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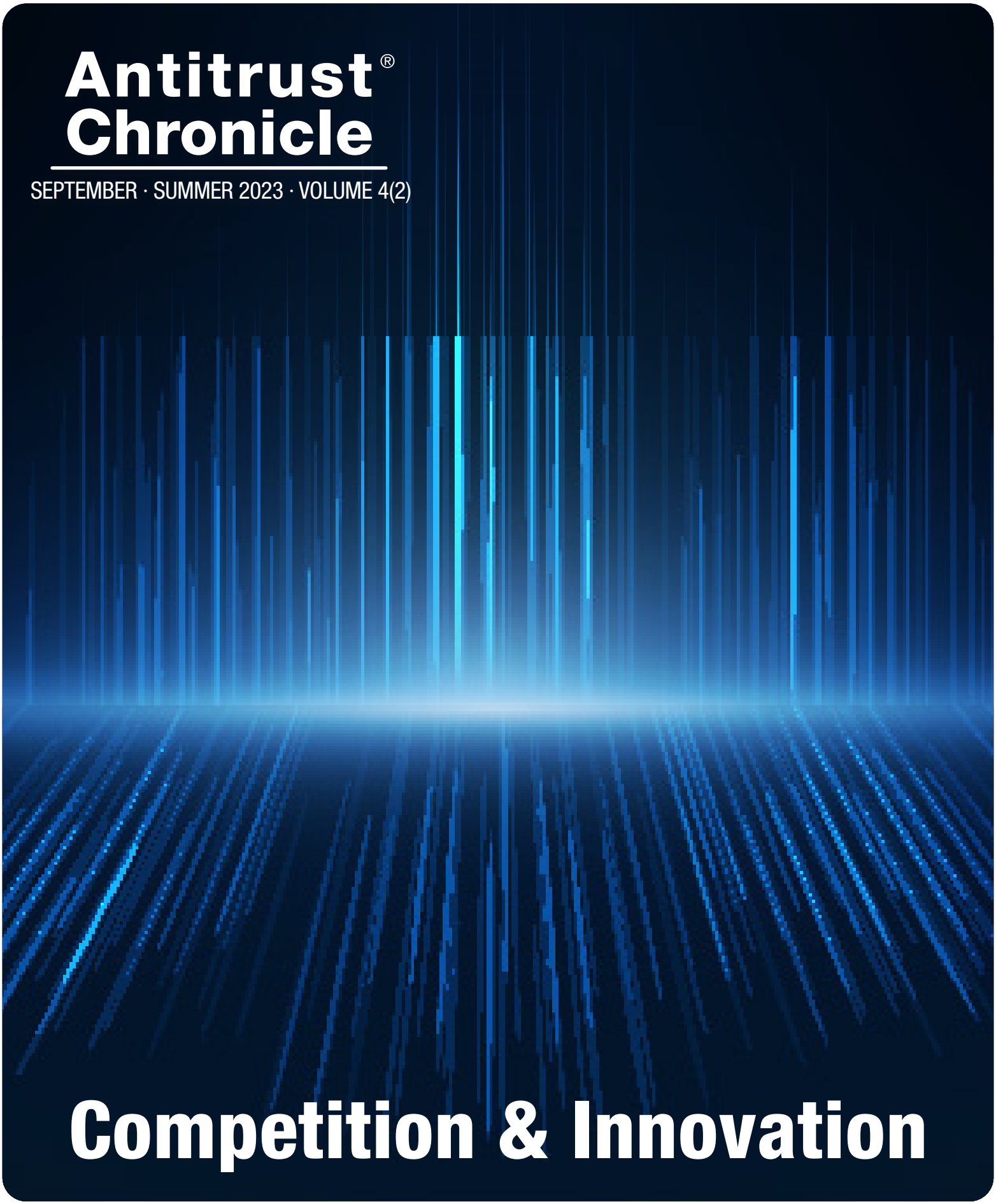

Competition & Innovation

CPI COMPETITION POLICY® INTERNATIONAL

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LETTER FROM THE EDITOR

Dear Readers,

At the heart of antitrust there are two fundamental, sometimes conflicting, concepts: "competition" and "innovation." In essence, competition is the striving against others for the same prize, while innovation embodies the creation of the new and novel. Their antonyms, "complacency" and "stagnation," represent stasis and lack of progress, the very societal ills antitrust seeks to avoid.

Clearly, without innovation, competition loses its forward momentum: it becomes a static race with no finish line in sight. Conversely, unchecked innovation can skew the playing field, destabilizing the very essence of competition. Within this mix there is the intellectual property regime: patents, instruments designed to foster innovation by protecting inventors, can, at times, also stifle the very progress they aim to encourage.

This edition of the Chronicle delves into the relationship between antitrust law and innovation, spanning *ex post* antitrust enforcement and merger control, across various industries. The contributions explore the nuanced dance between ensuring healthy competition and fostering groundbreaking progress. All agree that competition must spur innovation without being hindered by overly restrictive legal frameworks. The question is how best to achieve this,

To open, **George L. Priest** addresses the value of innovation as an ambition of U.S. antitrust law. The piece argues that innovation ought to be a principal goal of the antitrust laws, but has not been. The author shows, however, that the malleability of the U.S. antitrust laws may allow innovation to be a principal value in the years ahead. In short, in his view, the provisions of the Sherman and Clayton Acts are sufficiently open-ended to allow for multiple interpretations. If the objective is to develop a strong and vibrant economy, the policy of competition rules ought to be to promote innovation.

Economic analysis of dynamic efficiency is essential for antitrust policy. **Daniel F. Spulber** argues that measuring dynamic efficiency is feasible for antitrust policy makers, introducing the concept of the *innovative delta* as a measure of dynamic efficiency. The innovative delta measures the welfare effects of an observed technological change. In merger policy, a positive innovative delta could provide an efficiency defense for a merger, whereas a negative innovative delta could indicate harm. The innovative delta also supports a rule of reason approach to innovation competition.

Capturing innovation poses challenges for antitrust law and practice, despite innovation being recognized as one of antitrust's primary objectives. As such, **Viktoria H.S.E. Robertson & Klaudia Majcher** focus on the problem of defining "innovation," and what type of innovation deserves to be promoted. Focusing on the U.S. and the EU, the piece illustrates that despite efforts to rethink market definition, a coherent approach to innovation markets appears to be lacking. Safe harbors similarly fail to do justice to the value of innovation. Overall, in the authors' view, the question of how to consider innovation in antitrust is highly contingent on two fundamental questions: What is the relationship between competition and innovation? And how can we identify the type of innovation that antitrust should aim to promote?

As **Michael A. Carrier** wryly notes, the term "innovation" has a spellbinding effect. Because innovation is the lifeblood of the U.S. economy, no one can be seen to stand against it. To do so would be synonymous with backwards thinking and technological regression. For that reason, arguments that changes in the law or industry practice would harm innovation tend to be considered seriously. But that does not mean they are correct. This article criticizes the argument that innovation is reflected solely by the initial invention. In the standards context, many who have taken a "pro-licensor" perspective have focused only on the initial invention, claiming that any weakening of patents or application of antitrust to this stage will harm innovation. These arguments, however, do not capture the economic realities of innovation, which is multi-generational in nature.

In a somewhat similar vein, **Daniel A. Hanley**'s article argues that innovation is a not a universal societal good. Many innovations have not led to genuine social improvements. Instead, they often involve firms employing new tactics to coerce suppliers and distributors, and lawbreaking, with the explicit intent to undermine labor rights, privacy rights, and increase worker exploitation. As such, the article comments on how targeted antitrust enforcement can structure market competition to promote socially beneficial innovation.

Innovation matters in antitrust enforcement and the different ways in which it is defined, measured and, in general, understood, might bring different and sometimes opposing outcomes. As such, **Aura Garcia Pabon** argues that understanding what innovation actually is should be the first step. This question is increasingly relevant as competition authorities have intensified their interest in variables that go beyond mere prices. The article discusses how to define innovation for competition enforcement purposes and the challenges that arise when measuring it. While focused on mergers, this discussion also generally applies to potentially anti-competitive conduct.

Finally, focusing on merger control, **Giovanni Morzenti** argues that the ultimate effect of a concentration on innovation is determined by efficiencies, which can tip the balance between profit cannibalization and profit appropriability. The author argues that over recent decades, pre-merger notification requirements have become more lenient, allowing thousands of acquisitions of small innovative firms to avoid merger control. Evidence from the U.S. shows that non-notified mergers did not generate enough efficiencies to counterbalance their effect on market power, resulting in less innovation. A similar pattern has spread to several countries, contributing to a global rise in market power. Early steps have been taken to strengthen notification requirements in technology and pharmaceutical industries, but the author argues that regulators and should be ever vigilant.

In sum, the nexus between antitrust law and innovation is an evergreen topic. The articles in this Chronicle illuminate how competition is propelled by the driving force of innovation, but innovation can carry its own risk of social ills. Maintaining equilibrium between fostering new ideas and preserving robust competition is paramount.

As always, many thanks to our great panel of authors.

Sincerely,

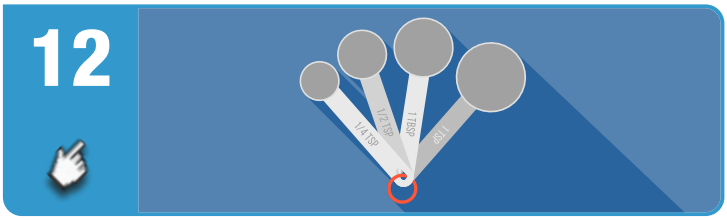
CPI

SUMMARIES

INNOVATION AND U.S. ANTITRUST LAW

By George L. Priest

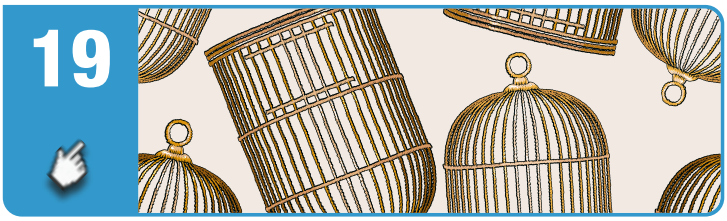
This paper addresses the value of innovation as an ambition of U.S. antitrust law. It argues that innovation ought to be a principal goal of the antitrust laws, but has not been. The paper shows, however, the malleability of the U.S. antitrust laws that may allow innovation to be a principal value in the years ahead.



ANTITRUST POLICY TOWARD INNOVATION COMPETITION: MEASURING DYNAMIC EFFICIENCY

By Daniel F. Spulber

Economic analysis of dynamic efficiency is essential for antitrust policy. I argue that measuring dynamic efficiency is feasible for antitrust policy makers. I introduce the concept of the *innovative delta* as a measure of dynamic efficiency. The innovative delta measures the welfare effects of an observed technological change. In merger policy, a positive innovative delta could provide an efficiency defense for a merger, whereas a negative innovative delta could indicate harm. The innovative delta also supports a rule of reason approach to innovation competition.



CAPTURING INNOVATION FOR ANTITRUST PURPOSES

By Viktoria H.S.E. Robertson & Klaudia Majcher

Capturing innovation poses challenges for antitrust law and practice, despite innovation being recognized as one of antitrust's primary objectives. Defining innovation, deciding on the type of innovation that deserves to be promoted, and designing antitrust assessment frameworks in a way that effectively integrates the value of innovation, continue to be contested issues. This article provides an overview of opportunities and challenges related to capturing innovation for antitrust purposes through the lens of market definition and safe harbors – both of which are typical starting points for antitrust assessments. Focusing on the U.S. and the EU, it illustrates that despite efforts to rethink market definition in view of the need to incorporate innovation, a coherent approach appears to be lacking. Safe harbors similarly fail to do justice to the value of innovation, even though there have been attempts to introduce a more innovation-conscious approach in this area. Overall, the question of how to consider innovation in antitrust is highly contingent on two more fundamental questions: what is the relationship between competition and innovation, and how can we identify the type of innovation that antitrust should aim to promote. Both deserve closer attention.

INNOVATION, INVENTION, AND STANDARDS

By Michael A. Carrier

The term "innovation" has a spellbinding effect. As innovation is the lifeblood of the U.S. economy, no one can reasonably stand on the opposite side. To do so would cast one's lot with the fragile sands of backwards thinking and technological regression. For that reason, arguments that changes in the law or industry practice would harm innovation tend to be considered seriously. And such arguments sometimes are vigorously propounded. But that does not mean they are correct. This essay criticizes one of these arguments: that innovation is reflected solely by the initial invention. In the standards context, many who have taken a "pro-licensor" perspective have focused only on the initial invention, claiming that any weakening of patents for or application of antitrust to this stage will harm innovation. These arguments, however, do not capture the economic realities of innovation, which is multi-generational in nature. The debate has most frequently taken place in the context of standards.

SUMMARIES

WHAT'S NEXT?

For October 2023, we will feature an Antitrust Chronicle focused on issues related to (1) ***Ex Post* Review**; and (2) **Bid Rigging**.

ANNOUNCEMENTS

CPI wants to hear from our subscribers. In 2023, we will be reaching out to members of our community for your feedback and ideas. Let us know what you want (or don't want) to see, at: antitrustchronicle@competitionpolicyinternational.com.

CPI ANTITRUST CHRONICLES November 2023

For November 2023, we will feature an Antitrust Chronicle focused on issues related to (1) **Consent Decrees**; and (2) **EU Horizontal Cooperation Rules**.

Contributions to the Antitrust Chronicle are about 2,500 – 4,000 words long. They should be lightly cited and not be written as long law-review articles with many in-depth footnotes. As with all CPI publications, articles for the CPI Antitrust Chronicle should be written clearly and with the reader always in mind.

Interested authors should send their contributions to Sam Sadden (ssadden@competitionpolicyinternational.com) with the subject line "Antitrust Chronicle," a short bio and picture(s) of the author(s).

The CPI Editorial Team will evaluate all submissions and will publish the best papers. Authors can submit papers on any topic related to competition and regulation, however, priority will be given to articles addressing the abovementioned topics. Co-authors are always welcome.

INNOVATION AND U.S. ANTITRUST LAW

BY GEORGE L. PRIEST[1]

1 George L. Priest is the Edward J. Phelps Professor of Law and Economics at Yale Law School.

The central ambition of all societies is to create a dynamic economic system that promotes economic growth to the benefit of the citizenry. Stimulating innovation is a principal objective toward this end. Indeed, innovation is the central mechanism for economic growth. Joined by the gains from the redistribution of internal resources to higher valued uses — the principal accomplishment of market economies — innovation in the use of resources increases the worth of the economy, sometimes in a particular sphere, exponentially.

Antitrust law can be an important element of this general ambition by prohibiting the possession of economic power where, by restraining trade, it might diminish innovation or constrain economic growth as well as by dissolving harmful economic power where it has been achieved. The potential importance of antitrust law toward these ends is not inconsiderable. Indeed, the values enshrined in the antitrust laws of equalizing incumbent economic power in order to allow pure innovation to best succeed are transcendent and parallel to the equally transcendent principle of one person-one vote in the realm of political activity which seeks to equalize the possession of political power across the citizenry, including where the expression of political views has important effects on the economy. Again, given the ambition of creating a dynamic economic society, stimulating innovation should be a principal objective of the antitrust laws.

Antitrust law in the U.S., however, has not consistently promoted innovation. The provisions of the Sherman Act — prohibiting combinations that restrain trade and monopolization — and, later, the Clayton Act — prohibiting unfair trade practices — seek only to prohibit practices that might increase economic power or to dissolve it when it has been achieved. There is no reference in these statutes, except perhaps by negative implication, to promoting innovation.

Early cases under the Sherman Act followed this mold. *Trans-Missouri Freight* (1897) and *Addyston Pipe* (1889) sought merely to prohibit cartels, where the only innovation implicated was profit-maximization through joint agreements, worthy of being prohibited.

The early monopolization cases were similar but somewhat more complicated. In *Standard Oil* (1911) the defendants made a strong argument about innovation which the Supreme Court described as "a powerful analysis of the facts . . ." Standard Oil argued

> that the origin and development of the vast business which the defendants control was but the result of lawful competitive methods, guided by economic genius of the highest order, sustained by courage, by a keen insight into commercial situations, resulting in the acquisition of great wealth, but at the same time serving to stimulate and increase production, to widely extend the distribution of the products of petroleum at a cost largely below that which would have otherwise prevailed, thus proving to be at one and the same time a benefaction to the general public as well as of enormous advantage to individuals.

Nonetheless, the Court found against the defendants, ordering the break-up of the Standard Oil monopoly. Subsequent research has shown that the innovation behind the creation of the Standard Oil refining monopoly consisted of Rockefeller and his associates' recognition that forming a monopoly of oil refineries — first, in Cleveland; later extended to Pittsburgh and beyond — would create the power to monopsonize the railroads on which the refiners relied for carrying shipments from the oil territories to eastern ports for export.[2] The Supreme Court missed this point entirely, rejecting the record of the innovation it had praised on grounds of other Standard Oil practices, such as predatory pricing, of minimal economic effect.

The Supreme Court had the opportunity to address innovation in *U.S. Steel* (1920) where J.P. Morgan and Andrew Carnegie had brokered a deal to create a holding company controlling 180 formerly independent steel manufacturers that together possessed 80 to 90 percent of U.S. steel production. In retrospect, the formation of U.S. Steel was obviously anti-competitive, but the Supreme Court refused to condemn it, not on grounds of innovation, though Morgan and Carnegie received as commissions, respectively, $62 million and $225 million for their efforts in its creation, suggesting their high creativity, but because the Court concluded that the firm had not engaged in bad practices.

These early cases show a Supreme Court not exactly indifferent to innovation, but not particularly solicitous of it either. Of course, these early combination and monopolization cases, surely guided by the prohibitory provisions of the Sherman and Clayton Acts, each involved mergers or combinations where the business innovation was centrally anti-competitive: capturing the benefits from the control of large market shares which might sometimes lead to a reduction in prices and an expansion of output (as was claimed in Standard Oil), but more typically harming the economy.

Later cases show the difficulty courts have had in integrating the promotion of innovation as an objective of the antitrust laws. In Alcoa (1945), which is still a controlling precedent, the Justice Department brought suit against the major manufacturer of aluminum and aluminum products in the U.S. on monopolization grounds. Alcoa's monopoly over U.S. supply was initially based on patents, but had been eroded over time

2 See G.L. Priest, Rethinking the Economic Basis of the Standard Oil Refining Monopoly: Dominance Against Competing Cartels, 85 So.Cal.Law Rev. 499 (2012).

by foreign competition and competition from recycled aluminum products. The court, in a somewhat confusing passage, concludes that Alcoa's monopoly may have been achieved without anti-competitive intent, though does not exactly attribute innovation as the central determinant:

> persons may unwittingly find themselves in possession of a monopoly, automatically, so to say: that is, without having intended to put an end to existing competition, or to prevent competition from arising when none had existed; they may become monopolists by force of accident. Since the Act makes "monopolizing" a crime, as well as a civil wrong, it would be not only unfair, but presumably contrary to the intent of Congress, to include such instances. A market may, for example, be so limited that it is impossible to produce at all and meet the cost of production except by a plant large enough to supply the whole demand. Or there may be changes in taste or cost which drive out all but one purveyor. A single producer may be the survivor out of a group of active competitors, merely by virtue of his superior skill, foresight and industry. In such cases a strong argument can be made that, although the result may expose the public to the evils of monopoly, the Act does not mean to condemn the resultant of those very forces which it is its prime object to foster. . . The successful competitor, having been urged to compete, must not be turned upon when he wins.

Applying this "principle" that monopolies achieved inadvertently by luck or natural monopolies are exempt, the court then turned the objective of rewarding innovation on its head, concluding that Alcoa's continued efforts to expand supply and create demand — the essence of innovation in any industry — violated the antitrust laws:

> It was not inevitable that it [Alcoa] should always anticipate increases in the demand for ingot and be prepared to supply them. Nothing compelled it to keep doubling and redoubling its capacity before others entered the field. It insists that it never excluded competitors; but we can think of no more effective exclusion than progressively to embrace each new opportunity as it opened, and to face each newcomer with new capacity already geared into a great organization, having the advantage of experience, trade connections and the elite of personnel. Only in case we interpret "exclusion" as limited to maneuvers not honestly industrial, but actuated by a desire to prevent competition, can such a course, indefatigably pursued, be deemed not "exclusionary." So to limit it would in our judgment emasculate the Act; would permit just such consolidations as it was designed to prevent.

Separately from the antitrust laws, the Patent Act, with Constitutional basis, provides for a time-limited — currently 20-year — monopoly, justified by the ambition to stimulate innovation. The standards for a patent grant are that the proposed invention be "non-obvious" and reduced to practical use, which is not exactly the same as innovative, but perhaps all a public agency can administer.

The approach of the antitrust laws, however, has been to restrict the execution of the patent grant, finding many practices to constitute patent abuse and otherwise limiting the extent to which patent holders or licensees can profit from the innovation, such as by prohibiting the use of tying arrangements and other forms of patent restrictions. In terms of economics, these restrictions on the licensing of patents have the effect of reducing the strength of the basic patent term, thus reducing the statutory incentives for innovation.

In more recent years, since the mid-1970s, the Supreme Court has overturned many of the restrictions it had imposed on industrial practices, but the effects on promoting innovation have been uneven at best. Perhaps the greatest example in the modern age of using antitrust law to promote innovation was administrative — court approved, but not court initiated — in the settlement between the Justice Department and American Telephone and Telegraph Company ("AT&T") breaking the company up.

At the time, AT&T possessed a national monopoly over telephony, both local and long distance, regulated by the FCC. Various other companies — such as MCI — had tried to enter distinct markets, which AT&T resisted on grounds of natural monopoly. The Justice Department sued the company in 1974 and settled the case in 1982. The settlement, crafted by William Baxter, a Stanford law professor, though a Chicago School acolyte, divested the parent company of its local land-line monopolies, though all lines at the time were land-line — creating the Baby Bells, divested the company of its manufacturing subsidiary, Western Electric, which had insisted on a monopoly of telephone manufacture, and opened up competition for interstate service.

The settlement had a huge effect on innovation, which was suddenly allowed in telephony. Innovations such as Fax machines and modern cellphones developed in the wake of the break-up of the monopoly.

More recently, in 2004 in *Verizon v. Trinko*, Justice Scalia for the Supreme Court, delivered the strongest endorsement of promoting innovation through the antitrust laws, though the peculiar context of the litigation raises questions as to how significant Scalia's language will be for the future. The 1996 Telecommunications Act required regional incumbent local exchange carriers — the former Baby Bells, with control

over regional telephone land lines — to share their networks with outside competitors, monitored by the FCC. Trinko, a New York City law firm, complained that its local carrier, Verizon, had discriminated against outside carriers. Earlier, in 1999, the FCC had investigated similar claims against Verizon and had levied fines and liability payments totaling $13 million.

The Supreme Court affirmed the dismissal of Trinko's claim. In stirring language, endorsing the promotion of innovation as an important value in antitrust jurisprudence, Justice Scalia addressed the significance of Verizon's practices taking account of its seeming monopoly over regional landline telephony:

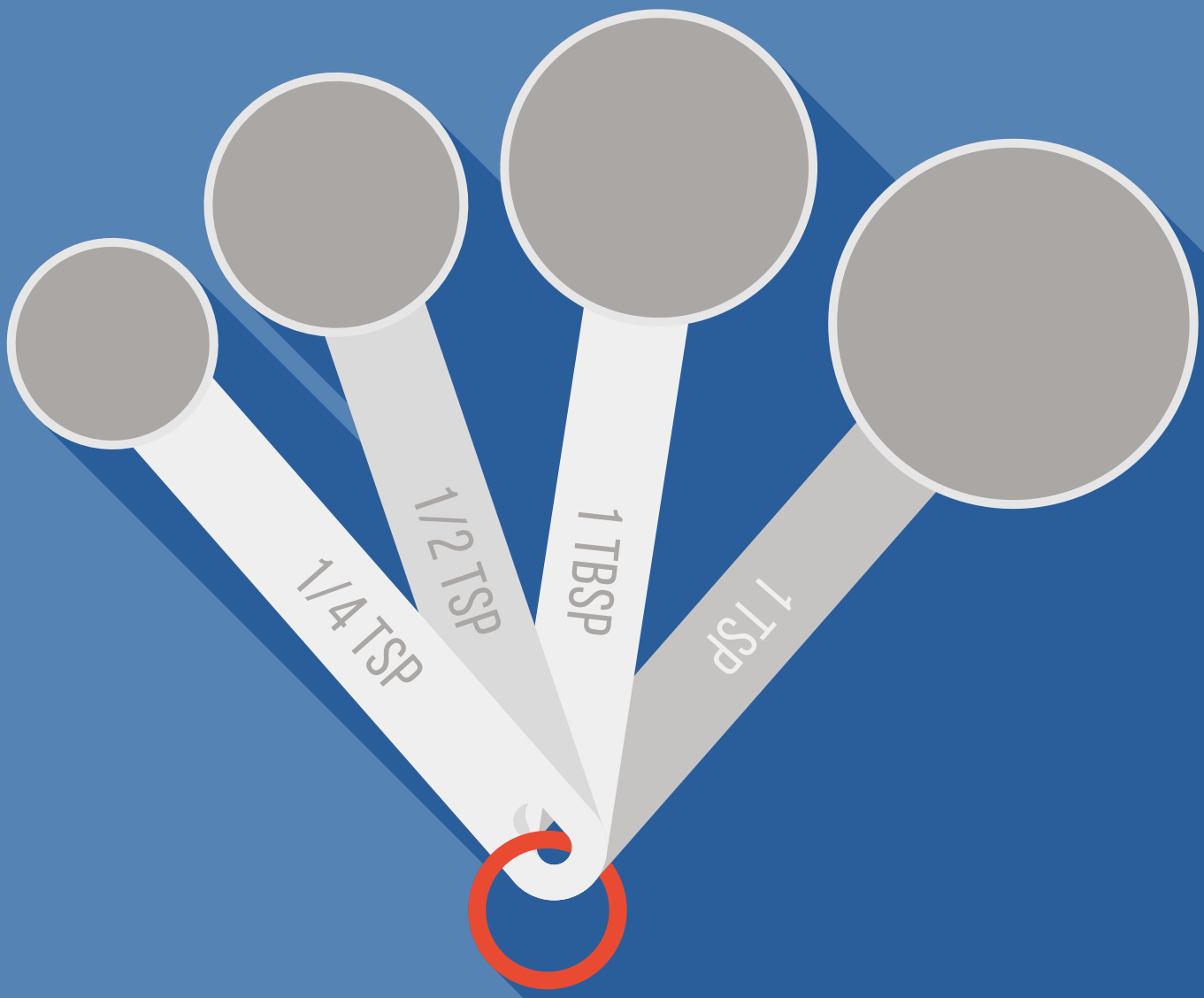
> The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not only not unlawful; it is an important element of the free-market system. The opportunity to charge monopoly prices — at least for a short period — is what attracts "business acumen" in the first place; it induces risk taking that produces innovation and economic growth. To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive conduct.
>
> Firms may acquire monopoly power by establishing an infrastructure that renders them uniquely suited to serve their customers. Compelling such firms to share the source of their advantage is in some tension with the underlying purpose of antitrust law, since it may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities. Enforced sharing also requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing — a role for which they are ill-suited.

This passage might provide grounds for transforming the basic goal of antitrust law to the promotion of innovation. But there are reasons to question its importance. The Supreme Court has not cited the passage since 2004. Secondly, the context of the *Trinko* litigation suggests that the case, more generally, may be regarded as a "primary jurisdiction" case, where the principal agency with jurisdiction over Verizon's practices was the FCC, despite the savings language of the 1996 Telecommunications Act which empowered antitrust jurisdiction. As mentioned, the FCC had penalized Verizon in the past for similar practices. Thus, Scalia's passage is pure dictum.

The principal question is how can the antitrust laws serve to promote innovation to increase the wealth of the economy? The provisions of the Sherman and Clayton Acts are not self-defining — " restraint of trade"; "unfair trade practices." Since the mid-1970s, they have been reinterpreted to embrace the values of greater output and lower prices under what is called the "consumer welfare" standard — following Robert Bork's advocacy. There has been much controversy over the Supreme Court's adoption of the "consumer welfare" standard and over its meaning. Much of this controversy relates to whether the dominant standard for interpretation of the antitrust laws should be so narrowly defined, as opposed to considering other values beyond lower prices and greater output.

The important point, however, is that the provisions of the Sherman and Clayton Acts are sufficiently open-ended to allow multiple interpretations. If the objective of a country is to develop a strong and vibrant economy, its basic policy, as well as the policy of its competition laws, ought to be to promote innovation.

ANTITRUST POLICY TOWARD INNOVATION COMPETITION: MEASURING DYNAMIC EFFICIENCY



BY DANIEL F. SPULBER[1]

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I. INTRODUCTION

Antitrust policy makers are rejecting economic efficiency and economic analysis.[2] The "Neo-Brandeisians" yearn for a time when big was bad, and many competitive activities were per se illegal. This policy shift would reject horizontal and vertical mergers for their market structure effects without efficiency considerations. This approach would reject the rule of reason that explains why certain competitive strategies could be efficient.[3] Antitrust policy makers would ignore advances in economic analysis and overturn decades of legal precedents.

To make matters worse, the need for economic efficiency in antitrust policy is greater than ever before. This need arises from the explosion of innovation competition, as detailed in Spulber.[4] Firms are increasingly engaged in competition through innovation, providing new products, production processes, and transaction methods.

The rise of innovation competition requires updating economic efficiency in antitrust policy. Traditional static efficiency based on an absence of technological change may not serve as a reliable guide for antitrust. However, antitrust policy must embrace dynamic efficiency to protect innovation competition. I introduce the concept of the innovative delta as a measure of dynamic efficiency. The innovative delta measures the welfare effects of an observed technological change.

Advances in Technology & Innovation Economics offer conceptual tools that are useful for analyzing dynamic efficiency. I argue that these tools are well within the reach of antitrust policy makers. I suggest that dynamic efficiency need not require speculative long-term analysis, but rather can be accomplished by simply considering a wider range of relevant economic data. I find that although technological change unfolds over time, the data needed for dynamic efficiency is readily available and easily understood.

In this article, I consider some of the implications of technological change for antitrust policy. I discuss the framework in Spulber[5] that explains why antitrust policy requires economic analysis to address innovation competition. Antitrust policy should recognize dynamic efficiency explanations for competitive strategies in innovation competition. Antitrust policy should consider dynamic efficiency aspects of mergers, as discussed by Abbott and Spulber.[6]

II. ECONOMIC EFFICIENCY IN ANTITRUST ANALYSIS

The underlying problem is that the Antitrust Laws are short on specifics. Congress passed the Sherman Act, for example, "[t]o protect trade and commerce against unlawful restraints and monopolies."[7] To avoid unintended consequences, antitrust policies should protect competitive conduct while limiting anticompetitive conduct. Policy makers, however, face the difficult task of distinguishing competitive from anticompetitive conduct.

This is where economic efficiency comes in. By considering economic efficiency, antitrust policy can better distinguish competitive conduct from anticompetitive conduct. Without economic analysis, antitrust policy itself risks restraining competition. Policy makers unfortunately may condemn efficient conduct that strengthens competition or support inefficient conduct that weakens competition.

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2 Christine S. Wilson, Commissioner, The Neo-Brandeisian Revolution: Unforced Errors and the Diminution of the FTC, U.S. Federal Trade Commission November 9, 2021 Remarks for the ABA Antitrust Law Section's 2021 Fall Forum, https://www.ftc.gov/system/files/documents/public_statements/1598399/ftc_2021_fall_forum_wilson_final_the_neo_brandeisian_revolution_unforced_errors_and_the_diminution.pdf.

3 See FTC-DOJ Merger Guidelines (Draft for Public Comment), July 19, 2023, https://www.ftc.gov/legal-library/browse/ftc-doj-merger-guidelines-draft-public-comment, Accessed August 11, 2023.

4 Daniel F. Spulber, Antitrust and Innovation Competition, 2023, Journal of Antitrust Enforcement, Vol. 11, Issue 1, March, pp. 5-50, https://doi.org/10.1093/jaenfo/jnac013.

5 Daniel F. Spulber, Antitrust and Innovation Competition, 2023, Journal of Antitrust Enforcement, Vol. 11, Issue 1, March, pp. 5-50, https://doi.org/10.1093/jaenfo/jnac013.

6 Alden Abbott & Daniel F. Spulber, Antitrust Merger Policy and Innovation Competition, Prepared for submission to Antitrust Law Journal, Special Symposium on Dynamic Competition, The Mercatus Center at George Mason University, September 1, 2023.

7 Sherman Act, Chapter 647 of the 51st Congress; 26 Stat. 209. Enacted July 2, 1890; 26 Stat. 209. As Amended Through P.L. 108–237, Enacted June 22, 2004. https://www.govinfo.gov/content/pkg/COMPS-3055/pdf/COMPS-3055.pdf.

Some policy makers and academics advocate antitrust based on solely on market power, the size of firms, and market concentration without considering consumer welfare or social welfare standards.[8] Marshall Steinbaum and Maurice Stucke maintain that "[a]ntitrust, historically, was never about promoting either allocative efficiency or consumer welfare. Instead, antitrust aimed to deconcentrate private power by protecting the competitive process."[9]

Economic analysis supports applying a social welfare standard to evaluate economic efficiency. In general, economists characterize efficiency in terms of Pareto Optimality, that is, an outcome is efficient if there is no other outcome that makes everyone better off. A measure of social welfare in many policy applications consists of total welfare, that is, the sum of consumers' surplus and producers' profit. Then, the efficient outcome under the social welfare standard maximizes total welfare.

Antitrust policy often applies a consumer welfare standard that typically is measured as total consumers' surplus.[10] Herbert Hovenkamp suggests that ease of use supports the consumer welfare standard: "a consumer welfare approach to antitrust's goals is generally justified on administrative grounds. As Williamson's original 'welfare tradeoff' model indicates, a total welfare approach to antitrust harm would require courts to routinely balance out consumer injuries from allocative inefficiencies against firm gains attributable to production efficiencies."[11] Christine Wilson notes that the consumer welfare standard "works because it is administrable, predictable, and credible. Injecting additional goals will undermine credibility and predictability while leading to subjectivity and politicization."[12]

Under the consumer welfare standard, efficiency would require choosing policy objectives to maximize consumers' surplus. The consumer welfare standard can differ from the social welfare standard because it presumably does not consider the effects of policies on firm profits. Hovenkamp observes "[t]he system that we actually have requires one to show only higher prices resulting from the exercise of market power. It requires a complex calculation of the magnitude of resulting efficiencies only in a very few cases."[13]

There are limitations to the application of the consumer welfare standard because antitrust policies must be feasible. Antitrust policies are not feasible if they generate losses for firms. This suggests that the consumer welfare standard might be modified to require that firms be profitable. Consumer welfare can guide policy decisions although policy makers must take social welfare into account.[14] More generally, if we recognize that consumers own firms and ultimately obtain their profits, a consumer welfare standard would address social welfare considerations.

Christine Wilson et al. examine the social welfare standard. They consider both differentiated and homogeneous products. Their analysis shows that the social welfare standard is feasible. The welfare tradeoffs between price increases and cost savings noted by Williamson can be estimated in practice. They observe that "adoption of the total welfare standard would give antitrust enforcers greater latitude to consider efficiencies."[15] They conclude that "[a] total welfare standard would be predictable, administrable, and credible."[16]

Under some conditions, the consumer welfare standard can provide a useful guide to economic efficiency. Consumer welfare and social welfare may be positively correlated. To illustrate how the consumer welfare standard and the social welfare standard can be related, consider a simple example. Suppose that there is one consumer and one firm that engage in a transaction. The consumer has benefit B

8 Lina M. Khan, Amazon's Antitrust Paradox, 126 Yale L. J. 710, 716 ("equating competition with 'consumer welfare,' typically measured through short-term effects on price and output – fails to capture the architecture of market power in the twenty-first century marketplace.").

9 Steinbaum, Marshall & Maurice E. Stucke. The effective competition standard. The University of Chicago Law Review, 87, no. 2 (2020): 595-623.

10 Christine S. Wilson, Thomas J. Klotz & Jeremy A. Sandford, Recalibrating the Dialogue on Welfare Standards: Reinserting the Total Welfare Standard into the Debate, 26 Geo. Mason L. Rev. 1435 (2019). At 1438. ("The prevailing consumer welfare standard seeks to maximize consumer surplus or, in economic terms, the difference between what each consumer actually pays and what he or she would be willing to pay.")

11 Hovenkamp, Herbert. Implementing Antitrust's Welfare Goals. Fordham Law Review. 81 (2012): 2471. See also Williamson, Oliver E. Economies as an Antitrust Defense: The Welfare Tradeoffs. The American Economic Review 58, no. 1 (1968): 18-36.

12 Wilson, 2021, *id.*

13 Hovenkamp, 2012, *id.*

14 Besanko, David, & Daniel F. Spulber. "Contested mergers and equilibrium antitrust policy." The Journal of Law, Economics, and Organization 9, no. 1 (1993): 1-29. See also Neven, Damien J., & Lars-Hendrik Röller. "Consumer surplus vs. welfare standard in a political economy model of merger control." International Journal of Industrial Organization 23, no. 9-10 (2005): 829-848.

15 Christine Wilson et al. at 1466.

16 Christine Wilson et al. at 1467, italics and capitals removed.

from the exchange and the firm has cost C from the exchange. Social welfare W equals gains from trade that are the net benefit from the exchange, $W = B - C$.

Suppose that the consumer and the firm negotiate how they will share the net benefit from the exchange. Negotiation results in a fixed share S for the consumer and $1 - S$ for the firm, where S is a number between zero and one. Then, the interests of the consumer and the firm are aligned because both wish to maximize gains from trade $B - C$. When the share S is a constant, the outcome is the same whether a policy seeks to maximize either consumer surplus $S(B - C)$, firm profit $(1 - S)(B - C)$, or social welfare $B - C$.

In this basic example, with a constant sharing rule, the exchange price is determined by equating consumer surplus to the consumer's share of gains from trade, $B - P = S(B - C)$. So, the price equals the weighted average of the consumer's benefit and the producer's cost, $P = (1 - S)B + SC$. With the sharing rule, producer profit is $P - C = (1 - S)(B - C)$. Again, choosing gains from trade to maximize consumers' surplus $B - P$ is the same as maximizing social welfare $B - C$.

If antitrust policy makers seek to change the sharing rule, then the interests of the consumer and firm may no longer be fully aligned. Then, antitrust policy shifts gains from trade between consumers and firms. If policy makers focus only on consumers' surplus, the outcome can be inefficient if policies generate gains from trade that are less than optimal as a means of increasing the consumer's net benefit.

As is well known, if producers increase their share of gains from trade, then Williamson's welfare trade-off arises. Suppose that a merger improves efficiency by decreasing cost from C1 to a lower cost C2, which increases gains from trade. Suppose, however, that the merger decreases the consumer's share of gains from trade from S1 to a lower share S2. Then, the consumer welfare standard depends on the trade-off between efficiency gains and harm, so it is necessary to compare $S1(B - C1)$ with $S2(B - C2)$. Consumers are made better off only if the efficiency gains outweigh the harm from changing the consumer's share of gains from trade.

III. ANTITRUST AND DYNAMIC ECONOMIC EFFICIENCY

The consumer welfare or social welfare standards not only are consistent with dynamic efficiency but demand it. Because technological change drives the economy, the consumer welfare standard or the social welfare standard should be applied to innovation competition. If consumers are made better off by innovation, antitrust policy that protects innovation competition will benefit consumers. Conversely, antitrust policy that discourages innovation competition will harm consumers.

Antitrust policy should consider dynamic efficiency in evaluating mergers and competitive conduct. Antitrust policy should avoid discouraging economically efficient strategies in innovation competition.

Measuring dynamic efficiency is straightforward and achievable. Public policy makers and economists can evaluate dynamic efficiency by supplementing price data with information about technological change. Evaluating technological change should be based on comparing observed technological innovations with the relevant existing generation of technology.

The main thing is to determine if innovation makes a positive contribution to social welfare. This should not require extensive technical or scientific analysis of research and development (R&D). There is no need to extend the time horizon very far. There also is no need for detailed forecasts of uncertain future innovations. It is sufficient to determine the benefits of a new technology as compared to the best existing technology. Policy makers also can measure adoption and diffusion of the new technology.

To measure dynamic efficiency, I introduce the concept of the innovative delta. To illustrate this, consider antitrust policy toward mergers. Suppose that two companies propose a merger. Antitrust policy makers anticipate that social welfare without the merger is W and social welfare with the merger is $W + \Delta$. Here, Δ represents economic analysis of the effects of competitive conduct on social welfare taking innovation into account. Antitrust policy makers should not presume that the innovative delta is positive or negative but should be willing to estimate its value.

The "innovation theory of harm" claims that mergers decrease incentives for innovation.[17] This view is based on the idea that the merger will decrease innovation and reduce welfare. So, using my terminology, the "innovation theory of harm" predicts that mergers have a *negative innovative delta*. Antitrust policy makers may seek to block a merger with a negative innovative delta.

In contrast, I would suggest that what I term the "innovation theory of efficiency" would apply when mergers increase incentives for innovation. The "innovation theory of efficiency" predicts that mergers have a *positive innovative delta*. Merging firms should be able to defend the merger by providing evidence of innovative efficiency, that is, a positive innovative delta can be an *efficiency defense* of a merger.

There are several reasons that mergers and acquisitions ("M&A") can generate innovation efficiencies. Horizontal and conglomerate mergers can have a positive innovative delta. The merged firms may have greater incentives to conduct R&D because they can cross-sell product innovations in their combined markets. Incentives to innovate are limited by the extent of the market, so a larger market can increase the returns to R&D.[18]

There may be economies of scale in R&D, as Joseph Schumpeter understood, so that larger firms can realize efficiencies in producing inventions. By combining complementary R&D projects, merging firms can realize economies of scope by sharing equipment, facilities, and other assets across those R&D projects. Merging firms could bring together complementary scientific and technical knowledge that might generate better innovations. Merging firms could combine their portfolio of inventions with their various skills in implementing and developing innovative products based on those inventions.

Vertical mergers can have a positive innovative delta. The vertically integrated firm may obtain returns from combining invention and innovation, improving the design of new products because of better market information, and improving the commercialization of products due to better product designs. These returns to invention and innovation will generate more R&D.

Acquisition of startups and new entrants also can have a positive innovative delta. The incumbent firm can acquire a startup or entrant to expand its portfolio of technologies or to broaden its product range. The incumbent can develop and implement the newly acquired technology. The incumbent firm that acquires the startup or new entrant may have access to capital that allows it to grow the acquired firm. The incumbent firm may have complementary technological knowledge and intellectual property (IP) that can be combined with the newly acquired technology to generate better innovations.

Measuring the innovative delta also can guide antitrust policy toward innovation competition. A positive innovative delta supports application of the rule of reason. An efficiency defense for competitive conduct might apply if an innovation makes a positive contribution to products, production processes, or transaction methods. Just as anticompetitive conduct can harm innovation, competitive conduct can stimulate innovation.

The rule of reason should extend to innovation competition. For example, the innovative delta can measure consumer benefits from product improvements such as computers with greater memory, higher processing power, longer battery life, greater speed, or clearer screens. Also, the innovative delta can measure consumer benefits from new products that increase product variety so that consumer benefits after innovation are $B + \Delta$. On the producer side, the innovative delta can measure improvements in production processes that lower costs of production or increase the speed of production so that producer costs are $C - \Delta$. The innovative delta can indicate improvements in transaction methods can lower the costs of search or negotiation or improve the quality of matches, leading to greater gains from trade, $B - C + \Delta$.

Consider Moore's Law for semiconductors. It is not necessary to review the full sweep of improvements in semiconductors over the decades. It also is not necessary to hypothesize what may be future generations. It is sufficient for policy makers to identify what is the relevant new generation of semiconductors and evaluate its contribution against the existing generation of semiconductors. Policy makers can also review adoption and usage of the new and existing generations of microprocessors.

17 For a critical discussion of this issue, see Nicolas Petit, Innovation Competition, Unilateral Effects, and Merger Policy, 82 Antitrust Law Journal, 873-920 (2019).

18 Daniel F. Spulber, The Quality of Innovation and the Extent of the Market, Journal of International Economics, 2010, 80, pp. 260-270; Daniel F. Spulber, Innovation and International Trade in Technology, Journal of Economic Theory, 138, January, 2008, pp. 1-20.

Then, antitrust policy can determine whether competitive strategies increase or decrease efficiency using the consumer welfare standard or the welfare standard. This analysis shows that examining the competitive effects of innovation does not require abandoning the consumer welfare standard or the social welfare standard. These standards can include the effects of innovation competition.

As Marshall Steinbaum and Maurice Stucke observe, "[c]ompetition agencies recognize that anticompetitive behavior can affect not just price and output but also privacy protection, quality, variety, services, and innovation."[19] Jonathan B. Baker notes "[i]f competition would be harmed on dimensions other than price, such as quality or innovation, it would also not matter whether the price (or the quality-adjusted price) exceeds a competitive level. The antitrust issue is whether the reduction in competition made the terms of trade adverse to buyers relative to the but-for world, regardless of the dimensions on which the firms compete or the absolute level of prices."[20]

Defining dynamic competition and evaluating its welfare effects, however, continues to pose conceptual challenges to policy makers. The fundamental problem lies in interpreting the term "dynamic efficiency". Examining dynamic efficiency, as opposed to "static efficiency", suggests to some policy makers that they should track economic change over a long period of time, requiring extensive data gathering. This also suggests to some policy makers that they should make predictions about future economic events, which are necessarily uncertain, thus requiring substantial empirical analysis. These interpretations make the dynamic efficiency criterion unworkable.

For example, the U.K Competition and Markets Authority ("CMA") recognizes the dynamic aspects of innovation competition: "The CMA views competition as a process of rivalry between firms seeking to win customers' business over time by offering them a better deal. Rivalry creates incentives for firms to cut prices, increase outputs, improve quality, enhance efficiency, or introduce new and better products. This is because rivalry provides the opportunity for successful firms to take business away from competitors, and poses the threat that firms will lose business to others if they do not compete successfully."[21] So far so good, but then the CMA raises concerns that policy makers face uncertainty if they address innovation: "in dynamic markets, firms that may not compete head-to-head today might do so in the future. The threat of future disruption may inspire incumbent suppliers to improve their offer in the present, for the benefit of consumers. Fast-changing and evolving markets make predicting the future uncertain."[22]

The U.K. Competition Appeal Tribunal ("CAT") in *Meta Platforms v. Competition and Markets Authority* stated that "Competition, and impairments to competition, need to be understood as subsisting on a spectrum."[23] They suggest that the spectrum of competition ranges from static competition at one end, to potential competition in the middle, and finally to dynamic competition at the other end. Static competition is the market "as it is", potential competition can "arise" from the market as it is, and dynamic competition "involves a far greater consideration of innovation and invention."[24] The CAT concludes that the legal requirement for antitrust is a "substantial lessening of competition" regardless of what type of competition we are addressing. The CAT argues that antitrust law applies without providing guidelines for evaluating what is dynamic competition.[25]

Antitrust policy makers in the EU make the same mistake in defining dynamic efficiency. For example, *Novartis/GlaxoSmithKline* addresses the potential effects of horizontal mergers on innovation competition.[26] The decision states that the European Commission "considers

19 Steinbaum & Stucke at 616. They suggest using a broader standard that includes distributive effects. ("The effective competition standard would require the courts and agencies to look beyond price effects in mergers, anticompetitive conduct, and monopolization and monopsonization cases, including effects on other important, nonprice parameters of competition (such as quality, choice, and privacy). In weighing these effects, courts should not offset harm to competition for one set of stakeholders with benefits for another when there is no mechanism for compensation, as is usually the case.")

20 Jonathan B. Baker, The Antitrust Paradigm: Restoring a Competitive Economy (Harvard 2019). At 180. (Cited in Steinbaum and Maurice E. Stucke).

21 Competition and Markets Authority ("CMA"), Merger Assessment Guidelines, 2021, at 6, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051823/MAGs_for_publication_2021_--_.pdf, Accessed August 11, 2023.

22 CMA, 2021, *id.* at .3

23 *Meta Platforms, Inc. Applicant v. Competition and Markets Authority*, [2022] CAT 26, https://www.catribunal.org.uk/sites/cat/files/2022-06/20220614_1429_Judgment_FINAL%20%5B2022%5D%20CAT%2026.pdf.

24 *Meta Platforms*, 2022, *id.*

25 Gabriele Corbetta & Joe Perkins: "Frameworks for Dynamic Competition", Network Law, Review, July 4, 2023, https://www.networklawreview.org/frameworks-dynamic-competition/ ("the CAT's framework is in our view insufficient. While the factors it raises will often be relevant to an assessment of the likely impacts of a merger involving dynamic competition, the link between these factors and consumer outcomes is currently insufficiently well-evidenced to place significant weight on them.")

26 Case M.7275, *Novartis/GlaxoSmithKline Oncology*, 2015 E.C.R.

that when research and development ("R&D") activities are assessed in terms of importance for future markets, the product market definition can be left open, reflecting the intrinsic uncertainty in analysing products that do not exist as yet."[27]

The Department of Justice/Federal Trade Commission Draft Merger Guidelines follow a similar flawed approach: "[w]hen considering harm to competition in innovation, market definition may follow the same approaches that are used to analyze other dimensions of competition. In the case where a merger may substantially lessen competition by decreasing incentives for innovation, the Agencies may define relevant antitrust markets around the products that would result from that innovation, **even if they do not yet exist**. In some cases, the Agencies may analyze different relevant markets when considering innovation than when considering other dimensions of competition."[28]

Although antitrust policy necessarily requires some anticipation of market outcomes, antitrust policy makers do not have a crystal ball. The basic measures of innovation discussed here place dynamic efficiency in the realm of the possible because they consider observable technological change. Antitrust policies founded on speculative predictions of innovations not yet discovered are doomed to fail.

Public policy makers should not pick winners and losers among technological approaches that are not fully tested in the marketplace. Antitrust policy based on speculation about future products that do not exist will be arbitrary. Antitrust policies based on visions of technology in the future are likely to reflect policy biases, such as merger policies directed against size or market concentration.

IV. CONCLUSION

There is no conflict between dynamic efficiency and innovation. Rather, innovation is the foundation of dynamic efficiency. Efficiency in R&D depends on firms trying to create beneficial inventions and innovations. Efficiency in product development requires that firms apply new technologies that increase consumer benefits. Efficiency in production requires that firms implement new technologies that lower costs and improve productivity. Efficiency in markets requires that firms introduce new technologies that increase the convenience and effectiveness of transactions.

Antitrust policy that protects innovation competition requires economic analysis of dynamic economic efficiency. Companies that operate inefficiently will go out of business, reducing the number of competitors. Companies that are less efficient than their rivals also may be driven out of business. Antitrust policies that limit efficient competitive strategies may channel firms into calmer waters with less intense competition.

I have argued that measuring innovative dimensions of competition is feasible for policy makers. It is feasible because economic analysis can measure the incremental effects of observed technological change. Measuring the innovative delta can guide merger policy, providing an efficiency defense or an indication of harm. Measuring the innovative delta also can help determine whether some types of conduct are competitive or anticompetitive, supporting a rule of reason approach for some types of conduct.

Innovation increases the intensity of competition and benefits consumers. Firms that provide better inventions and innovations tend to outperform competitors. Creative incumbents and entrants displace rivals with obsolete technologies. The increasing importance of innovation competition suggests that antitrust policy makers should continue to recognize and measure dynamic efficiency.

27 *Novartis/GlaxoSmithKline*, at 6.

28 Emphasis added. DOJ/FTC Draft Merger Guidelines, Appendix B, Market Definition in Certain Specific Settings, at 15, https://www.ftc.gov/system/files/ftc_gov/pdf/p859910draftmergerguidelines2023.pdf, Accessed August 11, 2023.

CAPTURING INNOVATION FOR ANTITRUST PURPOSES

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I. INTRODUCTION

Fostering innovation is said to be one of antitrust's primary goals. Nevertheless, a lot of uncertainty surrounds the issue of how to factor innovation into antitrust analyses. Complicating matters even further, by far not all innovation is "good," i.e. the type of innovation that a public policy should aim to promote. Indeed, it has been argued that a lot of innovation by Big Tech largely serves the companies themselves rather than their users or society at large.[2] So it would go too far to assert that antitrust wants to foster innovation as such; its aim can only be to foster certain types of innovation. This consideration should be kept in mind when discussing how to incorporate innovation considerations into antitrust analyses.

Any antitrust policy that wants to take innovation into account in one way or another must, as a necessary first step, define what is meant by the term "innovation." The OECD's Oslo Manual defines innovation as "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations."[3] It is possible to distinguish between radical and incremental innovation,[4] as well as between sustaining and disruptive innovation.[5] For antitrust law, the newness that the OECD definition alludes to implies that old analyses of markets, market conduct and the likely future development of a market may become outdated when faced with innovation, and will then need to be replaced with new (or significantly improved) analyses.

There are many instances in antitrust law where innovation plays a role – ranging from market delineation, the definition of safe harbors, the substantive analysis, to the implementation of remedies. The following tackles the question of how innovation can be captured for antitrust purposes through the lens of market definition and safe harbors, as both are typical starting points for an antitrust analysis. A substantive analysis that wants to incorporate innovation considerations but is based on a traditional market definition will run into difficulties, as will antitrust remedies that want to safeguard innovation without being based on a proper analysis of the innovation situation. A significant burden therefore lies on market definition not to turn a blind eye on innovation. Furthermore, the safe harbors employed by antitrust authorities typically rest on structural presumptions based on market shares, and these may be misguided where innovation cannot be properly captured through market definition. It is therefore worth looking at alternatives to market share thresholds as well.

We begin with a brief discussion of the famous Schumpeter vs Arrow debate on the question of the market structure that is most conducive to innovation, before moving to market definition, safe harbors and an outlook.

II. ANTITRUST'S RELATIONSHIP WITH INNOVATION

In economics, there are different views as to which kind of market structure is most conducive to innovation.[6] If antitrust policy wants to promote innovation, then it necessarily needs to take a stance in this debate. Although there is a broad spectrum of views, two opposing ones are typically discussed in this regard, namely those of Joseph Schumpeter (favoring market concentration as setting free innovation or "creative destruction") and of Kenneth Arrow (believing in a competitive market as fostering innovation).[7]

A more recent and commonly accepted assumption is that competition and innovation are in an inverted-U relationship: when the initial level of competition is low, competition is expected to have a positive impact on innovation; reversely, when competition is significant, the Schumpeterian effect is more likely to occur.[8] This, of course, is a simplified depiction of a debate that is still ongoing. As concerns antitrust, a

2 See Ariel Ezrachi & Maurice Stucke, *How Big-Tech Barons Smash Innovation – and How to Strike Back* (2022).

3 OECD & Eurostat (eds), "Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data" (2005) para 146.

4 See Josef Drexl, "Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market" (2012) 8 *Journal of Competition Law & Economics* 507, 513.

5 Joseph L Bower & Clayton M Christensen, "Disruptive Technologies: Catching the Wave" (1995) 73 *Harvard Business Rev* 43, 45.

6 On the undecided nature of this debate, see Mariateresa Maggiolino, "The Economics of Antitrust and Intellectual Property Rights" in Steven D Anderman & Ariel Ezrachi (eds), *Intellectual Property and Competition Law: New Frontiers* (Oxford, Oxford University Press, 2011) 73, at 87.

7 Joseph A Schumpeter, *Capitalism, Socialism and Democracy*, 5th edn (London, Allen & Unwin 1976) 83 f; Kenneth J Arrow, "Economic Welfare and the Allocation of Resources to Invention" in National Bureau of Economic Research (ed), *The Rate and Direction of Inventive Activity* (Princeton, Princeton University Press 1962) 609, at 619-622; both discussed in more detail in Viktoria HSE Robertson, *Competition Law's Innovation Factor: The Relevant Market in Dynamic Contexts in the EU and the US* (Oxford, Hart Publishing 2020) 78 ff.

8 See e.g. Philippe Aghion et al., "Competition and Innovation: An Inverted-U Relationship" (2005) 120 *Quarterly Journal of Economics* 701.

more nuanced approach will need to consider several factors as regards innovation, namely the type of innovation at stake, whether it is radical or incremental innovation that is sought, industry and product characteristics pertaining to innovation, as well as a company's ability to appropriate innovation outcomes.[9] As innovation is dynamic and often only realized in the long run, while many antitrust tools were devised for static markets and often focus on the short term, this is a difficulty that both economists and lawyers need to overcome.[10]

For a long time, and perhaps to this day, antitrust's focus has been on immediate efficiency gains, leading to higher output and lower prices for consumers in the short term. It is therefore not surprising that antitrust needs to leave its comfort zone when incorporating innovation considerations that are inherently dynamic and often more long-term in nature.[11] When factoring innovation into the antitrust analysis, the time horizon must often be expanded considerably, and the focus must shift away from prices and output restrictions and consider innovation dynamics instead.[12] The questions we are left with are: How? And at what stage of the antitrust assessment?

Several attempts have been made to capture innovation for antitrust purposes, and we turn to these in the next sections. In doing so, we focus on the first steps of an antitrust assessment: market definition and the assessment of safe harbors.

III. MARKET DEFINITION AND INNOVATION

The delineation of the relevant market is a central step in any competition law analysis, be it anti-competitive agreements, abuse of market power or mergers. It is therefore not surprising that there have been many attempts to incorporate innovation-related considerations into market definition. However, the application of traditional methods for market definition in the face of innovation is challenging.[13]

An early effort to capture innovation considerations through market definition was the delineation of innovation markets in the U.S., which was first undertaken in the Department of Justice's International Enforcement Guidelines of 1988[14] and then again in the Intellectual Property Guidelines of 1995, jointly issued by the DOJ and the Federal Trade Commission.[15] This innovation market comprised "the research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development."[16] It differs from a product market that already applies an earlier innovation, but also from future markets that will foreseeably introduce specific innovations and whose emergence is fairly certain.

Innovation, however, is not a regular market in which transactions can be observed.[17] Therefore, the application of the traditional market definition logic to innovation was largely not successful. In fact, the innovation market approach attempted to put its finger on innovation that occurred outside established antitrust markets.[18] The 2017 update to the IP Guidelines now uses a different term, namely R&D markets – that substantively is equivalent to innovation markets.[19] A central shortcoming of innovation or R&D markets, but also of technology markets, is that they strongly focus on price effects and output,[20] when they actually should focus on innovation effects.[21] Interestingly, the most recent version

9 Michael A Carrier, "Two Puzzles Resolved: Of the Schumpeter–Arrow Stalemate and Pharmaceutical Innovation Markets" (2008) 93 *Iowa Law Review* 393, 404-410.

10 Warning that economists should not preach innovation just to apply static analytical tools, see David J Teece, "Favoring Dynamic over Static Competition: Implications for Antitrust Analysis and Policy" in Geoffrey A Manne & Joshua A Wright (eds), *Competition Policy and Patent Law Under Uncertainty: Regulating Innovation* (Cambridge, Cambridge University Press, 2011) 203, 208 f.

11 Christina Bohannan & Herbert J Hovenkamp, *Creation without Restraint: Promoting Liberty and Rivalry in Innovation* (Oxford, OUP 2012) 238.

12 See e.g. James R Eiszner, "Innovation Markets and Automatic Transmissions: A Shift in the Wrong Direction?" (1998) 43 *Antitrust Bulletin* 297, 298.

13 European Commission, Draft for a Commission Notice on the definition of the relevant market for the purposes of Union competition law (2022) para 32.

14 U.S. Department of Justice, Antitrust Enforcement Guidelines for International Operations (1988).

15 U.S. IP Guidelines 1995. The FTC and DOJ Competitor Collaboration Guidelines of the year 2000 also rely on the innovation market approach; Federal Trade Commission and U.S. Department of Justice, Antitrust Guidelines for Collaborations among Competitors (April 2000) ("CC Guidelines").

16 U.S. IP Guidelines 1995, § 3.2.3.

17 See Richard T Rapp, "The Misapplication of the Innovation Market Approach to Merger Analysis" (1995) 64 *Antitrust Law Journal* 19, 27.

18 Drexl (*supra*, fn. 4) 517.

19 U.S. Department of Justice and Federal Trade Commission, Antitrust Guidelines for the Licensing of Intellectual Property (14 January 2017) (U.S. IP Guidelines 2017) § 3.2.3.

20 Richard J Gilbert, "Competition and Innovation" in ABA Section of Antitrust Law (ed), *Issues in Competition Law and Policy* (ABA Publishing 2008) 581.

21 On this, see Robertson (*supra*, fn. 7) 144.

of the U.S. Horizontal Merger Guidelines refers to the concept of "innovation competition," which might more aptly capture innovation efforts in a market setting.[22]

While the EU also briefly considered the concept of innovation markets,[23] it then moved to competition in innovation as a more realistic approach.[24] In two merger cases in 2017/18, innovation competition played a central role in the European Commission's assessment. In *Dow/DuPont*, the Commission defined "innovation spaces"[25] and then set out to investigate the merger's "impact … at the level of innovation efforts."[26] Similarly, in the later *Bayer/Monsanto* merger, the Commission looked at the transaction's impact on innovation spaces in addition to existing and future product markets.[27] It is not clear, however, to what extent these "innovation spaces" – which are also referred to in the recent draft for a new EU Market Definition Notice[28] – in fact differ from U.S.-style R&D markets.

Overall, a coherent approach to innovation competition and the capturing of innovation through market definition appears to be lacking.[29] While attempts to delineate self-standing "innovation markets" may have largely failed, in many cases that concept – or any one of its cousins – is not required in order to include innovation considerations into antitrust analyses. If we accept that market definition cannot provide the clear market boundaries that we often like to see in antitrust, then a more informative "market characterization"[30] can take place which emphasizes the innovation endeavors that are present (or lacking) in a certain market setting. This can then prepare the ground for including innovation considerations in the substantive analysis, especially in the case of regular product and technology markets.[31]

In the case of emerging markets, future markets can be relied upon that also need to consider – as comprehensively as possible – how the innovation situation may develop. Furthermore, potential competition can be used to include competitors that are able and likely to enter the market in the future.[32] Where antitrust analysis would like to capture innovation entirely outside of current or future markets, however, market definition as we know it will reach its limits. For this reason, in its draft for a new EU Market Definition Notice, the Commission proposes not to engage in a market delineation *strictu sensu* when faced with R&D that is not related to any identifiable product or technology market, but instead to "identify the boundaries within which undertakings compete in such earlier innovation efforts"[33] – something it has called innovation spaces in the past. Such an approach, however, can only be successful if the analysis relying on this type of market definition is mindful of its inherent uncertainty.

IV. AN INNOVATION SAFE HARBOR

Safe harbors are regularly used by competition authorities in their soft law guidance to allow companies an assessment of whether or not a certain behavior needs to be regarded as (potentially) problematic under the antitrust laws, or whether said behavior can come within a safe harbor that provides the actors with some legal certainty as to the legality of their business endeavors. These safe harbors often rely on market

22 U.S. Horizontal Merger Guidelines 2010, § 6.4. The 2023 draft that is currently open for feedback does not refer to innovation competition, but mentions innovation on 16 occasions; see U.S. Merger Guidelines – Draft of July 2023.

23 European Commission, Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements [2004] OJ C101/2, para 25.

24 European Commission, Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements [2014] OJ C89/3, para 26.

25 Ibid, para 350.

26 *Dow/DuPont* (Case M.7932) Commission Decision of 27 March 2017 [2017] OJ C353/9, para 348 ("innovation spaces" were defined as "those spaces in which innovation competition occurs in the crop protection industry").

27 *Bayer/Monsanto* (Case M.8084) Commission Decision of 21 March 2018 [2018] OJ C456/10, paras 80 f.

28 European Commission, Draft for a Commission Notice on the definition of the relevant market for the purposes of Union competition law (2022) footnote 25.

29 Benjamin R Kern, "Innovation Markets, Future Markets, or Potential Competition: How Should Competition Authorities Account for Innovation Competition in Merger Reviews?" (2014) 37 *World Competition* 173, 175.

30 On this, see Robertson (*supra*, fn. 7) 55-56, 82.

31 At the same time, one should be mindful of the danger that leaving innovation considerations to the substantive analysis could lead to a bias in favor of a more static analysis; see Drexl (*supra*, fn, 4) 522 f.

32 George A Hay, "Innovations in Antitrust Enforcement" (1995) 64 *Antitrust Law Journal* 7, 13 f.

33 European Commission, Draft for a Commission Notice on the definition of the relevant market for the purposes of Union competition law (2022) para 91.

share thresholds combined with black-listed clauses, meaning that they presuppose an earlier delineation of the relevant market.[34] In order to take innovation aspects into account when applying such a safe harbor, however, the U.S. antitrust agencies construed safe harbors differently for technology markets and for innovation ("R&D") markets "if market share data are unavailable or do not accurately represent competitive significance."[35]

Under the 2017 U.S. IP Guidelines, the safety zone for technology markets applies if four or more independently controlled technologies exist in addition to the technologies controlled by the parties to the licensing agreement, and those technologies are considered viable substitutes for the licensed technology (the "4+1 rule"). For R&D markets, the safety zone applies if four or more independently controlled entities exist in addition to the parties to the licensing agreement, and those entities "possess the required *specialized assets* or characteristics and the *incentive* to engage in research and development that is a close substitute of the research and development activities of the parties to the licensing agreement."[36] Instead of relying on market shares in innovation-centered markets, the U.S. antitrust agencies consider the number of viable competitors in a given field. This is because for innovation-centered markets, competition issues will usually only arise if access to specialized assets required for innovation is limited.[37] If access to the required assets is widely available, competition will not be dampened.

In 2022, the European Commission intended to implement a similar "3+1 rule" in its Horizontal Cooperation Guidelines.[38] While the Commission's safe harbors in its soft law are typically also based on market shares in combination with a black list, the Commission realized that this approach cannot capture competitor collaboration in cases in which innovation is at stake, but no product or technology market (present or future) has emerged yet. The draft therefore foresaw that the market share threshold would be replaced by the number of actors active in a certain field of innovation, as long as no product or technology market could be discerned.

Similar to the U.S. safety zones set out above, competitor collaboration would thus be exempt from antitrust scrutiny where three innovators in addition to the collaborating parties were present on the market.[39] However, the draft was met with considerable criticism from the industry that was concerned about how to identify competing R&D poles that had not yet reached the market.[40] The final version of the Guidelines, published in June 2023, no longer contains this rule.[41] This again goes to show the complexities and hurdles when trying to introduce a more innovation-conscious approach to competition law.

While the 4+1 rule has existed in the guidance issued by the FTC and the DOJ for a long time, the 3+1 rule was ultimately not implemented in EU soft law in 2023. This means that for innovation-centered market situations in which no relevant market has yet emerged, there is a risk that the Commission will continue to err on the side of caution – possibly to the detriment of emerging innovation.

V. OUTLOOK

In modern dynamic markets, turning a blind eye to innovation can no longer be justified in antitrust enforcement, something that is increasingly acknowledged by competition authorities around the world. In high-tech markets in particular, an inadequate integration of innovation consider-

34 E.g. see U.S. IP Guidelines 2017, § 4.3.

35 *Ibid.*

36 *Ibid* (emphasis added).

37 Richard J Gilbert & Steven C Sunshine, "Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets" (1995) 63 *Antitrust Law Journal* 569, 588; Kent Bernard, "Innovation Market Theory and Practice: An Analysis and Proposal for Reform" (2011) 7 *Competition Policy International* 159, 162.

38 See Viktoria HSE Robertson, "Block Exemption for Innovators under the Draft R&D BER: The 3+1 Rule" (WCNA Conference 2.0, 9 November 2022).

39 European Commission, Approval of the content of a draft for a Commission Regulation on the application of Article 101(3) of the Treaty on the Functioning of the European Union to certain categories of research and development agreements, C(2022) 1161 final, art 6 para 3 and art 7 para 2; European Commission, Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements (Draft, March 2022), paras 126 ff, 141 ff.

40 See European Commission, "Public consultation on the draft revised Horizontal Block Exemption Regulations and Horizontal Guidelines" (2022) https://competition-policy.ec.europa.eu/public-consultations/2022-hbers_en. It should be pointed out, of course, that no major R&D project will be financed unless the financier has engaged in market intelligence in order to know whether it is worth investing (often millions) in certain R&D – thus giving the innovator a fairly good idea of the innovation efforts around them.

41 Commission Regulation (EU) 2023/1066 of 1 June 2023 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to certain categories of research and development agreements, OJ 2023 L 143/9, art 6 para 2; Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements, C(2023) 3445 final, para 97.

ations is bound to lead to under- or over-enforcement errors that can be costly for economies and societies, sometimes even entirely preventing value-creating disruptive innovation from emerging.

Market definition and the assessment of safe harbors aptly illustrate the challenges that competition enforcers need to grapple with when integrating innovation in their decision-making. The question of how to incorporate innovation concerns is highly contingent on the essential question of the relationship between competition and innovation, which remains heavily contested. Despite the surrounding uncertainty, tapping into the knowledge generated through theoretical and empirical studies on this topic is a good first step towards evidence-based competition policy. For instance, there is some emerging consensus that factors including market contestability and appropriability (i.e. the ability to capture profits from innovation) are positively associated with innovation.[42]

Whereas the question of how to adequately capture innovation will inevitably continue to be the subject of discussions, it is safe to claim that innovation considerations should span a range of antitrust analyses and frameworks. From market definition and safe harbors to the analyses of theories of harm, remedies and justifications, innovation will need to start featuring more prominently in all these stages of antitrust analysis – even though some might be more flexible than others to integrate innovation. Furthermore, and as discussed above, the dilemmas related to how and at which stage to integrate innovation are unlikely to be properly resolved unless antitrust as a discipline reaches a consensus on an even more fundamental – and certainly highly contestable – issue, namely the type of innovation that antitrust should seek to promote. What parameters should be employed to distinguish between "good" and "bad" innovation? How can antitrust feed into a mission-oriented innovation policy? Who should be tasked with conducting such assessments? As of now, these are unanswered questions. Despite the layer of complexity that these questions add to an already complex dimension of antitrust, we must not shy away from addressing them.

42 OECD, "Competition and Innovation, Part I: a theoretical perspective – Background Note" DAF/COMP(2023)2 (2023) paras 27, 28, 101.

INNOVATION, INVENTION, AND STANDARDS

BY MICHAEL A. CARRIER[1]

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I. INTRODUCTION

The term "innovation" has a spellbinding effect. As innovation is the lifeblood of the U.S. economy, no one can reasonably stand on the opposite side. To do so would cast one's lot with the fragile sands of backwards thinking and technological regression. For that reason, arguments that changes in the law or industry practice would harm innovation tend to be considered seriously. And such arguments sometimes are vigorously propounded. But that does not mean they are correct.

This essay criticizes one of these arguments: that innovation is reflected solely by the initial invention. In the standards context, many who have taken a "pro-licensor" perspective have focused only on the initial invention, claiming that any weakening of patents for or application of antitrust to this stage will harm innovation. These arguments, however, do not capture the economic realities of innovation, which is multi-generational in nature. The debate has most frequently taken place in the context of standards.

II. STANDARDS CONTEXT

Standards, which are ubiquitous in our economy, are common platforms that allow products to work together. Standards offer significant benefits, but are subject to the increased power that a patent-holder can attain after the standard is selected.

Before selection, a standards development organization ("SDO") can choose from an array of alternative technologies. But after a standard is chosen and the industry has invested in a particular technology, the owner of a standard-essential patent ("SEP") could impose excessive licensing terms that reflect not just the value of the patent but also the significant costs of switching to a new technology. The patentee, in other words, could "hold up" the standard's implementation. This threat of holdup explains why many SDOs have required members to agree to license their SEPs on fair, reasonable, and nondiscriminatory ("FRAND") terms.

III. INITIAL INVENTION CLAIM

Despite this straightforward story, some with a pro-licensor perspective have claimed that any restrictions on patentees or imposition of antitrust liability would harm innovation.

One recent example of such arguments can be found in the comments filed in response to the government's 2021 draft policy statement on SEPs. In 2013, the Department of Justice Antitrust Division ("DOJ") and U.S. Patent and Trademark Office ("PTO") issued a policy statement that recognized anticompetitive harms from holdup while articulating categories of behavior that would allow SEP holders to obtain injunctions.[2] Despite this balance, six years later, the DOJ, together with the PTO and National Institute of Standards and Technology ("NIST"), issued a very different statement that, as I have written elsewhere, took a one-sided perspective and relied on "omissions, strawmen, and generalities."[3]

The proposed 2021 statement would have reintroduced the nuance present in the 2013 statement. As I explained in my comments to the agencies,[4] it "offer[ed] a balanced approach that considers the potential abuses on both sides of the table, offer[ed] an elaborate framework for good-faith negotiation, and set[] forth a strongly supported approach to remedies."[5] Despite this balance, the draft statement was met with a barrage of comments offering a narrow, one-sided view of innovation.

For example, several comments anticipated that it was only the intellectual property (IP) of the initial inventor (as opposed to anything contributed by "implementers") that was responsible for innovation. Scholars of "law, economics, and business" stated that IP "significantly boosts innovation" and that "insufficient protection of [IP] generates more severe welfare losses than its overprotection."[6] These scholars warned

2 DOJ & PTO, Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments, Jan. 8, 2013, https://www.justice.gov/atr/page/file/1118381/download.

3 Michael A. Carrier, *New Statement on Standard-Essential Patents Relies on Omissions, Strawmen, Generalities*, Jan. 13, 2020, https://news.bloomberglaw.com/ip-law/insight-new-statement-on-standard-essential-patents-relies-on-omissions-strawmen-generalities.

4 Michael A. Carrier, *Comments on Draft Policy Statement on Licensing Negotiations and Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments,* at 2, Dec. 27, 2021, https://www.regulations.gov/comment/ATR-2021-0001-0004.

5 Carrier comments, *supra* note 4.

6 Comments of Scholars of Law, Economics, and Business, at 8, Feb. 4, 2022, https://www.regulations.gov/comment/ATR-2021-0001-0115.

that "[e]ven small erosions of [IP] protection are . . . liable to have outsized effects, as freeriding soon becomes a viable strategy," which "may lead to underinvestment and economic stagnation."[7] Similarly, the Innovation Alliance stated that "[t]he U.S. innovation ecosystem is premised on private sector investments of money and talent which is only possible through the incentives provided by strong patent protections."[8]

Another theme from these commenters was that the draft statement threatened innovation. A group of "legal academics, economists, and former government officials" asserted that the statement "disadvantages U.S. innovators" and "undermines [their] ability to continue investing in the development and commercialization of the foundational wireless technologies that have enabled transformative innovations in markets as disparate as transportation, finance, and healthcare."[9] This group concluded that it is "difficult to overstate the risks to the U.S. innovation economy."[10]

Similarly, "former officials from Democratic and Republican Administrations" lamented that the draft statement "would work great harm to the American innovation economy and send a dangerous message to our global competitors regarding the value and enforceability of [IP] rights."[11] The officials worried that "[t]hose who voluntarily contributed technology may simply decide that the hurdles to recouping their investments cannot be justified from a business perspective, resulting in capital being diverted away from technology destined for contribution to standards, or from technology-based innovation altogether," with "[d]ecreased investments in research and development . . . necessarily lead[ing] to decreased innovation."[12]

In the four years preceding these comments, Makan Delrahim, the head of the Antitrust Division in the Trump administration, had voiced similar views. Delrahim stated that "an antitrust duty to license on FRAND terms would . . . contravene the patent laws' policy of promoting innovation by offering incentives for holders of valid patents to seek the greatest rewards possible for their inventions."[13] Similarly, he "worr[ied]" that "enforcers have strayed too far in the direction of accommodating the concerns of technology implementers who participate in standard-setting bodies, and perhaps risk undermining incentives for IP creators, who are entitled to an appropriate reward for developing breakthrough technologies."[14] And he lamented that "misapplication of the antitrust laws threatens to disrupt the free-market bargain, which could undermine the process of dynamic innovation."[15]

Delrahim additionally worried that "in recent years, competition policy has focused too heavily" on holdup, "often ignoring what fuels dynamic innovation and efficiency."[16] He viewed "every incremental shift in bargaining leverage toward implementers of new technologies acting in concert" as potentially "undermin[ing] incentives to innovate."[17] As a result, he "view[ed] policy proposals with a one-sided focus on the holdup issue with great skepticism because they can pose a serious threat to the innovative process."[18]

Delrahim's arguments, together with the comments on the draft 2021 statement, had a significant effect. Delrahim changed longstanding bipartisan government positions, gave speeches considered by SDOs and foreign enforcers, and oversaw the filing of amicus briefs and

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7 *Id.*

8 Innovation Alliance, Public Submission, at 6, Feb. 4, 2022, https://www.regulations.gov/comment/ATR-2021-0001-0123.

9 *Comments on Draft Policy Statement on Licensing Negotiations and Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments*, at 4-5, Feb. 4, 2022, https://www.regulations.gov/comment/ATR-2021-0001-0136.

10 *Id.* at 5.

11 *Comments of Former Administration Officials on December 6, 2021 "Draft Policy Statement on Licensing Negotiations and Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments*," at 2, https://www.regulations.gov/comment/ATR-2021-0001-0086.

12 *Id.* at 6.

13 Ass't Att'y Gen. Makan Delrahim, Remarks at IAM's Patent Licensing Conference (Sept. 18, 2018), https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-iam-s-patent-licensing.

14 Ass't Att'y Gen. Makan Delrahim, Remarks at the USC Gould School of Law's Center for Transnational Law and Business Conference (Nov. 10, 2017), https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-usc-gould-school-laws-center.

15 *Id.*

16 *Id.*

17 *Id.*

18 *Id.*

issuance of business review letters.[19] And the comments on the 2021 statement likely played a role in the agencies not adopting the statement. The effect of these arguments, however, is not matched by their persuasiveness.

IV. INITIAL INVENTION CRITIQUE

The first problem that arises from linking innovation with only the initial patentee's contribution is that it ignores the advances contributed by companies that build on the patented invention. As industry organizations have explained, "the assumption that only the upstream inventions that are contributed to standard-setting activities merit protection is . . . incorrect."[20] The reason is that "companies that implement standards both make important technical contributions to develop the standards they implement and innovate above the level of a standard to create differentiated products that consumers want to buy."[21]

On an individual level, a single product "can contain a multitude of technological innovations separate and apart from a given SEP."[22] For example, "different wireless access points may implement the same standard, but differ significantly relative to other features, such as . . . antenna design, configuration and management, and interference management features that go beyond the standard."[23] Because of this differentiation, "a large enterprise may spend hundreds of dollars for an enterprise-class access point that implements the same standard as a consumer access point that is available for less than 50 dollars at a consumer electronics retailer."[24]

The smartphone reflects this reality. This device includes "an advanced microprocessor, a sophisticated graphics processor, flash memory, DRAM [dynamic random-access memory], location awareness technology, touch technology, voice recognition, high-definition still and video cameras, video and music replay, power management technology, and an advanced operating system."[25] Each of these technologies "provide[s] benefits to end users that are independent of the cellular technology that enables telephony connections."[26]

V. CUMULATIVE INNOVATION

A focus on subsequent — as opposed to just initial — invention fits into a well-established literature on cumulative innovation. This type of innovation proceeds in a sequential fashion, with innovators "build[ing] on each other's discoveries."[27] Industries characterized by cumulative innovation call for nuanced analysis: the optimal breadth of patents is unclear, since stronger patent protection helps the initial innovator but hurts subsequent, "follow-on" innovators, and licensing is critical to keep the path of innovation flowing.[28]

Cumulative innovation occurs in two primary contexts. In the first, "basic" upstream research is the building block for downstream product applications. The basic research, which has no commercial value by itself, creates gateways — often referred to as enabling technologies or research tools — to products.[29] The second context involves lengthy sequences of products, each of which improves upon its predecessor, which are known as "quality ladders."[30]

19 Michael Carrier, *4 Ways Kanter Should Clean Up DOJ Antitrust Holdups*, Law360, Nov. 17, 2021, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3966557 (providing detail on these actions).

20 Letter from ACT, The App Ass'n et al., to Ass't Att'y Gen'l Makan Delrahim, at 23 (May 30, 2018), http://actonline.org/wp-content/uploads/05302018_Multi-Assn_DOJ-SEP-White-Paper_FINAL.pdf. See also *id.* at 7 (criticizing distinction between upstream "innovators" and downstream "implementers").

21 *Id.*

22 *Id.*

23 Id.

24 *Id.*

25 *Id.* at 24.

26 *Id.*

27 See Suzanne Scotchmer, *Cumulative Innovation in Theory and Practice* (GSPP Working Paper, 1999) (on file with author). See generally Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. Econ. Persp. 29 (1991).

28 See generally Scotchmer, *Standing on the Shoulders of Giants, supra* note 27.

29 Scotchmer, *Cumulative Innovation, supra* note 27, at 10.

30 *Id.* at 10, 13.

Cumulative innovation occurs in industries as diverse as automobiles, aircraft, biotechnology, semiconductors, computer hardware, and computer software.[31] Computer software, for example, can be viewed as "a series of inventions piled on top of each other."[32] Incremental improvement in computer programs offers several advantages: enhancing interoperability, rendering programs more stable, and responding to hardware-based architectural constraints in the industry.[33] Science-based technologies (such as biotechnology, lasers, and superconductors) also emphasize cumulative development, with research and development ("R&D") efforts seeking to exploit recent scientific advances.[34]

Across the entirety of industries marked by cumulative innovation, bottlenecks can block the path of innovation, with the latest product generation held hostage to its predecessor. Such holdups are the inevitable consequence of (1) the incremental fashion in which innovation proceeds in certain industries and (2) the patent system, which awards improvement patents to inventions that may be nonobvious to a person skilled in the relevant art but nonetheless cannot be practiced without infringing the earlier patent. The presence of bottlenecks in industries with cumulative innovation necessitates licensing between the initial and follow-on innovator. And it underscores the crucial role played by follow-on development.

VI. PATENT LAW

Patent law supports the economic understanding about innovation. As Doug Melamed and Carl Shapiro have explained, "the patent laws are intended to limit, not maximize, the royalties to which patent-holders are entitled."[35] The patent statute limits infringement remedies to compensatory damages not less than a "reasonable royalty" and enhanced damages up to a specified maximum.[36]

Many cases have limited the amounts a patentee can recover,[37] with William Lee and Doug Melamed pointing out that "courts generally show concern about *over*compensating standard-essential patent-holders."[38] For example, the court in *Ericsson, Inc. v. D-Link Systems, Inc.* made clear that "the patentee's royalty must be premised on the value of the patented feature, not any value added by the standard's adoption of the patented technology."[39] Similarly, the court in *Commonwealth Science & Industrial Research Organization v. Cisco Systems, Inc.* explained that the value of the patented technology "is distinct from any value that artificially accrues to the patent due to the standard's adoption," and that "[w]ithout this rule, patentees would receive all of the benefit created by standardization — benefit that would otherwise flow to consumers and businesses practicing the standard."[40] And the court in *Microsoft Corp. v. Motorola, Inc*. stated that "standards threaten to endow holders of standard-essential patents with disproportionate market power" and that "once a standard has gained such widespread acceptance that compliance is effectively required to compete in a particular market, anyone holding a standard-essential patent could extract unreasonably high royalties from suppliers of standard-compliant products and services."[41]

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31 Thomas M. Jorde & David J. Teece, *Innovation, Cooperation, and Antitrust, in* Antitrust, Innovation, and Competitiveness 48 (Thomas M. Jorde & David J. Teece eds., 1992); Bronwyn H. Hall & Rosemarie Ham Ziedonis, *The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry*, 1979–1995, 32 Rand J. Econ. 101, 102 (2001); Richard C. Levin et al., *Appropriating the Returns from Industrial Research and Development,* 1987 Brookings Papers on Econ. Activity 783, 788; Scotchmer, *Cumulative Innovation, supra* note 27, at 1.

32 Fed. Trade Comm'n, Anticipating the 21st Century: Competition Policy in the New High-Tech, Global Marketplace, ch. 8, at 18 (1996); Scotchmer, *Standing on the Shoulders of Giants, supra* note 27, at 29. Bessen & Maskin demonstrate that because of the sequential and complementary nature of innovation in the software industry, patent protection has reduced innovation and social welfare. They substantiate their hypotheses with observations of cross-licensing in the computer and semiconductor industries, the positive relationship between innovation and firm entry, and the correlation between the extension of patent protection to software in the 1980s and a relative decline in R&D activity. See James Bessen & Eric Maskin, *Sequential Innovation, Patents, and Imitation* (MIT Working Paper No. 00-01, 2000), http://www.researchoninnovation.org/patent.pdf.

33 Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 Va. L. Rev. 1575, 1620–22 (2003).

34 Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 Colum. L. Rev. 839, 883 (1990).

35 A. Douglas Melamed & Carl Shapiro, *How Antitrust Law Can Make FRAND Commitments More Effective*, 127 Yale L.J. 2110, 2121 (2018).

36 See 35 U.S.C. § 284 (2012).

37 See e.g. *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1031 (9th Cir. 2015); *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1326 (Fed. Cir. 2014); *In re Innovatio IP Ventures, LLC Patent Litig.*, 2013 WL 5593609 (N.D. Ill. Oct. 3, 2013); *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009).

38 William F. Lee & A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 Cornell L. Rev. 385, 430 (2016) (emphasis in original).

39 773 F.3d 1201, 1232 (Fed. Cir. 2014).

40 809 F.3d 1295, 1305 (Fed. Cir. 2015).

41 696 F.3d 872, 876 (9th Cir. 2012).

VII. IDENTITY

A final point that calls into question the linkage between the initial inventor and innovation involves the identity of the companies that have made the narrow arguments summarized in this piece. These actors criticized the proposed 2021 statement, which, as discussed above, would have reintroduced balance. But empirical analysis casts doubt on the assumption that these are the only companies that contribute to innovation. After reviewing the comments filed with the government, Brian Scarpelli concluded that "[t]he companies supporting the revisions" — in other words, follow-on developers rather than SEP holders — "play a significant role in American innovation."[42] In particular:

- "The R&D expenditures from U.S. companies directly supporting reasonable limits on exclusionary relief exceeds $170 billion, dwarfing the $8 billion spent on R&D by U.S. companies opposing them."[43]
- "Supporters of the revised policy have been granted about 220,000 patents compared with about 30,000 patents by those that oppose it."[44]
- "[O]f the 2.2 million U.S. jobs created by companies that responded . . . , 97% were created by companies that support the agencies' reasonable restrictions on exclusionary relief for SEPs."[45]

In short, a narrow set of SEP holders does not offer the only relevant perspective on innovation.

VIII. CONCLUSION

The claim that innovation will be harmed by even modestly limiting the rewards for the initial generation of inventors has been loudly voiced. But this finite category cannot claim to be the exclusive engine of innovation. The crucial role played by licensees, cumulative nature of innovation, limiting doctrines of patent law, and stakeholders' contributions ensure a central place in innovation analysis for follow-on developers.

42 Brian Scarpelli, *Biden Should Act Now To Finalize SEP Draft Policy Statement,* Law360, May 9, 2022.

43 *Id.*

44 *Id.*

45 *Id.*

STRUCTURING COMPETITION TO FOSTER SOCIALLY BENEFICIAL INNOVATION

BY DANIEL A. HANLEY[1]

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I. INNOVATION IS A NOT A UNIVERSAL SOCIETAL GOOD

The structure of market competition is determined by the governing legal regime enacted by the state. Among other things, all property rights, contracts, and methods of competition defined as tortious are explicitly or implicitly determined by the state. By structuring the terms of market competition away from some methods of competition toward others, the state inherently determines whether firms are engaging in socially beneficial or harmful innovation.

Socially beneficial innovations can include firms implementing technologies that lead to genuine efficiency gains, such as the introduction of superior methods of production and distribution that increase quality and decrease prices for goods. Other kinds of socially beneficial innovation can include significant improvements in public health, such as developing new drugs or introducing new products and services that make our work easier. Such innovations can create fairer, more competitive markets and provide the public with more wealth, leisure, and time to invest in other professional endeavors.

Many innovations today, however, have not led to these genuine social improvements. Instead, they often involve firms employing new tactics to coerce suppliers and distributors, and flagrant lawbreaking, with the explicit intent to undermine labor rights, privacy rights, and increase worker exploitation. Consider how Amazon's routinely marketed innovation of two-day shipping is actually the result of Orwellian surveillance of its workers,[2] draconian productivity standards,[3] and the pervasive misclassifying of thousands of workers as independent contractors so the corporation can regulate worker's wages and workflow at-will without bearing the traditional responsibilities firms have toward their employees (such as providing a minimum wage).[4] Or that Amazon's often asserted low prices result from repeated instances of predatory pricing and the usage of restrictive contracts with third-party sellers that demand prices on its platform be the lowest.[5]

It becomes clear that not all inventions, discoveries, processes, or methods of competition are universally *per se* good; indeed, many are socially harmful. Given the inseparable relationship between the governing legal regime and the conduct corporations use to succeed in the marketplace, it becomes prudent to examine how the law can be used to shape corporate behavior to engage in socially beneficial innovation. Antitrust law deserves attention as it is a powerful legal instrument for policymakers to realign corporate operations to foster socially beneficial innovation.[6]

II. HOW ANTITRUST LAW STRUCTURES SOCIALLY BENEFICIAL CORPORATE CONDUCT AND INNOVATION

Antitrust law structures the coordination rights between economic actors in part by delineating which methods of competition are fair, and therefore permissible, and those that are unfair, and therefore impermissible.[7] For example, during the zenith of antitrust law's legal potency between the 1940s and the 1970s, the Supreme Court faithfully carried out Congress's legislative command by interpreting them to tightly restrict corporations from using their sheer financial power or dominance to succeed in the market. Firms could not just engage in certain forms of "hard" competition by any means necessary. Concerning mergers, in one case, the Court blocked the merger of the 10th and 18th largest beer sellers, which would have resulted in a combined market share of 4.5 percent.[8] The Supreme Court also established multiple bright-line rules that substantially limited or prohibited entirely a range of conduct, including exclusive deals, tying agreements, and territorial allocation agreements.[9]

2 Daniel A. Hanley & Sally Hubbard, *Eyes Everywhere: Amazon's Surveillance Infrastructure and Revitalizing Worker Power*, Open Markets Inst. (Sept. 2019).

3 *In Denial: Amazon's Continuing Failure to Fix Its Injury Crisis*, Strategic Org. Ctr. (Apr. 2023), https://thesoc.org/wp-content/uploads/2023/04/SOC_In-Denial_Amazon-Injury-Report-April-2023.pdf.

4 Brian Callaci, *Entrepreneurship, Amazon Style,* Am. Prospect (Sept. 27, 2021), https://prospect.org/power/entrepreneurship-amazon-style/; Sandeep Vaheesan, *The Shadow Empire That Fuels Amazon's Dominance*, New Republic (Feb. 28, 2023), https://newrepublic.com/article/170708/contracts-surveillance-amazon-anti-trust/.

5 Daniel A. Hanley, *Per Se Illegality of Exclusive Deals and Tyings as Fair Competition*, 37 Berkeley Tech. L.J. 1057, 1089 (2023) (detailing Amazon's tying) [hereinafter Hanley-Tyings and Eds]; Stacy Mitchell & Ron Knox, *How Amazon Exploits and Undermines Small Businesses, and Why Breaking It Up Would Revive American Entrepreneurship*, Inst. for Loc. Self-Reliance 4 (June 2021) (detailing Amazon's predatory pricing); David McCabe, Karen Weise & Cecilia Kang, *D.C. Accuses Amazon of Controlling Online Prices*, N.Y. Times (May 25, 2021), https://www.nytimes.com/2021/05/25/business/amazon-dc-lawsuit.html (detailing a D.C. lawsuit against Amazon's "most favored nation" contracts).

6 *United States v. Aluminum Co. of Am.*, 148 F.2d 416, 427 (2d. Cir. 1945) ("rivalry is a stimulant to industrial progress").

7 See Sanjukta Paul, *Antitrust As Allocator of Coordination Rights*, 67 UCLA L. Rev. 378 (2020).

8 *United States v. Pabst Brewing Co.*, 384 U.S. 546 (1966).

9 *Standard Oil Co. of Cal. v. United States (Standard Stations)*, 337 U.S. 293 (1949); but see *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320 (1961). *N. Pac. Ry. Co. v. United States,* 356 U.S. 1 (1958); *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365, 379, overruled by *Cont'l T. V., Inc. v. GTE Sylvania Inc.,* 433 U.S. 36 (1977).

The Supreme Court's favorable holdings were also generated from and supported by vigorous enforcement from the Department of Justice, the Federal Trade Commission, and private parties.[10]

During the same era, antitrust also acted as a check on intellectual property so that rather than patents operating as a government-sanctioned means to exploit and coerce firms, it was a narrow privilege that had to operate in the public interest and within the fair competition limits established by the antitrust laws. For example, in a series of decisions, the Supreme Court limited patents to their explicit terms and imposed restrictions on how patents could be licensed and used as part of other contractual agreements.[11]

As detailed in some of the examples below, the restrictions imposed by the antitrust laws structured corporate conduct to channel a firm's limited resources to publicly beneficial activities such as investments in productive capacity, the hiring of workers, investments in worker training, and increased expenditures in their own research and development.[12]

While the implicit notions of fair competition remain, primarily due to a reactionary Supreme Court that became extraordinarily sympathetic to the demonstrably false history promoted by the Chicago School of Economics,[13] significant portions of the robust antitrust apparatus have been eroded since the 1970s. Rather than being reviewed under bright-line rules, conduct like territorial restraints are reviewed under the rule of reason – effectively a demarcation of de facto legality.[14] Indicative of this conservative trend, federal enforcers also chose to significantly restrict enforcement. For example, average enforcement actions from the DOJ dropped from 40 between 1970 and 1979 to 14 in the following decade.[15]

Since the 1970s, patent law has also taken precedence over antitrust law, leading to perverse usages of patents that actively suppress socially beneficial innovation.[16] For example, drug manufacturers now routinely and intentionally delay patent submissions to effectively extend the intellectual property protection of a drug well beyond the 20-year grant.[17]

With these changes, corporations like Amazon were able to either engage in conduct that was previously illegal or avoid prosecution due to sympathetic enforcers abdicating their duty to enforce the law. Disruptive innovations certainly still took place, but the incentives to make continued investments have been reduced. Firms, like Amazon, are now heavily emboldened to use restrictive contracts and their sheer dominance to succeed rather than engaging in productive activities that produce socially beneficial innovation in the first place. Markets have also become heavily consolidated, leaving little competition.[18] As a result, antitrust enforcement actively suppresses socially beneficial and promotes socially harmful innovation. But changes in enforcement can re-tailor antitrust policy to reverse this circumstance.

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10 Willard F. Mueller, *The Celler-Kefauver Act: The First 27 Years*, A Study Prepared for the Subcomm. on Monopolies and Commercial Law of the House Comm. on the Judiciary, H.R. Doc. No. 243, 96th Cong., 1st Sess. 11, at 7 (1979) (between 1951 and 1977, the Department of Justice and Federal Trade Commission issued 437 complaints that challenged over 1,400 mergers); see also Richard A. Posner, *A Statistical Study of Antitrust Enforcement*, 13 J.L. & Econ. 365, 371 (1970) (detailing the vigorous private enforcement between the 1940s and 1970s).

11 David M. Hart, Forged Consensus: Science, Technology, and Economic Policy in the United States, 1921-1953, at 94-96 (1998); see also Bruce Wilson, *Department of Justice Luncheon Speech, Law on Licensing Practices: Myth or Reality?* (Jan. 21, 1975), in Abbot B. Lipsky, *Current Antitrust Division Views on Patent Licensing Practices*, 50 Antitrust L.J. 515, 518-24 (1981) (detailing nine prohibited practices of patent licensing).

12 See generally Mansel G. Blackford & K. Austin Kerr, Business Enterprise in American History 180, 346-408 (2d ed. 1990); Hart, *supra* note 11, at 94-96, 153.

13 See Sandeep Vaheesan, *The Profound Nonsense of Consumer Welfare Antitrust*, 64 Antitrust Bull. 1, 11-15 (2019).

14 See Richard A. Posner, *The Rule of Reason and the Economic Approach: Reflections on the Sylvania Decision*, 45 U. Chi. L. Rev. 1, 14 (1977) (stating the rule of reason is a "euphemism for nonliability"); see also Michael A. Carrier, *The Rule of Reason: An Empirical Update for the 21st Century*, 16 Geo. Mason L. Rev. 827 (2009).

15 *Antitrust Division Workload Statistics FY 1970-1979*, U.S. Dep't Justice Antitrust Division, https://www.justice.gov/atr/antitrust-division-workload-statistics-fy-1970-1979 (last visited Aug. 8, 2022); *Antitrust Division Workload Statistics FY 1980-1989*, U.S. Dep't Justice Antitrust Division, https://www.justice.gov/atr/antitrust-division-workload-statistics-fy-1980-1989 (last visited Aug. 8, 2022).

16 For a brief overview of the changes to patent law and its relationship to antitrust enforcement, see Spencer W. Waller & Noel J. Byrne, *Changing View of Intellectual Property and Competition Law in the European Community and the United States of America*, 20 Brook. J. Int'l L. 1 (1993).

17 *Overpatented, Overpriced: How Excessive Pharmaceutical Patenting is Extending Monopolies and Driving up Drug Prices*, I-MAK 4-5 (Aug. 2018), https://www.i-mak.org/wp-content/uploads/2018/08/I-MAK-Overpatented-Overpriced-Report.pdf.

18 Gustavo Grullon et al., *Are US Industries Becoming More Concentrated,* 23 Rev. Fin. 697 (2019).

III. ENFORCEMENT PRIORITIES TO REVERSE THE CURRENT ANTI-INNOVATION ANTITRUST PARADIGM

A. The Power of Enforcement

By merely enforcing the antitrust laws, firms are put on notice that the federal government could challenge their behavior. Such a threat deters a firm from engaging in unlawful behavior and therefore incentivizes firms to structure their operations to engage in socially beneficial and lawful conduct.[19]

Consider IBM and the development of its personal computer in the 1970s. Before 1970, IBM tightly controlled and integrated its products – hardware, software, and services alike. Its unfair practices repeatedly drew the ire of the federal government, which launched antitrust lawsuits against the company in 1936, 1952, and 1969.[20] To avoid further antitrust scrutiny, IBM adopted an open, decentralized development system for its then-new personal computer, the IBM PC, in the 1970s.[21] Under this system, IBM only developed certain parts of the computer in-house, and other components would be built by other firms and integrated at a later stage.[22] The level of decentralization was exceptionally high. For example, IBM specifically did not retain the rights or ownership of the operating system it licensed from Microsoft when it was building its PC.[23] IBM also licensed computer chips from Intel.[24]

IBM's actions laid the groundwork for the modern computing revolution because it created an open system that others could improve upon to make new products and software.[25] Other examples show that vigorous enforcement of the antitrust laws channels a firm's resources into productive activities such as in-house research and development.[26]

Historian Richard Hofstadter described the effect of robust antitrust enforcement during this era on corporate behavior when he stated that "[A]nybody who knows anything about the conduct of American business knows that the managers of the large corporations do their business with one eye constantly cast over their shoulders at the Antitrust Division[.]"[27]

Critically, federal enforcement also facilitates private enforcement because Section 5 of the Clayton Act allows private plaintiffs to use final judgments against a defendant in a lawsuit brought by the Department of Justice as prima facie evidence against the same defendant in their own lawsuit.[28]

B. Targeting Mergers

Enforcers should use existing law to significantly restrict mergers to promote socially beneficial innovation. Mergers suppress potential innovation, in part, because they are financially wasteful. Mergers inherently divert financial expenditures that can be put toward more productive,

19 Jonathan B. Baker, *The Case for Antitrust Enforcement*, 17 J. Econ. Persp. 27, 40 (2003); Rory Van Loo, *In Defense of Breakups: Administering A "Radical" Remedy*, 105 Cornell L. Rev. 1955, 1997-98 (2020).

20 *Int'l Bus. Machines Corp. v. United States,* 298 U.S. 131 (1936); Final Judgment, *United States v. Int'l Bus. Machines Corp.*, No. 72-344 (S.D.N.Y. 1956) (consent decree); Amended Complaint, *United States v. Int'l Bus. Machines Corp.*, No. 69-200 (S.D.N.Y. 1969).

21 IBM also took other actions specifically to avoid antitrust scrutiny. Lawrence A. Sullivan, *Monopolization: Corporate Strategy, the IBM Cases, and the Transformation of the Law*, 60 Tex. L. Rev. 587, 600 (1982); James W. Cortada, IBM: The Rise and Fall and Reinvention of a Global Icon 310 (2019).

22 Watts S. Humphrey, *Software Unbundling: A Personal Perspective*, 24 IEEE Annals Hist. Computing 59 (2002).

23 Cortada, *supra* note 21, at 303-04.

24 *Id.*

25 See Jimmy Maher, *The Complete History of the IBM PC*, Ars Technica (Jul. 31, 2017), https://arstechnica.com/gadgets/2017/06/ibm-pc-history-part-1/; Jimmy Maher, *The Complete History of the IBM PC, Part Two: The DOS Empire Strikes*, Ars Technica (Jul. 31, 2017), https://arstechnica.com/gadgets/2017/07/ibm-pc-history-part-2/.

26 Hart, *supra* note 11, at 96 (detailing how DuPont spent more money into research and development as a response to vigorous antitrust enforcement in the post-World War II era).

27 Richard Hofstadter, *What Happened to the Antitrust Movement, in* The Paranoid Style in American Politics and Other Essays 192-93 (1979).

28 15 U.S.C. § 16(a).

socially beneficial use, such as spending that expands a firm's industrial capacity.[29] Between 1985 and 2022, firms spent more than $47 trillion on mergers and acquisitions, $3 trillion of which was spent in 2021 alone.[30] As Walter Adams and James Brock aptly stated in a 1986 law review article:

> Billions of dollars spent on shuffling ownership shares are, at the same time, billions of dollars not spent on productivity-enhancing plant, equipment, and research and development. The millions of dollars absorbed in legal fees and investment banking commissions are, at the same time, millions of dollars not plowed directly into the nation's industrial base.[31]

Mergers also harm innovation because they base competition on a firm's market power and privileged access to capital rather than internal investment. When mergers are unavailable as a method of competition, firms can instead invest in their own operations to compete and produce socially beneficial innovation. For example, in 2011, the Obama administration prevented the merger between AT&T and T-Mobile, two of the top four wireless carriers in the United States.[32] Supporters of the merger asserted that it was necessary to increase innovation and ensure vigorous competition,[33] despite the merger resulting in one corporation that would control more than 40 percent of the U.S wireless carrier market.[34] Without being able to merge its way to success in the marketplace, T-Mobile implemented a series of policies that transformed the industry. For example, T-Mobile abolished long-term consumer contracts, then the industry standard, which locked consumers into a specific carrier and mobile plan for a set period. T-Mobile also aggressively cut prices for its wireless plans.[35]

To take another example of a firm innovating after a blocked merger, after Bethlehem Steel was prevented from acquiring a rival in 1958,[36] the company proceeded to build a state-of-the-art steel-making plant – a project the company had repeatedly asserted was infeasible.[37] Other evidence, principally in the healthcare and technology sector, has shown that firms often use mergers to destroy potential and existing innovations to entrench or expand the acquirer's market position.[38]

C. Targeting Unfair Contracts

Restrictive contracts should be a prime target for antitrust enforcers to promote socially beneficial innovation. Particular attention should be given to pay-for-delay agreements, noncompetes, and tying contracts.

First, a corporate practice known as pay-for-delay is particularly harmful to potential innovation and should be aggressively litigated.[39] The practice involves a drug company exchanging cash or other consideration for a rival drug manufacturer to delay the entry of a generic drug. Pay-for-delay agreements suppress the incentive to innovate because a firm can use its monopoly profits to stymie potential competition that might result in lower costs or the emergence of new drugs, instead extending its ability to extract profits from existing drug

29 Walter Adams & James W. Brock, The Bigness Complex: Industry, Labor, and Government in the American Economy 80-81 (1986); Melissa A. Schilling, *Potential Sources of Value from Mergers and Their Indicators*, 63 Antitrust Bull. 183 (2018); 95 Cong. Rec. 11,493 (1949) (statement of Rep. Yates).

30 *United States - M&A Statistics*, Inst. for Mergers, Acquisitions & Alliances, https://imaa-institute.org/mergers-and-acquisitions-statistics/united-states-ma-statistics/ (last visited Aug. 10, 2023); Vijay Sekhon, *2022 Emerging trends in U.S. Mergers and Acquisitions*, Wolters Kluwer (Mar. 22, 2022), https://www.wolterskluwer.com/en/expert-insights/2022-trends-in-us-mergers-and-acquisitions.

31 Walter Adams & James W. Brock, *The Proposed Emasculation of Section 7 of the Clayton Act*, 65 Neb. L. Rev. 813, 819 (1986).

32 Jesse Eisinger & Justin Elliott, *These Professors Make More Than a Thousand Bucks an Hour Peddling Mega-Mergers,* ProPublica (Nov. 16, 2016), https://www.propublica.org/article/these-professors-make-more-than-thousand-bucks-hour-peddling-mega-mergers.

33 See e.g. Philipp Humm, *Merger of T-Mobile and AT&T Will Provide More Benefits for Customers*, Seattle Times (Sept. 29, 2011), https://www.seattletimes.com/opinion/merger-of-t-mobile-and-att-will-provide-more-benefits-for-customers/ (Humm was the CEO of T-Mobile at the time of the proposed merger).

34 Allen P. Grunes & Maurice E. Stucke, *Antitrust Review of the AT&T/T-Mobile Transaction*, 64 Fed. Commc'ns L.J. 47, 52 (2011).

35 Sandeep Vaheesan, *American Prosperity Depends on Stopping Mega-Mergers*, Fin. Times (Apr. 25, 2019), https://www.ft.com/content/7709cfe4-557e-36c7-9404-11eb4785ba54.

36 *United States v. Bethlehem Steel Corp*, 168 F. Supp. 576 (S.D.N.Y. 1958).

37 Adams & Brock, *supra* note 31, at 817.

38 Colleen Cunningham et al., *Killer Acquisitions*, 129 J. Pol. Econ. 649 (2021); Daniel A. Hanley, *A Topology of Multisided Digital Platforms*, 19 Conn. Pub. Int. L.J. 271, 313-15 (2020); Kurt M. Saunders & Linda Levine, *Better, Faster, Cheaper - Later: What Happens When Technologies Are Suppressed,* 11 Mich. Telecomm. & Tech. L. Rev. 23, 57-59 (2004).

39 This course of action should be pursued despite heightened substantive barriers imposed by the Supreme Court. *FTC v. Actavis, Inc.*, 570 U.S. 136 (2013) (holding that pay-for-delay agreements cannot be determined to be per se illegal). Joshua P. Davis & Ryan J. McEwan, *Deactivating* Actavis; *The Clash Between the Supreme Court and (Some) Lower Courts*, 67 Rutgers U. L. Rev. 557, 559 (2015); see also Michael A. Carrier, *Unsettling Drug Patent Settlements: A Framework for Presumptive Illegality*, 108 Mich. L. Rev. 37, 72 (2009).

products. These agreements effectively operate as a form of market allocation between rivals, a practice long condemned under the antitrust laws.[40]

The public also pays a heavy price for these agreements. A 2010 study conducted by the Federal Trade Commission revealed that pay-for-delay agreements raise the cost of prescription drugs by nearly $3.5 billion per year.[41] Research has found that these agreements have practically no countervailing benefits.[42]

Second, antitrust enforcement should be directed at restrictive contracts that inhibit worker mobility and competition for workers. Contractual restrictions like noncompetes forcibly bind a worker to their employer, blocking them from obtaining ostensibly better employment at another firm.[43] Between 36 and 60 million workers are bound by non-competes and it is estimated to deprive workers of nearly $300 billion in wages.[44] Such contracts also heavily suppress socially beneficial innovation because they inhibit the formation of new firms and the competition for workers.[45] The lack of noncompetes, for example, was a contributing factor in the rise of Silicon Valley as an economic center of worker talent and business innovation.[46] Evidence also shows that states with strict enforcement of noncompetes adversely afflict the number of patents businesses file.[47]

Third, antitrust enforcement should be directed at tying arrangements. Tying involves the forced usage or purchase of a product or service along with the purchase or use of another product or service.[48] Such agreements are used to stifle innovation, suppress competition, and unfairly extend a dominant firm's power in one market to another.[49] For example, Apple and Google tie their smartphone operating systems (iOS and Android, respectively) to their application payment system and their application store – meaning users and application developers must use both the operating system, payment system, and application stores collectively. The restrictions stifle innovation for alternative services that can have additional features and lower costs to developers and consumers.

Litigating tying arrangements is notably critical since they can be evaluated under a near-per se test of illegality.[50] Importantly, despite the changes in patent and antitrust law since the 1970s, firms can still violate the antitrust law through illegal tying with their patents as long as enforcers show they have market power.[51]

D. Targeting Dominant Firms and Selecting Potent Remedies

Antitrust enforcement should be directed at conduct by dominant corporations with at least a 20 percent share in a relevant market.[52] Besides being the entities predominantly engaging in the conduct described above and being the intended targets of the antitrust laws,[53] dominant corporations have less incentive to innovate in general. Economist Kenneth Arrow made such an observation in the 1960s.[54]

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40 Davis & McEwan, *supra* note 39, at 559.

41 Fed. Trade Comm'n, Pay-for-Delay: How Drug Company Pay-Offs Cost Consumers Billions 8 (2010).

42 Michael A Carrier, *Payment After* Actavis, 100 Iowa L. Rev. 7, 19-25 (2014).

43 Daniel A. Hanley, *Ending Corporate America's Coercive Contracts*, Dem. (Dec. 21, 2021), https://democracyjournal.org/arguments/ending-corporate-americas-coercive-contracts/.

44 U.S. Dep't of Treasury, Non-Compete Contracts: Economic Effects and Policy Implications 3 (2016); Non-Compete Clause Rule, 88 Fed. Reg. 3482, at 164-65 (Fed. Trade Comm'n proposed Jan. 19, 2023).

45 Hanley, *supra* note 43 (citing studies).

46 Ronald J. Gilson, *The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128, and Covenants not to Compete*, 74 N.Y.U. L. Rev. 575, 594-619 (1999).

47 Matthew S. Johnson et al., *Innovation and the Enforceability of Noncompete Agreements* (Nat'l Bureau of Econ. Rsch., Working Paper 31487, 2023), https://www.nber.org/papers/w31487.

48 *N. Pac. Ry.*, 356 U.S. at 5-6.

49 See Hanley-Tyings and Eds, *supra* note 5.

50 *Id.* at 1069-70 (collecting case law and detailing that the per se test for tying involves the forced purchase of two separate products or services, that creates foreclosure of a substantial volume of commerce in the tied market, and created by a firm with appreciable economic power).

51 Robin Feldman, *Patent and Antitrust: Differing Shades of Meaning,* 13 Va. J.L. & Tech. 1, 6 (2008) (detailing the 1988 Patent Act only requires alleged violators of patent misuse based on tying to have market power).

52 This figure is dependent on the targeted violation.

53 See e.g. 21 Cong. Rec. 2561 (1890) (statement of Sen. Hoar).

54 Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention, in* The Rate and Direction of Inventive Activity: Economic and Social Factors 619-21 (Richard Nelson ed., 1962).

To promote innovation, enforcers must also request the right kinds of remedies from reviewing courts. The selection of remedies is a critical part of antitrust litigation because "once the Government has successfully borne the considerable burden of establishing a violation of law, all doubts as to the remedy are to be resolved in its favor."[55] The selection of ineffective remedies has been cited as a reason for lackluster results with antitrust enforcement.[56] The Government can seek practically any remedy so long as it "represents a reasonable method of eliminating the consequences of the [defendant's] illegal conduct."[57] Two remedies remain heavily underutilized by the federal government that can directly increase the conditions for socially beneficial innovation in the economy – corporate breakups and compulsory licensing.

Besides being an administrable remedy that enhances competition by creating newly competing firms that, but for the remedy, would not exist,[58] breakups can release innovation that was otherwise being suppressed. History is replete with dominant corporations withholding or suppressing technologies that would undermine their dominant position.[59] For example, in 1909 employees at Standard Oil, the infamous corporation owned by robber baron John Rockefeller, developed a more efficient process for converting oil into gasoline (known as "thermal cracking"). However, corporate management claimed that the idea was too risky and prohibited the practice from being implemented. Only after Standard Oil was broken up in 1911 was the technology able to be widely implemented.[60]

Using another example, AT&T in the 1920s, the then-dominant telephone service provider before 1982, deliberately withheld technology to record telephone calls because the company believed it would deter customers from using the telephone and thus hurt its bottom line.[61] AT&T took a similar approach with its development of wireless communications.[62] The breakup of AT&T in 1982 unleashed a wave of innovation in the industry. Research shows that after the breakup, the number of patents in the telecommunications sector grew by 19 percent.[63] Considering the last mandated corporate breakup was in 1982 and,[64] before the antitrust lawsuit against Google in 2022,[65] the last attempted breakup was in 2000,[66] such a remedy has remained dormant for far too long.

Second, compulsory licensing is a remedy that should be pursued in antitrust cases to promote competition and innovation. Once a routine element of successful antitrust litigation,[67] compulsory licensing involves the forced licensing of a corporation's intellectual property, typically at reasonable prices, to all those who seek to use them. Since the 1970s, however, compulsory licensing has fallen out of favor with enforcers.[68]

Compulsory licensing immediately stimulates the competitive landscape by allowing current and potential competitors to access requisite technology to engage in meaningful competition and therefore start on a similar competitive footing. Compulsory licensing, therefore, lowers structural barriers to competition. In some cases, compulsory licensing operates as a form of restitution to the public as it forces a corporation to share the spoils that a corporation was able to accumulate while using unfair methods of competition.

The most notable and arguably important use of compulsory licensing was the 1956 settlement with AT&T. To ensure that AT&T would not use its dominant control in the telecommunications industry to foreclose potential competitors or leverage itself into the then-nascent com-

55 *Ford Motor Co. v. United States*, 405 U.S. 562, 575 (1972) (quoting *United States v. E. I. du Pont de Nemours & Co.*, 366 U.S. 316, 334 (1961)).

56 See generally William E. Kovacic, *Failed Expectations: The Troubled Past and Uncertain Future of the Sherman Act As A Tool for Deconcentration*, 74 Iowa L. Rev. 1105 (1989).

57 *Nat'l Soc'y of Prof'l Eng'rs v. United States*, 435 U.S. 679, 697-98 (1978).

58 William E. Kovacic, *Designing Antitrust Remedies for Dominant Firm Misconduct*, 31 Conn. L. Rev. 1285, 1294 (1999) ("Divestiture orders offer the possibility of swiftly dissipating the defendant's market power by introducing new competitors into the market."); *United States v. E.I. Du Pont de Nemours & Co.*, 366 U.S. 316, 330-31 (1961).

59 Kurt M. Saunders & Linda Levine, *Better, Faster, Cheaper - Later: What Happens When Technologies Are Suppressed,* 11 Mich. Telecomm. & Tech. L. Rev. 23 (2004).

60 F.M. Scherer, *Standard Oil as a Technological Innovator*, 38 Rev. Indus. Org. 225, 232-33 (2011).

61 See Mark Clark, *Suppressing Innovation: Bell Laboratories and Magnetic Recording*, 34 Tech. & Culture 516, 520-24, 531-37 (1993).

62 Kurt M. Saunders & Linda Levine, *Better, Faster, Cheaper - Later: What Happens When Technologies Are Suppressed*, 11 Mich. Telecomm. & Tech. L. Rev. 23 (2004).

63 Martin Watzinger & Monika Schnitzer, *The Breakup of the Bell System and its Impact on US Innovation*, CEPR (Press Discussion Paper No. 17635, Nov. 2, 2022), https://cepr.org/publications/dp17635.

64 *United States v. AT&T*, 552 F. Supp. 131 (D.D.C. 1982), aff'd sub nom. *Maryland v. United States*, 460 U.S. 1001 (1983).

65 Complaint, *United States v. Google LLC*, No. 23-cv-00108 (E.D. Va. 2023).

66 *United States v. Microsoft Corp.*, 97 F. Supp. 2d 59, 64 (D.D.C. 2000), vacated, 253 F.3d 34 (D.C. Cir. 2001).

67 Hart, *supra* note 11, at 95-96 (detailing between 1941 and 1959, 107 judgments required the licensing of approximately 40,000 to 50,000 patents).

68 See Jorge Contreras, *A Brief History of FRAND: Analyzing Current Debates in Standard Setting and Antitrust Through a Historical Lens*, 80 Antitrust L.J. 39 (2015).

puter industry, the Department of Justice prohibited the corporation from providing any service other than common carriage telephone services. Bolstering these restrictions was that AT&T was required to license its massive patent portfolio.[69]

After the courts imposed the remedy on AT&T, pioneering research has confirmed that a wave of innovation occurred in the economy.[70] For example, after smaller companies were able to utilize AT&T's patents, researchers showed that firms created approximately $5.8 billion in today's dollars of patent value.[71] Other evidence has also shown that when enforcers force firms to share their patents, firms spend even more on research and development, upwards of 30 percent more.[72] Additional research has confirmed similar findings.[73] Critically, other research has shown that compulsory licensing has "little to no unfavorable impact" on a firm's decisions to invest in research and development.[74]

Compulsory licensing can even jumpstart innovation by facilitating the creation of new industries. Gordon Moore, the founder of computer chip maker Intel, stated that compulsory licensing of AT&T's patents allowed the semiconductor industry "to really get started" in the United States.[75] Semiconductors are now viewed as a vital and necessary component of national security and economic development.[76]

E. Modify Enforcement Policy Concerning Certain Horizontal Collaborations

Promoting vigorous competition between firms to foster socially beneficial innovation is not always desirable. In certain circumstances, increased coordination and collaboration between firms (including rivals) is prudent. Two practices, in particular, are worth emphasizing. Specifically, antitrust agencies should update their guidelines and enforcement protocols detailing how standard-setting organizations and joint ventures should be structured.[77]

Standard-setting organizations, groups of firms agreeing to establish market wide standards for products, and joint ventures, an agreement between firms to combine resources to undertake a specific task or project, are business collaborations that can provide corporations with the ability to diffuse risk as well as sufficient scale, capital, and information that is sometimes necessary to produce socially beneficial innovation.[78] Of course, such collaborations can facilitate other unlawful and unfair conduct.[79] But heightened oversight protocols can be instituted to ensure compliance with the law and create fair and open markets. Such conduct is also preferable to other methods of competition and integration, such as mergers or other methods of collusion that can stifle competition and unfairly restrict markets.

Concerning joint ventures, enforcement agencies currently take too much of a deferential approach. Joint ventures often operate as partial mergers and, thus, disincentivize firms from engaging in socially beneficial internal expansion. Joint ventures can also extend the power of already dominant firms.

Concerning standard-setting organizations, if they are open and democratically structured, such arrangements can "facilitate the integrating processes necessary to large-scale production and distribution."[80] Therefore, they should be encouraged but with strict requirements to ensure they are operating fairly in line with the purpose of the antitrust laws.

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69 Final Judgment, *United States v. Western Elec. Co.*, No. 17-49, (D.N.J. Jan. 24, 1956).

70 Martin Watzinger et al., *How Antitrust Can Spur Innovation: Bell Labs and the 1956 Consent Decree*, 12 Am. Econ. J.: Econ. Pol'y 328 (2020).

71 *Id.* at 346.

72 Joerg Baten et al., *Compulsory Licensing and Innovation--Historical Evidence from German Patents After WWI*, 126 J. Dev. Econ. 231, 232 (2017).

73 Richard J. Gilbert, Innovation Matters: Competition policy for the High-Technology Economy 139-166 (2020).

74 F. M. Scherer, *The Political Economy of Patent Policy Reform in the United States*, 7 J. Telecomm. & High Tech. L. 167, 172 (2009) (citing Frederick M. Scherer et al., Patents and the Corporation: A Report on Industrial Technology Under Changing Public Policy (2d ed. 1959)).

75 Bd. on Sci., Tech. & Econ. Policy, Nat'l Research Council, Capitalizing on New Needs and New Opportunities: Government-Industry Partnerships in Biotechnology and Information Technologies 86 (Charles W. Wessner, ed., 2001).

76 See generally Chris Miller, Chip War: The Fight for the World's Most Critical Technology (2022).

77 U.S. Dep't of Justice & Fed. Trade Comm'n, Antitrust Guidelines for Collaborations Among Competitors (2000).

78 Sanford. V. Berg et al., Joint Venture Strategies and Corporate Innovation 1 (1982).

79 See e.g. *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492 (1988).

80 P. G. Agnew, *Standards in Our Social Order*, 11 Indus. Standardization 141, 146 (1940).

DEFINING AND MEASURING INNOVATION FOR COMPETITION ENFORCEMENT

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I. INTRODUCTION

Defining innovation is not as straightforward as one would think and depending on its definition, implications on different areas might differ. From defining businesses strategies to designing economic policy or enforcing competition law, different understandings of what innovation is and what it involves might generate diverse and even opposing outcomes. While this article does not aim at defining innovation for all purposes, it aims at approximating it in a way that captures different considerations and approaches to its relationship with competition in the framework of antitrust enforcement.

Why is innovation important in the context of competition enforcement? While not new, there is a recent intensified interest from competition authorities to account for the effects of transactions and market players' behaviors on variables that go beyond prices and quantities, and innovation is one of those.

For example, guidelines on substantive assessment of mergers and acquisitions, which competition authorities constantly update to account for changes and developments in markets and analytical frameworks, are increasingly consider how innovation relates to competition and should be part of the assessment of a transaction.

As an illustration, both European Commission guidelines on the assessment of horizontal and non-horizontal mergers have considerations on innovation, stating that innovation is one of the criteria against which the Commission assesses the likely effects of a merger. Other jurisdictions such as France[2] and the United Kingdom[3] in Europe, Brazil[4] and Chile[5] in Latin America, Canada[6] and the United States[7] (in process of update but also holds for the draft[8] published for public consultation) in North America, Kenya[9] in Africa, Japan,[10] the Philippines,[11] Australia[12] and New Zealand[13] in Asia – Pacific are only some examples of competition authorities that have merger guidelines that explicitly include innovation as a variable to be taken into account in merger control.

Although the level of detail and scope for explicitly consider innovation in guidelines vary among jurisdictions, they all consider the potential impact of a merger or an acquisition on innovation. The difference in scope and detail could reflect differences in legal frameworks, but also on how competition authorities define innovation, the types of innovation they are interested in capturing in their analyses and how they perceive the relationship between competition and innovation.

There seems to be a consensus that innovation is more than just invention or generation of ideas. Innovation could be understood as "*the development and realization, and frequently also the spread, of new creative ideas that challenge conventional wisdom and disrupt established practices.*"[14] Furthermore, if we look closer as how definition has been considered for economic policy, we find that the OECD has defined innovation as "*the successful development and application of new knowledge.*"[15] Both definitions mean that innovation involves other processes

2 https://www.autoritedelaconcurrence.fr/sites/default/files/Lignes_directrices_concentrations_2020_EN_adlc.pdf.

3 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051823/MAGs_for_publication_2021_--_.pdf.

4 https://cdn.cade.gov.br/Portal/centrais-de-conteudo/publicacoes/guias-do-cade/guia-para-analise-de-atos-de-concentracao-horizontal.pdf.

5 https://www.fne.gob.cl/wp-content/uploads/2022/05/20220531.-Guia-para-el-Analisis-de-Operaciones-de-Concentracion-Horizontales-version-final-en-ingles.pdf.

6 https://ised-isde.canada.ca/site/competition-bureau-canada/sites/default/files/attachments/2022/cb-meg-2011-e.pdf.

7 https://www.ftc.gov/system/files/documents/public_statements/804291/100819hmg.pdf.

8 https://downloads.regulations.gov/FTC-2023-0043-0001/content.pdf.

9 https://cak.go.ke/sites/default/files/guidelines/Consolidated%20Merger%20Guidelines.pdf.

10 https://www.jftc.go.jp/en/legislation_gls/imonopoly_guidelines_files/191217GL.pdf.

11 https://www.jftc.go.jp/en/legislation_gls/imonopoly_guidelines_files/191217GL.pdf.

12 https://www.accc.gov.au/system/files/Merger%20guidelines%20-%20Final.PDF.

13 https://comcom.govt.nz/__data/assets/pdf_file/0020/91019/Mergers-and-acquisitions-Guidelines-May-2022.pdf.

14 TORFING, JACOB, COLLABORATIVE INNOVATION IN THE PUBLIC SECTOR, 10.1353/book48834 (2016).

15 OECD, *Competition and Innovation: A Theoretical Perspective*, OECD Competition Policy Roundtable Background Note (2023), www.oecd.org/daf/competition/competition-and-innovation-atheoretical-perspective-2023.pdf and OECD, *Competition, Patents and Innovation*, OECD Competition Policy Roundtable Background Note (2006), https://www.oecd.org/daf/competition/39888509.pdf.

such as research and development of such inventions and bringing those new ideas into application, which involve their use, application and even commercialization. Besides, it implies that innovation takes place in different forms and contexts. This is, that there exist innovations in processes, organizational forms, tools, technologies, commodities, products and services, politics and even in social life.

Nonetheless innovating to improve a specific characteristic of a product that is already in the market cannot be seen as equal to launching a new product that disruptively changes the competitive dynamics of it, or even so, creates a new market. Changing size, color or other physical characteristics of a mobile phone have a completely different impact than when the first touchscreen mobiles entered the market.

Patented innovations that never reach a commercialization stage or others that end up significantly alter organizations and politics but not necessarily result in tangible products or services, for example, also have different implications than those who are marketed. This is relevant given that a significant share of patents granted are never commercialized. As an illustration, using advanced natural language processing and machine learning methods, a recent study estimated that the probability of commercialization of U.S. granted patents between 1981 and 2015 was, on average, 59 percent.[16]

The public sector is one example of an area where innovation does not necessarily result in tangible products or services. Recent forms of accountability for government actions have been developed in the last years. They include algorithmic tools and modern technologies that lead to better outcomes such as higher transparency, engagement of citizens and empowerment of communities and, thus, can be considered as innovative in that context without necessarily translate it to innovation in product industries.

As the previous examples show, there are differences between innovations that, in turn, could impact differently competition dynamics in the markets. Understanding which innovations do relate to competition and which ones require analysis from a competition perspective is also relevant for competition law enforcers. The next section will deal with different types of innovation, as understanding the magnitude, intensity and impact of innovation is also a key step when introducing innovation considerations in competition assessment. The article will then highlight some of the challenges with measuring innovation and finally, the last section will present some considerations on the implications that defining and measuring innovation may have on competition enforcement, focused on merger review.

II. TYPES OF INNOVATION

The multiple ways to define innovation and their scope lead to the need of identifying different types of innovations, which depend on their magnitude, intensity or impact they have in the economy and the competitive dynamics of markets.[17]

The classification of innovations is relevant in the sense that it allows competition authorities to better understand the relevance of innovation in certain markets or industries, as well as it could help shedding some light on market definition itself.

One first classification relies on the **form of the innovation**. Innovation could refer to a **process**, meaning that it involves a change or an improvement in the production or distribution technologies of a product or a service, which would in turn reduce costs for the innovator or the user of such innovation or somehow bring improvements in its productivity, or it could refer to a **product**, meaning the introduction of a new product or further development of existing products or services, changing, for instance, their physical characteristics.[18]

The moving assembly line model introduced by Ford, for instance, changed the way automobiles were made, impacting the use of time and resources, but did not imply a change in their design. In turn, the introduction of automated driving vehicles does impact on the final product sold in the market.

This goes in line with a second classification of innovation that refers to the **magnitude of the innovation**. In product innovations, if the new ideas rely on the same core concept and correspond to constant improvements, upgrades or updates of its components that add value to the product, the innovation is considered **incremental**. If the ideas drastically alter the markets because they introduce a distinct set of attributes than those already valued by consumers, they are considered **breakthrough**. In the previous example, automated driving is considered break-

16 As mentioned by John P. Walsh, during the *What Share of Patents is Commercialized?* Innovation & Entrepreneurship Seminar, Max Planck Institute for Innovation and Competition (2023).

17 OECD (2023), *supra* note 15.

18 European Commission, *Competition Policy Briefs: EU merger control and innovation* (2016), https://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf.

through, as it minimizes the need for human drivers and has the potential to transform everyday transportation, but other changes in the design of such vehicles such as speed, are then considered incremental.

Similarly, a third classification, often overlapping the previous one, corresponds to the **intensity of the innovation**. The difference with the previous categorization is that this grouping classifies innovations according to the frequency they happen and the way they impact the value network around it. This is, there are **sustaining** innovations that happen constantly, meaning that they maintain a rate of improvement in the attributes of the products, adding value to them frequently. Sustaining innovations are often equivalent to incremental ones. On the other side, there are innovations that are not regular or predictable improvements to the products and, therefore, alter the value network around them.[19] Those innovations are considered **disruptive**. Disruptive innovations generate radical changes to the markets, occur irregularly and have a bigger impact on a value chain and the surrounding processes.[20]

Breakthrough innovations are not necessarily disruptive if they do not impact the value network around them, for instance because they do not occur irregularly but are part of sustaining innovations that happen constantly in the market. They happen in markets that rely significantly on innovation, where changes to products and introduction of new ones are expected frequently. They introduce distinct features and attributes that generate value to consumers, such as the example above on automated driving, but do not necessarily alter the market structure or the network around it.

Disruptive innovations normally reduce or significantly alter market shares of incumbent firms in existing markets or create new markets and business models.[21] Understanding the capability of disruptive innovations to create new markets could also imply the need to use novel approaches to define relevant markets in enforcement proceedings.

The previous distinctions are not mutually exclusive and somehow overlap. An innovation can also be categorized differently depending on the point in time where it is evaluated and the effects that has generated in the markets at said moment. Regardless of such limitations, it is relevant to acknowledge the distinct types, magnitudes, and intensities of innovations to better measure them and account for them in a competitive assessment.

III. MEASURING INNOVATION

Once we somehow understand what we are talking about when defining and categorizing innovation, measuring it also brings its own challenges.

The OECD has recognized that appropriately measuring innovation can help policymakers better understand the impact of innovation and its contribution to economic goals.[22] Competition policy is not the exception. An adequate measure to capture, for instance, substitutability between R&D activities, to assess capabilities of agents to innovate and compete for innovation, to find the innovators that could restrict the market power of another innovator, is key in the assessment of a potentially anti-competitive behavior or a merger review. Whenever competition authorities find the need to define markets based on innovation specifically, relying on pertinent measures to account for the relevant innovation efforts has proven to be key.

Two of the most used variables to measure innovation are **R&D expenditure** and **patent activity**. While R&D expenditures are a measure via inputs, patent activity is a measure of outputs. This means that considering R&D expenditures accounts for all the efforts the companies are doing to innovate but does not necessarily reflect their success in doing so. This could be particularly relevant in industries where generating innovation takes time and is costly and where it is common that research projects do not lead to the results expected. Think about developing vaccines or medicines. The percentage of successful R&D projects is lower than in other industries, although the R&D expenditures are one of the highest. This happens because pharmaceutical laboratories take multiple R&D projects with expectations that they will result in a product, but this very often is not the case. On the opposite side, there is the measurement of patent activity. Patenting is the reflection of a final innovation. While it measures success, it does not measure all the effort behind it. Following an example from the same industry, consider two companies

19 OECD, *Background Note on the impact of disruptive innovations on competition law enforcement* (2015), https://www.oecd.org/competition/globalforum/disruptive-innovationscompetition-law-enforcement.htm.

20 OECD, *id.*

21 OECD (2023), *supra* note 15.

22 OECD/Eurostat, *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation*, 4th Edition, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris/Eurostat, Luxembourg (2018), https://doi.org/10.1787/9789264304604-en.

patenting one vaccine each. If measured by patent activity, they could be seen as innovative as the other one. However, this will not capture the fact that one of them took decades to develop its vaccine while the other only took two years and much less resources to do so.

Even though R&D expenditures and patent activity approach innovation differently, there is something both measurements have in common. None of them captures accurately the contestability of markets where innovations take place, measure the appropriability of returns from such innovations or capture their diffusion across industries.[23] Besides, different allocations of expenditures in R&D projects might affect the first measure, while lack of differentiation between magnitude and intensity of innovations captured through patents might affect the second one. Other exogenous variables, non-observable considerations and business strategies of innovators can also impact both measurements.

IV. IMPLICATIONS FOR COMPETITION ENFORCEMENT

A recent hearing held at the OECD Competition Committee discussed the relationship between competition and innovation from a theoretical perspective. One of the findings, unsurprisingly, was that although the theory could give authorities some insights, there is no one-size-fits-all theoretical explanation of the relationship between the two variables as innovation processes work differently in different industries with different technologies, skills, capabilities, and resources. In turn, this implies that if competition authorities want to consider innovation in their enforcement proceedings or merger reviews, they must do so on a case-by-case basis. Where there seemed to be a consensus was on the need for competition authorities to understand the role that their enforcement activities can play to ensure that innovation processes can occur in well-functioning markets as well as the risk that a competition policy not properly enforced could end up discouraging innovation.

In practice, competition authorities have taken different approaches to introduce innovation in their competitive assessments. These approaches differ, for example, in how innovation is defined and measured. Some authorities have focused their analysis on the impact of competition in innovation, others have concentrated their efforts on understanding the effect that innovation has on competition and others have considered both, either independently or as part of the same assessment. Moreover, they have analyzed innovation on existing product markets, on future product markets, as well as on innovation markets.

In past cases, innovation has played a role in various stages of the proceedings. It has been a relevant factor by competition authorities when defining markets and analyzing their structure, when assessing the effects of a transaction or a conduct and determining its legality, as a countervailing factor to market power, a justification of a certain behavior or even as an efficiency gain. No less important, innovation has played a prominent role in the design of remedies and of commitments.

When introducing innovation in their analysis, competition authorities face different decisions related to deciding how and to what extend they should consider it. For instance, for defining markets where innovation is one of the most important competing factors, competition authorities need to measure somehow the different innovative activities companies are engaged in and what are the substitutability dynamics among them. In other words, bearing in mind the uncertainty that innovation processes bring, competition authorities must find ways to understand if possible outcomes could compete in the future.

For this, competition authorities must decide which types of innovations to review and define the best strategy to analyze the dynamics of competition between innovators, an exercise that becomes more difficult in cases where the result of the innovation is not clear or cannot be directly associated to an existing market or a specific product or service. On defining innovation, aspects such as how advanced an R&D project should be to be considered as feasible or as probable to enter a market, have been considered by competition authorities.

To overcome some of the drawbacks of measuring innovation that were described above, sometimes, competition authorities use different approximations to measure innovation. These approximations are usually presented together, for example, analyzing simultaneously the R&D expenditures of a company and its patent activity to completely understand the relevance of the market players as innovators (or as potential ones). These measures are often complemented with other information on historical behavior of the companies, business plans and strategies, and in general internal documentation or third parties' opinion on existing and potential competitive pressure that relies on innovation.

In the complaint filed by the United States Federal Trade Commission ("FTC") seeking to block Meta's acquisition of Within in 2022, the FTC alleged that it was reasonably probable that Meta would have entered the VR Dedicated Fitness App market through alternative means absent the transaction. To justify its claim, the FTC used information on value of investments of Meta on R&D in the specific field, particularly in its Reality Labs division, and complemented it with the company's business plans, information on its financial resources, historic innovations

23 OECD (2023), *supra* note 15.

related to the relevant market and past behavior of the company.[24] For the FTC, Meta's Reality Labs had plans, as well as relevant R&D projects that could generate innovations allowing the company to enter the market by itself. The reasoning behind that is that the efforts made by the labs could be considered, even if in the future, as innovations that were close substitutes to the products sold by Within.

In one of its most recent merger prohibitions, the European Commission blocked a transaction between two South Korean shipbuilders, based, among other arguments, on the fact that the transaction would contribute to the creation of a dominant position as the merging parties were relevant innovators in a market mainly driven by innovation. To reach such conclusion, the Commission analyzed all the recent patents by the merging parties, examined qualitatively their technologies, the type of innovations and how those innovations acted as barriers to enter the market.[25]

Competition authorities can also take different paths when analyzing the effects of a conduct or a transaction. There are theories of harm built around changes in innovation because of reduced competition depending on how agencies understand the relationship between the two variables.

In merger review, authorities have analyzed how increased concentration can affect incentives and ability to innovate, both for the merging parties and for their competitors. When taking a more dynamic perspective, authorities have also been interested in reviewing how transactions that have the potential to reduce, restrict or delay R&D activities can impact future competition. While neither common nor often accepted by competition authorities, innovation has also been part of efficiency claims by merging parties, who have argued that merging complementary assets will lead them to process and product innovations, which in turn will have a positive effect on consumers, reflected in a decrease in prices and/or increases in quality and variety.

In the framework of the assessment done by the UK CMA of the acquisition of Giphy by Facebook in 2022, the parties claimed that the user experience would be enhanced with the transaction. They argued that the merger would allow Facebook to offer more innovative products following significant investments in additional Giphy services and further integrating it into Facebook's ones. However, the CMA rejected the argument as there was no evidence that such efficiencies would raise as a direct result of the transaction.[26]

Authorities have also reviewed potentially anti-competitive conduct in light of changes in innovation. Some co-operation agreements which are normally prohibited in competition law, could be seen as legal if the efficiencies they bring are higher than their potential distortion on competition. R&D agreements are part of this group.

Innovation can also play a prominent role in abuse of dominance investigations. When considering the impact on innovation of an abusive conduct, competition authorities are interested in determining whether the conduct that potentially had the effect of excluding a rival would end up benefiting consumers since it protected innovation of the dominant firm in the first place, or whether it would harm them as it retarded or deterred innovation from the excluded rival.[27] This is, changes in innovation can be seen as part of the negative effect of the abusive conduct or as part of the positive effects, justifying it.

The most recent abuse of dominance investigations against Google are a great example of this. In the Android operating system case, the Commission's concerns relied on Google stifling choice and innovation in a range of mobile apps and services, including mobile browsing, by requiring manufacturers to pre-install the Google Search app and browser app (Chrome) as a condition for licensing the Play Store.[28] Similar arguments were used by the Commission to analyze the effects of Google's conduct on innovation, mainly of reducing or eliminating incentives of competitors to innovate, in the Shopping Service case in 2017,[29] and in the AdSense case in 2019.[30]

Finally, the way competition authorities define and consider innovation also impacts the way they design, examine, and impose remedies

24 U.S. FTC (2022). Complaint in the matter of Meta Platforms, Inc., Mark Zuckerberg, and Within Unlimited Inc. Available at: https://www.ftc.gov/system/files/ftc_gov/pdf/D09411MetaWithinComplaintPublic.pdf.

25 European Commission, *Hyundai Heavy Industries Holdings / Daewoo Shipbuilding & Marine Engineering*. Case No. M. 9343 (2022).

26 CMA, Facebook, Inc (now Meta Platforms, Inc) / Giphy, Inc merger inquiry. Final Report. Par. 9.110 and 9.111. 18 October 2022.

27 Shapiro, Carl, *Competition and Innovation. Did Arrow Hit the Bull's Eye? In The Rate and Direction of Inventive Activity Revisited*, University of Chicago Press (2012).

28 European Commission Case No. AT.40099 – *Google Androi*d.

29 European Commission Case No. AT.39740 – *Google Search (Shopping).*

30 European Commission Case No. AT.40411 – *Google Search (AdSense).*

or analyze and accept commitments. If competition authorities are looking to preserve incentives of companies to innovate, remedies will relate more to adjusting the behavior of the companies and preserving the levels of competition in the market. If competition authorities perceive more a need to maintain capabilities of companies to innovate, remedies should tend to be more structural and include transmission of *know-how*, as well as all the necessary specialized assets so that the buyer could become be an effective innovator.

To illustrate this, let us review the remedies in the Alstom/General Electric transaction, conditionally approved by the European Commission in 2015.[31] The concerns the Commission had relied purely on existing technologies already active in the market. The Commission argued that post transaction, General Electric would reduce or discontinue the production of innovative products developed by Alstom in the market for heavy-duty gas turbines. For that reason, the remedies involved selling key assets of Alstom's business to a competitor to guarantee the existence of a third player. This included all the necessary elements to act as a relevant innovator in the same market and keep the number of effective competitors unchanged.

In other scenarios, selling or licensing of actual intellectual property rights, or intangible assets, including the expertise can play a vital role, when innovation considerations have to do with future products and even future markets.

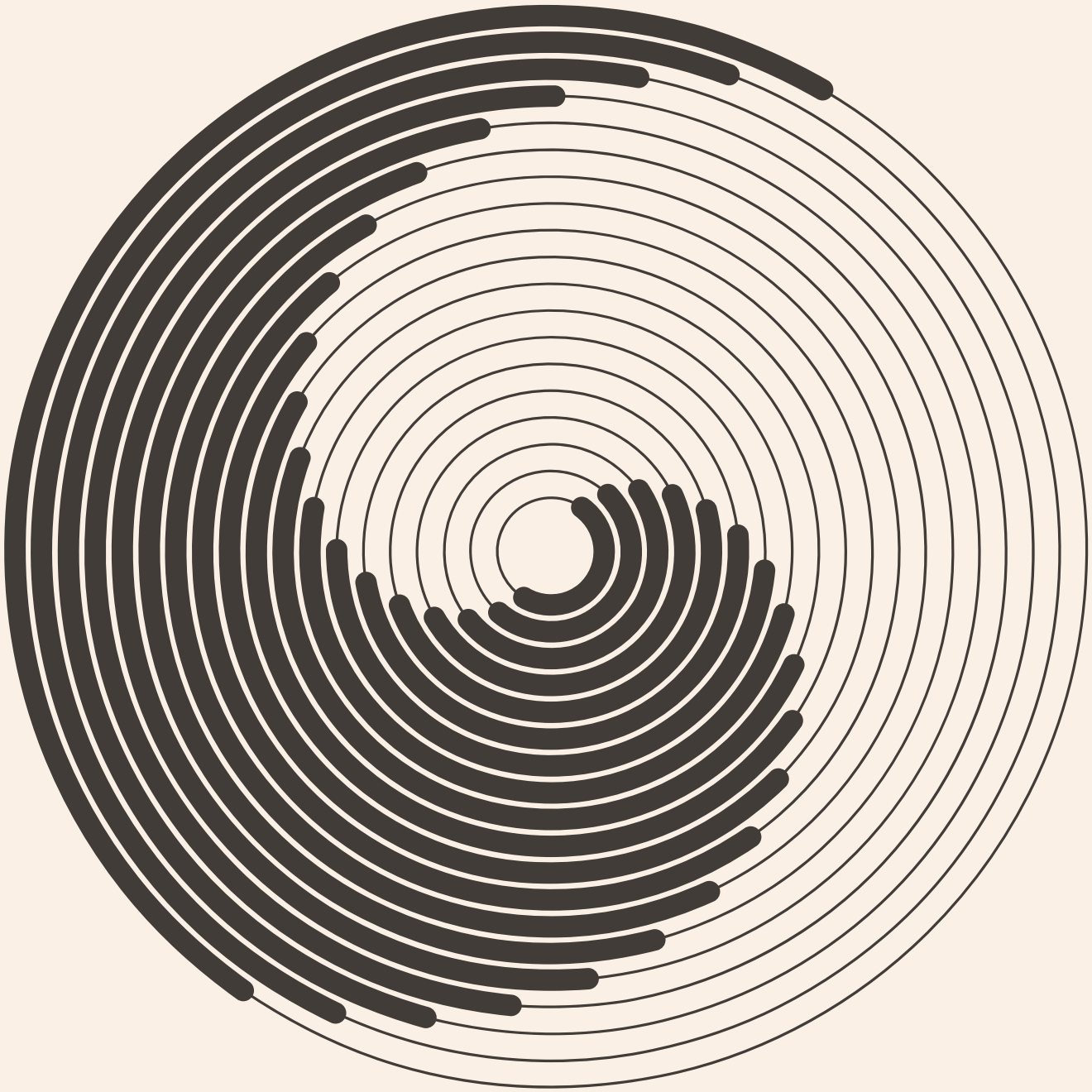
V. CONCLUSIONS

The concept of innovation is fundamental for competition enforcement. As innovation is increasingly considered to be interrelated with competition in many ways, understanding what innovation is, how to measure it and what could be its impact on competition, are part of the priorities of competition authorities to make sure their decisions are sound and relevant.

From defining relevant markets in a merger review context to justify or understand the effects of anti-competitive conduct, innovation takes part in the assessments that competition authorities do when deciding on a transaction or investigating a conduct. The way competition authorities understand innovation would have an impact on how they consider it in their activities and how important it is in their decisions. Depending on the approach competition authorities chose to incorporate innovation considerations in their enforcement, aspects such as how the markets are defined, which theory of harm to explore, and how to design remedies or commitments might differ.

31 European Commission, *General Electric / Alstom (Thermal Power – Renewable Power & Grid Business)*. Case No. M. 7278 (2015).

MERGERS AND INNOVATION



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Innovation is the engine powering economic growth. Innovation improves productivity, and in the long run productivity is almost all that matters.[2] Although it is common for people working on antitrust to focus on narrow industries and short time spans, industrial policy has the potential to radically change the innovation process through competition. This is because competition shapes the returns and incentives to innovation, but it does so in an ambiguous way. On the one hand, less competition means that firms can appropriate more returns from innovation, and this incentivizes creative destruction as described by Joseph Schumpeter (1934).[3] On the other hand, more competition pushes companies to innovate to defend their market share, as emphasized by Arrow (1962).[4] Then, it is only natural to ask what antitrust policy can do to improve innovation, and what has been done so far.

One of the prominent applications of competition policy is merger control, and the act of blocking a merger can have significant consequences for the affected markets. Besides, merger activity is on the rise, and it is at an all-time high. 2021 has been a record-setting year in global M&A activity. Total transaction volume topped $5.5 trillion, exceeding prior peaks in 2007 and 2015 that remained below $5 trillion.[5] It is debated whether this activity is due to lax merger policy, and the effect of these mergers on innovation is unclear. While there exists a wide literature on the effects of the level of competition on innovation, the literature on mergers and innovation has only developed in recent years.

The ultimate effect of a merger on innovation is determined by the balance between profit cannibalization and profit appropriability. Cannibalization implies that, after a merger, each merging party realizes that a successful innovation will cannibalize the profits of the new partner. To be more precise, the merging party internalizes the negative externality that its innovation has on the profits of the new partner. Therefore, the cannibalization channel pushes firms to innovate less after a merger. Instead, appropriability represents the ability of a merging firm to extract returns from a successful innovation. After the merger, the resulting entity has more market power, and it can secure more profits as compensation for its innovation efforts. Consequently, the appropriation channel incentivizes the merged firm to innovate more.

I. EFFICIENCIES: WHAT ARE THEY AND WHY DO THEY MATTER?

The balance between cannibalization and appropriability is decided by the efficiencies associated with the merger. This is why efficiencies are at the heart of merger analysis involving innovation concerns. Efficiencies are a general term representing synergies and cost reductions, both in terms of production and innovation, that are possible only due to the merger. Efficiencies make it easier to produce and to innovate, increasing output and profits. Therefore, efficiencies favor the appropriability channel, increasing the amount of profits generated with a given innovation effort. The higher the efficiencies, the more likely that the merged entity will find it profitable to innovate more. Moreover, it is worth noting that efficiencies also improve the consumer surplus, and not only profits. Therefore, merger efficiencies are beneficial for an antitrust authority that has a consumer surplus standard, and for an authority that has a total welfare standard.

There is an open debate in the literature on whether efficiencies are a necessary condition for a merger to be innovation improving. In the fairly general class of models studied by Motta & Tarantino (2021), a merger absent efficiencies is always detrimental to innovation.[6] These are models of cost-reducing innovation, which is akin to process innovation, where efficiencies reduce the fixed cost of innovation. The conclusion of these models, and similar conclusions by Federico et al. (2018), supported the divestitures imposed by the European Commission on the Dow-DuPont merger in 2017, a milestone case for innovation concerns in merger control.[7] On the contrary, in the model described by Burreau et al. (2021) a merger that generates no efficiencies can still lead to more innovation.[8] This is a model of demand-enhancing innovation, which

2 As quoted from Paul Krugman: "A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker." Source: The Age of Diminished Expectations (1990).

3 Schumpeter, Joseph A. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle. Rochester, NY, 1934. https://papers.ssrn.com/abstract=1496199.

4 Arrow, Kenneth. "Economic Welfare and the Allocation of Resources for Invention." In The Rate and Direction of Inventive Activity: Economic and Social Factors, 609–26. Princeton University Press, 1962. https://www.nber.org/books-and-chapters/rate-and-direction-inventive-activity-economic-and-social-factors/economic-welfare-and-allocation-resources-invention.

5 For more information see https://www.nytimes.com/2021/12/18/business/dealbook/deals-of-the-year.html.

6 Motta, Massimo & Emanuele Tarantino. "The Effect of Horizontal Mergers, When Firms Compete in Prices and Investments." International Journal of Industrial Organization (2021): 102774. https://doi.org/10.1016/j.ijindorg.2021.102774.

7 Federico, Giulio, Gregor Langus & Tommaso Valletti. "Horizontal Mergers and Product Innovation." International Journal of Industrial Organization (2018): 590–612. https://doi.org/10.1016/j.ijindorg.2018.11.005.

8 Bourreau, Marc, Bruno Jullien & Yassine Lefouili. "Mergers and Demand-Enhancing Innovation," (2021). https://papers.ssrn.com/abstract=3846118.

is closer to product innovation. The authors also propose a comparison between innovation diversion and price diversion ratios to evaluate the likely impact of a merger on innovation.

Assessing the existence and the extent of efficiencies generated by a merger is a challenging task, both before and after the merger has taken place. The problem lies in the lack of a counterfactual, as it is often the case in economics. Once the merger is realized, it is impossible to know how much the merging parties would have produced or how much they would have innovated absent the merger. An additional issue is the measurement of innovation, which is a long and complex process. The economic literature has frequently relied on patents as a readily available source of information on the innovation.[9] The recent work on killer acquisitions by Cunningham et al. (2019), instead, studies the development and approval process in the pharmaceutical sector.[10] A further challenge is given by the nature of innovation, which is often carried out by young startups. There is very little information available on these small enterprises, and their prospects tend to be uncertain.

II. A USEFUL EXPERIMENT: WHAT HAPPENS WHEN THE AUTHORITY GOES BLIND?

A sudden change in policy provides a unique opportunity to find out the actual effect of merger control on innovation. In December 2000, the Clinton administration approved an amendment to the Hart-Scott-Rodino act (hereafter "HSR act") that disciplines the pre-merger notification requirements in the United States. The four pages amendment was part of a 320-page omnibus bill signed at the end of the year, and so it was not a publicly transparent or an expected attempt to weaken antitrust enforcement in the United States.[11] Despite its little news coverage, this amendment led to a 70 percent decline in pre-merger notifications. By avoiding pre-merger notifications, firms elude antitrust enforcement almost entirely, resulting in stealth consolidation. Wollmann (2019) defines stealth consolidation as a series of horizontal mergers that go unnoticed by the antitrust authorities, because they are not notified.[12] Mergers consumed in the period before the amendment provide a suitable counterfactual for the new mergers that arise due to stealth consolidation and that are outside of merger control by the authorities. This allows us to identify the effect of these new mergers on innovation, which is ultimately the effect of a policy change that removes merger control for a subset of mergers.

The recent work of Morzenti (2023) uses patenting activity as a measure of innovation, and so it focuses on the first stages of the innovation process.[13] On average, mergers lead to a 28 percent decline in innovation in the 6 years following the transaction. However, there is high heterogeneity around this figure, as 36 percent of these mergers actually raise innovation. This implies that the work of an antitrust authority is particularly challenging when dealing with the innovation effects of a merger, and only a careful study of each case can determine its likely outcomes. Removing pre-merger notifications, instead, prevents the authority from monitoring every transaction for potential harmful effects. Indeed, horizontal mergers that were not notified due to the amendment lead to a further 30 percent decline in innovation. This can be considered the effect of removing antitrust scrutiny indiscriminately. A notification to the authorities, instead, would have prevented this decline in innovation.

A particularly strong decrease in process innovation drives the decline in overall innovation, supporting the argumentations of Motta & Tarantino (2021) on cost reducing innovation. On the other hand, the effect on product innovation is less pronounced. This suggests that affected firms become less productive after these mergers, and this can have dire consequences in the long run for economic growth and welfare. The two industries that are most affected by the policy change are big tech and the pharmaceutical sector. This is not surprising, as these are the industries that produce most patents, and so they have the most innovation to lose.

The burgeoning literature on killer acquisitions focuses on the future of firms that are target of acquisitions. In the case of the amendment to the HSR act, however, it is the acquiring firms that tends to decrease innovation more after the merger. This phenomenon has been called reverse killer acquisition by Caffarra et al. (2020), and it implies that the large acquiring firm kills its own project to replace it with the new

9 See for instance the work of Haucap, Justus, Alexander Rasch & Joel Stiebale. "How Mergers Affect Innovation: Theory and Evidence." International Journal of Industrial Organization (2019): 283–325. https://doi.org/10.1016/j.ijindorg.2018.10.003.

10 Cunningham, Colleen, Florian Ederer & Song Ma. "Killer Acquisitions" (2019)

11 Lancieri, Filippo, Eric A. Posner & Luigi Zingales. "The Political Economy of the Decline of Antitrust Enforcement in the United States." Antitrust Law Journal (Forthcoming) (2022)

12 Wollmann, Thomas G. "Stealth Consolidation: Evidence from an Amendment to the Hart-Scott-Rodino Act." American Economic Review: Insights 1, no. 1 (2019): 77–94. https://doi.org/10.1257/aeri.20180137.

13 Morzenti, Giovanni. "Antitrust Policy and Innovation," Mimeo (2023) https://www.dropbox.com/s/pxwr4wt9hh5rate/Antitrust_and_Innovation___Paper_V2.pdf?dl=0.

acquired one.[14] Even though the acquiring firm develops a final product, by killing its original project the firm reduces the number of competing products on the market, and this has the potential to harm the consumer.

As the amendment to the HSR act focused on small and private firms, it is natural to wonder whether the overall level of innovation was affected in a significant and detectable way. If the merging firm has an incentive to reduce innovation after the merger, then its rivals might find it optimal to increase their innovation effort in response. Therefore, the effect of a merger on the whole industry is a priori ambiguous. In the case of the amendment to the HSR act, the affected industries became more concentrated after the policy change. Moreover, the profit margins of these industries soared, indicating a likely increase in market power. Both R&D spending and overall investment declined after the policy change, and this can be considered the effect of a merger wave that is not monitored by the antitrust authority.

III. A GLOBAL PHENOMENON

The United States were one of the first countries to relax their pre-merger notification rules, but they were not the only one by far. In the two past decades 11 countries have amended their notification practices to make them more lenient, largely to follow in the United States footsteps. As an example, Italy amended its pre-merger notification program in 2012, resulting in an abrupt 90 percent year-over-year decline in merger flings. The list includes several European countries, but also Canada, Japan, and Russia. In all these cases, pre-merger filings declined sharply. The fact that notifications diminished is not surprising, as this was the original intent of regulators. The size of such a decrease is quite striking, and it shows that such amendments had a significant impact on the merger policy in affected countries.

Moreover, these countries show evidence of stealth consolidation after the relaxation of notification rules. This implies that these policy changes generated more horizontal mergers that were outside of the control of the national antitrust authorities. As in the case of the United States, these other countries experienced rising levels of concentration in affected industries, indicating that merging firms are gaining more market power due to these amendments. These findings relate to the recent evidence of rising market power in the United States and on a global level. De Loecker et al. (2022) show that markups have been increasing in the past decades, indicating that firms are becoming more profitable, and they are capturing a larger share of the economic surplus.[15] Using a similar approach, Diez et al. (2019) show that markups have risen on a global scale.[16] A laxer antitrust policy is often mentioned as a possible explanation for the rising firms' market power. The HSR amendment in the United States and similar policy changes around the world are a clear example of the global relaxation of antitrust enforcement. And the first scientific studies on their outcomes do not paint a favorable picture.

IV. WHAT HAS BEEN DONE AND WHAT CAN BE DONE?

Given the available evidence, the regulators have started to recognize the need for thorough antitrust scrutiny in industries that are most crucial for innovation. For instance, in the United States the FTC issued special orders compelling big tech to disclose previously non-reportable deals, citing past stealth consolidation as justification.[17] Moreover, the New York Senate passed a bill creating a first-of-its-kind $9.2 million state-specific pre-merger notification threshold. This new regulation was implemented following concerns regarding the big tech sector, as stated by the regulators themselves.[18] In the European Union a recent Commission Guidance on Article 22 regulating the referral of transactions to the European Commission, states that national competition authorities can report mergers that do not trigger national filings to the Commission, if these affect the pharmaceutical and the digital sectors.[19] All these examples show that regulators around the world are considering seriously the issue of mergers and innovation, and they are moving to restore antitrust control over industries that are inherently innovative.

14 Caffarra, Cristina, Greg Crawford & Tommaso Valletti. "'How Tech Rolls': Potential Competition and 'Reverse' Killer Acquisitions." VoxEU (blog), May 11, 2020. https://www.competitionpolicyinternational.com/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions/.

15 De Loecker, Jan, Jan Eeckhout & Gabriel Unger. "The Rise of Market Power and the Macroeconomic Implications" The Quarterly Journal of Economics 135, no. 2 (2022): 561–644. https://doi.org/10.1093/qje/qjz041.

16 Diez, Federico J, Jiayue Fan & Carolina Villegas-Sanchez. "Global Declining Competition," (2019)

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19 "... this includes in particular transactions in the digital and pharma sectors." Commission Guidance on the application of Article 22 https://ec.europa.eu/competition/consultations/2021_merger_control/guidance_article_22_referrals.pdf.

The available evidence shows that relaxing antitrust policy could have far reaching and unintended consequences. A wave of mergers outside the control of antitrust authorities can increase concentration, raise profits, and stifle innovation. Policymakers should not dismiss small mergers as negligible for competition and innovation either. Quite to the contrary, a large number of these transactions may have a profound impact in localized and segmented product markets. By implementing a series of small acquisitions in a fragmented product market, a strategy called “roll-up” in the private equity jargon, large companies can increase concentration without triggering any merger notification. The antitrust authorities should be ever vigilant, and policymakers should ensure that they have the appropriate laws and funds to do so. By monitoring the market, the authorities can foster competition, to the benefit of the consumer and of future innovation.

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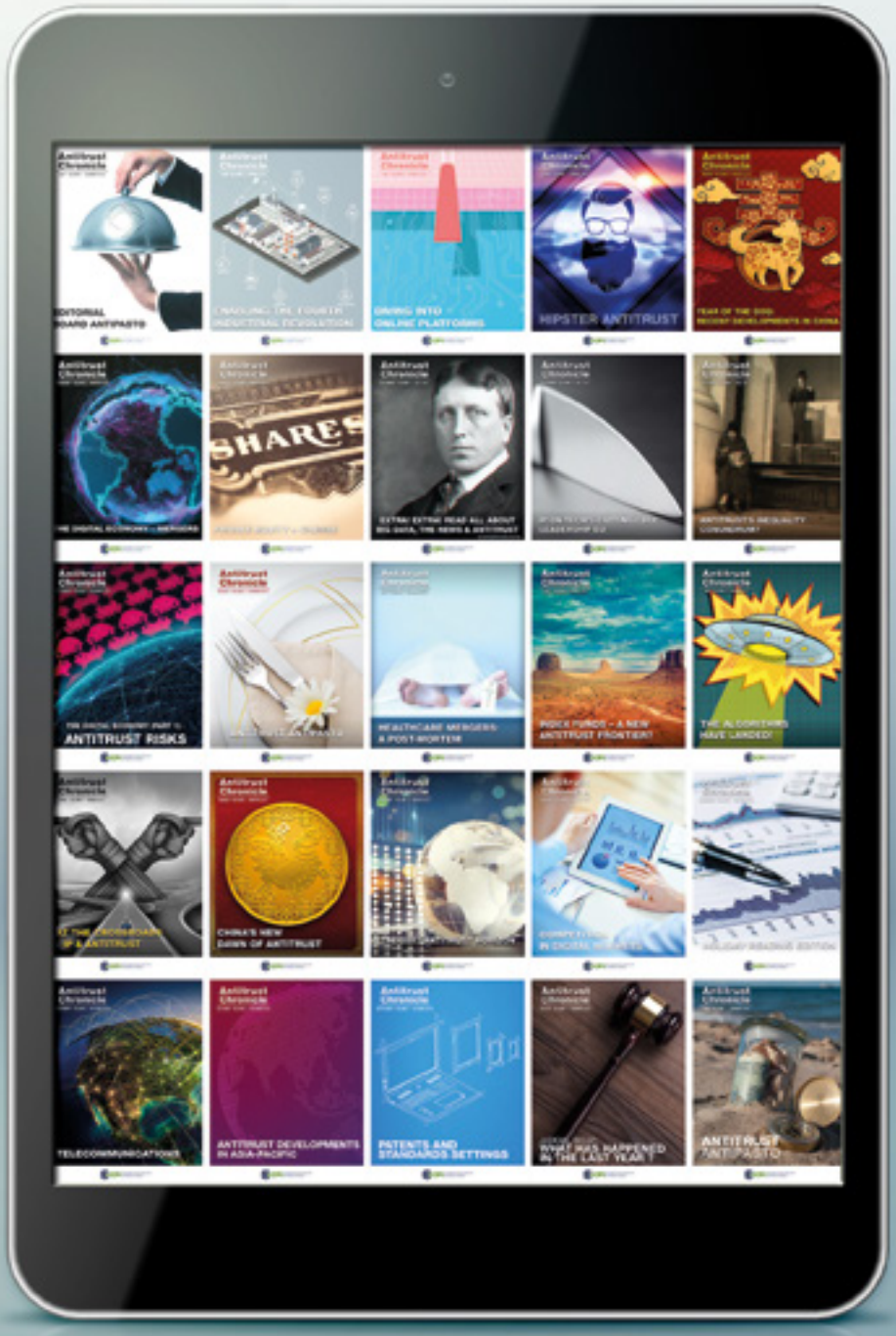


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