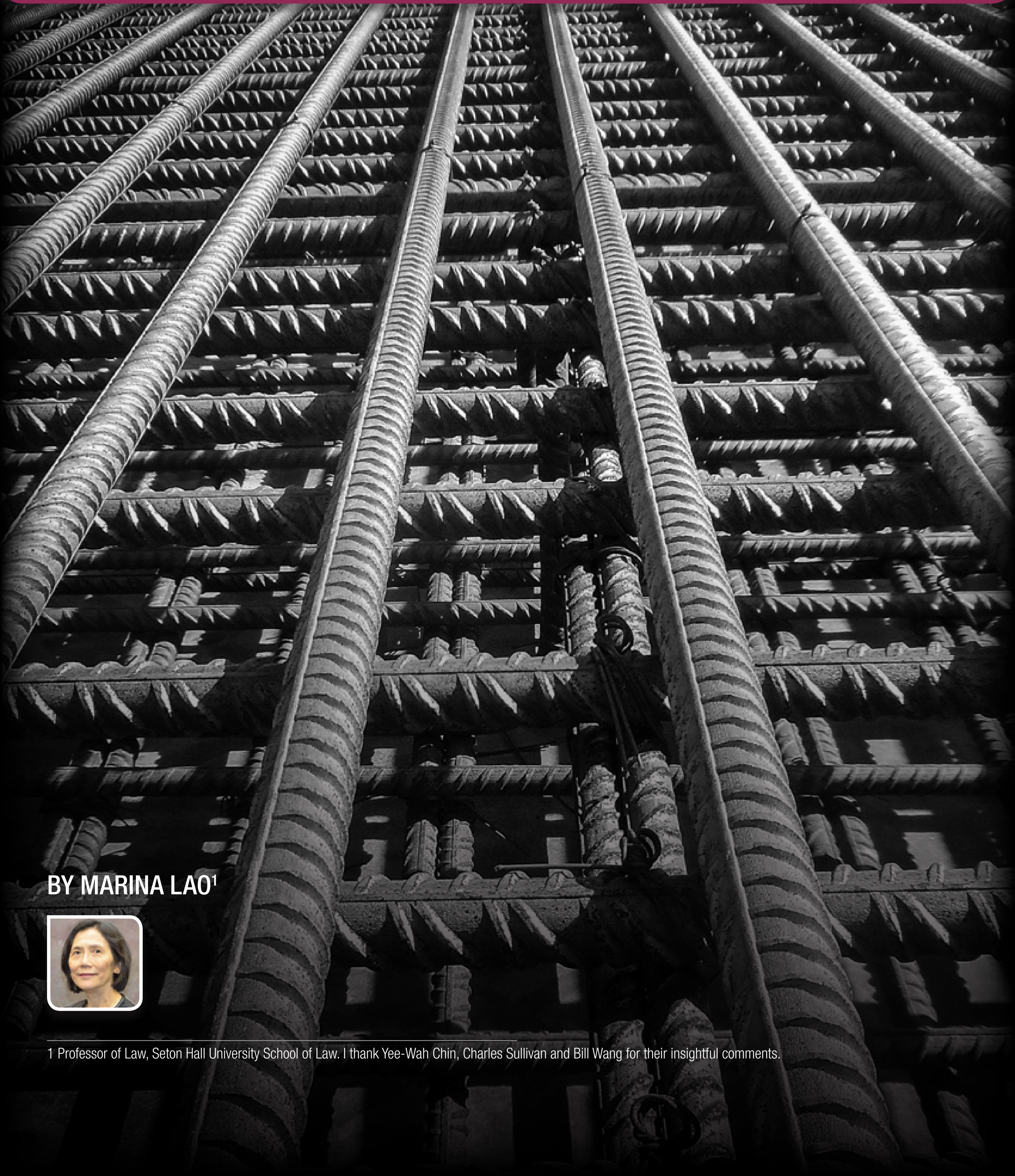
STRENGTHENING ANTITRUST ENFORCEMENT WITHIN THE CONSUMER WELFARE RUBRIC



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I. INTRODUCTION

Even the harshest critics of the digital giants — Facebook, Amazon, Apple, Google, and Microsoft — will likely acknowledge that digital technology has greatly benefited consumers and businesses alike, and has transformed much of the global economy. The dominance of these large digital platforms in their respective core areas and the breadth of their activities across multiple markets, however, is troubling.[2] From a competition policy perspective, although concentration can be efficient and thus benefit consumers, the absence of competition over time carries costs. Economic theory suggests that in the long-run, without the constraint of competition, dominant incumbents have less incentive to innovate or to perform their best. Consumers also lose choice and the opportunity to benefit from potential innovations of new companies that have difficulty entering the market or scaling up. Some concerns extend beyond the economic: a number of critics also attribute a range of non-economic, social, and political ills to the largest digital companies' unbridled power.[3]

During this period of unparalleled growth in the technology sector, antitrust enforcement in the United States has been surprisingly lax. Google, Facebook, Apple, Amazon, and Microsoft, in the aggregate, managed to make over 500 acquisitions in the past ten to fifteen years, most without any challenge from either American or European antitrust enforcers or at most with only a few conditions attached.[4] Some of these acquisitions have allowed already dominant platforms to consolidate their positions in a core market, eliminate a potential future rival, or expand into adjacent spaces.[5] Exacerbating the problem is that natural entry barriers into these markets are already unusually high because of a combination of factors, including the centrality of data to platform markets, which gives data-rich incumbents a huge competitive advantage over would-be rivals, economies of scale and scope, and significant network effects.

2 For example, recent data shows that Google's search engine handles approximately 90 percent of all general internet searches worldwide. See Statista, https://www.statista.com/statistics/216573/worldwide-market-share-of-search-engines/. Amazon garners 83 percent of e-book sales and 41 percent of all e-commerce retail sales in the U.S. See Authorearnings.com, http://authorearnings.com/report/february-2017/ & Statista, https://www.statista.com/statistics/788109/amazon-retail-market-share-usa/. Facebook is by far the most popular social network worldwide outside of China, with 69 percent of the worldwide social media market. See StatCounter, http://gs.statcounter.com/social-media-stats/all/united-states-of-america.

3 See, e.g. Tim Wu, The Curse of Bigness: Antitrust in the New Gilded Age 21 (Columbia Global Reports 2018); Lina Khan & Sandeep Vaheesan, *Market Power and Inequality: The Antitrust Counterrevolution and its Discontents*, 11 Harv. L. & Pol'y Rev. 235, 235-36 (2017).

4 See Nicolas Petit, *Technology Giants, the "Moligopoly" Hypothesis and Holistic Competition: A Primer*, at 28-29, Oct. 20, 2016, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2856502; Unlocking Digital Competition: Report of the Digital Competition Expert Panel 91 (Mar. 2019) [hereinafter, the Furman Report].

5 For example, Facebook's acquisition of Instagram in 2012 and Google's acquisition of DoubleClick in 2007 are both examples of a large digital platform incumbent acquiring a smaller firm operating in an adjacent space which could have developed into a competitive force against the incumbent in the future.

Alarm over the enormous power of the tech platforms, the difficulty of entry into these markets, and frustration over decades of antitrust permissiveness, has led to a healthy discussion of ways to reinvigorate antitrust and to address the special competition challenges of the digital markets. Some critics, going further, have frontally challenged the "consumer welfare" paradigm that underpins application of the antitrust laws. They argue that the consumer welfare standard is incapable of addressing the special economic problems of concentration and power in digital markets because of the standard's perceived exclusive focus on consumers and on short-term *price* effects, ignoring non-consumers and non-price effects such as quality and innovation and data-related effects.[6] Other critics, populists who are often referred to as "New Brandeisians" or "hipster" antitrusters, charge more broadly that the standard is fundamentally flawed in that it does not address political power, or the social consequences of concentration itself and of the tools the platforms have created.[7] Among the non-economic harms most often noted are wealth and income inequality, privacy intrusions, data security breaches, political corruption, and the proliferation of "fake news" and hateful messages.

Antitrust enforcement, indeed, has been far too lax. I argue, however, that stronger antitrust enforcement is possible within the consumer welfare rubric because that standard is capable of a broader reach than is typically assumed. Antitrust enforcement has fallen short, not because of the legal deficiencies of consumer welfare but because of practical problems of implementation and other factors. Finding solutions to those challenges would be a less disruptive and more effective response than abandoning a paradigm that is conceptually sound and has been incorporated into competition policies throughout the world. To the extent that there may be a few intractable problems in digital markets that competition cannot solve, we could consider the possibility of limited legislation and regulation as a supplement to antitrust, which would be preferable to a wholesale displacement of the consumer welfare standard.

It is true that consumer welfare cannot reach transgressions and non-economic harms that are unrelated, or only tangentially related, to market competition, but no law can be (or should be) expected to perform tasks for which they were not designed. Tackling those problems directly, through use of other existing laws or new laws or regulations specifically designed to address them, would be more productive and less likely to have unintended and undesirable consequences.[8]

II. THE BROAD, IF NOT FULLY UTILIZED, SCOPE OF CONSUMER WELFARE

The "consumer welfare" paradigm has been the economic underpinning of American antitrust law since the Supreme Court first endorsed it in 1979,[9] and it has been generally embraced by competition authorities in Europe and other countries.[10] Curiously, however, the term has no uniform, or even clear, definition in antitrust law.[11] Under Robert Bork's initial narrow conception as articulated in *The Antitrust Paradox*,[12] the term was almost synonymous with allocative efficiency, and thus only practices that artificially restrict output would be deemed to decrease consumer welfare.[13] But it is clear that the term does not have that narrow meaning in practice.[14] As used in antitrust, "consumer welfare" is simply a term of art that expresses the general principle that the antitrust laws are for the protection of competition, because the distortion of competition

6 See, e.g. Maurice E. Stucke & Allen P. Grunes, Big Data and Competition Policy (Oxford U. Press 2016).

7 For commentaries generally considered to be New Brandeisian, see, e.g. Lina M. Khan, *The Ideological Roots of America's Market Power and Inequality: The Antitrust Counterrevolution and its Discontents*, 127 Yale L.J. Forum 960 (2018); Sandeep Vaheesan, *The Twilight of the Technocrats' Monopoly on Antitrust?*, 127 Yale L.J. Forum 980 (2018); Ramsi Woodcock, *Inconsistency in Antitrust*, 68 U. Miami L. Rev. 105 (2013).

8 For example, it is not even clear that breaking up Facebook would likely result in less, rather than more, fake news. With more social media platforms vying for our attention, the incentive to screen out fake news might be even further reduced because many consumers gravitate to the loudest and the most sensational "news," and so competition might not alleviate the harm but actually increase it.

9 *Reiter v. Sonotone Corp.*, 442 U.S. 330, 343 (1979). See also *Nat'l Collegiate Athletic Ass'n v. Bd. Of Regents of Univ. of Okla.*, 468 U.S. 85, 107 (1984); *Arizona v. Maricopa County Med. Soc'y*, 457 U.S. 332, 367 (1982).

10 See, e.g. *The Furman Report*, *supra* note 4.

11 Among antitrust scholars, the debate usually revolves around whether "consumer welfare" means a *total* surplus standard, which was how Bork used it, or a *consumer* surplus standard. See Steven C. Salop, *Question: What Is the Real and Proper Antitrust Welfare Standard? Answer: The True Consumer Welfare Standard*, 22 Loy. Consumer L. Rev. 336 (2010). Total welfare looks at the combined consumer and producer welfare, while consumer welfare disregards producer welfare and only looks at the effect on consumers.

12 Robert H. Bork, The Antitrust Paradox: A Policy at War with Itself (1978)

13 In fact, Bork meant "total surplus" when he used the term "consumer welfare," that is, the sum of consumer and producer surplus. In other words, under Bork's interpretation, conduct would be condemned only if any loss to consumers is not offset by any gain to producers. See Robert H. Bork, The Antitrust Paradox: A Policy at War with Itself 90-160 (1978) (discussing the neoclassical efficiency model).

14 See, e.g. Barak Y. Orbach, *The Antitrust Consumer Welfare Paradox*, 7 J. Competition L. & Econ. 133 (2011)

ultimately harms consumers,[15] and it is hardly as restrictive in scope as many believe.

A. "Consumer" Welfare Extends Beyond Literal Consumers

The consumer welfare standard does not limit antitrust law to the protection of *literal* consumers but clearly protects business purchasers against the harms of restraints on competition as well. This includes intermediate purchasers in the supply chain regardless of whether an intermediate purchaser's higher prices feed through to the final purchaser.[16] Intermediate purchasers and even end-use business purchasers, of course, are not literally consumers.

"Consumer" welfare, in fact, extends beyond considering how sellers' conduct impacts the welfare of buyers, but also permits antitrust law to act against distortions of the competitive process on the buyer side that have harmful effects on *sellers*. For example, conspiracies among purchasers to reduce prices paid to sellers of inputs have long been treated as antitrust violations,[17] without the need to establish higher prices or reduced output in the downstream end-use market. The law against monopolization, likewise, captures *monopsony* as well.[18]

On the important issue of workers, antitrust enforcers and private plaintiffs have challenged collusion among employers based on adverse effects on workers, essentially treating harms to workers (who are sellers in the labor market) as cognizable anticompetitive effects, without linking lower employee wages to higher prices or reduced output in a downstream product market.[19] The best known of the enforcement actions involve the "no poaching" agreements among several high-tech employers to refrain from soliciting each other's employees.[20] Clearly, if only harm to consumers in the literal sense were cognizable, these cases might not have been brought since finding an adverse effect in the downstream end-product market resulting from depressed wages of workers involved in bringing those products to market (or lower prices for other inputs) would have been an uphill battle. In short, the record of enforcement actions in the U.S. and court decisions show that the word "consumer" in consumer welfare is not used literally and reaches more broadly than is popularly believed.

The more challenging, related, issue stems from the antitrust maxim that antitrust laws protect competition, not competitors,[21] which is often interpreted to mean that harms to competitors from a dominant firm's disruptions to competition do not count unless there is discernible adverse impact on consumers. I believe that this interpretation is hyper-literal and does not serve the ultimate goal of antitrust, which is to foster competition to benefit consumers and the economy. In digital economy markets where technologies frequently change and innovations can revolutionize the nature of existing products and services, protecting competitors from unfair strategies by dominant incumbents may be inseparable from protecting competition. Without competitors, it is hard to know whether a dominant firm's product is the best that technology can produce, or whether improved (or better, but different) products and services are feasible but have not been introduced because of an incumbent's dominance and exclusion of potential rivals.

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15 See, e.g. *United States v. Microsoft Corp.*, 253 F.3d 34, 58 (D.C. Cir. 2001) (speaking of the need to show more than harm to competitors; "it must harm the competitive *process* and thereby harm consumers"); *The Consumer Welfare Standard in Antitrust: Outdated or a Harbor in a Sea of Doubt?*, *Hearing Before the Subcomm. on Antitrust, Competition and Consumer Rights of the H. Comm. on the Judiciary*, 115th Cong. (2017) (opening statement of Carl Shapiro, Professor of Business and Economics, Haas School of Business, U. Cal. Berkeley) (the consumer welfare standard "means that a business practice is judged to be anticompetitive if it disrupts the anticompetitive process and harms trading parties on the other side of the market").

16 This is self-evident from the American "direct purchaser" rule, which restricts recovery of damages in an antitrust action to a direct purchaser, even if the direct purchaser passes on its higher costs resulting from the seller's anticompetitive conduct to the indirect purchasers (the direct purchasers' customers). The doctrine obviously would not exist if intermediate buyers were not considered "consumers" who could be harmed by antitrust violations. See, e.g. *Illinois Brick Co. v. Illinois*, 431 U.S. 720 (1977); *Hanover Shoe, Inc. v. United Shoe Machinery Corp.*, 392 U.S. 481 (1968).

17 See, e.g. *Mandeville Island Farms v. American Crystal Sugar Inc.*, 334 U.S. 219 (1948).

18 See, e.g. *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co.*, 549 U.S. 312, 324-25 (2007) ("Even if output prices remain constant, a predatory bidder can use its power as the predominant buyer of inputs to force down input prices and capture monopsony profits.").

19 Private class actions brought include: *Carruth v. Knorr-Bremse*, No. 2:18-CV-00469-CRE (W.D. Pa. April 18, 2018) (affecting rail equipment employees); *In re Broiler Chicken Grower Litig.*, No. 6:17-CV-00033-RJS (E.D. Okla. Sept. 1, 2017) (affecting chicken growers); *Deslandes v. McDonald's USA, LLC*, No. 1:17-cv-04857, (June 28, 2017) (affecting fast-food employees); *Bautista v. Carl Karcher Enters., LLC*, No. BC649777 (Cal. Super. Feb. 8, 2017) (affecting fast-food employees); *Seaman v. Duke University*, No. 1:15-CV-462 (M.D.N.C. filed June 9, 2015) (affecting university faculty); *In re High-Tech Employee Antitrust Litig.*, 856 F.Supp.2d 1103 (N.D. Cal. 2012) (affecting high-tech employees); *Fleischman v. Albany Medical Center*, No. 06-CV-0765 (Sept. 7, 2006) (affecting nurses).

20 See, e.g. *United States v. Adobe Sys., Inc.*, No. 10-cv-01629, 2010 WL 11417874 (D.D.C. Sept. 24, 2010); Complaint, *United States v. Lucasfilm Ltd.*, No. 10-cv-02220, 2010 WL 5344347 (D.D.C. Dec. 21, 2010); Complaint, *United States v. eBay, Inc.*, No. 12-cv-5869, 2012 WL 5727488 (N.D. Cal. Nov. 16, 2012).

21 *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 458 (1993); *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 488 (1977); *Brown Shoe Co., Inc. v United States*, 370 U.S. 294, 320 (1962).

Even if there is no evidence of direct and immediate consumer harm from a dominant firm's business practice that disrupts the competitive process and harms a competitor, I believe that indirect harm to consumers in the long run can be presumed. Harm to a competitor stunts the competitor's ability to invest in its own growth and development, and consumers, in turn, potentially lose out on new products and services that never emerge. The real difficulty here is making the factual distinction between harm to competitors that is based on competition on the merits, which antitrust law does not protect against, and harm from business strategies that is not so based. But this difficulty does not stem from a defect within the consumer welfare standard itself.

B. The Consumer Welfare Standard Is Capable of Capturing Non-Price Effects

Another popular critique of the consumer welfare standard comes from the misunderstanding that it is restricted to assessing short-run price and output effects. The standard, in fact, is not so restricted but is capable of taking in nonprice considerations, including quality, choice and innovation, because these features have value to consumers and clearly impact their welfare.[22] It is true that nonprice and dynamic harms, unlike higher prices, are unquantifiable and often not readily observable; that, along with high evidentiary standards currently imposed on plaintiffs, means that antitrust cases lacking any price effects are very difficult to establish and rarely brought.

The difficulty of showing nonprice harms makes antitrust enforcement in digital platform markets especially difficult because, in these markets, the monetary price of products and services is often zero for consumers. Where the price is zero, any harm from alleged anticompetitive conduct or mergers would necessarily be reflected in quality, innovation or other nonprice factors, not in price. Even in markets where the price to consumers is not zero, firms in the digital economy tend to compete more on innovation and quality than on price. The ability to consider the effects of conduct or mergers along nonprice dimensions, then, is critical in the digital economy.

The consumer welfare standard, however, is not a legal impediment to the consideration of these nonprice factors, as *Microsoft*[23] demonstrated. In *Microsoft*, the U.S. Court of Appeals affirmed most of the government's monopolization claims against the company despite the absence of evidence that Microsoft's conduct raised prices or reduced output for any product.[24] This outcome supports the argument that rejecting the consumer welfare standard is not necessary to reinvigorate antitrust law. Instead, making some targeted reforms in application could go a long way in spurring more robust enforcement. In a few areas where overly restrictive case precedents may stand as obstacles (e.g. the restrictive potential competition doctrine in the U.S.),[25] antitrust enforcers could seek a more expansive interpretation, or even an overruling, of the problematic relevant judicial precedents through the careful selection of test cases.

III. STRENGTHENING ANTITRUST ENFORCEMENT WITHIN THE CONSUMER WELFARE RUBRIC

Despite the broad scope of the consumer welfare standard, antitrust enforcement has in fact fallen short due to several factors, including the inability of antitrust enforcers to fully keep up with the new markets, the difficulty of applying nonprice metrics, burdensome evidentiary standards, and American courts' restrictive interpretation of a few important relevant antitrust doctrines. I believe that finding practical solutions to these problems should strengthen antitrust enforcement, within the consumer welfare rubric and without the need to jettison a paradigm that is conceptually sound and is embedded into competition policies of many countries including the U.S.

First, digital markets are fast-moving and complex, which requires enforcers to have expertise in order to truly understand them.[26] Having a deeper understanding of the technologies and the workings of these markets would allow enforcers to recognize more novel sources of market power, observe and analyze less visible nonprice competitive harms, understand the full impact of data on competition, evaluate efficiency claims, and understand what might or might not work to foster competition in a particular digital market.

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22 There is general agreement that innovation is more important to economic growth than price competition. See, e.g. Howard Shelanski, *Information, Innovation, and Competition Policy*, 161 U. Pa. L. Rev. 1663, 1674-75 (2013).

23 *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001).

24 The government had charged that, to protect its Windows monopoly, Microsoft engaged in a variety of exclusionary practices to squash a competing browser and another potential nascent technology before they could potentially succeed in developing the features that could threaten Microsoft's Windows monopoly. But there was no evidence that Microsoft's bad conduct raised prices either for Windows or for browsers (which were free to consumers).

25 See, e.g. *United States v. Marine Bancorporation*, 418 U.S. 602, 624-25 (1974) (on who is considered a "perceived potential entrant"); *United States v. Siemens Corp.*, 621 F.2d 499, 505 (2d Cir. 1980) (on who is considered an "actual potential entrant").

26 In the U.S., antitrust agencies have started taking steps in that direction, with the Federal Trade Commission having recently set up a Technology Task Force.

Second, challenges to mergers or to dominant firm conduct absent price effects are infrequently brought because of difficulties of proof and other problems. Because digital platforms generally do not compete on price, a greater willingness on the part of antitrust enforcers to investigate nonprice harms and assert loss of innovation and potential competition as theories of harm is key to more vigorous enforcement. While cases based on these harms are difficult to investigate and pursue, *Microsoft* demonstrates that success is possible; courts have been willing to find consumer harm, based on harm to the competitive process,[27] in the absence of any evidence that a monopolist's conduct led to higher prices or reduced output.

Third, reducing the evidentiary standards currently imposed on plaintiffs and adjusting presumptions and burden-shifting frameworks in a more pro-enforcement direction are moves that can be especially helpful for enforcement in digital markets where the alleged harm, being nonprice, is inherently difficult to prove. These types of reforms are not inconsistent with the consumer welfare standard flexibly applied, but may require persuasion of the federal judiciary.

Fourth, the doctrine of potential entry is hardly a bar to mergers today because of the Supreme Court's extremely narrow interpretation of that doctrine over four decades ago.[28] By analogy, it is probably equally difficult to rely on loss of potential competition as a theory of harm in a conduct case. Yet loss of potential competition is a genuine risk in digital markets and warrants continued agency attention. Much has changed in the economy in the forty to fifty years since the Supreme Court articulated the potential entry doctrine, and the time may be ripe to seek judicial reexamination of the doctrine when a good case presents itself. In short, the key to addressing the competitive challenges in today's digital markets is not to change the consumer welfare paradigm but to make intelligent changes within it.

IV. SOCIAL AND POLITICAL HARMS UNRELATED OR ONLY TANGENTIALLY RELATED TO COMPETITION

Of course, these changes would not address populist critiques that fault the consumer welfare standard for its failure to reach a panoply of social or political ills, such as economic and political inequality and threats to democracy.[29] The digital platform giants are also widely criticized for intrusion on consumer privacy, lack of transparency relating to data use, influence on the news and digital advertisements that we consume, negligence in managing data security, sloppiness in policing "fake news" and hateful messages, and more.

Critics are correct that antitrust law does not deal with these problems. But no law, including antitrust law, should be burdened with performing tasks for which they are ill-suited. Nor should any law be manipulated to make it function in ways for which they were not designed. Bringing antitrust to bear on corporate mismanagement or on the miscellaneous undesirable consequences of the platform's services, when they are unrelated to competition issues, would completely transform antitrust law and the role of enforcement agencies.

I believe that tackling non-competition related problems directly, using existing or new laws and policies targeted to the specific problems, should deliver better results and with less risk of unintended consequences. Consumer protection laws and specific privacy and data security regulations would be a better fix for transparency and privacy issues than antitrust law. Similarly, tax and labor laws, job-training and education initiatives, rather than antitrust, would be more effective in dealing with economic inequality or loss of jobs due to technological advances.

27 *U.S. v. Microsoft*, 253 F.3d 34, 58 (D.C. Cir. 2001) (stating that a prima facie case requires proof of "anticompetitive effects," but anticompetitive effects can be evidenced by conduct that "harm[s] the competitive process and thereby harm[s] consumers.").

28 *United States v. Marine Bancorporation*, 418 U.S. 602, 624-25 (1974) (stating the standard for "perceived potential entrant"); *United States v. Siemens Corp.*, 621 F.2d 499, 505 (2d Cir. 1980) (stating the standard for the "actual potential entrant" theory, which incidentally has never been endorsed by the Supreme Court).

29 See, e.g. Wu, *supra* note 3; Khan & Vaheesan, *supra* note 3.

V. THE RISKS OF A FUNDAMENTAL SHIFT FROM CONSUMER WELFARE

From the perspective of populists, another limitation of the consumer welfare standard is its neutrality on size. The standard, being economically grounded, does not act against size or market power standing on its own. Antitrust law does not prohibit a company's gaining or retaining market power due to economies of scale and scope or network effects, recognizing that size and concentration based on scale and scope can be efficient and deliver substantial consumer benefits. It also does not prevent organic growth by a successful company for similar reasons.

Populists tend to reject this economic grounding of antitrust and advocate a fundamental shift away from the consumer welfare paradigm, in order to permit more radical solutions such as "no-fault" breakups of the largest digital companies.[30] I do not share that perspective and believe that safeguarding competition, not combatting size, should remain the heart of competition law because, all else being equal, competition benefits consumers and the economy, and fosters innovation and growth. Abandoning consumer welfare in order to more easily "take down" the largest digital platforms risks throwing out much of what is good about the platforms along with the bad. It could also do unnecessary or disproportionate damage to a very creative and successful industry. Antitrust enforcers do have the tools to engage in more aggressive antitrust enforcement, while adhering to the consumer welfare principle, by apply existing law to a fuller extent and implementing some intelligent changes.

Some have suggested that replacing the consumer welfare standard would be useful, even if it is broader in scope than is popularly thought, because its misleading label causes confusion. Were we operating on a clean slate, I would probably agree; "consumer welfare" is an odd term to use for a standard that reaches beyond what is normally considered consumer welfare. But we are not operating on a clean slate — the paradigm has been incorporated into competition policies throughout the world, and the term infuses American antitrust decisions. While interpretation of the term differs to some extent among different jurisdictions and among scholars, there is general agreement on its basic meaning and purpose — to safeguard the competitive process so as to ultimately benefit consumers. Given that, there is no compelling reason to incur the disruption and uncertainties that would surely accompany such a change.

VI. CONCLUSION

Among those who agree that the antitrust laws are underenforced, there is nonetheless a chasm. There are those who see the consumer welfare standard as so defective that it should be abandoned. While I share their concerns about the market power problem, particularly in the digital platform markets, I do not believe that a complete shift in paradigm is necessary or wise. If used to its full scope, and with some intelligent changes within the system, the standard can address most of the competition-related economic problems that have been identified. If it becomes clear that competition truly cannot solve a few endemic problems in the digital platform markets, limited legislation or regulation could be called for, as a supplement to antitrust. Consumer welfare, indeed, does not directly address various social and political harms unrelated to competition, but these harms are better dealt with directly by laws designed for those specific purposes.

30 See, e.g. Elizabeth Warren, *Here's How We Can Break Up Big Tech* (Mar. 8, 2019), https://medium.com/@teamwarren/heres-how-we-can-break-up-big-tech-9ad9e0da324c (proposing to break up Amazon, Google, Facebook, and Apple — technology firms that have annual global revenue of $25 billion or more, and also operate a platform or a digital marketplace).