver—both in terms of being able to achieve the cost of production specified in the contract and product features and performance. Covidien management questioned whether Newport's ability to complete the project as agreed to in the contract was realistic.").

[487] Jason Crawford, *What Went Wrong With the Ventilator Stockpile?*, JASON CRAWFORD (Apr. 1, 2020), https://jasoncrawford.org/what-went-wrong-with-the-ventilator-stockpile [https://perma.cc/RD3U-NGC6].

The above is mostly Covidien's "side" of the story, of course. But other pieces of evidence lend credibility to these claims:

1. Newport agreed to deliver its Aura ventilator at a per unit cost of less than $3000. But, even today, this seems extremely ambitious. For instance, the WHO has estimated that portable ventilators cost between $3,300 and $13,500.[488] If Newport could profitably sell the Aura at such a low price, then there was little reason to discontinue it.

2. Covidien/Newport is not the only firm to have struggled to offer suitable ventilators at such a low price. Philips (which took Newport's place after the government contract fell through) also failed to achieve this low price.[489] Rather than the $2,000 price sought in the initial RFP, Philips ultimately agreed to produce the ventilators for $3,280.[490] But it has not yet been able to produce a single ventilator under the government contract at that price.[491]

3. Covidien has repeatedly been forced to recall some of its other ventilators[492]—including the Newport HT70. And rival manufacturers have also faced these types of issues.[493]

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[488] WHO, *supra* note 463.

[489] Patricia Callahan, Sebastian Rotella & Tim Golden, *Taxpayers Paid Millions to Design a Low-Cost Ventilator for a Pandemic. Instead, the Company Is Selling Versions of It Overseas*, PROPUBLICA (Mar. 30, 2020), https://www.propublica.org/article/taxpayers-paid-millions-to-design-a-low-cost-ventilator-for-a-pandemic-instead-the-company-is-selling-versions-of-it-overseas- [https://perma.cc/64NR-4KFS].

[490] *Id.*

[491] *Id.*

[492] *Class 1 Device Recall Newport Medical" HT70 and HT70 Plus Ventilators*, FDA (Apr. 10, 2017), https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfres/res.cfm?id=154521 [https://perma.cc/SU7D-964N]; *Class 2 Device Recall Newport HT50 Ventilator*, FDA (May 27, 2011), https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfres/res.cfm?id=99743 [https://perma.cc/3WYH-LE3S]; *see also Covidien Ventilator Woes Continue*, MED. EXPO, https://trends.medicalexpo.com/project-44943.html [https://perma.cc/DA9U-3GFT] (last visited June 3, 2021); and F.A. Kelley, *Newport Medical Instruments' Ventilators Recalled Due to Problems with Battery Backup*, PUB. HEALTH WATCHDOG (May 2, 2013), http://www.publichealthwatchdog.com/newport-medical-instruments-ventilators-recalled-due-to-problems-with-battery-backup/ [https://perma.cc/HE6R-6C2Q].

[493] Dräger, *Dräger issues voluntary nationwide recall of optional PS500 power supply for Evita V500 and Babylog VN500 ventilators*, PRNEWSWIRE (Apr. 2, 2014), https://www.prnewswire.com/news-releases/draeger-issues-voluntary-nationwide-

Accordingly, Covidien may well have preferred to cut its losses on the already problem-prone Aura project before similar issues rendered it even more costly.

In short, while it is impossible to prove that these development issues caused Covidien to pull the plug on the Aura project, it is certainly plausible that they did. This further supports the hypothesis that Covidien's acquisition of Newport was not a killer acquisition.

4. Ending the Aura Project Might have been an Efficient Outcome

As suggested above, it is entirely possible that Covidien was better able to realize the poor prospects of Newport's Aura project and better organized to enable it to make the requisite decision to abandon the project. A small company like Newport faces greater difficulties abandoning entrepreneurial projects because doing so can impair a privately held firm's ability to raise funds for subsequent projects.[494] Moreover, the relatively large share of revue and reputation that Newport – worth $103 million in 2012, versus Covidien's $11.8 billion – would have realized from fulfilling a substantial U.S. government project could well have induced it to overestimate the project's viability and to undertake excessive risk in the (vain) hope of bringing the project to fruition.[495]

While there is a tendency among antitrust scholars, enforcers, and practitioners to look for (and find) antitrust-related rationales for mergers and other corporate conduct, it remains the case that most corporate control transactions (such as mergers) are driven by the acquiring firm's expectation that it can *manage* more efficiently.[496] As Henry G. Manne put it in *Mergers and the Market for Corporate Control*:

> Since, in a world of uncertainty, profitable transactions will be entered into more often by those whose information is relatively more reliable, it should not surprise us that mergers within the same industry have been a principal form of changing corporate control. Reliable information is often available to suppliers and customers as well. Thus many vertical mergers may be of the control takeover variety rather than of the "foreclosure of competitors" or scale-economies type.[497]

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recall-of-optional-ps500-power-supply-for-evita-v500-and-babylog-vn500-ventilators-253574251.html [https://perma.cc/5WZF-6SQY].

[494] Augustin Landier, *Entrepreneurship and the Stigma of Failure* (2006), http://people.stern.nyu.edu/alandier/pdfs/stigma9.pdf [https://perma.cc/ZB3G-MK3U].

[495] Covidien Pub. Ltd. Co., (Form 10-K), *supra* note 430.

[496] Manne, *supra* note 15, at 113.

[497] *Id.* at 118–19.

> Of course, the same information that renders an acquiring firm in the same line of business knowledgeable enough to operate a target more efficiently could also enable it to affect a "killer acquisition" strategy. But the important point is that a takeover by a firm with a competing product line, after which the purchased company's product line is abandoned, is at least as consistent with a "market for corporate control" story as with a "killer acquisition" story. The story also falls prey to what Ronald Coase derisively called "blackboard economics", that is a tendency to shoehorn policy issues into theoretical models detached from reality.[498]

Numerous commentators rushed to fit the story to their preconceived narratives, failing to undertake even a rudimentary examination of the underlying market conditions before they voiced their recriminations.[499] But the only thing that Covidien and Newport's merger ostensibly had in common with the killer acquisition theory was the fact that a large firm purchased a small rival, and that the one of the small firm's products was discontinued.[500] But this does not even begin to meet the stringent conditions that must be fulfilled for the theory to hold water. Unfortunately, critics appear to have completely ignored all contradicting evidence.

VII. THE PROBLEM WITH PROPOSED POLICY RESPONSES

The previous sections have argued that there is little evidence to suggest that there are currently significant innovation-related gaps in merger enforcement. This is not to say that *some* innovation-reducing transactions do not slip through the cracks under existing regimes. If plugging these blind spots was costless – both in terms of administrative costs and false positives – then the antitrust reforms proposed by proponents of tougher enforcement would be unobjectionable. But, of course, this is not the case. We have already argued above that the relevant economic research does not offer reliable proxies that might enable authorities to sort harmful from procompetitive conduct in an error-cost minimizing manner. But that is only part of the problem. Indeed, as we explain below, the antitrust reforms that have been suggested to plug perceived enforcement gaps would generate significant costs that further weigh against their implementation.

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[498] Ronald H. Coase, *The Institutional Structure of Production*, UNIV. OF CHI. L. SCH. OCCASIONAL PAPERS NO. 28 (1992). ("What is studied is a system which lives in the minds of economists but not on earth. I have called the result "blackboard economics." The firm and the market appear by name but they lack any substance. The firm in mainstream economic theory has often been described as a "black box." And so it is.").

[499] *See supra* notes 419 and 421 and accompanying text.

[500] Kulish, *supra* note 417.

A. Ex-Post Merger Reviews

Conducting ex-post merger reviews is one of the most obvious ways for antitrust authorities and plaintiffs to challenge potential killer acquisitions (as well as other transactions that might have reduced innovation).[501] Indeed, procedures of this sort are likely permitted under existing law.[502] However, these retroactive reviews present significant social costs and entail important practical difficulties that undermine their value as an antitrust policy tool.[503]

The complaints filed by the Federal Trade Commission and forty-six state attorneys general (along with the District of Columbia and the Territory of Guam) against Facebook offered an interesting insight into the perils of ex-post merger reviews: The DC Circuit dismissed both complaints, and the FTC has re-filed a modified complaint.[504] In both cases, the crux of the argument was that Facebook pursued a series of acquisitions over the past decade that aimed to cement its prominent position in the "personal social media networking" market.[505] If successfully prosecuted these cases would represent one of the most fundamental shifts in antitrust law since passage of the Hart-Scott-Rodino Act in 1976.[506] That law required antitrust authorities to be notified of proposed mergers and acquisitions that exceed certain value thresholds, essentially shifting the paradigm for merger enforcement from ex-post to ex-ante review.[507] While the prevailing paradigm does not explicitly preclude antitrust enforcers from taking a second bite of the apple via ex-post enforcement, it has created an assumption among that

[501] *See, e.g.*, Hemphill & Wu, *supra* note 121, at 1909 ("Enforcement agencies must be ready to intervene ex post when a pattern of anticompetitive conduct becomes clearer. As we have explained, ex post enforcement is sometimes inevitable and has some desirable features. The distinctive setting of nascent competition tends to lend support to later evaluation and to longstanding remedial proposals that incorporate ex post scrutiny, such as conditional clearance that effectively places a merger on parole.").

[502] *See* Fed. Trade Comm'n v. Facebook, Inc., No. CV 20-3590 (JEB), 2021 WL 2643627, at *18 (D.D.C. June 28, 2021).

[503] *Id.*

[504] Dismissed Complaint, Fed. Trade Comm'n v. Facebook, Inc., No. 1:20-cv-03590 (D.C. Cir. Jan. 13, 2021); *see also* New York v. Facebook, Inc., No. CV 20-3589 (JEB), 2021 WL 2643724, at *28–29 (D.D.C. June 28, 2021).

[505] *See* Facebook, Inc., 2021 WL 2643724, at *1; Dismissed Complaint, Fed. Trade Comm'n v. Facebook, Inc., No. 1:20-cv-03590 (D.C. Cir. Jan. 13, 2021).

[506] Hart-Scott-Rodino Antitrust Improvements Act, Pub.L. 94–435, 90 Stat. 1383 (1976).

[507] 15 U.S.C. § 18a(a) (2000).

regulatory clearance of a merger makes subsequent antitrust proceedings extremely unlikely.[508]

Indeed, the very point of ex-ante merger regulations is that ex-post enforcement, particularly in the form of breakups, has tremendous social costs.[509] It can scupper economies of scale and network effects on which both consumers and firms have come to rely.[510] Moreover, the threat of costly subsequent legal proceedings will hang over firms' pre- and post-merger investment decisions and may thus reduce incentives to invest.[511] With their complaints, the FTC and state AGs threatened to undo this status quo.[512] Even if current antitrust law allows it, pursuing this course of action threatens to quash the implicit assumption that regulatory clearance generally shields a merger from future antitrust scrutiny.[513] Ex-post review of mergers and acquisitions does also entail some positive features,[514] but the Facebook complaints failed to consider these

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[508] Dirk Auer, *Facebook and the Pros and Cons of Ex Post Merger Reviews*, INT'L CTR. L. & ECON. (Dec. 11, 2020), https://laweconcenter.org/resource/facebook-and-the-pros-and-cons-of-ex-post-merger-reviews/?pdf=10377 [https://perma.cc/UV2F-KKLM] [hereinafter *Pros and Cons of Ex Post Merger Reviews*].

[509] *Id.*

[510] *See, e.g.*, RICHARD A. POSNER, ANTITRUST LAW 113 (2d ed. 2009) ("Nor can the problem of reducing concentration without sacrificing possible efficiencies, scale and otherwise, with which concentration might be associated be swept under the rug by positing that efficiency is not an important factor in concentration. It is undoubtedly important in explaining *persistently* high concentration. . . ."). This might be particularly relevant in digital industries where network effects provide significant benefits to consumers, as evidenced by recent empirical research. *See, e.g.*, Chiara Farronato, Jessica Fong & Andrey Fradkin, *Dog Eat Dog: Measuring Network Effects Using a Digital Platform Merger* 33 (Nat'l Bureau of Econ. Rsch., Working Paper No. 28047, 2020) ("To maximize user surplus, should we increase competition or allow monopolies? On one hand, competition among platforms may keep commission fees down so that the share of total surplus going to platform users—buyers and sellers—is maximized. On the other hand, if network effects are large enough such that it is more efficient to have all users participating on a single platform rather than having users spread across multiple platforms, efficiency may counterbalance the costs of a monopolistic position.").

[511] *See Pros and Cons of Ex Post Merger Reviews*, *supra* note 508.

[512] Dismissed Complaint, Fed. Trade Comm'n v. Facebook, Inc., No. 1:20-cv-03590 (D.C. Cir. Jan. 13, 2021); *see also* New York v. Facebook, Inc., No. CV 20-3589 (JEB), 2021 WL 2643724, at *28–29 (D.D.C. June 28, 2021).

[513] *See Pros and Cons of Ex Post Merger Reviews*, *supra* note 508.

[514] *See, e.g.*, Prepared Remarks of Commissioner Noah Joshua Phillips, *supra* note 12, at 9 ("In these cases, we have evidence of what happened after the merger. We cannot ignore evidence of reality; and I think we need to weight it above speculation, especially where that speculation is not itself supported by evidence. Depending on what that evidence shows, comparing harms and benefits may now be more straightforward. If, after the merger, prices go up or output goes down relative to some reliable proxy for the but-for world, that should give us confidence that the

complicated trade-offs. And failure by the courts to correct this oversight could have hampered tech and other U.S. industries.

1. Mergers and Uncertainty

Merger decisions are probabilistic. Of the thousands of corporate acquisitions each year, only a fraction can be deemed "successful."[515] These relatively few success stories must pay for the duds in order to preserve the incentive to invest. Switching from ex-ante to ex-post review enables authorities to focus their attention on the most lucrative deals. It stands to reason that they will not want to launch ex-post antitrust proceedings against bankrupt firms whose assets have already been stripped. Instead, as with the Facebook complaint, authorities are far more likely to pursue high-profile cases that boost their political capital.

This would not be a large concern if: (i) authorities could commit to ex-post prosecution only of anticompetitive mergers; and (ii) parties could reasonably anticipate whether their deals would be deemed anticompetitive in the future. If those were the conditions, ex-post enforcement would merely reduce the incentive to partake in problematic mergers; it would leave welfare-enhancing deals unscathed. But where firms could not have ex-ante knowledge that a given deal would be deemed anticompetitive, the associated error-costs should weigh against prosecuting such mergers ex-post, even if such enforcement might appear desirable. The deterrent effect that would arise from such prosecutions would be applied by the market to all mergers, including efficient ones. Put differently, authorities might get the ex-post assessment right in one case, but the bigger picture remains that they could be wrong in many other cases. Firms will perceive this threat and it may hinder their investments.

There is also reason to doubt that either of the ideal conditions for ex-post enforcement could realistically be met in practice. Ex-ante merger proceedings involve significant uncertainty. Indeed, antitrust-merger clearance decisions routinely have an impact on the merging parties' stock

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monopolist's acquisition violated Section 2. Correlatively, if prices actually go down or output actually goes up, and we lack a good reason to believe that would have happened otherwise, those facts ought to weigh heavily against speculation about a better world that might have been.").

[515] *See, e.g.*, Richard Schoenberg, *Measuring the performance of corporate acquisitions: An empirical comparison of alternative metrics*, 17 BRIT J. MGMT. 361 (2006) ("The choice of performance measure has long been a difficult issue facing researchers. This article investigates the comparability of four common measures of acquisition performance: cumulative abnormal returns, managers' assessments, divestment data and expert informants' assessments. Independently each of these measures indicated a mean acquisition success rate of between 44–56%, within a sample of British crossborder acquisitions.").

prices.[516] If management and investors knew whether their transactions would be cleared, those effects would be priced-in when a deal is announced, not when it is cleared or blocked. Indeed, if firms knew a given merger would be blocked, they would not waste their resources pursuing it. This demonstrates that ex-ante merger proceedings involve uncertainty for the merging parties.

Unless the answer is markedly different for ex-post reviews, authorities should proceed with caution. If parties cannot properly self-assess their deals, the threat of ex-post proceedings will weigh on pre- and post-merger investments.[517] Furthermore, because authorities will likely focus ex-post reviews on the most lucrative deals, the incentive effects are particularly pronounced. Parties may fear that the most successful mergers will be broken up. This could have wide-reaching effects for all merging firms that do not know whether they might become "the next Facebook."

Accordingly, for ex-post merger reviews to be justified, it is essential that their outcomes be predictable for the parties, and that analyzing the deals after the fact leads to better decision-making (fewer false acquittals and convictions) than ex-ante reviews would yield. If these conditions are not in place, ex-post assessments will needlessly weigh down innovation, investment, and procompetitive merger activity in the economy.

2. Hindsight Does Not Disentangle Efficiency from Market Power

So, could ex-post merger reviews be so predictable and effective as to alleviate the uncertainties described above, along with the costs they entail? Based on the recently filed Facebook complaints, the answer appears to be no. We simply do not know what the counterfactual to Facebook's acquisitions of Instagram and WhatsApp would look like. Hindsight does not dispositively tell us whether Facebook's acquisitions led to efficiencies that allowed it to thrive (a pro-competitive scenario), or whether Facebook merely used these deals to kill off competitors and

[516] Though it is difficult to draw normative inferences from these price movements. *See, e.g.*, Oliver Budzinski, *Impact Evaluation of Merger Control Decisions*, 9 EUR. COMPETITION J. 199, 212–16 (2013) ("There is no indication that financial market reactions represent an accurate prediction of the competitive effects; however, there is ample indication to the contrary."). For a discussion of the impact of antitrust case filings on stock prices, *see* George Bittlingmayer, *Stock Returns, Real Activity, and the Trust Question*, 47 J. FIN. 1701, 1727 (1992) ("Using quarterly returns for 1904–1944, I find that each case filed is associated with a decline of the Dow of one-half percentage point, after adjusting for changes in the level of production and inflation. These results also hold up for three major subperiods, although the per case effects are higher in 1904-1914 and in 1915-1928.").

[517] A breakup effectively amounts to expropriating investments that are dependent upon the divested assets.

maintain its monopoly (an anticompetitive scenario).[518] In fact, contrary to what some have argued, hindsight might even complicate matters, as it inherently biases contemporary takes on the Facebook/Instagram merger. For instance, it seems almost self-evident with hindsight that Facebook would succeed and that entry in the social media space would occur only at the fringes of existing platforms (the combined Facebook/Instagram platform)—which the emergence of TikTok, offering a distinct form of media, reflects. At the time of the merger, however, such an outcome was anything but a foregone conclusion.[519]

In other words, ex-post reviews will, by definition, focus on mergers where today's outcomes seem preordained, when, in fact, they were probabilistic. This will skew decisions toward finding anticompetitive conduct. If authorities think that Instagram was destined to become great, they are more likely to find that Facebook's acquisition was anticompetitive because they implicitly dismiss the idea that it was the merger itself that made Instagram great.

Authorities might also confuse correlation for causation. For instance, the state AGs' complaint tied Facebook's acquisitions of Instagram and WhatsApp to the degradation of these services, particularly in terms of privacy and advertising loads. As the complaint explained:

> 127. Following the acquisition, Facebook also degraded Instagram users' privacy by matching Instagram and Facebook Blue accounts so that Facebook could use information that users had shared with Facebook Blue to serve ads to those users on Instagram.
>
> 180. Facebook's acquisition of WhatsApp thus substantially lessened competition…. Moreover, Facebook's subsequent degradation of the acquired firm's privacy features reduced consumer choice by eliminating a viable, competitive, privacy-focused option.[520]

But these changes may have nothing to do with Facebook's acquisition of these services. At the time, nearly all tech startups focused on growth over profits in their formative years.[521] It should be no surprise that the platforms imposed higher "prices" to users after their acquisition

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[518] See discussion, *supra* Section V.A.

[519] *See* Section V.A.1 for a more detailed discussion.

[520] Complaint, State of New York, et al. v. Facebook, Inc., No. 1:20-cv-03589-JEB (D.C. Cir. filed Jun. 28, 2021).

[521] *See, e.g.*, Erin Griffith, *Silicon Valley Is Trying Out a New Mantra: Make a Profit*, N.Y. TIMES (Oct. 8, 2019), https://www.nytimes.com/2019/10/08/technology/silicon-valley-startup-profit.html [https://perma.cc/SAY7-2MQN].

by Facebook; they were maturing.[522] Further monetizing their platform would have been the logical next step, even absent the mergers.

It is just as hard to determine whether post-merger developments actually harmed consumers. For example, the FTC complaint argued that Facebook stopped developing its own photo-sharing capabilities after the Instagram acquisition, which the Commission cited as evidence that the deal neutralized a competitor:

> 98. Less than two weeks after the acquisition was announced, Mr. Zuckerberg suggested canceling or scaling back investment in Facebook's own mobile photo app as a direct result of the Instagram deal.[523]

But it is not obvious that Facebook or consumers would have gained anything from the duplication of R&D efforts if Facebook continued to develop its own photo-sharing app. More importantly, this discontinuation is not evidence that Instagram could have overthrown Facebook. In other words, the fact that Instagram provided better photo-sharing capabilities does necessarily imply that it could also provide a versatile platform that posed a threat to Facebook.

Finally, if Instagram's stellar growth and photo-sharing capabilities were certain to overthrow Facebook's monopoly, why do the plaintiffs ignore the competitive threat posed by the likes of TikTok today? Neither of the complaints made any mention of TikTok and its more than 1 billion monthly active users.[524] Instead, the FTC and state AGs would have us believe that Instagram posed an existential threat to Facebook in 2012 but that Facebook faces no such threat from TikTok (or other similar platforms like SnapChat) today.[525] It is exceedingly unlikely that both these statements could be true, yet both are essential to the plaintiffs' case. That is, if we do not believe that TikTok could overthrow Facebook today, then there is little reason to believe that Instagram could have done so in 2012 given the similarities between these platforms. At the same time, if TikTok and similar platforms were acknowledged as actual or potential competitors today, it would be much more difficult for the plaintiffs to maintain that Facebook enjoys monopoly power in the relevant market.

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[522] *See Pros and Cons of Ex Post Merger Reviews*, *supra* note 508.

[523] Complaint, Fed. Trade Comm'n v. Facebook, Inc., No. 1:20-cv-03590 (D.C. Cir. filed Jan. 13, 2021).

[524] *See, e.g.*, Sarah Perez, *New Forecast Pegs TikTok to Top 1.2B Monthly Active Users in 2021*, TECHCRUNCH (Nov. 10, 2020), https://techcrunch.com/2020/11/10/new-forecast-pegs-tiktok-to-top-1-2b-monthly-active-users-in-2021/ [https://perma.cc/N5GH-QG6M].

[525] Dismissed Complaint, Fed. Trade Comm'n v. Facebook, Inc., No. 1:20-cv-03590 (D.C. Cir. Jan. 13, 2021). *See also* New York v. Facebook, Inc., No. CV 20-3589 (JEB), 2021 WL 2643724, at *28–29 (D.D.C. June 28, 2021).

3. Appropriate Responses

None of this is to say that ex-post review of mergers and acquisitions should be categorically out of the question. Indeed, relative to *prospective* nascent or potential competitor reviews, consummated merger reviews may be relatively better informed.[526] Rather, such proceedings should be initiated only with appropriate caution and consideration for their broader consequences.

When undertaking reviews of past mergers, authorities do not necessarily need to impose remedies every time they find a merger was wrongly cleared. The findings of these ex-post reviews could simply be used to adjust existing merger thresholds and presumptions. This would effectively create a feedback loop where false acquittals lead to meaningful policy reforms in the future. At the very least, it may be appropriate for policymakers to set a higher bar for findings of anticompetitive harm and imposition of remedies in such cases. This could, for example, be done by requiring authorities to intervene within predetermined deadlines, imposing higher evidentiary thresholds, limiting ex-post cases to certain predetermined fact patterns, or even requiring authorities to announce on what grounds they might subsequently intervene. This would reduce the undesirable deterrent effects that such reviews may otherwise entail, while reserving ex-post remedies for the most problematic cases. If these conditions were met, a tougher system of ex-post review could enable authorities to take more risks during ex-ante proceedings. Indeed, when in doubt, they could effectively experiment by allowing marginal mergers to proceed, with the understanding that bad decisions could be clawed back afterwards. In that regard, it might also be useful to set precise deadlines for such reviews and to outline the types of concerns that might prompt scrutiny or warrant divestitures.

In short, some form of ex-post review may well be desirable. It could help antitrust authorities to learn what works and subsequently to make useful changes to ex-ante merger-review systems. But this would necessitate deep reflection on the many ramifications of ex-post reassessments. Legislative reform or, at the least, publication of guidance documents by authorities, seem like essential first steps. Unfortunately, this is the exact opposite of what the Facebook proceedings would achieve. Plaintiffs have chosen to ignore these

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[526] *See, e.g.*, Hemphill & Wu, *supra* note 121, at 1905 ("Due to this forward-looking posture, the enforcement agency and the court, considering an acquisition of a nascent competitor before the fact, are in the unusual position where delay may be expected, in some respects, to increase the accuracy of decision. Facts that the enforcer has trouble seeing today often become clearer later. There may be costs to waiting—notably, the difficulty and disruptiveness of after-the-fact divestiture, if that is the chosen remedy—but accuracy considerations tend to favor delay.").

complex trade-offs in pursuit of a case with extremely dubious underlying merits. Success for the plaintiffs would thus prove a pyrrhic victory, destroying far more than it intends to achieve.

B. Lowering Merger Filing Thresholds

Another proposed reform is to lower current transaction filing thresholds.[527] Authorities could thus review much smaller transactions than is currently the case and, perhaps more importantly, they could look at acquisitions where one of the merging parties earns little to no revenue at the time of the transaction, despite arguably having a much larger competitive significance.

In many ways, lowering these filing thresholds appears to be the most sensible reform. To a first approximation, doing so would merely give authorities the option of looking into deals that might otherwise fly under the radar—or, more precisely, that might show up on the radar but would evade authorities' oversight.[528] But the devil lies in the details. Lowering transaction thresholds raises practical challenges that might ultimately undermine its usefulness as a policy reform.[529] Indeed, scrutinizing more deals will merely increase administrative costs if authorities do not have the requisite knowledge to identify the harmful transactions among them, and if they do not have the right legal tools to prosecute them.[530] In other words, it is necessary to question (i) what would be the administrative costs of lowering transactions thresholds, (ii) what anticompetitive transactions could antitrust authorities hope to identify, and (iii) would prosecuting these cases require a change to substantive merger enforcement rules?

The administrative cost question is significant for firms and authorities alike. On the one hand, it seems infeasible to scrutinize every deal that takes place—even if authorities were to focus only on

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[527] *See, e.g.*, European Commission Press Release, *Mergers: Commission announces evaluation results and follow-up measures on jurisdictional and procedural aspects of EU merger control*, EUR. COMM'N (Mar. 26, 2021), https://ec.europa.eu/commission/presscorner/detail/en/IP_21_1384 [https://perma.cc/3EN9-7Z8M] (publishing revised guidance about article 22 of the EU Merger Regulation). The revisions were made in order to enable the Commission to review mergers that currently fall below EU merger filing thresholds—in an attempt to catch potentially anticompetitive nascent competitor acquisitions. *Id.*

[528] *Id.*

[529] Mitchell D. Raup Et Al., *Lowering the Bar: The FTC Lowers HSR Premerger Reporting Thresholds for the First Time in a Decade*, NAT'L L. REV. (February 3, 2021), https://www.natlawreview.com/article/lowering-bar-ftc-lowers-hsr-premerger-reporting-thresholds-first-time-decade [https://perma.cc/7NYF-XCJ2].

[530] *Multijurisdictional Mergers: Rationalizing the Merger Review Process Through Targeted Reform*, U.S. DEP'T OF JUST. (updated June 25, 2015), https://www.justice.gov/atr/chapter-3 [https://perma.cc/35K4-KBH5].

acquisitions by large incumbents in concentrated industries. For instance, it is well documented that big tech firms have made a significant number of acquisitions over the past few decades.[531] Gautier and Lamesch document at least 175 acquisitions by the GAFAM (*i.e*. Google, Amazon, Facebook and Apple) between 2015 and 2017, while Argentesi et al. document almost 300 by Google, Amazon, and Facebook, between 2008 and 2018.[532] In short, given the caseloads that authorities currently handle,[533] it is fanciful to believe that they could examine most deals involving these, or other, companies without tremendous additional resources that are potentially better spent elsewhere.

It is thus likely that most deals below existing thresholds would *not* be scrutinized under new rules. The question then is how authorities would select cases without opening the floodgates of arbitrary and/or politically motivated enforcement. Authorities might indeed be tempted to use their newfound discretion to target sectors where they want to appear "tough" on businesses, or as an industrial policy tool—using repeated investigations to stifle foreign businesses.[534] This is not to say that such an outcome is inevitable, but rather that guidelines need to be put in place to keep authorities' discretion in check.

Unfortunately, as things stand, there are simply no widely accepted methods by which to identify those deals. Focusing on mergers with overlapping R&D pipelines is unlikely to assuage the demands of critics. This is because a significant number of the tech mergers that provide the basis for today's calls appear to concern acquisitions in "complementary" markets, and, as explained above, it has even been claimed that startups

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[531] Saikat Chaudhuri and Behnam Tabrizi, *Capturing the Real Value in High-Tech Acquisitions*, HARV. BUS. REV. (Sept. 1999), https://hbr.org/1999/09/capturing-the-real-value-in-high-tech-acquisitions [https://perma.cc/JH3G-6QGG].

[532] Gautier & Lamesch, *supra* note 283, at 14; Argentesi et al., *supra* note 290, at 3.

[533] *See* Easterbrook, *supra* note 13, at 39.

[534] *See, e.g*., Geoffrey A. Manne, *The Rule of Reason as a Discovery Procedure: A Response to Ramsi Woodcock's Hidden Rules of a Modest Antitrust*, 105 MINN. L. REV. HEADNOTES 422, 439–40 (2021) ("[E]nforcers do not make their decisions necessarily on the winnability of the case as determined by a court's expected imposition of a filter. Rather, most cases probably . . . turn substantially on considerations divorced from the merits of any given case . . . [and instead] turn on political and, of course, budgetary considerations. For instance, it is worth noting that federal enforcers have recently devoted vast resources to bring cases against Qualcomm, Facebook, and Google. It is an open question whether antitrust authorities decided to allocate substantial budgets toward these cases because they were perceived to be easily winnable – and at least for the Qualcomm proceedings, this has already turned out not to be the case – or because these cases fitted well within the agencies' broader political agendas.").

are afraid of competing on projects where incumbents have an R&D pipeline.[535]

Using the size of transactions as a filtering mechanism is equally unpromising, as this metric could easily be gamed and does not necessarily correlate with the competitive significance of a deal.[536] In other words, applying a transaction size filing threshold might merely incentivize startups to sell before they reach the threshold, and might focus authorities' attention on the wrong set of transactions.[537]

Another potential heuristic would be to look at the so-called "fitness" of acquiring and acquired firms. According to Robert Mahari, Sandro Lera and Alex Pentland, fitness can be seen as "how well a given firm translates size (measured by the number of business relationships it has) into growth."[538] The intuition is that, in network industries where firm growth is often exponential, firms' growth rates carry more predictive value than their size at a given point in time.[539] The authors thus propose to focus on firms' ability to raise money, as a proxy for fitness.[540] In practice, the authors believe this might lead authorities to scrutinize acquisitions that bring together high-fitness companies.[541]

Such an approach is not without problems. Merger enforcement is about identifying the competitive relationship that exists between two firms in order to determine whether their merger will harm competition. Knowing that two firms are "fit" and likely to grow in the future says little to nothing about this competitive landscape. At some point in time, Uber and Airbnb might both have been "high-fitness" startups, yet it is clear that they are not competitors in the antitrust sense: taxis are not substitutes for holiday homes.

This is not to say that looking at firms' "fitness" is entirely without merit. There is certainly a case to be made for authorities adopting a more

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[535] Zingales et al., *supra* note 8, at 29.

[536] *See, e.g.*, Thomas G. Wollmann, *Stealth Consolidation: Evidence from an Amendment to the Hart-Scott-Rodino Act*, 1 AM. ECON. REV. INSIGHTS 77, 77–78 (2019).

[537] *Id.* at 78.

[538] Robert Zev Mahari et al., *Time for a New Antitrust Era: Refocusing Antitrust Law to Invigorate Competition in the 21st Century*, 1 STAN. COMPUTATIONAL ANTITRUST 52, 57 (2021).

[539] *Id.* at 58.

[540] *Id.* ("We proxy the fitness of a private company by the average amount of money raised per round of funding (we obtain similar results for other measures of fitness). As shown below, firms with a high level of fitness are systematically more likely to be acquired, and approximately half of the transactions that involve a high fitness firm fall below the HSR reporting threshold.").

[541] *Id.* at 62 ("It is also our recommendation that FTC and DOJ take into account the relative fitnesses of two merging entities (proxied as appropriate by revenue growth, user growth or other relevant metrics) to determine when to issue a second request in the merger review process.").

"dynamic" approach to antitrust analysis.[542] Focusing more heavily on firms' ability to thrive, rather than the competitive situation at an arbitrary point in time, might certainly be worthwhile. However, it does not follow that the merger of two "fit" firms is necessarily, or even likely, detrimental to competition and consumers. In short, just like a focus on transactions values, "fitness" does not provide a useful heuristic for authorities to analyze mergers that fall below existing filing thresholds.

The upshot is that lowering existing merger filing thresholds would lead authorities to an impasse, as there is no cost-effective way to review mergers that take place below them.[543] And, because of this, such a reform would also require reforms to substantive merger rules (such as those discussed in the following section). Put simply, the future is uncertain. Accordingly, innovation harms also entail significant uncertainty that seems incompatible with existing antitrust standards or review and burdens of proof.

C. Shifting the Burden of Proof

Shifting the burden of proof in certain merger enforcement proceedings is one of the most popular reforms that has been suggested to clamp down on potential killer acquisitions and other allegedly innovation-reducing mergers.[544] It is the cornerstone of several proposed antitrust reforms, including Senator Amy Klobuchar's draft Competition and Antitrust Law Enforcement Reform Act (the "CALERA Bill"), and the creation of a Digital Markets Unit ("DMU"), in the United Kingdom.[545]

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[542] *See, e.g.*, J Gregory Sidak & David J Teece, *Dynamic Competition in Antitrust Law*, 5 J. COMPETITION L. & ECON. 581, 582 (2009) ("A necessary but not sufficient condition for that effort is a public process by which the Division and the FTC revisit and restate the Merger Guidelines in a manner that clarifies and defends the role of dynamic competition in antitrust analysis. We therefore applaud the announcement of the antitrust agencies in September 2009 to solicit public comment on the possibility of updating the Merger Guidelines. Assuming that the Division and the FTC decide to revise the existing Merger Guidelines, those revised guidelines (and useful complementary undertakings, such as generalized guidelines on market power and remedies) then will require leadership by the enforcement agencies to persuade the courts that antitrust doctrine should evolve accordingly. That neo-Schumpeterian process may take a decade or longer to accomplish, but it is a path that we believe the Roberts Court is willing to travel.").

[543] *See, e.g.*, Gautier & Lamesch, *supra* note 283, at 14; and Argentesi et al., *supra* note 290, at 3.

[544] James Keyte et al., *Buckle Up: The Global Future of Antitrust Enforcement and Regulation*, ANTITRUST MAG., Summer 2021 at 34.

[545] Competition and Antitrust Law Enforcement Reform Act of 2021, S. 225, 117th Cong. § 2(b)(4) (as introduced February 4, 2021); *Appendix F: The SMS regime: a distinct merger control regime for firms with SMS*, DIGITAL MARKETS TASKFORCE F1 (2020), https://assets.publishing.service.gov.uk/media-

These proposals would essentially require tech firms that meet certain thresholds to prove that their acquisitions do not harm competition.

For example, the preamble to Senator Klobuchar's CALERA bill explains that the purpose of the Act is, among other things, to "establish simple, cost-effective decision rules that require the parties to certain acquisitions that either significantly increase concentration or are extremely large bear the burden of establishing that the acquisition will not materially harm competition."[546]

Similarly, the UK's DMU proposal would apply a lower *standard* of proof to mergers involving firms that are deemed to have a "strategic market status."[547] While this is not the same thing as shifting the *burden* of proof, the result may be similar. The onus would be on firms to show that their deals benefit competition, with authorities only needing to clear a very low bar in order to successfully block a transaction.[548] And while the European Union has not yet proposed rules that would shift the burden of proof in merger proceedings, its draft Digital Markets Act would require so-called "gatekeeper" platforms (i.e., platforms that serve as an important gateway between consumers and other companies) to notify all of their acquisitions to competition authorities.[549] One reading of this provision is that information gathered from these notifications may ultimately provide the basis for tighter rules, such as shifting the burden of proof for acquisitions involving gatekeeper platforms.[550] On the face of it, these might seem like modest and sensible reforms. Indeed, several scholars have claimed that firms are ideally situated to explain how their deals will affect competition.[551] According to them, firms' failure to discharge their

/5fce706ee90e07562d20986f/Appendix_F_-_The_SMS_regime_-_a_distinct_merger_control_regime_for_firms_with_SMS_-_web_-.pdf [https://perma.cc/SHZ7-UMG9].

[546] Competition and Antitrust Law Enforcement Reform Act § 2(b)(4).

[547] DIGITAL MARKETS TASKFORCE, *supra* note 545, at F30.

[548] *Id.* at F29 ("Our recommendation at this point is to assess whether there is a 'realistic prospect' that a merger gives rise to an SLC. This would, critically, enable the CMA to intervene in mergers that have the potential to cause significant harm to UK consumers, even where it cannot be established that this outcome is more likely than not.").

[549] *See* Proposal for a Regulation of the European Parliament and of the Council On Contestable and Fair Markets in the Digital Sector (Digital Markets Act), art. 12.1,COM/2020/842 final (Dec. 15, 2020), https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020PC0842&from=en.

[550] *Id.* at art. 10 (detailing a procedure that the Commission can use to introduce new rules that would apply to gatekeepers).

[551] Caffarra et al., *supra* note 9, at 18 ("[E]nforcers cannot be all-knowing, especially given their limited resources and the huge asymmetry of information. This would militate in favor of super-dominant firms being required to proactively show why they are pursuing the deal, and why consumers would necessarily benefit.").

burden of proof would constitute a clear sign of anticompetitiveness.[552] But such an assertion is far from self-evident. Critics implicitly assume that firms *know* how their deals will affect competition and consumers. This may be true in those limited cases where a merger *merely* aims to eliminate a competitor. But in many other instances firms may struggle to rationalize *how* their deals could benefit consumers, a task that is only made harder by the prospective nature of merger-specific benefits.

One key problem is that business managers might not be well-versed in the intricacies of antitrust enforcement and might thus struggle to explain the benefits of their transactions in such terms. Frank Easterbrook was one of the first scholars to pick-up on this fundamental difficulty:

> [E]ntrepreneurs often flounder from one practice to another trying to find one that works. When they do, they may not know why it works, whether because of efficiency or exclusion. They know only that it works. If they know why it works, they may be unable to articulate the reason to their lawyers-because they are not skilled in the legal and economic jargon in which such "business justifications" must be presented in court. . . .
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> . . . It takes economists years, sometimes decades, to understand why certain business practices work, to determine whether they work because of increased efficiency or exclusion. To award victory to the plaintiff because the defendant has failed to justify the conduct properly is to turn ignorance, of which we have regrettably much, into prohibition. That is a hard transmutation to justify.[553]

Easterbrook's intuition undoubtedly carries over to the field of merger enforcement—especially in cases where relatively small transactions are involved (i.e., deals that fall below existing Hart-Scott-Rodino and EU Merger Regulation filing thresholds). As a result, "[i]mposing a burden of proof on entrepreneurs – often to prove a negative in the face of enforcers' pessimistic assumptions– when that burden can't plausibly be met can serve only to impede innovation."[554]

Indeed, despite calls for such burden-shifting, which would often impose upon business actors the obligation to establish a defined, causal relationship between market structure and innovation, even *economists* know very little about the optimal conditions for innovation.[555] And,

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[552] *Id.*

[553] Frank H. Easterbrook, *On Identifying Exclusionary Conduct*, 61 NOTRE DAME L. REV. 972, 975 (1986).

[554] Geoffrey A. Manne, *supra* note 174, at 77.

[555] *See, e.g.*, Herbert Simon, *Theories of Decision Making in Economics*, 49 AM. ECON. REV. 253, 278–79 (1959) ("W]e know very little at present about how the rate of innovation depends on the amounts of resources allocated to various kinds of research and development activity. Nor do we understand very well the nature of

despite the lack of evidence clearly connecting structural concerns (i.e., the number of competitors or the amount of concentration in a market) with innovation outcomes, most antitrust economists and enforcers are singularly focused on these structural conditions.[556] As David Teece writes:

> A less important context for innovation, although one which has received an inordinate amount of attention by economists over the years, is market structure, particularly the degree of market concentration. Indeed, it is not uncommon to find debate about innovation policy among economists collapsing into a rather narrow discussion of the relative virtues of competition and monopoly. . . .
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> . . . [Yet] reviews of the extensive literature on innovation and market structure generally find that the relationship is weak or holds only when controlling for particular circumstances. The emerging consensus is that market concentration and innovation activity most probably either coevolve or are simultaneously determined.[557]

As a result of shifting the burden of proof to defendants to establish that mergers or other activities will affirmatively promote consumer welfare (and/or innovation) is not merely a "neutral" shift aimed simply at

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'know how,' the costs of transferring technology from one firm or economy to another, or the effects of various kinds and amounts of education upon national product. These are difficult questions to answer from aggregative data and gross observation, with the result that our views have been formed more by arm-chair theorizing than by testing hypotheses with solid facts."). Sadly, our understanding of the conditions that encourage innovation has progressed little since Simon wrote in 1959. *See, e.g.*, Geoffrey A. Manne & Joshua D. Wright, *Regulating Innovation: Competition policy and patent law under uncertainty* (Antonin Scalia L. Sch. Fac. Working Paper #09-41, 2009) ("[T]he ratio of what is known to unknown with respect to the relationship between innovation, competition, and regulatory policy is staggeringly low. In addition to this uncertainty concerning the relationships between regulation, innovation, and economic growth, the process of innovation itself is not well understood."); Geoffrey A. Manne & Joshua D. Wright, *Innovation and the Limits of Antitrust*, 6 J. COMPETITION L. & ECON. 153, 166 (2010) ("[A]s a general rule, economists know much less about the relationship between competition and innovation, and in turn, consumer welfare, than they do about standard price competition."); Richard J. Gilbert, *Competition and Innovation*, in 1 ISSUES IN COMPETITION LAW AND POLICY 577, 583 (W. Dale Collins, ed. 2008) ("[E]conomic theory does not provide unambiguous support either for the view that market power generally threatens innovation by lowering the return to innovative efforts nor the Schumpeterian view that concentrated markets generally promote innovation.").

[556] *See Innovation and the Limits of Antitrust*, *id.*, at 166.

[557] David J. Teece, *Technological Innovation and the Theory of the Firm: The Role of Enterprise-Level Knowledge, Complementarities, and (Dynamic) Capabilities*, in 1 HANDBOOK OF THE ECON. OF INNOVATION 679, 687–88 (Bronwyn H. Hall & Nathan Rosenberg, eds. 2010).

taking better account of defendants' private information; it is an effectively insurmountable obstacle that would dramatically deter procompetitive conduct.

Google's acquisition of Android provides a salient illustration.[558] Google paid $50 million for a tiny startup with only six employees, reportedly without the knowledge of then-CEO Eric Schmidt.[559] As discussed above, the deal ended up being widely successful and seemingly benefited consumers.[560] The question, however, is whether Google could have outlined those benefits at the time of the acquisition. While it seems clear that Google saw the purchase as a way of moving into mobile operating systems,[561] other aspects of the merger would likely have been less clear. Could Google have *successfully* vertically integrated absent the merger? Would an independent Android have succeeded as a standalone company? Would the benefits of additional smartphone competition outweigh the potential costs of increased barriers to entry in the search engine market? The answers to these questions seem somewhat unknowable. And yet, Google would have been required to elucidate them all under a reformed merger control regime where the burden of proof is shifted to merging parties. If the purchase was driven by instinct rather than a fully-rationalized strategy rooted in structural change, the ensuing proceedings would merely be a somewhat superficial exercise in ex-post rationalization (between authorities and Google), largely untethered from the unknown merits of the case and the underlying acquisition.

It is not clear that this sort of discussion significantly advances the interests of consumers. What is clear is that these proceedings would have entailed several non-trivial costs—hiring law firms, diverting computer scientists from product development to regulatory questions, delaying work on the Android project (compared to internal expansion), etc. If what matters for competition and innovation in this space is "moving fast and breaking things"[562] to take the words of Mark Zuckerberg, or

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[558] *See supra* Section V.A.

[559] Nicholas Carlson, *Larry and Sergey Didn't Always Tell Eric Schmidt About Google's Acquisitions*, INSIDER (January 20, 2011), https://www.businessinsider.com/larry-and-sergey-didnt-always-tell-eric-schmidt-about-googles-acquisitions-2011-1 [https://perma.cc/38E7-UVA4]; Callaham, *supra* note 157.

[560] *See* Callaham, *supra* note 157.

[561] *Id.*

[562] Hemant Taneja, *The Era of "Move Fast and Break Things" Is Over*, HARV. BUS. REV. (Jan. 22, 2019), https://hbr.org/2019/01/the-era-of-move-fast-and-break-things-is-over [https://perma.cc/8PWV-8CT9] ("Many of today's entrepreneurs live by Facebook founder Mark Zuckerberg's now-famous motto: "Move fast and break things." Zuckerberg intended for this to inform internal design and management processes, but it aptly captures how entrepreneurs regard disruption: more is always

"permissionless innovation"[563] in the words of Adam Thierer, then the proposed reforms might be a step in the wrong direction.

Another way of framing this problem is to draw a distinction between heuristics and rationalization. Antitrust enforcement, with its complicated procedures for assessing cases, is largely driven by the latter. Instead, businesses can arguably rely more heavily on the first. This is possible because, unlike their regulatory counterparts, firms have "skin in the game." Firms bear the costs of faulty deals and thus operate under conditions where feedback loops enable successful managers to proceed without detailed rationalizations (think of the email exchange between Zuckerberg and Ebersman) and consign unsuccessful ones to bankruptcy.[564] Thus Nassim Taleb, for example, has written that business plans are essentially ex-post rationalizations that are largely irrelevant for business decisions:

> Likewise, the illusion prevails that businesses work via business plans and science via funding. This is strictly not true . . . . [F]or a real business (as opposed to a fundraising scheme), something that should survive on its own, business plans and funding work backward. At the time of writing, most big recent successes (Microsoft, Apple, Facebook, Google) were started by people with skin and soul in the game and grew organically—if they had recourse to funding, it was to expand or allow the managers to cash out; funding was not the prime source of creation. You don't create a firm by creating a firm; nor do you do science by doing science.[565]

Matt Ridley offers another spin on this intuition. As he puts it, "innovation is the mother of science as often as it is the daughter":

> There is a widely held view among politicians, journalists and the public that science leads to technology, which leads to innovation. . . . While this can sometimes happen, it is just as often the case that invention is the parent of science: techniques and processes are developed that work, but the understanding of them comes later. Steam engines led to the understanding of thermodynamics, not the

better. We raced to put our products into consumers' hands as fast as possible, without regard for the merit of—and rationale for—offline systems of governance.").

[563] ADAM THIERER, PERMISSIONLESS INNOVATION: THE CONTINUING CASE FOR COMPREHENSIVE TECHNOLOGICAL FREEDOM 1 (2016).

[564] *See generally* Armen Alchian, *Uncertainty, Evolution, and Economic Theory*, 58 J. POL. ECON. 211 (1950).

[565] NASSIM N. TALEB, SKIN IN THE GAME: HIDDEN ASYMMETRIES IN DAILY LIFE 159 (2018).

> other way round. Powered flight preceded almost all aerodynamics. Animal and plant breeding preceded genetics.[566]

While Taleb and Ridley's points are clearly not about the ex-ante motivations for corporate mergers, they touch upon the same underlying point: When it comes to business, entrepreneurship, and innovation, it is wrong to assume that rationalization always precedes action.

In short, antitrust enforcers and innovators arguably rely on very different processes to generate the information required to guide their conduct. It is not clear that the type of knowledge on which innovators rely could easily be transposed to antitrust enforcement. And if that is not the case, shifting the burden of proof in merger proceedings might ultimately amount to a *de facto* ban on transactions—or at the very least prevent many desirable acquisitions from taking place. As discussed throughout this paper, there is little evidence to suggest that such an outcome would be appropriate from an error-cost standpoint. Of course, our point here is certainly not dispositive. Perhaps firms *would* overcome these difficulties; at this point, we simply do not know. Accordingly, our insight is not that burden shifting should be categorically proscribed—after all, it is already present in other areas of antitrust enforcement where anticompetitive harm is deemed likely, such as collusion—but rather that more evidence is necessary to determine whether such a system would be beneficial or even workable in practice.

VIII. CONCLUSION

This paper has argued that projected merger enforcement reforms risk throwing the baby out with the bathwater. Mergers are beneficial to society, anticompetitive ones are rare, and there is little way, at the margin, to tell good from bad. To put it mildly, there is a precious baby that needs to be preserved and relatively little bathwater to throw out.

Take the fulcrum of policy debates that is the pharmaceutical industry. It is not hard to point to pharmaceutical mergers (or long-term agreements) that have revolutionized patient outcomes. Most recently, Pfizer and BioNTech's efforts to successfully market an mRNA vaccine against COVID-19 offers a case in point.[567] The deal struck by both firms

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[566] MATT RIDLEY, HOW INNOVATION WORKS: AND WHY IT FLOURISHES IN FREEDOM 282 (2020).

[567] *BioNTech Signs Collaboration Agreement with Pfizer to Develop mRNA-based Vaccines for Prevention of Influenza*, BIONTECH (Aug. 16, 2018), https://investors.biontech.de/news-releases/news-release-details/biontech-signs-collaboration-agreement-pfizer-develop-mrna-based#:~:text=(NYSE%3A%20PFE)%20to%20develop,advance%20mRNA%2Dbased%20flu%20vaccines [https://perma.cc/R5BC-2MYK] ("Under the terms of the agreement, BioNTech and Pfizer will jointly conduct research and development

could naïvely be construed as a killer acquisition (or an anticompetitive agreement; long-term agreements can easily fall into either of these categories): Pfizer was a powerful incumbent in the vaccine industry; BioNTech threatened to disrupt the industry with new technology; the deal likely caused Pfizer to forgo some independent R&D efforts. And yet, it also led to the first approved COVID-19 vaccine and groundbreaking advances in vaccine technology.[568] Of course, the counterfactual is unclear, and the market might be *more* competitive absent the deal, just as there might be only one approved mRNA vaccine today—we simply do not know.[569] More importantly, this counterfactual was even less knowable at the time of the deal. And much the same could be said about countless other pharmaceutical deals.

The key policy question is how authorities should handle this uncertainty. Critics of the *status quo* argue that current rules and thresholds leave certain anticompetitive deals unchallenged. As explained throughout this paper, however, these calls for tougher enforcement fail to satisfy the requirements of the error-cost framework. Critics have so far failed to show that, on balance, mergers harm social welfare – even overlapping ones or mergers between potential competitors – just as they are yet to suggest alternative institutional arrangements that would improve social welfare. In other words, they mistakenly analyze the occurrence of false negatives in isolation. In doing so, they ignore how measures that aim to reduce such judicial errors may lead to other errors, as well as higher enforcement costs. In short, they paint a world where

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activities to help advance mRNA-based flu vaccines. Pfizer will assume sole responsibility for further clinical development and commercialization of mRNA-based flu vaccines, following BioNTech's completion of a first in human clinical study. BioNTech will receive $120 million in upfront, equity and near-term research payments and up to an additional $305 million in potential development, regulatory and commercial milestone payments. In addition, BioNTech will receive up to double-digit tiered royalty payments associated with worldwide sales if the program reaches commercialization.").

[568] *See, e.g.*, Damian Garde & Jonathan Saltzman, *The Story of mRNA: How a Once-Dismissed Idea Became a Leading Technology in the Covid Vaccine Race*, STAT (Nov. 10, 2020), https://www.statnews.com/2020/11/10/the-story-of-mrna-how-a-once-dismissed-idea-became-a-leading-technology-in-the-covid-vaccine-race/ [https://perma.cc/Z2ZV-5WE7]; Laurie McGinley et al., *FDA Authorizes the First Coronavirus Vaccine, a Rare Moment of Hope in the Deadly Pandemic*, THE WASH. POST (Dec. 12, 2020), https://www.washingtonpost.com/health/2020/12/11/trump-stephen-hahn-fda-covid-vaccine/ [https://perma.cc/X8V6-LACQ].

[569] At the time of writing, there are two FDA approved mRNA vaccines against COVID-19. *See COVID- 19 Vaccines*, FDA (last visited Jun. 10, 2021), https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines#authorized-vaccines [https://perma.cc/6AQR-BBED].

policy decisions involve facile tradeoffs, and this undermines their policy recommendations.

Given these significant limitations, this body of academic research should be met with an appropriate amount of caution. For all the criticism it has faced, the current merger review system is mostly a resounding success. It is administrable, predictable, and timely. Yet it also eliminates a vast majority of judicial errors: even its critics concede that false negatives make up only a tiny fraction of decisions. Policymakers must decide whether the benefits from catching the very few arguably anticompetitive mergers that currently escape prosecution outweigh the significant costs that are required to achieve this goal. There is currently little evidence to suggest that this is indeed the case.