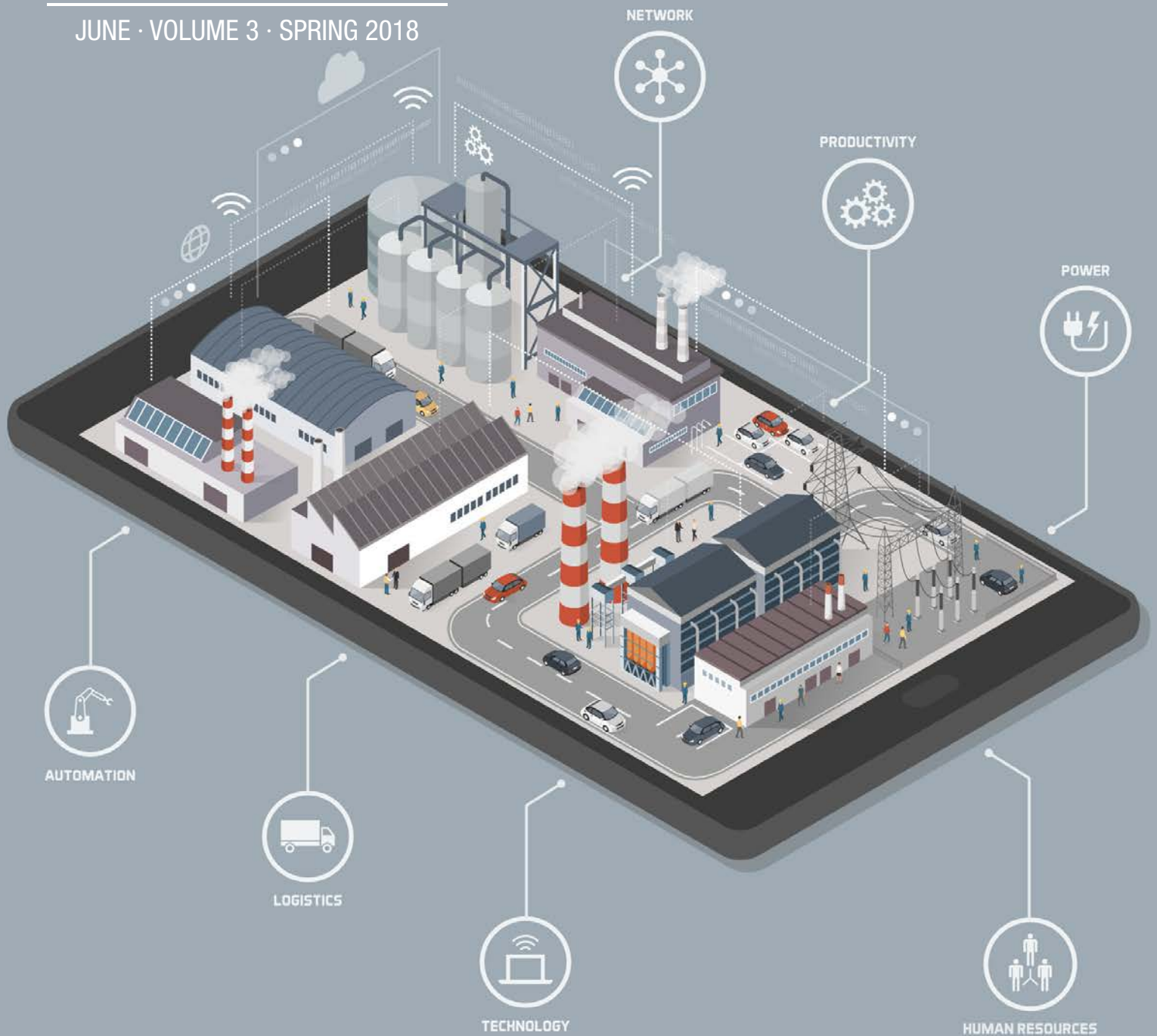


Antitrust Chronicle

JUNE · VOLUME 3 · SPRING 2018



ENABLING THE FOURTH INDUSTRIAL REVOLUTION

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LETTER FROM THE EDITOR

Dear Readers,

The June 2018 CPI Antitrust Chronicle addresses issues related to the fifth annual Leadership Conference, “Enabling the Fourth Industrial Revolution,” which took place in Washington, D.C. on April 10th. The panelists at the conference came from the private and public sectors: regulators, academics and private practitioners. We are pleased to have articles from speakers at the Leadership conference from all of the panels.

A focus of the day-long conference featured ranging views on innovation policy, intellectual property policy and international antitrust policy. Notably, the intersection and overlay of IP and antitrust with respect to the development of standardized technology and the continuing “Great Patent Debate” were hotly-discussed topics.

We are pleased to open this month’s Chronicle with an interview with Makan Delrahim, Assistant Attorney General for Antitrust at the U.S. Department of Justice, who gave a keynote address at the Leadership Conference.

The next Leadership EU Conference will take place in Brussels, Belgium on November 7, 2018

As always, thank you to our great panel of authors.

Sincerely,

CPI Team¹

¹ CPI thanks Qualcomm Inc. for their sponsorship of this issue of the Antitrust Chronicle. Sponsoring an issue of the Chronicle entails the suggestion of a specific topic or theme for discussion in a given publication. CPI determines whether the suggestion merits a dedicated conversation, as is the case with the current issue of the Chronicle, and takes steps to ensure that the viewpoints relevant to a balanced debate are invited to participate.

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CPI Talks...

An interview with Makan Delrahim, Assistant Attorney General for Antitrust at the U.S. Department of Justice. Mr. Delrahim graciously agreed to answer questions posed by Judge Douglas H. Ginsburg.

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LEADERSHIP

DISCUSS. DEBATE. UNITE. LEAD.

IP Leadership DC: Key Takeaways and The Path Forward

By Kirti Gupta

The fifth annual IP Leadership 2018 conference in Washington DC began with the broad recognition of the critical importance of 5G/IoT technologies in enabling the Fourth Industrial Revolution, followed by topics that explored IP and competition policies needed to ensure its success. The panels and the keynote addresses by Congressman Steve Stivers and DOJ Antitrust Division head Makan Delrahim covered recent developments related to: the impact of recent decisions from the U.S. Supreme Court on patent eligible subject matter and the patent invalidity process at the USPTO's Patent Trial and Appeal Board, on entrepreneurship and innovation; antitrust concerns with potential concerted action in the development of standards-development organization intellectual property rights policies; and the importance of providing due process rights and respecting international comity concerns in antitrust actions. A discussion across policy makers, scholars, and practitioners provided a framework and ideas for future analysis for informed policy making.

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Innovation and U.S. Patent Law

By Paul R. Michel & Matthew J. Dowd

Because the strength of patent rights gauges the incentive to invest, America's future is threatened by the weakening of those rights. Starting in 2006 and continuing to today, excessive and uncoordinated incursions by the Supreme Court, the Congress and the patent office have enfeebled patent rights. The American Patent System, previously the best in the world, but now ranked 12th, is failing, patenting is being avoided by many, and investments are now flowing away from inventive start-ups and away from America to more secure opportunities elsewhere. Halting this decline has become a national priority. But to revive patents, we must first understand how and why the system was gutted.

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The Antitrust Assault on Intellectual Property

By David J. Kappos

The importance of intellectual property ("IP") and its role in promoting economic growth and consumer welfare have long been recognized in the U.S. Despite the risks involved in tampering with a system that has benefitted this country, some U.S. Government agencies have in recent years been anything but careful in their approach to IP issues. Abandoning antitrust law's historical deference to the exercise of core IP rights, authorities have taken to using antitrust enforcement to favor IP users over innovators and to reduce the value of IP, threatening innovation incentives. Neither antitrust principles nor sound policy supports such measures. These practices should cease before they do permanent damage to our nation's innovation ecosystem and the national economy.

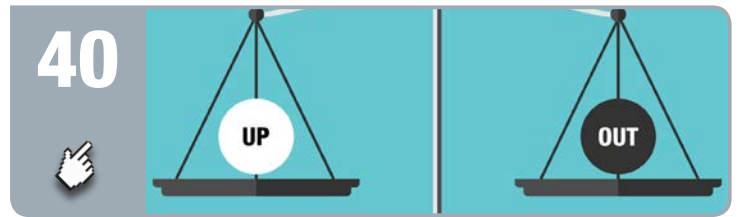
SUMMARIES



The Policy Challenge of Artificial Intelligence

By James Bessen

The new technologies of the “Fourth Industrial Revolution” promise to bring major policy challenges. Perhaps the biggest challenge that new information technologies pose to intellectual property and antitrust policy is their effect on the diffusion of knowledge. Increasingly, large firms are becoming more dominant in their markets and information technology is a major reason for this. This marks a slowdown in the diffusion of technical knowledge that results in rising industry concentration, slower average productivity growth, and growing wage inequality. Both IP law and antitrust law pay heed to balancing innovation incentives against the need for disclosure and competition. The policy challenge of new information technologies is to restore that balance.



Enabling Technology, Social Returns to Innovation, and Antitrust: The Tragedy Of Depressed Royalties

By David J. Teece

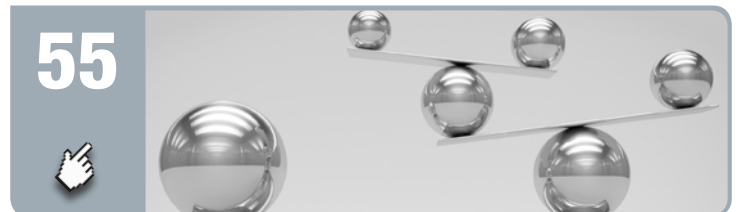
Innovation is the handmaiden of competition and economic growth. Few activities have larger payoffs than investment in activities which support innovation, especially R&D. However, inventors and private firms often struggle to capture an adequate return because of spillovers which benefit other firms and consumers. Social returns are at minimum three times private returns (enabling technologies likely have greater multiples). Absent government support, significant underinvestment in R&D to support enabling technologies is likely because of the difficulties associated with finding business models that enable inventors to profit from innovation. Mobile wireless technologies supporting 3G, 4G and 5G have large spillovers. Sound technology policy should support generous royalties. These considerations are ignored in the antitrust debate around patent hold up and hold out, for standards essential patents. That debate is framed on static terms. Dynamic forward looking policy considerations should be center stage.



Standards Development Organizations as Two-Sided Markets

By Anne Layne-Farrar

Payment cards and dating websites may be the most famous examples of two-sided markets, but technology standard development organizations (“SDOs”) offer another example of two-sided platforms. How SDOs set the rules for their members can have wide-reaching effects – including on the SDO’s ability to attract and keep participants. This short note explains how SDO governance rules, and the procedures for forming governance committees, impact SDO member participation, including several real world examples from the ICT and computing industries.



Competition, Innovation and Intellectual Property... The Elusive Balance

By Sir Philip Lowe

In this article, Philip Lowe assesses the progress made so far in promoting international convergence in antitrust law and practice. Considerable efforts have been made to reach consensus between jurisdictions, both on substance and process. The OECD and the International Competition Network have played an important role in this. Despite the many differences between countries, it has been possible on a pragmatic basis to devise remedies to antitrust problems on global markets which make sense for businesses and for consumers in all jurisdictions. But there is still a long way to go. Finding the right balance between protecting IP rights and promoting competition and follow-on innovation is a difficult task, even within a single jurisdiction. But we cannot believe simultaneously in competition, innovation and protection of IP rights without achieving this elusive balance.

WHAT'S NEXT?

Our July 2018 Antitrust Chronicle will feature articles from members of CPI's Editorial Advisory Board.

ANNOUNCEMENTS

CPI wants to hear from our subscribers. In the remaining months of 2018, 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 CHRONICLE AUGUST 2018 & SEPTEMBER 2018

The August 2018 Antitrust Chronicle will focus on recent developments in **Vertical Mergers**.

Our topic for the September 2018 Chronicle will focus on **Platform Competition and Antitrust**.

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 in any topic related to competition and regulation, however, priority will be given to articles addressing the abovementioned topics. Co-authors are always welcome.





With Makan Delrahim, an interview by Judge Douglas Ginsburg

Makan Delrahim, the Assistant Attorney General for Antitrust at the U.S. Department of Justice, delivered the keynote address at the Leadership Conference on IP, Antitrust, and Innovation Policy, which was co-sponsored by Competition Policy International. Following up on that discussion, Mr. Delrahim graciously agreed to answer the following questions posed by Judge Douglas H. Ginsburg.

Thank you, AAG Delrahim, for granting this interview to CPI.

- 1. You mentioned that some foreign enforcement agencies have read the 2015 IEEE business review letter as endorsing efforts by standard-setting organizations to restrain patentees from seeking to enjoin infringement of a patent subject to a FRAND commitment. You have advanced a very different view of the propriety of seeking an injunction in that circumstance. Why not just rescind the IEEE letter, at least prospectively, so as to avoid the possibility of further misinterpretation?**

The business review letter that the Division issued to IEEE in 2015 in response to IEEE's request states that "[t]he Department's task in the business review process is to advise the requesting party of the Department's present antitrust enforcement intentions regarding the proposed conduct." While many in the antitrust community – including our foreign enforcer colleagues – may look to our business review letters for insight, it is important to keep in mind that these letters are limited in their application to our *present enforcement intentions* as they relate to the conduct proposed in the request. The Division always reserves the right to bring an enforcement action if, as more evidence becomes available, the actual operation of the proposed conduct proves to be anticompetitive. I have lately expressed concerns that promulgating rules that limit the ability of patent holders to seek injunctions risks undermining incentives to innovate. I have also said that such rules could potentially violate the antitrust laws where the limitation is imposed by a group of implementers with market power and has the effect of pushing royalty rates down. Nothing in the IEEE letter prevents the Division from acting where newly uncovered evidence discloses that those circumstances are present.

- 2. Referencing your earlier speech at the University of Southern California, you stated that when a court denies injunctive relief to a patentee, it “run[s] the risk of turning a FRAND commitment into a compulsory license.” Yet a FRAND commitment is by its nature a promise to license, albeit at a rate to be set later. What, then, is the precise nature of your concern?**

A FRAND commitment may be a promise to license, but it should certainly not be construed as an *unconditional* promise. In fact, it is rather typical for a FRAND commitment to include conditions. To take one example, it frequently occurs that one patent holder offers to license on FRAND terms a second SEP holder, so long as the second SEP holder reciprocates. In a situation in which the second SEP holder refuses to offer a reciprocal license to the first SEP holder, we would not expect the first SEP holder to proceed with licensing the second SEP holder, and we would not think it reasonable for a court to require it, because the court would be imposing on the first patent holder a more onerous set of obligations than the patent holder agreed to honor when it made the commitment. The same principle applies to a patent holder's right to seek an injunction. The patent right confers on the patent holder a right to exclude. Courts should not take it upon themselves to craft additional limitations on that right, or they risk undermining the system of incentives that our forefathers contemplated when they framed the U.S. Constitution. If, in making a FRAND commitment, a patent holder has expressly agreed not to seek an injunction against a putative licensee, then that is a fact that courts can take into account during litigation.

3. Referencing your earlier speech at the University of Pennsylvania, you argued antitrust law is not an appropriate means by which to resolve licensing disputes “between intellectual property holders and implementers regarding the scope of FRAND commitments.” Instead, you said “a contract theory is adequate and more appropriate” to the task. Is there no role for other sources of law, such as the trade statutes administered by the International Trade Commission?

Contract theory is certainly an appropriate and useful mechanism for assessing the scope and application of FRAND commitments, but it may not be the only mechanism. There have been cases in which the courts have construed the meaning and application of FRAND commitments in the context of patent infringement claims, which may also be an appropriate mechanism for adjudicating these disputes. Similarly, the ITC has the ability to consider FRAND commitments in the context of 337 actions, and the authority to issue exclusion orders where infringement is established. There may also be legitimate fraud claims when, for example, patentees make deliberate misrepresentations to SSOs in their letters of assurance. As an antitrust enforcer, my focus has of course been on the proper application of the antitrust laws to these disputes, and as I have said, it is my view that antitrust theories generally are not an appropriate mechanism for resolving disputes relating to the infringement or licensing terms of SEPs. Antitrust is not appropriate for solving every and any inefficiency in the economy; the proper role of antitrust is limited to where inefficiencies arise from identifiable harms to a competitive process. Moreover, as I have explained, an antitrust theory carries with it the threat of treble damages, and the related risk of blunting incentives to innovate and participate in standard setting in the first place. My emphasis on contract law is not meant to exclude theories of infringement, in either the district courts or at the ITC. Rather, I mean to highlight the fact that there are mechanisms other than antitrust claims that are appropriate to resolving FRAND-related disputes.

4. You note the Division “strive[s] to impose remedies that are carefully tailored to the harm we identify.” Does this mean you rule out conditioning mergers on prospective commitments such as tightening data security or licensing patents more freely that may be viewed as desirable but are unaffected by the proposed transaction?

In the context of merger enforcement, the appropriate goal is to accomplish a remedy that effectively preserves competition in the relevant market. There should be a close, logical nexus between the proposed remedy and the alleged violation. Furthermore, the remedy should fit the violation and flow from the theory or theories of competitive harm. I have on several occasions expressed that the Division prefers structural to behavioral relief in addressing the anticompetitive effects of mergers. In crafting a remedy that meets these requirements, we apply economic and legal analysis to the particular facts of each case. Using merger enforcement to accomplish goals unrelated to the alleged harm – however desirable those goals may be on some level – is contrary to our mandate as antitrust enforcers, and could ultimately undermine public trust in our mission.

5. You have often emphasized the importance of strong intellectual property rights. How did you come to this view? Did personal experience shape your perspective?

The intersection of antitrust and intellectual property has long interested me, and personal experience has undoubtedly shaped my perspective. Before beginning my career as an antitrust lawyer, I was a registered patent agent. I also hold a Master’s Degree in Biotechnology. My experience in the fields of science and technology give me a real appreciation for what this country’s forefathers aimed to accomplish when they drafted Article I, Section 8 of the U.S. Constitution, which empowers Congress to promote the progress of science and the arts by granting authors and inventors exclusive rights to their writings and discoveries. I believe that this feature of the Constitution is a cornerstone of our country’s ingenuity and success. As some people may know, I emigrated to the United States from Iran as a child, in 1979. I have seen firsthand, as an employee at my father’s gas station, and throughout my career as an antitrust lawyer, how a free market economy facilitates innovation and entrepreneurship. Taking all of these experiences together, it is fair to say that it is a deeply held personal goal of mine to ensure that the antitrust laws and the intellectual property laws work in harmony to facilitate a climate in which the market rewards ingenuity, innovation, and dynamic competition.

6. **Some might say the debate over the proper role of antitrust in the standard-setting process poses a choice between weakening patent rights, which would favor implementers and maximize static efficiency, and leaving patent rights unimpaired, which would favor innovators and maximize dynamic efficiency. Do you agree that patent and antitrust policies can maximize either static efficiency or dynamic efficiency, but not both?**

There are enormous benefits to the public from standard setting. Particularly in the information and communications technology (or “ICT”) sector, we all have a richer, more varied set of choices thanks to the work of all of those companies and individuals that participate in setting technical standards. The system works best when both innovators and implementers are attracted to the standard setting process. It follows that the ideal antitrust policy is calibrated to forestall anticompetitive conduct while attracting a diverse set of participants to standard setting. As I have said on multiple occasions, I am concerned that over the past few years, antitrust policy has been too focused on the incentives of implementers, and not focused enough on the incentives of innovators. I have advocated for a rebalancing, so that we have a system that more appropriately accounts for the interests of both groups. Ideally, we should strive for an ecosystem in which patent holders are rewarded for their innovations and consumers have access to exciting new technologies at competitive prices. The choice is not binary. Both static competition and dynamic competition are worthy of the protection of the antitrust laws. With the right policies, we can all benefit.



IP LEADERSHIP DC: KEY TAKEAWAYS AND THE PATH FORWARD

LEADERSHIP

DISCUSS. DEBATE. UNITE. LEAD.

BY KIRTI GUPTA¹



¹ Dr. Kirti Gupta is Senior Director of Economic Strategy at Qualcomm. All views are those of the author.

I. INTRODUCTION

This year's annual IP Leadership conference in Washington, D.C. brought together judges, policy makers, scholars, and experts from around the world to debate and explore critical issues at the forefront of intellectual property ("IP") and antitrust policy.² IP Leadership 2018 began with the broad recognition of the critical importance of 5G/IoT technologies in enabling the Fourth Industrial Revolution, and the topics throughout the day explored the IP and antitrust policies needed to ensure its success. The panels and the keynote addresses by Congressman Steve Stivers and Department of Justice Antitrust Division head Makan Delrahim covered the recent developments related to the following:

- The impact of recent decisions from the U.S. Supreme Court restricting patent eligible subject matter and potentially harming entrepreneurs and social welfare, and the impact of high patent invalidity rates at the U.S. Patent and Trademark Office's ("U.S. PTO") Patent Trial and Appeal Board ("PTAB"), potentially making efficient infringement a widespread practice. Together, these concerns have led to the introduction of the STRONGER Patents Act in the U.S. Congress.
- Antitrust concerns with concerted action (e.g. seller or buyer cartels) in the development of standards-development organization ("SDO") intellectual property rights ("IPR") policies.
- The importance of providing fundamental due process rights and respecting international comity principles in antitrust actions around the world.

Within these broad topics, panelists discussed specific issues such as: the use of non-market-based approaches to determine the value of standard-essential patents ("SEPs"); SDOs as two-sided platforms that must carefully balance the various interests of its members in order to preserve incentives to participate in standardization; and sound principles for antitrust agencies and courts to follow when crafting remedies involving foreign patents.

II. 5G/IOT POLICIES FOR SUCCESS: AVOIDING RENT SEEKING THAT DIMINISHES THE SIZE OF THE PIE, ISSUES WITH THE *EX-ANTE* VALUATION APPROACH, AND MORE

Panelists emphasized the importance of 5G and IoT and the need to adopt antitrust and innovation policies that provide incentives to innovate and participate in standards-development. This section covers the suggested policies as well as concerns raised with the so-called "*ex-ante* valuation" approach towards valuation of SEPs.

The 5G and IoT value chain is a complex, multilateral, vertical chain consisting of complementary layers of technology including: the core communication layers, such as 5G technologies, that form the fundamental building blocks for the entire supply chain, R&D and technology developers, component manufacturers, device manufacturers, infrastructure manufactures, network operators, and data or content providers. There are strong interdependencies among these layers such that the value generated by the entire value chain depends on the success of each individual layer. Panelist Dr. Jorge Padilla remarked that, "The conditions for success are therefore very clear. First, all layers must invest, they must find it optimal to invest; they must have the ability and incentive to invest. Secondly, at each layer the most efficient technologies need to be selected."³ In addition, the overall price, or total cost of ownership, needs to be sufficiently modest for high market penetration to occur.

Dr. Padilla identified some of the potential obstacles to success of 5G and IoT: First, some layers can have significant market power due to a combination of factors such as strong economies of scale and scope. In those layers, the result may be either a duopoly or limited oligopoly or possibly even a situation in which the market tips and results in some monopoly power. The problem with significant market power in multiple layers in a vertical supply chain is double-marginalization — that is, several price markups building on top of one another, which would result in a higher overall cost of ownership that decreases market penetration.⁴

The second obstacle is fragmentation: Companies will want to fragment other layers in order to extract rents in the entire value chain.⁵

² Video of the conference available at: <http://www.ipleadership.org/events/leadership-2018>.

³ 2018 Leadership Transcript, Panel 2, at 4 [hereinafter Transcript].

⁴ Id. at 5.

⁵ Id.

The third obstacle is regulatory gaming — for instance, filing complaints with antitrust agencies or attempting to change existing laws and policies — by companies in one layer in an attempt to rent-shift and extract more rents for themselves.⁶

Of critical importance is the fact that initiatives to shift rents from one layer to another may have far reaching implications beyond merely distributional effects. Indeed, they may have significant value effects resulting in a shrunk pie for all.⁷

The solution, according to Dr. Padilla, is threefold. First, enforcers and courts should internalize the complexity of the value chain and understand the incentives that the various players have. For example, enforcers should consider whether a particular player is motivated by rent-shifting concerns or considerations in line with consumer welfare benefits to end-users. Second, enforcers and courts should also understand that high margins can be desirable when they incentivize and enable future R&D. Finally, the focus of any scrutiny should be on performance — for instance, the amount of innovation and value created at each layer — as opposed to structural indicators such as high concentration or the existence of monopoly power.⁸

Further guidance on antitrust policies designed to protect innovation incentives were offered in a keynote address by the Assistant Attorney General (“AAG”) for the U.S. Department of Justice’s (“DOJ”) Antitrust Division, Makan Delrahim.⁹

AAG Delrahim expressed his concern that, by denying injunctive relief to SEP holders “except in the rarest circumstances, courts in the U.S. run the risk of turning a FRAND [fair, reasonable, and non-discriminatory] commitment into a compulsory license.”¹⁰ He warned that recent patent law developments with respect to injunctive relief “could have an unintended and harmful effect on dynamic competition by undermining important incentives to innovate, and ultimately, have a detrimental effect on U.S. consumers.”¹¹ AAG Delrahim also advocated for the application of appropriate theories to address disputes between IP holders and implementers regarding the scope of FRAND assurances, reiterating the Division’s position that unilateral patent holdup is not an antitrust problem.¹²

AAG Delrahim reiterated the Division’s position that it will be “inclined to investigate and enforce when we see evidence of collusive conduct undertaken for the purpose of fixing prices, or excluding particular competitors or products.”¹³ He enumerated cases such as *Radiant Burners*, *Hydrolevel*, and *Allied Tube* as providing guidance regarding the types of conduct that would garner the Division’s attention.¹⁴

The AAG also emphasized the critical distinction between advocacy and enforcement, stating that certain foreign enforcers have improperly relied on the Division’s work, including business review letters (“BRLs”), to support antitrust investigations that would not have been brought under U.S. antitrust law. To illustrate, AAG Delrahim explained:

[W]hile the Division decided that it would not challenge as unlawful the IEEE’s [Institute of Electrical and Electronics Engineers] patent policy update in 2015—including the portion of the policy that limits the availability of injunctions to holders of FRAND-encumbered patents—for the reasons I have just explained, this letter should never be cited for the proposition that what IEEE did is required, or that a patent holder who seeks an injunction is somehow in violation of the antitrust laws.¹⁵

In other words, the Division’s IEEE BRL opined on whether a private SDO’s decision to adopt certain policy changes were likely to violate U.S. antitrust laws as a matter of advocacy; it did not address whether conduct that violated those policy changes could amount to an antitrust violation, as a matter of enforcement.

6 Id. at 5-6.

7 Id. at 6.

8 Id. at 6-7.

9 Makan Delrahim, Asst. Att’y Gen., U.S. Dep’t of Justice, Antitrust Div., *The Long Run: Maximizing Innovation Incentives Through Advocacy and Enforcement*, Address Before the Leadership Conference (Apr. 10, 2018), <https://www.justice.gov/opa/speech/file/1050956/download>.

10 Id. at 3.

11 Id. at 2-3.

12 Id. at 3.

13 Id. at 5.

14 Id.; see *Radiant Burners, Inc. v. Peoples Gas Light & Coke Co.*, 364 U.S. 656 (1961); *Am. Soc’y of Mech. Eng’rs, Inc. v. Hydrolevel Corp.*, 456 U.S. 556 (1982); *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492 (1988).

15 Delrahim, supra note 9, at 8-9.

Another potential threat to innovation incentives discussed by panelists was the “*ex-ante*” valuation approach, under which the innovators of technology standards — that is, those who serve as the R&D arm of the industry — are deprived of any of the value created due to the process of standardization.

The seminal case adopting an *ex-ante* valuation approach is *Ericsson, Inc. v. D-Link Sys., Inc.*, a 2014 decision by the U.S. Court of Appeals for the Federal Circuit.¹⁶ In *Ericsson*, the Federal Circuit held, among other things, that:

[T]he 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. These steps are necessary to ensure that the royalty award is based on the incremental value that the patented *invention* adds to the product, not any value added by the standardization of that technology.¹⁷

In explaining the basis for its approach, the court described the standardization process as follows:

When a technology is incorporated into a standard, it is typically chosen from among different options. Once incorporated and widely adopted, that technology is not always used because it is the best or the only option; it is used because its use is necessary to comply with the standard. In other words, widespread adoption of standard essential technology is not entirely indicative of the added usefulness of an innovation over the prior art. This is not meant to imply that SEPs never claim valuable technological contributions. We merely hold that the royalty for SEPs should reflect the approximate value of that technological contribution, not the value of its widespread adoption due to standardization.¹⁸

In other words, the court’s rationale for its *ex-ante* valuation approach appears to be based on the assumption that participants in the standardization process pick winners among numerous competing technologies of equal or similar technical superiority.

This underlying assumption is inaccurate, as the process of standards development reveals otherwise as documented in past research. The formation of technology standards is not about selecting between equally suitable existing technical alternatives but about firms cooperatively creating new technical solutions where none existed prior to the articulation of the new problem (or requirement) to solve the problem.¹⁹ Of significance, the active participants in these standards-development meetings are engineers and discussions are of a purely technical nature. Objective metrics for technical merit are relied upon to select between alternative proposed solutions, usually related to performance, efficiency, or a combination of the two.²⁰ Economic research has shown that a sizable portion of the patents included in a standard is more likely to fall into our first scenario of “crowning winners.” In other words, any value is inherent in the ownership of the patented technology itself, not due to being incorporated in the standard. Being included in a standard may further enhance this patent’s market value or importance even as it reduces its holder’s market power as compared to the benchmark of creating a proprietary *de facto* standard from that patented technology.²¹

In its 2015 decision in *Commonwealth Scientific & Industrial Research Organization (“CSIRO”) v. Cisco Systems, Inc.*, the Federal Circuit reaffirmed and expanded upon the approach set forth in *Ericsson*.²² In *CSIRO*, the court concluded that “damages awards for SEPs must be premised on methodologies that attempt to capture the asserted patent’s value resulting not from the value added by the standard’s widespread adoption, but only from the technology’s superiority,” and held that this approach applies not only to SEPs upon which a patent holder has made an assurance to license on FRAND terms, but to all SEPs.²³ The court reasoned that a reasonable royalty calculation under U.S. patent law:

[A]ttempts to measure the value of the patented invention. This value—the value of the technology—is distinct from any value that artificially accrues to the patent due to the standard’s adoption. Without this rule, patentees would receive all of the benefit created by standardization—benefit that would otherwise flow to consumers and businesses practicing the standard.²⁴

16 773 F.3d 1201 (Fed. Cir. 2014).

17 *Id.* at 1232.

18 *Id.* at 1233.

19 Kirti Gupta, *How SSOs Work: Unpacking the Mobile Industry’s 3GPP Standards* 6 (Nov. 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3063360.

20 *Id.* at 15.

21 See Layne-Farrar & Padilla, *Assessing the Link Between Standards and Patents*, 9 INT’L J. IT STANDARDS & STANDARDIZATION RES. 19, 25 (2011).

22 809 F.3d 1295 (Fed. Cir. 2015), cert. denied, 136 S. Ct. 2530 (2016).

23 *Id.* at 1304.

24 *Id.* at 1305.

Ultimately, the Federal Circuit in *CSIRO* found that the lower court “erred because it did not account for standardization,” and instead increased the royalty award because the patent at issue was essential to the relevant standard.²⁵ The court went on to explain that this error impacted the lower court’s analysis of the *Georgia-Pacific* factors, which are the fifteen non-exhaustive factors relevant to a reasonable royalty calculation for damages in a patent infringement suit.²⁶ Specifically, the Federal Circuit concluded that the lower court erred in its analysis of the three such factors that it weighed in favor of the SEP holder. With respect to factor 8 — which examines the “established profitability of the product made under the patent; its commercial success; and its current popularity” — the lower court concluded that “[a]t the time of the hypothetical negotiations, the market for wireless products was growing rapidly, indicating increased commercial success.”²⁷ As to factors 9 and 10, which relate to the advantages of the patented invention, the lower court concluded that “[a]lternative technologies in the wireless industry . . . failed to achieve commercial success.”²⁸ The error, according to the Federal Circuit, was that the lower court “never considered the standard’s role in causing commercial success” — a fundamental assumption that subsequently lead the Federal Circuit in *Ericsson* to “call[] out factors 8, 9, and 10 as all being irrelevant or misleading in cases involving SEPs.”²⁹

In addition to administrability problems, the *ex-ante* approach is fundamentally flawed as a matter of economics because of the Federal Circuit’s observation — that the creation of a standard has a role in causing commercial success. Commercial success of any technology creates both additional consumer surplus (thus benefiting end-users) and producer surplus (thus benefiting the firms). However, as a matter of economics, the producer surplus that the process of standardizing a technology creates in causing commercial success should be shared by *both* innovators and implementers, and of that technology. An “*ex-ante*” rule essentially dictates that *none* of this additional producer surplus generated due to the process of standardization should be attributable to innovators, and thus *all* of it should be attributable to implementers of the technology.³⁰ Perhaps the court assumed that by restricting the “value due to the standard” flowing to the innovators, this value will ultimately be passed on to end-consumers. But the likely outcome of dictating rules for how a producer surplus should be divided is rent-shifting, and any flow passed on to end-consumers depends on the pass-through rates for the industry, dictated by a variety of factors and not this rule of division.

III. SDO IPR POLICIES AS TWO-SIDED PLATFORMS AND THE DANGERS OF SELLER OR BUYER CARTELS

In describing the role of SDOs in facilitating the creation and widespread adoption of new technologies and standards, panelists such as Dr. Anne Layne-Farrar and Joshua D. Wright described SDOs as two-sided platforms that must balance the interdependent interests of both standards innovators and implementers.³¹ This critical balance includes the adoption of consensus-based IPR policies as well as sound governance and voting rules.

Indeed, the highly controversial 2015 amendments to the IEEE’s SDO IPR Policy would likely not have been possible if the IEEE had the type of sound governance rules in place in major SDOs such as the European Telecommunications Standards Institute (“ETSI”). Several SDOs, such as the ETSI, operate under rules of governance that necessitate the leadership proposing and voting on changes in rules to directly reflect the interests of their members, require leaders to be appointed based on voting across members, and call for consensus or majority voting to enact changes. Some SDOs, such as the IEEE, differ from those governance rules, and leaders are “appointed” by outgoing leaders, not elected across members, and positions are filled by “passing the baton” from one leader to the next. A disconnect between the interest of the members and leaders enables changes in rules that are controversial.

The IEEE amendments included provisions that essentially prohibit patent holders from seeking or enforcing injunctive relief on FRAND-assured SEPs and essentially require component-level licensing, the latter of which is contrary to the long-standing industry practice of end-user

25 *Id.*

26 See *Ga.-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), modified sub nom. *Ga.-Pac. Corp. v. U.S. Plywood-Champion Papers, Inc.*, 446 F.2d 295 (2d Cir. 1971).

27 *Commw. Sci. & Indus. Research Org.*, 809 F.3d at 1305 (citing *Ga.-Pac. Corp.*, 318 F. Supp. at 1120; *Commw. Sci. & Indus. Research Org. v. Cisco Sys., Inc.*, No. 6:11-CV-343, 2014 WL 3805817, at *13 (E.D. Tex. July 23, 2014)).

28 *Id.*

29 *Id.* (citing *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1231 (Fed. Cir. 2014)).

30 See Sidak, *The Meaning of FRAND, Part I: Royalties*, 9 J. COMPETITION L. & ECON. 931, 975-76 (2013).

31 See Transcript, Panel 3, at 4-5; see also Kobayashi & Wright, *Intellectual Property and Standard Setting* 1-5 (Geo. Mason Univ. Law & Econ., Research Paper No. 09-40, 2009), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1460997.

device licensing. These amendments were highly criticized by major SEP holders and others on both procedural and substantive grounds.³² Importantly, they were also rejected by other major SDOs — namely, those with sound governance rules, including the ETSI, Joint Electron Device Engineering Council (“JEDEC”), Cooperative Intelligent Transport System (“C-ITS”), Internet Engineering Task Force (“IETF”), and Telecommunications Standards Development Society, India (“TSDSI”). Yet, despite this rejection, certain implementers have attempted to use domestic and foreign antitrust laws — through complaints to antitrust agencies and their own litigation — to essentially re-write consensus-based IPR policies to achieve what they could not in consensus-based processes — and all to their benefit.

Panelists, as well as AAG Delrahim, also discussed potential antitrust concerns with concerted conduct in the standards-development process such as seller or buyer cartels. AAG Delrahim described “two related situations that would raise concern”:

First, if a group of patent implementers were to engage in concerted efforts to exclude a patent holder from meaningful participation in standard setting unless the patent holder agreed to offer particular licensing terms dictated by the group of implementers, those facts would raise red flags. Similarly, if patent holders A, B and C were to agree to exclude from consideration for inclusion substitute technology owned by their competitor patent holder D—for the purpose of harming patent holder D, rather than as a result of good-faith efforts to incorporate the most effective technology—that would also raise concerns.³³

In a prior speech, the AAG also raised concerns about concerted conduct by buyers, stating that SDO rules “purporting to clarify the meaning of ‘reasonable and non-discriminatory’ that skew the bargain in the direction of implementers warrant a close look to determine whether they are the product of collusive behavior.”³⁴ He went on to give the following example: “While the so-called ‘smallest salable component’ rule may be a useful tool among many in determining patent infringement damages for multicomponent products, its use as a requirement by a concerted agreement of implementers as the exclusive determinant of patent royalties may very well warrant antitrust scrutiny.”³⁵

IV. THE NEED FOR FURTHER PROGRESS TO REALIZE DUE PROCESS NORMS AND A FRAMEWORK FOR EXTRA-JURISDICTIONAL REMEDIES

Panelists, including Roger Alford, Deputy Assistant Attorney General (“DAAG”) for the DOJ’s Antitrust Division, discussed the critical importance of antitrust agencies and courts providing fundamental due process rights. While process varies by jurisdiction, core features of fundamental due process have emerged based on substantial work by multilateral organizations such as the International Competition Network (“ICN”) and the Organisation for Economic Co-operation and Development (“OECD”).³⁶ The core principles on due process include: legal representation for parties under investigation, including allowing the participation of local and foreign counsel of parties choosing; Notifying the parties of the legal and factual bases for an investigation and sharing the evidence on which the agency relies (including any exculpatory evidence); Direct and meaningful engagement between the parties and the agency’s investigative and staff decision makers; ability to present a defense to decision makers; protection of confidential information; and ensuring checks and balances on decision making, including meaningful access to independent courts.

32 See, e.g. Letter from Lawrence F. Shay, Exec. Vice President of Intellectual Prop., InterDigital, Inc., to David Law, Patent Comm. Chair, IEEE-SA Standards Bd. (Mar. 24, 2015), <http://wpuploads.interdigital.com.s3.amazonaws.com/uploads/2015/03/Letter-to-IEEE-SA-PatCom.pdf>; Letter from Gustav Brismark, Vice President, Strategy & Portfolio Mgmt., Ericsson AB, to Eileen M. Lach, Gen. Counsel & Chief Compliance Officer, IEEE, at 2 (Oct. 21, 2014), http://www.mlex.com/Attachments/2015-10-26_5P338037F7HPVP5L/rand-terms.pdf; Letter from Irwin Mark Jacobs, Founding Chairman & CEO Emeritus, Qualcomm, to Dr. Roberto Boisson de Marca, President & CEO, IEEE (Nov. 19, 2014), <http://www.advancingengineering.org/irwin-jacobs>; see also Letter from Sen. Christopher A. Coons, U.S. Senator, to Hon. Eric Holder, Att’y Gen., U.S. Dep’t of Justice, and Hon. William J. Baer, Assistant Att’y Gen., U.S. Dep’t of Justice (Jan. 14, 2015), <http://ipwatchdog.com/materials/1-14-2015-Coons-IEEE.pdf>.

33 Delrahim, *supra* note 9, at 6.

34 Makan Delrahim, Assistant Att’y Gen., U.S. Dep’t of Justice, Antitrust Div., Take It to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law, Address Before the USC Gould School of Law – Application of Competition Policy to Technology and IP Licensing 11 (Nov. 10, 2017), <https://www.justice.gov/opa/speech/file/1010746/download>.

35 *Id.*

36 See INT’L COMPETITION NETWORK, ICN GUIDANCE ON INVESTIGATIVE PROCESS (2018), <http://www.icn2018delhi.in/images/AEWG-New-GIP.pdf>; INT’L COMPETITION NETWORK, ANNOTATED ICN GUIDANCE ON INVESTIGATIVE PROCESS (2018), <http://www.icn2018delhi.in/images/AEWG-Annotated-GIP.pdf>; INT’L COMPETITION NETWORK, ICN GUIDING PRINCIPLES FOR PROCEDURAL FAIRNESS IN COMPETITION AGENCY ENFORCEMENT (2018), <http://www.icn2018delhi.in/images/AEWG-Guiding-Principles-4PF.pdf>; ORG. FOR ECON. CO-OPERATION & DEV., PROCEDURAL FAIRNESS AND TRANSPARENCY (2012), <http://www.oecd.org/daf/competition/mergers/50235955.pdf>.

Building on his prior remarks, DAAG Alford provided a framework for antitrust agencies and courts to use when considering whether to adopt an extra-jurisdictional remedy such as requiring or prohibiting certain conduct with respect to foreign patents and/or foreign conduct.³⁷ Specifically, he explained that, before imposing such a remedy, antitrust enforcers must “clearly articulate the harm to its commerce and consumers and describe how the proposed remedy is necessary to address that harm.”³⁸ Antitrust enforcers should also take into consideration comity concerns, both positive (actual conflicts) and negative (conflicting policies). For example, the United States has “a clearly articulated policy to support innovation by permitting a patent holder to extract the full value of the patent holder’s rights. As a result, an antitrust remedy that impacts the protections another jurisdiction offers under its intellectual property laws is one i[n] which comity concerns may well arise.”³⁹

V. THE IMPACT OF RECENT U.S. SUPREME COURT AND PTAB DECISIONS

Panelists also discussed the jurisprudence governing “Section 101” of the Patent Act (Section 101) and the ways in which recent U.S. Supreme Court decisions have harmed patent owners and weakened the U.S. patent system.⁴⁰ The Honorable Paul Michel, Former Chief Judge of the United States Court of Appeals for the Federal Circuit, opined that the “anti-patent dynamic” in the United States began with the Supreme Court’s 2006 decision in *eBay v. MercExchange*, which weakened patentees’ ability to obtain injunctive relief, undermined the enforceability of patent rights, and reduced the rate at which injunctions are issued in patent litigation.^{41,42} Indeed, empirical studies have found that permanent injunctions have been denied in approximately one-third of patent cases post-*eBay*.^{43,44} As a practical matter, the *eBay* decision — and specifically, Justice Kennedy’s concurrence — has weakened patent rights by making injunctions essentially unavailable to victorious patent-owner litigants unless they are direct competitors with corresponding products in the same market.^{45, 46}

More recently, the Supreme Court issued a series of decisions on Section 101 that expanded the judicial exceptions to patent subject matter eligibility to the detriment of patent owners.⁴⁷ Notably, in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, the Supreme Court limited patent-eligible subject matter by holding that certain processes involved in a diagnostic medical test were unpatentable laws of nature.⁴⁸ Soon thereafter, in *Alice Corp. Pty. Ltd. v. CLS Bank International*, the Court further limited subject matter eligible for a patent by concluding that certain claims regarding computer-implemented inventions were unpatentable abstract ideas.⁴⁹ Judge Michel cautioned that, under the *Mayo-Alice* line of cases, district courts have invalidated thousands of patents pursuant to the “vague, subjective, inconsistent, undefined, irrational standards” articulated by the Supreme Court.⁵⁰ The Court’s recent Section 101 decisions have contributed to “a huge cloud of possible

37 Roger Alford, Deputy Assistant Att’y Gen., U.S. Dep’t of Justice, Antitrust Div., Antitrust Enforcement in an Interconnected World, Address Before the American Chamber of Commerce in South Korea (Jan. 29, 2018, <https://www.justice.gov/opa/speech/file/1034976/download>).

38 Id. at 10.

39 Id.; see also ORG. FOR ECON. CO-OPERATION & DEV., ROUNDTABLE ON THE EXTRATERRITORIAL REACH OF COMPETITION REMEDIES—NOTE BY THE UNITED STATES ¶ 11 (2017), [https://one.oecd.org/document/DAF/COMP/WP3/WD\(2017\)41/en/pdf](https://one.oecd.org/document/DAF/COMP/WP3/WD(2017)41/en/pdf).

40 35 U.S.C. § 101.

41 Transcript, Panel 1, at 26 (citing *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388 (2006)).

42 See Transcript, Panel 1, supra note 41, at 26; Michel & Dowd, *The Need for “Innovation Certainty” at the Crossroads of Patent and Antitrust Law*, 1 CPI ANTITRUST CHRONICLE 1, 2 (2017), <https://www.competitionpolicyinternational.com/wp-content/uploads/2017/04/CPI-Michel-Dowd.pdf> [hereinafter Michel & Dowd, *Innovation Certainty*]; Michel & Dowd, *Understanding the Errors of eBay*, 2 CRITERION J. ON INNOVATION 21, 28 (2017), <https://www.criterioninnovation.com/articles/understanding-the-errors-of-ebay.pdf> [hereinafter Michel & Dowd, *eBay*].

43 Michel & Dowd, *eBay*, supra note 42, at 27 & n.32 (citing Seaman, *Permanent Injunctions in Patent Litigation After eBay: An Empirical Study*, 101 IOWA L. REV. 1949, 1982-84 (2016)).

44 See Gupta & Kesan, *Studying the Impact of eBay on Injunctive Relief in Patent Cases* (Univ. of Ill. Coll. of Law Legal Studies, Research Paper No. 17-03, 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2816701&download=yes.

45 Many district courts have relied on Justice Kennedy’s concurrence to deny injunctions in cases where the patent holder is a non-practicing entity and in cases where the patented invention is only a small component of an infringing product. See Michel & Dowd, *eBay*, supra note 42, at 26-27 (criticizing Justice Kennedy’s concurrence in *eBay*); Seaman, supra note 43, at 1970-72.

46 See Transcript, Panel 1, supra note 41, at 26; Michel & Dowd, *Innovation Certainty*, supra note 42, at 2; Seaman, supra note 43, at 2002.

47 See Transcript, Panel 1, supra note 41, at 6; Michel & Dowd, *Innovation Certainty*, supra note 42, at 2.

48 *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012).

49 *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014).

50 Transcript, Panel 1, supra note 41, at 6.

invalidity,” under which tens of thousands of patents are currently operating.⁵¹ The *Mayo-Alice* precedents have caused tremendous uncertainty specifically with respect to the patentability of medical diagnostics, software, computers, and business methods.⁵² These sources of uncertainty make the value of a patent difficult to ascertain and dissuade entrepreneurs from investing in certain new technologies, purchasing patents, or licensing patent rights.⁵³

To illustrate, panelist Gary Lauder, described how patent-eligibility concerns have suppressed the amount of venture capital available for U.S. life sciences startups, especially for medical diagnostic and device companies and companies developing new drugs.⁵⁴ Judge Michel opined that this uncertainty has contributed to historically low startup birth rates in the United States, with more startups failing each year than being created.⁵⁵

The Supreme Court’s recent Section 101 decisions have also impacted the ability of patent examiners to issue patents reliably. Panelist David Kappos, explained how the patent-eligibility test articulated by the Supreme Court in *Alice* has proven to be “un-implementable” at the U.S. PTO.⁵⁶ Mr. Kappos stressed that this test, which requires patent examiners to determine whether the subject matter of a particular application is directed to “abstract ideas,” is not a “repeatable process” that is capable of consistent execution by patent examiners.⁵⁷ The variability inherent to this step of the patent-grant process necessarily contributes to additional uncertainty surrounding the validity of many patents.

The Supreme Court’s recent Section 101 case law has also impacted patent owners’ forum-selection considerations. Recently, some patent holders who have the option to enforce their rights in multiple jurisdictions have opted to bring enforcement actions in venues outside of the United States.⁵⁸ Specifically, certain multinational companies have elected to enforce their patent rights in China rather than the United States, as the strength and predictability of the U.S. system has declined.⁵⁹

The Supreme Court’s recent opinions in Section 101 cases were discussed in further detail, with Judge Michel chastising the Court for citing to “ancient dicta” from cases decided before the enactment of the Patent Act of 1952, and for failing to recognize the distinction between patentability and eligibility under Section 101.⁶⁰ As a result, the Supreme Court has ventured into areas beyond its judicial function and has created “national economic innovation policy.”⁶¹ Judge Michel advocated for Congress to reassert itself as a co-equal branch of government and to reclaim control over this area of national economic policy.⁶² Panelist Jamie Simpson, opined that congressional action is needed to fix the problems associated with Section 101, but cautioned that a legislative fix should also “address the concerns” that persuaded the Supreme Court to weaken patent rights in its recent series of Section 101 decisions.⁶³

Apart from the Court’s Section 101 jurisprudence, the panel also considered the case of *Oil States Energy Services v. Greene’s Energy Group*,⁶⁴ which was then-pending before the Supreme Court. In *Oil States*, the Court was confronted with the question of whether patent rights must be adjudicated by federal courts rather than federal agencies and, consequently, whether *inter partes* review (“IPR”) proceedings violate Article III of the Constitution and the Seventh Amendment. Some panelists expressed concerns about the Court reaching a decision in which

51 Transcript, Panel 1, supra note 41, at 6 (quoting Judge Michel).

52 Michel & Dowd, *Innovation Certainty*, supra note 42 at 2; see Transcript, Panel 1, supra note 41, at 10.

53 See Transcript, Panel 1, supra note 41, at 6; Michel & Dowd, *Innovation Certainty*, supra note 42, at 6.

54 See Transcript, Panel 1, supra note 41, at 13-14.

55 See Transcript, Panel 1, supra note 41, at 10; see also *The Impact of Bad Patents on American Businesses: Hearing Before the H. Comm. on the Judiciary*, 115th Cong. (July 13, 2017) (statement of Judge Michel (Ret.), Former Chief Judge, United States Court of Appeals for the Federal Circuit), <https://judiciary.house.gov/wp-content/uploads/2017/07/Statement-of-Judge-Paul-Michel-House-IP-Subcomm.-7-13-2017.pdf>.

56 Transcript, Panel 1, supra note 41, at 15.

57 See id.

58 See id. at 16.

59 See id. at 9.

60 Id. at 14.

61 Id. at 15.

62 See id.

63 Id. at 13.

64 138 S. Ct. 1365 (2018).

patent rights were not found to be *bona fide* private property rights.⁶⁵

On April 24, 2018, the Court issued its opinion in *Oil States*, upholding IPR proceedings conducted by the PTAB and concluding that patents are public rights — specifically, government-issued “franchises.”⁶⁶ The 7-2 decision, authored by Justice Thomas, relied heavily on the public-rights doctrine, under which Congress may assign adjudication of a dispute to “entities other than Article III courts”⁶⁷ if the dispute “involves a matter ‘arising between the government and others.’”⁶⁸ The Court concluded that the grant of a patent falls within the public-rights doctrine because “patents are public franchises that the Government grants to [] inventors” by statute.⁶⁹ Because IPR proceedings “involv[e] the same basic matter as the grant of a patent,” the Court held that they also “fall on the public-rights side of the line.”⁷⁰

Despite its embrace of the public-rights doctrine, the majority also “emphasize[d] the narrowness of [its] holding.”⁷¹ The decision addressed only the Article III and Seventh Amendment challenges brought by *Oil States* and did not reach the question of whether IPR proceedings may violate the Fifth Amendment’s Due Process Clause.⁷² Importantly, the opinion stressed that it “should not be misconstrued as suggesting that patents are not property for purposes of the Due Process Clause or the Takings Clause.”⁷³

On the same day as the *Oil States* decision, the Court also issued its opinion in *SAS Institute Inc. v. Iancu*, which invalidated the PTAB’s “partial institution” procedure.⁷⁴ Under this procedure, the PTAB was able to institute IPR on only a subset of the patent claims raised in a challenger’s petition.⁷⁵ In a 5-4 decision authored by Justice Gorsuch, the Court held that the America Invents Act (“AIA”) unambiguously requires the PTAB to institute review on all claims raised in an IPR petition if it institutes review on any of the claims.⁷⁶

The Court’s *SAS Institute* decision will reshape the manner in which IPR proceedings are conducted and will likely raise the stakes of the institution stage of IPR proceedings. Indeed, because the PTAB must now institute review on all challenged claims or none of them, the Board might deny review outright more often than it has in the past. Conversely, in some cases the PTAB may review weaker patent claims that it would not have considered under the partial institution regime. This dynamic will likely result in IPR proceedings becoming broader in scope and taking longer to resolve, which will increase costs and potentially cast a cloud over patent claims that previously would have been filtered out at the institution stage. The PTAB recently issued additional guidance in light of the Court’s ruling, in which it informed stakeholders that the Board now “will institute as to all claims or none[,] . . . [and] if the PTAB institutes a trial, the PTAB will institute on all challenges raised in the petition.”⁷⁷

In addition to the impact of recent U.S. Supreme Court decisions, the panel also contemplated the ways in which decisions by the PTAB have affected stakeholders in the U.S. patent system. Judge Michel cited the PTAB’s high invalidation rates as a source of additional innovation uncertainty that is further weakening patent rights in the United States.⁷⁸ Ms. Simpson conveyed how the IPR system has adversely impacted small and solo inventors, a number of whom have seen their patents invalidated by the PTAB.⁷⁹ Judge Michel echoed Ms. Simpson’s concerns

65 See Transcript, Panel 1, *supra* note 41, at 24-25.

66 *Oil States Energy Servs., LLC*, 138 S. Ct. at 1373-75.

67 *Id.* at 1373.

68 *Id.* (citing *Ex parte Bakelite Corp.*, 279 U.S. 438, 451 (1929)).

69 *Id.*

70 *Id.* at 1374.

71 *Id.* at 1379.

72 See *id.*

73 *Id.*

74 *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1358 (2018).

75 See *id.* at 1354.

76 See *id.* at 1354-55.

77 PTAB, *Guidance on the Impact of SAS on AIA Trial Proceedings*, U.S. PTO (Apr. 26, 2018), <https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial>.

78 Transcript, Panel 1, *supra* note 41, at 6; see Michel & Dowd, *Innovation Certainty*, *supra* note 42, at 3.

79 Transcript, Panel 1, *supra* note 41, at 19-20.

regarding individual inventors, noting that a decade ago, 24 percent of patent applications filed with the U.S. PTO were by individual inventors.⁸⁰ Today, however, only 4 percent of patent applications are filed by such inventors, due in part to the high cost of defending one's patent rights — an issue the IPR system was intended to address, but has failed to remedy.⁸¹ Indeed, the PTAB's high invalidation rates and the significant financial burden accompanying the defense of one's patent rights has created a business climate in which the rights of patent owners are often ignored.⁸² Some companies, recognizing that many patent owners lack the financial means to enforce or defend their rights, have refused to pay or even negotiate licensing fees and have exploited the IPR process to discourage patent owners from defending their rights.⁸³

At bottom, recent U.S. Supreme Court decisions diluting the strength and value of patent rights, coupled with the PTAB's high invalidation rates, have contributed to the decline of the U.S. patent system.⁸⁴ This decline is reflected in a number of metrics gauging global innovation policy: In 2018, the United States fell to twelfth place worldwide in patent-system strength, down from tenth in 2017 and first every year prior, according to the U.S. Chamber of Commerce Global Innovation Policy Center's International IP Index.⁸⁵ Additionally, the United States recently dropped out of the top ten in the *Bloomberg* Innovation Index for the first time in the six-year history of the Index.⁸⁶ Ultimately, the panelists all agreed that the U.S. patent system needs to be recalibrated to protect the rights of patent owners and properly incentivize investors.⁸⁷

VI. CONCLUSION: A PATH FORWARD

The deep dive by panelists into complicated issues was instructive both for current enforcement and policy goals as well as for providing guidance on areas in need of further study. These areas include:

- The extent to which the ex-ante value approach towards SEP valuation is adversely affecting SEP holders.
- The role of buyer power in the standardization and FRAND licensing contexts, and specifically, whether buyer holdout impacts SEP holders.
- The extent to which the Supreme Court's decision in *SAS Institute Inc. v. Iancu* and related guidance from the U.S. PTO alter how the PTAB approaches the institution stage of IPR proceedings.
- Possible legislative and administrative solutions to provide more clarity with respect to issues regarding patent subject matter eligibility under Section 101.

These and other subjects explored at the 2018 IP Leadership conference in Washington, D.C. will increasingly impact the development of IP and competition policy, both in the United States and internationally, with the imminent adoption of 5G and IoT.

80 Id. at 20.

81 See id.

82 See id.

83 See id. at 6; Michel & Dowd, *Innovation Certainty*, supra note 42 at 3 n.11.

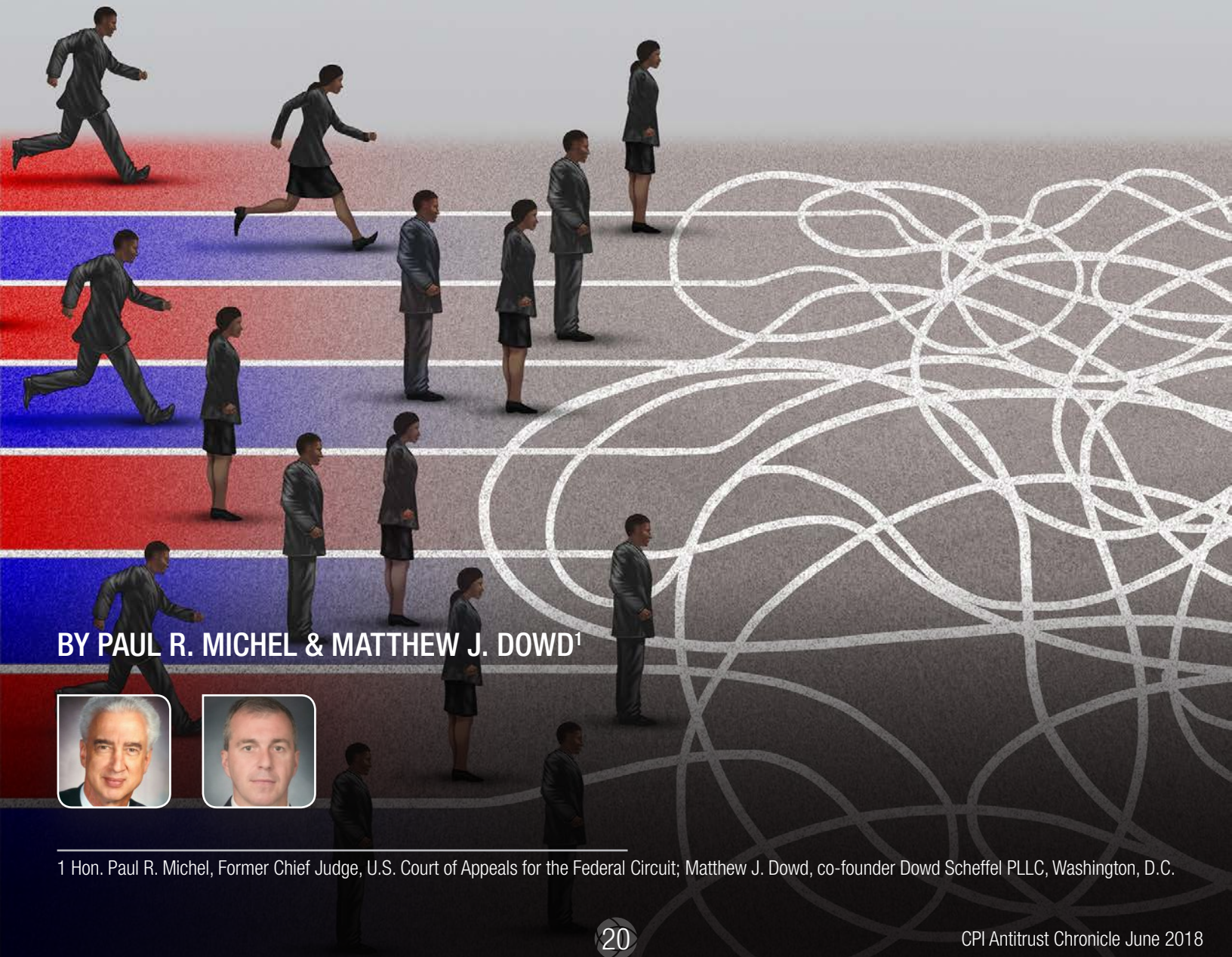
84 See Transcript, Panel 1, supra note 41, at 6; Michel & Dowd, *Innovation Certainty*, supra note 42 at 4.

85 See U.S. CHAMBER OF COMMERCE, GLOBAL INNOVATION POLICY CTR., INTERNATIONAL IP INDEX fig. XI (6th ed. 2018), http://globalipcenter.wpengine.com/wp-content/uploads/2018/02/GIPC_IP_Index_2018.pdf.

86 See Jamrisko & Lu, *The U.S. Drops Out of the Top 10 in Innovation Ranking*, BLOOMBERG (Jan. 22, 2018), <https://www.bloomberg.com/news/articles/2018-01-22/south-korea-tops-global-innovation-ranking-again-as-u-s-falls>.

87 See, e.g. Transcript, Panel 1, supra note 41, at 5, 7, 9, 16.

INNOVATION AND U.S. PATENT LAW



BY PAUL R. MICHEL & MATTHEW J. DOWD¹



¹ Hon. Paul R. Michel, Former Chief Judge, U.S. Court of Appeals for the Federal Circuit; Matthew J. Dowd, co-founder Dowd Scheffel PLLC, Washington, D.C.

I. INTRODUCTION

The United States has, for decades, been the leading economy in any number of metrics. Many factors have enabled this success — vast natural resources, an energetic, creative, and innovative populace, a stable government that ensures the rule of law, and a strong educational infrastructure. These factors and others contribute to “innovation certainty,” about which we have written before.²

Of all the factors, one of the most important is a robust intellectual property system.³ From the early days of the United States, inventors — whether individuals or employees working for research institutions or companies — have been a driving force in creating wealth and innovation for the United States.⁴ This remains true, but the type of innovation driving the U.S. economy has changed. Gone are the days of Whitney and Goodyear, when advances in the cotton gin or rubber vulcanization could transform the economy.

In the 21st century, inventions are more likely to occur *in silico* than in a manufacturing plant. Amazon, the largest online retailer, started its business with the help of its famous One-Click patent. Google’s online domination started with patents protecting its search algorithms. Facebook likewise has thousands of patents to numerous technologies, including social networking. Advances in computer technology now dominate the automotive industry, biotechnology, and pharmaceutical R&D. Artificial intelligence, machine learning, and deep learning are transforming every industrial sector.⁵

With innovation increasingly shifting to computer-based technologies, the question is whether the United States can maintain its position as an innovation-friendly environment having optimal “innovation certainty.” Is the U.S. patent system creating optimal incentives to investors? After all, the patent system is designed to encourage investors to provide the necessary capital for firms and inventors to conduct their innovative work.

Several developments in the United States have combined to create “innovation uncertainty.” And with this uncertainty comes an increasing unwillingness to license intellectual property, even when there is no question of infringement. This is important because most patent disputes are voluntarily resolved, usually through a licensing arrangement. The U.S. federal courts do not have the capacity to decide all disputes, with only about 100 patent infringement suits per year tried to final judgement.

We detail the judicial and legislative developments that have led to the current situation. It is important to understand how we have arrived here in order to evaluate possible solutions to the current problems. And solutions are needed. The U.S. economy is at risk of losing the innovation race to other countries that are increasing their innovation certainty, such as China.

II. eBAY AND THE WEAKENING OF THE “EXCLUSIVE” PATENT RIGHT

In 2006, these incentives were suddenly and fundamentally shifted by the Supreme Court. In a case called *eBay v. MercExchange*, the Court essentially restricted injunction to suits between direct competitors. Previously, injunctions were issued as a matter of course once infringement and validity were proven. This ruling, as applied by lower courts, upended the incentive structure.⁶

Under the old law, IBM secured licenses from innumerable users of its patented technology, thereby earning billions of dollars, without having to file suit. After *eBay*, that all changed. Most users of another’s technology no longer voluntarily take a license. Why? One main reason is the decreased availability of injunctions. The sudden change in the law caused a huge change in the negotiation tactics. Today, most users of someone else’s technology choose to litigate, rather than license. Indeed, most will not negotiate or even communicate with the patent owner, on advice of outside counsel. Patent owners, knowing this, simply file suit, or if they cannot afford expensive litigation, concede their rights. Less wealthy companies, such as start-ups, are most disadvantaged by this development.

2 See Michel & Dowd, *The Need For “Innovation Certainty” At The Crossroads Of Patent And Antitrust Law*, CPI Antitrust Chronicle (Spring 2017), <https://www.competitionpolicyinternational.com/the-need-for-innovation-certainty-at-the-crossroads-of-patent-and-antitrust-law/>.

3 See generally United States Patent & Trademark Office, *Intellectual Property and the U.S. Economy: 2016 Update*, available at: <https://www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf>.

4 See generally Mossoff, *Patents as Constitutional Private Property: The Historical Protection of Patents Under the Takings Clause*, 87 B.U.L. Rev. 689 (2007).

5 Cockburn, et al., *The Impact of Artificial Intelligence on Innovation*, NBER Conference on Research Issues in Artificial Intelligence Toronto, Sept. 2017 (draft Dec. 16, 2017), <http://www.nber.org/chapters/c14006.pdf>.

6 For a more detailed analysis, see Michel & Dowd, *Understanding the Errors of eBay*, 2 Criterion J. on Innovation 21 (2017), available at: <https://www.criterioninnovation.com/articles/understanding-the-errors-of-ebay/>.

The start-ups are especially important in the information/knowledge economy because they create most new technologies, as well as most new jobs and most economic growth. Many take basic research done in university labs and develop it into marketable products, which usually requires large investments of money from external funders such as venture capital firms. Such funders are very reluctant to make the investments unless a return is reasonably secured by enforceable patents. The Supreme Court's disruption with *eBay* makes patents more difficult to enforce, and it thus becomes more difficult to achieve business resolutions and compensation for inventors and investors.

Of course, the Court was responding to a particular case and had little reason to appreciate how its ruling would alter incentives when broadly and aggressively applied, as it later was. It's not entirely clear what the Court intended, for the majority opinion said little, while the concurring opinions took opposing views. That written by Chief Justice Roberts assumed an injunction would be granted much as before, while that penned by Justice Kennedy suggested that an injunction should be limited, especially if the patent owner did not itself practice the technology. The lower courts have ignored Chief Justice Robert's opinion in favor of Justice Kennedy's opinion — and again it's not entirely clear why. In any event, an injunction became far rarer after *eBay*. Pre-suit settlements largely disappeared, and post-suit settlements were much delayed or altogether deterred.

There then arose the corporate practice known as “efficient infringement,” meaning that companies chose to infringe another's patent because it was cheaper to do so than to pay for a license.⁷ The lack of injunctions was a principal reason for this change.⁸ Another practice that arose was called “hold-out,” which meant that the implementer of the patented technology would not pay a reasonable price for the right to lawfully use the technology, instead holding out for a much lower price.

And the changed circumstances also depressed the value of valid and infringed patents. By some economists' analyses, average prices of publicly-traded patent rights dropped 60 percent in recent years.

III. THE AMERICAN INVENTS ACT INJECTS MAJOR UNCERTAINTY INTO THE PATENT SYSTEM

Was this all due to *eBay*? No, but as the innovation marketplace was absorbing *eBay*'s growing impact, another seismic development shook the patent world. In 2011, the U.S. Congress enacted the America Invents Act (“AIA”), which created the Patent Trial and Appeal Board (“PTAB”), a new forum inside the USPTO to adjudicate patent validity. Although sold as “an alternative” to expensive litigation, it instead became the prelude, for over 80 percent of the new validity challenges involved infringement suits already in federal court. But unlike court proceedings that require clear and convincing evidence to invalidate an issued patent, the AIA allowed invalidation under the lower evidentiary standard of a mere “preponderance” — just greater than a fifty-fifty coin toss. And, in contrast to courts which require the challenger to have an economic interest in the patent, i.e. “standing,” the AIA allows anyone, even a stockmarket short-seller, to challenge a patent.

The USPTO also used a different standard of interpreting the patent, thus making it easier for the challenger to prevail in the AIA review. The USPTO also ignored policy reasons authorized by the AIA for declining to entertain such challenges such as the impact on the economy or technological advancement. Further, while Congress assumed that amendments to patent claims would be freely permitted, the PTAB almost never allowed such amendments.

Importantly, federal court trials on patent validity use live testimony of expert and other witnesses so the decision-maker — whether judge or jury — can personally assess the witness's credibility. In contrast, the PTAB almost never hears live testimony. The PTAB administrative judges have almost zero experience assessing live testimony. They never see the witness being cross-examined before them. It's a wonder how the PTAB administrative judges can make credibility determinations merely on a written record.

Not surprisingly, the rate of invalidations at the PTAB was very high — 80 percent plus to kill at least some claims and 60 percent plus to kill all. Various commentators have debated the precise statistics and their implication,⁹ but there was no question that invalidating patents before the PTAB appeared to be much easier than in a court of law. And because of that perception, marketplace behavior changed dramatically. For many investors, patents were too unreliable to justify investing in R&D and follow-on commercialization. Instead, they shifted to less risky

⁷ Kappos, et al., *From Efficient Licensing to Efficient Infringement*, N.Y. Law Journal (Apr. 4, 2016).

⁸ See Engelken, *Opening the Door to Efficient Infringement: eBay, Inc. v. MercExchange, L.L.C.*, 2 Akron Intellectual Property Journal 57 (2008).

⁹ See Landau, Patent Progress, *A Little More Than Forty Percent: Outcomes At The PTAB, District Court, and the EPO* (May 1, 2018), at: <https://www.patent-progress.org/2018/05/01/a-little-more-than-forty-percent/>; Quinn et al., IPWatchdog, *PTAB Facts: An Ugly Picture of a Tribunal Run Amok* (Jan. 8, 2018), at: <http://www.ipwatchdog.com/2018/01/08/ptab-facts-ugly-picture-tribunal-run-amok/id=91959/>; USPTO, *PTAB Statistics* (May 11, 2018), at: <https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/statistics>.

alternatives such as entertainment and to foreign jurisdictions where patents are more reliable. By some economists' estimates, investment in early-stage research dropped 60 percent in the wake of growing PTAB impacts.

Start-ups and small companies were hardest hit. According to some studies, start-up formation fell 40 percent to a half-century low, and in 2014, for the first time ever, their death rate exceeded their birth rate.

IV. PATENT ELIGIBILITY LAW IS UNMOORED FROM THE STATUTE

Like the *eBay* decision, the effects of PTAB reviews took several years to manifest. But as stark as their combined impact was, the patent system meanwhile absorbed another massive blow, this time from other Supreme Court decisions, the quartet of *Bilski*, *Mayo*, *Myriad*, and *Alice* (collectively the “*Alice*” decisions).¹⁰

From 2010 through 2014, those decisions transformed the law of what types of inventions are even eligible for patent protection. Previously, patentability disputes focused on the merits of the invention, such as novelty and nonobviousness. *Alice* changed that. So-called *Alice* challenges are routinely advanced, often on early motions before any evidence, testimony, or claim construction has occurred. The results were catastrophic for patent owners, for the patents were usually invalidated. And the criteria used by courts were extremely vague and subjective. Thus the attempted analysis was frustrating to all involved, and the results were anything but consistent and predictable. With the additional unpredictability came further declines in patent values and business resolutions.

In the eligibility cases, the Supreme Court all but ignored the statute that, on its face, made four broad classes of inventions eligible for patenting. The Court decreed that these classes were subject to “implied exceptions” but gave little to no guidance on the bounds of those judicial exceptions. The Court was, in essence, claiming for itself the power to make broad national innovation policy, but it lacks the necessary experience or factual knowledge-base for doing so.

But the Supreme Court's assault on patent rights was not finished. Just this year, the Court in the *Oil States* case¹¹ upended considerable precedent by declaring patent rights to be mere “public franchises” that can be rescinded by the USPTO at any time for virtually any reason. The majority was not persuaded by Congress's instruction in the Patent Act that patents were to have the “attributes of personal property.” Nor did the *Oil States* majority follow the Court's earlier precedent comparing patent grants to land grants that were irrevocable and could be rescinded only in a court of law, not an administrative agency.

V. THE “PATENT TROLL” NARRATIVE OVERTAKES REASONED ANALYSIS

Throughout these developments, many companies and organizations were advancing the narratives that the “patent troll” is Public Enemy No. 1 and that “efficient infringement” is a better approach to responding to patent owners. Many of these companies are very large, very rich, multi-national companies, primarily in the Internet industry. These companies are commonly known as the FANGs, meaning Facebook, Apple, Amazon, Netflix, and Google (now Alphabet). Those were the very companies pressing Congress to pass the AIA, which made delaying court trials and invalidating patents easier in the first place. They employed a massive campaign combining public relations and lobbying firms along with supporting friendly academics to write favorable articles, not to mention enormous campaign contributions to members of Congress.

Over the course of nearly a decade, their messaging took hold, especially the exaggerated narrative suggesting that “patent trolls” were impoverishing them with baseless and abusive lawsuits. Of course, frivolous lawsuits exist in every area of law. And there was evidence of nuisance patent infringement suits. But most are well controlled and readily dismissed by watchful judges. In recent years, fee-shifting in favor of the defendant has tripled and deters much of this conduct.

But the endless advertisements and constant repetition of the narrative made it seem to members of Congress like established fact. It never was, but in Washington perception matters more than fact. Indeed, Google executives visited the Obama White House on average once a week over eight years — seven times more often than any other corporation — and a handful of Google executives were appointed to high-level executive-branch positions.¹² A former Google official was put in charge of the USPTO. With an \$18 million annual budget, Google conducted

¹⁰ For more detailed analysis, see Michel & Dowd, *The Uncertain State of Patent Law 10 Years Into The Roberts Court*, IAM, Nov./Dec. 2016, at 27.

¹¹ *Oil States Energy Services LLC v. Greene's Energy Group, LLC*, 138 S. Ct. 1365 (2018).

¹² Google Transparency Project, at: <https://googletransparencyproject.org/articles/googles-white-house-meetings>.

an extensive lobbying campaign. Many outside groups were formed under its initiation to advance the troll message. No wonder then that most witnesses called before congressional committees were supporting the Silicon Valley policy line.

The question arises as to why technology-based giant corporations built partly on patented technology now want to weaken patent rights. They still own many patents and continually file more patent applications. But the reasons seems apparent: They likely fear being overtaken by a new company with a new market-disrupting technology. They know the next Amazon or Google may be a small company with a patented technology. Now that the FANGs dominate their markets, they benefit from weaker patent rights; it makes it easier for them to acquire the next innovative start-up.

Indeed, there has been increased commentary suggesting that the FANGs ought to be scrutinized more closely under antitrust and competition laws. They are near-monopolies in certain markets, some with as much as 80 percent market share, and the internet industry is largely unregulated. This will be a discussion to watch closely.

VI. DECLINING PATENT VALUES AND A DECLINING U.S. PATENT SYSTEM LEAD TO DECLINING INVESTMENT AND INNOVATION

The triple hit of *eBay*, the AIA, and *Alice*, coupled with the simplistic “patent troll” and “efficient infringement” narratives, significantly weakened the American patent system. That showed up not only in the Chamber of Commerce ranking that dropped the U.S. out of the top ten but also in the Bloomberg ranking of overall innovation strength where the U.S. fell out of the top ten for the first time, ever.¹³

The falling value of U.S. patents is only part of the story, however. If the value of patents, on average, has fallen 60 percent, what about the true worth of our corporations? Unlike in decades past, a company’s valuation is highly dependent on intellectual property, including patents. But patents are not always reflected on a company’s balance sheets. A company thought to be a great deal may suddenly look far less valuable, when the decreased value of its intellectual property is considered.

The differential between the U.S. patent system and that of foreign jurisdictions, including Europe and China, concerns not only enforcement but also eligibility. The U.S. has narrowed the types of inventions considered eligible, but other countries have greatly widened theirs. Inventions that used to be eligible in the U.S. no longer are, and inventions that used to be ineligible in Europe and Asia now are.

Meanwhile, China has advanced in both rankings. China has also embarked on a truly massive surge of public investment in the technologies of tomorrow such as artificial intelligence, robotics, autonomous vehicles, and bio-technology, including gene editing and immunotherapy, among others. These used to be fields led by the United States, but China seems well on its way to surpassing the U.S.¹⁴

For one thing, China has created specialized courts for patent cases, and they are operating vigorously to protect patent rights of Chinese and foreign owners alike.¹⁵ China has greatly expanded the size and capability of its patent office which now gets many more filings and issues more patents than the USPTO. Injunctions are becoming routine in China. And enforcement proceedings are faster, cheaper, and more predictable than in the U.S. Little wonder then that U.S. venture capital that used to be invested in the US is now flowing increasingly to China.

Europe is also benefiting from similar investments in U.S. funds, and for the same reasons: Trials are faster, cheaper, and more predictable, and injunctions are routine, especially in Germany.

The patent gap is particularly dangerous to future U.S. prosperity because innovation is our primary competitive advantage. The U.S. cannot compete on labor costs, nor on regulatory costs. In today’s global economy, this disadvantage means ultimately that the U.S. standard of living could decline. Similarly, our capacity to create the new jobs necessary for an expanding population may be reduced.

13 Jamrisko & Lu, *The U.S. Drops Out of the Top 10 in Innovation Ranking*, Bloomberg (Jan. 23, 2018), <https://www.bloomberg.com/news/articles/2018-01-22/south-korea-tops-global-innovation-ranking-again-as-u-s-falls>.

14 See Zaharia, *Trade War or Not, China is Closing the Gap on U.S. in Technology IP Race*, Reuters (Apr. 13, 2108), at: <https://www.reuters.com/article/us-usa-trade-china-intellectualproperty/trade-war-or-not-china-is-closing-the-gap-on-u-s-in-technology-ip-race-idUSKBN1HK187>.

15 See Zukus, *How China Is Emerging as a Leader in Global Innovation and IP Rights*, The Diplomat (July 7, 2017), at: <https://thediplomat.com/2017/07/how-china-is-emerging-as-a-leader-in-global-innovation-and-ip-rights/>.

VII. WHAT TO DO?

After more than a decade, the Supreme Court is unlikely to fix the current mess. It was given an opportunity in the *Sequenom* case, where several Federal Circuit judges pleaded with the Supreme Court to clarify the law. Feeling bound by Supreme Court precedent, the judges explained that the innovative pre-natal screening method was precisely the type of invention the patent system was designed to protect. Yet the Supreme Court declined.

The next logical stop would be the U.S. Congress, but, so far, the patent committees in the Senate and the House of Representatives have shown no willingness to do so. Instead, they seem stuck in old rhetoric about patent trolls.

Despite testimony from several experts, the House committee seems entirely unaware of the above developments and the harms caused by design defects in the AIA reviews, and exacerbated by the way in which the USPTO implemented them.¹⁶ The Senate Judiciary Committee has held no hearings on those issues. It had declined to provide a hearing, for example, on the bill introduced by Senator Coons that would fix many AIA problems.

Beyond the Congress and the Supreme Court, the new Director of the USPTO (Andrei Iancu) can effect certain limited reforms. The AIA granted him authority to provide greater clarity for examiners on eligibility law. But he too can do little that would be significant. Only the Congress can.

The Director can shift the claim construction method used by the PTAB from the lax “broadest reasonable interpretation” to the more rigorous *Phillips* standard. In fact, the Director has published a proposed regulation that, if finalized, would do just that. Similarly, the Director could screen challenges for the effect on the economy or the development of technology, as the AIA seems to contemplate. That would mean that, even if the petition meets the evidentiary standard of “more likely than not that a claim would be invalidated,” the challenge could nevertheless be rejected under existing statutory authority granted by the AIA.

The Director cannot make two additional changes that warrant consideration. One is the “preponderance of the evidence” standard used in AIA proceedings, as opposed to the “clear and convincing evidence” standard. The latter is used in courts and was approved by the Supreme Court in *Microsoft v. i4i*. The “clear and convincing evidence” standard recognizes that the patent was granted after lengthy examination by expert examiners and is consistent with the Patent Act’s mandate that issued patents are presumed valid.

The second issue is the “standing” requirement, or lack thereof. The AIA authorizes that “any person” other than the patent owner can file an AIA challenge. Stock short-sellers sought to make money by using AIA challenges to depress stock prices by the mere filing of a petition. Surely, that is not what Congress wanted or expected with AIA reviews.

Senator Coons has introduced a bill with ten specific changes, eight of which could be instituted by PTO regulation. Changes that could be made by PTO rule change could include allowing claim amendments liberally, encouraging live testimony when appropriate, and rejecting challenges based on the same or similar technology already considered by the examiners.

Additionally, the PTO could implement an ethics code for PTAB members like that governing judges in courts of law. That would prevent PTAB members sitting on panels to judge patent challenges brought by former clients when the member was in a law firm before being appointed to the PTAB. The purpose, of course, would be to prevent even the appearance of a conflict of interest. Another change might be to restrict the PTAB practice of enlarging a panel if its decision is viewed unfavorably by PTO management so the new panel can produce the opposite result.

The PTAB procedures, however, are far less harmful than the Supreme Court’s eligibility chaos. Without doubt, that can only be overcome by Congress overruling the four cases, if it agrees to do so. Although several witnesses so suggested to the relevant committees, their chairs and ranking members showed only tentative interest and have taken no action as yet. In addition, the “efficient infringer” lobby will vigorously fight any such legislative proposal even if some member is brave enough to propose such a fix. At least two members of the House are reportedly considering doing so, but it can be effectively blocked by committee leaders who can decline to provide hearings or committee votes on any such bills. Therefore, at least under current conditions, the prospects for passage seem dim.

¹⁶ One of the present authors (Michel) testified before the House Subcommittee on Courts, Intellectual Property and the Internet on July 13, 2017. He also provided a detailed supplemental statement to the subcommittee, which can be read here: <https://www.scribd.com/document/381649917/Supplemental-Statement-of-Paul-R-Michel-Sept-12-2017>.

In any event, why is it so easy to commence an AIA challenge? It is, in part, because too many patents deliberately contain some over broad claims. The AIA challenge can proceed if any claim is seen as likely to be invalidated. And federal trial judges, too few in number, are so backlogged that they are eager in most cases to “stay” the patent infringement case to await the outcome of the PTAB’s decision. And given the high invalidation rate at the PTAB, such calculations are understandable. All this is unlikely to change because all administrations are slow to nominate judges to fill existing vacancies and there are too few district court judgeships in the first place.

Like the Supreme Court, Congressional committees responsible for the patent system seem largely oblivious to market forces and global impacts. Consider the timing effects of delayed infringement trials. Of course, if all the claims asserted in court are invalidated, the case disappears, and everyone saves time and money. But there are many cases in which most or all asserted claims survive the review. If after the court case resumes it results in a damage award to the patent owner, it may seem to be made whole — between the award and interest added to the judgement. But from the investment perspective, three years of delay have been added. Investors, however, are concerned with “time to money” as well as risk of no return on their investment. So, they face an increased risk of invalidation compared to pre-AIA and increased delay and expense because of the cost of defending the review, and often many separate reviews, and the stays. The net effect is to substantially reduce the incentive to invest at all. For very rich companies with ample cash, this may not matter. But for start-ups and small firms, it matters a lot. They may not get the continual infusions of money on which their success, even their survival, may depend.

Does Congress see the full picture including the plight of start-ups who lack lobbyists for the most part? Or, is it overly focused on the situation of the giant incumbents with armies of lobbyists and PR firms? There are only about 30 companies in the efficient infringement business. What of the rest? Well, America has 30,000 commercial companies with at least 100 employees. Although many may not depend on investments assured by patents, thousands surely do. To date, the policy debates on Capitol Hill have been dominated by the giants, the ones who do not depend on external investments by venture capital firms and the like.

In like fashion, does the Congress realize the eligibility mess is driving U.S. investments overseas to jurisdictions with wider eligibility standards? Those jurisdictions, including Germany and the rest of Western Europe and China and most of the rest of Asia, have other comparative advantages as well. They include faster cheaper, trials and routine injunctions. When wider eligibility is added into the analysis, no wonder investments now head outward. In today’s world, money is mobile — globally and instantly. Investment decisionmakers are unsentimental, and they seek the best ROI — “Return on Investment.” Neither the Court nor the Congress seems alert to these crucial realities.

CONCLUSION

In conclusion, the combined effect of judicial decisions and legislative patent initiatives over the last ten-plus years has fundamentally altered the value of U.S. patent rights. The result is “innovation uncertainty,” and this is bad news for the U.S. economy. While some judicial and legislative reforms were needed, the response has been a serious over-correction, driven in large part by lobbying efforts advancing the “patent troll” and “efficient infringement” narratives.

Similarly, the Supreme Court eligibility cases were based on a vague assumption that vast arrays of inventions not qualifying for patenting were out there in the form of wrongly-issued patents that were causing grave economic harm.

It is time to recalibrate and re-adjust patent policy to conform to economic reality and global competition. It is time for competition policy to rein in the overreach of the internet giants. Congress and competition authorities are up to the job. Let them begin before it is too late.



THE ANTITRUST ASSAULT ON INTELLECTUAL PROPERTY

IP

ANTITRUST

BY DAVID J. KAPPOS¹



¹ This Article is adapted from: David J. Kappos, *The Antitrust Assault on Intellectual Property*, 31 HARV. J.L. & TECH. 665 (2018).

I. INTRODUCTION

Before deciding a patent law question in the 1873 case *Adams v. Burke*,² the Supreme Court noted that “[t]he vast pecuniary results involved in such cases, as well as the public interest, admonish us to proceed with care[.]”³ The importance of intellectual property (“IP”), and its role in promoting economic growth and consumer welfare, has persisted; the value added by IP-intensive industries accounted for over \$6.5 trillion of gross domestic product in 2014 and these industries supported (directly or indirectly) 45.5 million jobs.⁴ But despite the risks involved in tampering with a system that has benefitted this country since its inception, some U.S. Government agencies have in recent years been anything but careful in their approach to IP issues. Abandoning antitrust law’s historical deference to the exercise of core IP rights, authorities have taken to using antitrust enforcement to favor IP users over innovators and to reduce the value of IP, threatening innovation incentives. Neither antitrust principles nor sound policy supports such measures. These practices should cease before they do permanent damage to our nation’s innovation ecosystem and the national economy.

II. THE ROLE OF INTELLECTUAL PROPERTY RIGHTS IN STIMULATING INNOVATION

Over 240 years ago, the Framers laid the foundation for the U.S. patent and copyright system by giving Congress power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries[.]”⁵ As the Constitution makes clear, the goal is to encourage creativity and innovation. To that end, it prescribes but one incentive: awarding exclusive rights to the fruits of creativity and innovation. This exclusivity takes legal form in patents and copyrights.

Patents and copyrights (collectively, IP rights or “IPRs”) incentivize innovation on multiple levels. At base, IPRs encourage innovation by assuring that the rewards of innovation go to the innovator, whether the innovator chooses to sell the innovation or license it to others. But in many instances, IPRs do not simply reward innovation — they are an absolutely necessary prerequisite to innovation.⁶ Research, development, and creativity are time-consuming and expensive, but copying the successful results of these endeavors can be quick and easy.⁷ In such (all-too-common) cases, it makes no sense for an innovator to devote time and resources to developing works and inventions that are freely appropriated by competitors.⁸ Moreover, beyond enabling the innovation leading to the IPRs themselves, IPRs enable future innovation by providing an income stream that can be used to fund ongoing research and development.⁹ Finally, by granting exclusivity over a product or technology to an innovator, IPRs drive competitors to come up with even better products or technologies of their own.¹⁰

The innovation enabled by IPRs brings benefits extending beyond innovators. New inventions lead to new products, businesses, and even industries, providing employment to workers, profits to owners and shareholders, and tax revenue for the government. Consumers benefit when innovative technologies result in new, faster, better, or cheaper products. Copyrights incentivize the production of books, films, and music at a

2 84 U.S. 453 (1873).

3 *Id.* at 455.

4 ANTONIPILLAI ET AL., ECON. & STAT. ADMIN. & LEE ET AL., U.S. PATENT & TRADEMARK OFFICE, INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: 2016 UPDATE ii (2016), <https://www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf>.

5 U.S. Const. art. I, § 8.

6 See Haber, *Patents and the Wealth of Nations*, 23 GEO. MASON. L. REV. 811, 817–20 (2016) (finding “a causal relationship between strong patents and innovation” and discussing studies about the role of patents in Britain’s industrial growth). But see Cheng, *Putting Innovation Incentives Back in the Patent-Antitrust Interface*, 11 NW. J. TECH. & INTELL. PROP. 385, 387 (2013).

7 See Masoudi, Deputy Assistant Att’y Gen., Antitrust Div., U.S. Dep’t of Justice, Intellectual Property and Competition: Four Principles for Encouraging Innovation, Address at the Digital Americas 2006 Meeting: Intellectual Property and Innovation in the Digital World (Apr. 11, 2006), <https://www.justice.gov/atr/speech/intellectual-property-and-competition-four-principles-encouraging-innovation>; see also Cheng, *supra* note 6, at 387 (explaining the cited propositions as elements of the “standard argument concerning the patent-antitrust interface[.]” but arguing that courts have placed too much weight on that argument).

8 See Kappos, Ludwin & Ehrlich, *From Efficient Licensing to Efficient Infringement*, 255 N.Y.L.J. (Apr. 4, 2016).

9 See Cheng, *supra* note 6, at 387; Kesselheim, *Using Market-Exclusivity Incentives to Promote Pharmaceutical Innovation*, 363 NEW ENG. J. MED. 1855, 1855 (2010).

10 *Cf.* Kesselheim, *supra* note 9, at 1855.

professional level, which disseminates scholarship and ideas while providing entertainment and cultural growth.¹¹ Public disclosure requirements for patent protection enrich the body of common knowledge and allow others to extend innovators' creativity.¹² In short, IPRs are powerful drivers of a dynamic culture and economy.

III. ANTITRUST LAW & INTELLECTUAL PROPERTY: HISTORICAL RECONCILIATION, MODERN DAY FRICTION

As envisioned in the Constitution,¹³ the cornerstone of the IPR system's benefits has been the granting of exclusivity to innovators. This exclusivity requires effective deterrents against unauthorized, uncompensated use of IPRs. Though exclusion and restraint are inherent in IPRs, they excite suspicion and hostility in antitrust law.¹⁴ Doctrinally, however, antitrust law does not forbid market power in and of itself — only market power that is unlawfully obtained or used.¹⁵ IPRs are not necessarily problematic from an antitrust perspective;¹⁶ simply put, “[t]he commercial advantage gained by new technology and its statutory protection by patent do not convert the possessor thereof into a prohibited monopolist.”¹⁷ Therefore, instead of attacking the exclusivity at the heart of IPRs, antitrust regulation has historically been limited to preventing their wrongful acquisition and misuse.¹⁸

Developments from 2012 to 2016 impacting patents and copyrights provide worrying evidence that the Government has succumbed to the temptation to use antitrust law as an excuse to weaken IPRs, even though neither antitrust doctrine nor antitrust objectives, properly understood, support that result.¹⁹

IV. ANTITRUST MEASURES AGAINST PATENT HOLD-UP: A DANGEROUS “CURE” FOR AN ILLUSORY DISEASE

In a series of actions and pronouncements, both the Department of Justice (“DOJ”) and the Federal Trade Commission (“FTC”) have in recent years attacked patent holders' ability to enforce “standard-essential patents” (“SEPs”) — patents covering technology incorporated into standards. In many areas of technology, consumers and businesses benefit from interoperability and standardization.²⁰ Technical standards are set by standards-setting organizations (“SSOs”), which are groups to which industry participants belong.²¹ SSOs usually request that any contribution of patented technology that is “essential” to practicing the standard be accompanied by a commitment by the patent holder to license such tech-

11 See Worstall, *Copyright is About Incentives to Innovation, Not Justice: What Incentive Does Naruto Need?*, FORBES (Jan. 7, 2016), <https://www.forbes.com/sites/timworstall/2016/01/07/copyright-is-about-incentives-to-innovation-not-justice-what-incentive-does-naruto-need/#18d02b8e27c3>; see also Mossoff, *How Copyright Drives Innovation: A Case Study of Scholarly Publishing in the Digital World*, 2015 MICH. ST. L. REV. 955 at 956–57 (“copyright does incentivize the creation of new works . . . [though] is not [its] sole justification”).

12 MPEP (9th ed. Rev. 08.2017, Jan. 2018), <https://www.uspto.gov/web/offices/pac/mpep/s608.html>.

13 See source cited supra note 5 and accompanying text.

14 See *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100, 135 (1969) (citations omitted). See also 15 U.S.C. § 1–2 (2012).

15 See *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004).

16 Haber, *Patents and the Wealth of Nations*, 23 Geo. Mason. L. Rev. 811, 813 (2016); see *Genentech, Inc. v. Eli Lilly & Co.*, 998 F.2d 931, 949 (Fed. Cir. 1993), abrogated on other grounds by *Wilton v. Seven Falls Co.*, 515 U.S. 277 (1995).

17 *Abbott Labs. v. Brennan*, 952 F.2d 1346, 1354 (Fed. Cir. 1991).

18 *In re Indep. Serv. Orgs. Antitrust Litig.*, 203 F.3d 1322, 1326–28 (Fed. Cir. 2000).

19 See infra Section III–IV. The goal of U.S. antitrust law should be to protect the competitive process, which protects consumers. Lipsky, Jr., *Protecting Consumers by Promoting Competition*, Federal Trade Commission: Competition Matters (blog) (Mar. 6, 2017 5:22 PM), <https://www.ftc.gov/news-events/blogs/competition-matters/2017/03/protecting-consumers-promoting-competition>.

20 See Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1893 (2002).

21 Ramirez, Statement of Commissioner Edith Ramirez before the U.S. Senate Committee on the Judiciary (July 11, 2012), <https://www.ftc.gov/public-statements/2012/07/statement-commissioner-edith-ramirez-standard-essential-patents>.

nology on (fair), reasonable and non-discriminatory (“F/RAND”) terms.²² Despite the wide range of potential negotiating positions and strategies between SEP owners and licensees over a F/RAND license, the Government has fixated on one hypothetical scenario: so-called “patent hold-up.”²³ Under this theory, a patent holder succeeds in having its patented technology incorporated into a standard by promising to offer F/RAND licensing terms, but then demands “unreasonable” license terms from companies practicing the standard, backing up its demands with threats of litigation, including injunctions or International Trade Commission (“ITC”) exclusion orders.²⁴ Such behavior might indeed be problematic if it actually occurred, but history has demonstrated that it is not a problem.²⁵ Nevertheless, the DOJ and FTC have focused on hold-up as a basis for wielding antitrust law against SEP owners. For example, at various events in 2013, the then-Deputy Assistant Attorney General of the DOJ Antitrust Division contemplated the merits of imposing Sherman Act Section 2 liability against an SEP owner that purportedly violates F/RAND commitments, including by merely seeking an injunction,²⁶ and the FTC has initiated proceedings on the theory that an SEP owner can violate Section 5 of the FTC Act simply by threatening or seeking an injunction or ITC exclusion order.²⁷

The Government’s actions apparently reached a receptive audience. SEP licensees used their control of committees of the Institute of Electrical and Electronics Engineers (“IEEE”) — the SSO responsible for the ubiquitous 802.11 Wi-Fi standard and others — to push through bylaws amendments that, among other things, require an SEP owner to commit not to seek an injunction against a recalcitrant infringer until first-level appellate review has been exhausted, and define SEP RAND royalty rates as necessarily excluding any value attributable to the standard.²⁸ There were open questions raised concerning anticompetitive licensee collusion and other improprieties in forcing through these bylaws amendments.²⁹ But despite the serious implications of permitting a cabal of IPR purchasers to suppress IPR prices and to weaken incentives for innovation in standardized technology, the DOJ promptly ruled that adoption of the IEEE bylaws amendments would be free of any antitrust concerns.³⁰ This unprecedented assault on owners’ power over the licensing and enforcement of their property threatens real damage to the integrity of IPRs and to the innovation incentives they represent.³¹

22 Maldonado, *Breaching RAND and Reaching for Reasonable: Microsoft v. Motorola and Standard-Essential Patent Litigation*, 29 Berkeley Tech. L. J. 419, 419 (2014). The meaning of FRAND is not “universally agreed upon.” Layne-Farrar, Padilla & Shmalensee, *Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of FRAND Commitments*, 74 ANTITRUST L.J. 671, 671 (2009).

23 Wong-Ervin, *The Proper Role of Antitrust in Addressing Patent Hold-Up*, 11 SEC. ANTITRUST L. 11, 11–12 (2013), https://www.ftc.gov/system/files/attachments/key-speeches-presentations/wong-ervin_-_proper_role_of_antitrust_in_addressing_patent_hold.pdf.

24 For discussions and critiques of various tenets of holdup theory, see Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1161–62 (2009); Sidak, *Does the International Trade Commission Facilitate Patent Holdup?*, 1 CRITERION J. INNOVATION 601 (2016).

25 There are virtually no documented instances of SEP hold-up; to the contrary, major SSOs have reported that hold-up is not an issue. See, e.g. Sidak, *The Antitrust Division’s Devaluation of Standard-Essential Patents*, 104 Geo. L.J. Online 48, 61 n.49 (2015); Comments of Telecomms. Indus. Ass’n, June 14, 2011, *Fed. Trade Comm’n Request for Comments and Announcement of Workshop on Standard-Setting Issues*, Project No. P11-1204, 4.

26 Hesse, Deputy Assistant Att’y Gen., Antitrust Div., U.S. Dep’t of Justice, IP, Antitrust and Looking Back on the Last Four Years, Address at Global Competition Review, 2nd Annual Antitrust Law Leaders Forum 15–21 (Feb. 8, 2013); Hesse, Deputy Assistant Att’y Gen., Antitrust Div., U.S. Dep’t of Justice, The Art of Persuasion: Competition Advocacy at the Intersection of Antitrust and Intellectual Property, Address in Seattle, WA 9 (Nov. 8, 2013).

27 See Complaint 19–20, 23, In re Robert Bosch GmbH, FTC Docket No. C-4377 (2012); Complaint at 19, 25–27, In re Motorola Mobility LLC & Google Inc., FTC Docket No. C-4410 (2013).

28 Hoffinger, *The 2015 DOJ IEEE Business Review Letter: The Triumph of Industrial Policy Preferences Over Law and Evidence*, CPI ANTITRUST CHRON., Mar. 2015, at 2, 6; Sidak, *Testing for Bias to Suppress Royalties for Standard-Essential Patents*, 1 CRITERION J. INNOVATION 301, 302 (2016); IEEE Standards Association, STANDARDS BOARD BYLAWS, § 6.1–6.2 (IEEE Standards Ass’n 2017).

29 See, e.g. Hoffinger, *supra* note 28, at 6–9; Sidak, *supra* note 28.

30 Business Review Letter from Renata B. Hesse, Acting Assistant Att’y General, Antitrust Div., U.S. Dep’t of Justice, to Michael A. Lindsay, Esq., Dorsey & Whitney LLP 1, 16 (Feb. 2, 2015).

31 Given IP’s importance to the economy, threatened attacks on IPRs cannot be taken lightly. ANTONIPILLAI ET AL., *supra* note 4, at ii.

The Government's actions are irrational not only because of the lack of actual evidence of patent hold-up, but because existing legal and market forces provide sufficient restraints and correctives.³² In such context, there is no justification for initiating or threatening antitrust enforcement to impose particular outcomes on what are plainly contractual disputes between sophisticated parties,³³ let alone for favoring technology users over innovators.

Paradoxically, weakening IPRs to combat the hypothetical problem of patent hold-up has created a serious real-world problem: patent hold-out.³⁴ In patent hold-out, it is not the SEP owner that acts unreasonably, but companies that seek to use SEP technologies, by refusing to take a license or purporting to engage in negotiations but refusing to pay a reasonable price for licensing the SEP.³⁵ Hold-out can deprive companies of fair returns on their substantial investments in research, development and innovation, making future investment less likely or making innovator companies reluctant to contribute cutting-edge technology to standards.³⁶ In contrast to hold-up, the loss of innovation in the standards context is potentially irreparable and thus more serious in its potential impact on industry and consumers.³⁷

The anti-IPR attitude evidenced by the Government's actions over the last several years is worrying for its domestic effects, but these damaging effects extend beyond the U.S. By siding with technology users against innovators, the Government's actions amount to wielding antitrust law to project a misguided industrial policy exemplar globally. As Acting FTC Chairman Ohlhausen notes, "what we say and do here to our patent system reverberates around the world."³⁸ The principle that IPRs can be overridden using antitrust grounds as a pretext to achieve policy results encourages competition authorities abroad to also use antitrust law against IPRs, whether as a pretext for protectionism or for attacks on IPRs in the form of compulsory licensing or state-imposed limits on royalties; in the same speech in which she stated that mere risk of hold-up justifies antitrust intervention, former FTC Chairwoman Ramirez recognized that "enforcement activity that deprives patent owners of a reasonable reward in one country can depress incentives to create technology for next-generation standards that will benefit consumers around the world."³⁹ No good to long-term global welfare can come from antitrust authorities far and wide following the U.S. in a race to the bottom against innovation incentives.

V. WEAKENING COPYRIGHT IPRS: PERFORMING RIGHTS ORGANIZATIONS THWARTED FROM WELL-SETTLED LICENSING MODELS

The pattern of U.S. antitrust regulators siding with those who utilize creativity and innovation over creators and innovators is also evident in the copyright context through the DOJ's attempts to impose restrictions on creators belonging to performing-rights organizations ("PROs"). PROs aggregate IPRs of thousands of individual contributors, such as songwriters and publishers, which can then be licensed by users of their creations,

32 E.g. Wright, Comm'r, Fed. Trade Comm'n, SSOs, FRAND, and Antitrust: Lessons from the Economics of Incomplete Contracts, Remarks at the Center for the Protection of Intellectual Property Inaugural Academic Conference, George Mason University School of Law 16–21, 24 (Sept. 12, 2013); Ginsburg, Owings & Wright, *Enjoining Injunctions: The Case Against Antitrust Liability for Standard Essential Patent Holders Who Seek Injunctions*, *The Antitrust Source*, Oct. 2014, at 1, 2–4.

33 See generally, e.g. Wright, supra note 32.

34 A 2015 ITC proceeding found evidence of hold-out but not patent hold-up. *In the Matter of Certain 3G Mobile Handsets*, USITC Inv. No. 337-TA-613 (Remand), 2015 WL 6561709, at *23, 25–26 [hereinafter *Certain 3G Mobile Handsets*].

35 Letter from Ambassador Michael B. G. Froman, U.S. Tr. Rep., to Honorable Irving A. Williamson, Chairman, USITC, at 2 (Aug. 3, 2013); Ohlhausen, Comm'r, Fed. Trade Comm'n, Antitrust Oversight of Standard-Essential Patents: The Role of Injunctions, Address at the 2015 IP and Antitrust Forum, China Intellectual Property Law Association (Sept. 12, 2015) at 9–10, 16 [hereinafter Ohlhausen, *Antitrust Oversight*]; see *Certain Wireless Devices with 3G and/or 4G Capabilities and Components Thereof*, Inv. No. 337-TA-868, USITC (June 13, 2014) (Initial Determination).

36 *Certain 3G Mobile Handsets*, supra note 34, at *26; see Ohlhausen, *Antitrust Oversight*, supra note 35, at 5–6, 8–11, 16; Ganglmair, Froeb & Werden, *Patent Hold-Up and Antitrust: How a Well-Intentioned Rule Could Retard Innovation*, 60 J. INDUS. ECON. 249 (2012); Wright, supra note 32, at 26–31.

37 See, e.g. Ohlhausen, *Antitrust Oversight*, supra note 35, at 5, 8–11; Wright, supra note 32, at 32–33. The joint DOJ-USPTO statement on F/RAND remedies correctly emphasized the need to preserve innovation incentives in the SSO context. See UNITED STATES DEP'T OF JUSTICE & UNITED STATES PATENT & TRADEMARK OFFICE, POLICY STATEMENT ON REMEDIES FOR STANDARDS-ESSENTIAL PATENTS SUBJECT TO VOLUNTARY F/RAND COMMITMENTS (2013), at 8.

38 Ohlhausen, *Patent Rights in a Climate of Intellectual Property Rights Skepticism*, 30 Harv. J.L. & Tech. 103, 106 (2016) [hereinafter Ohlhausen, *Patent Rights*].

39 Id. at 106–07; Ohlhausen, *The Elusive Role of Competition in the Standard-Setting Antitrust Debate*, 20 Stan. Tech. L. Rev. 93, 96–97 (2017); Ramirez, Chairwoman, Fed. Trade Comm'n, Standard-Essential Patents and Licensing: An Antitrust Enforcement Perspective, Address at 8th Annual Global Antitrust Enforcement Symposium, Georgetown University Law Center 2, 7, 9 (Sept. 10, 2014).

such as radio shows and restaurants.⁴⁰ By offering “blanket licenses” to the works of their members, PROs make it easy for licensees to obtain the rights they need without negotiating many individual licenses.⁴¹

In 2016, the DOJ unexpectedly took the position that consent decrees under which two of the largest PROs have operated since 1941 prohibit fractional licensing: licensing by a PRO of the share of a co-owned work it has received from the work’s creator.⁴² The DOJ’s position — which the Copyright Office had rejected⁴³ — threatens to upend settled expectations in the industry, hurt creators of copyrighted works, and devalue their IPRs. Under this view, the works of co-creators who belong to different PROs become effectively unlicensable, unfairly depriving them of royalty income and unfairly depriving the public of access to those works.⁴⁴ Forcing all rights to a co-owned work to be licensed from one PRO may be convenient for users, but deprives creators of the freedom to work with the PRO of their choice since all co-creators must agree on a PRO in order for their works to be licensable.⁴⁵ Fortunately, the DOJ’s radical reinterpretation was rejected by the Southern District of New York, which declared: “[n]othing in the Consent Decree gives support to the [Antitrust] Division’s views.”⁴⁶ The Second Circuit Court of Appeals affirmed the decision, “that the consent decree neither requires full work licensing nor prohibits fractional licensing of BMI’s affiliates’ compositions.”⁴⁷ As with SEPs, licensee arguments in the PRO context ignore the long-term damage that interfering with IPRs can cause to an innovation economy that rests on those IPRs.⁴⁸

VI. THE WAY FORWARD IS A RETURN TO PRUDENCE AND DEFERENCE

The assault on IPRs must stop before it does serious harm to innovation itself and to the innovation economy that has been a bright spot for our country. Instead of being used as a pretext to favor those who benefit from innovation over innovators themselves, antitrust law should resume its historical deference to IPRs. As the Ninth Circuit put it in beating back an earlier attempt at antitrust overreach, “[t]he antitrust laws do not grant the government a roving commission to reform the economy at will.”⁴⁹ Indeed, the DOJ and FTC would do well to respect to the basic principles they themselves set forth in the latest revision of the “Antitrust Guidelines for the Licensing of Intellectual Property”:

- (1). “The [IP] laws and the antitrust laws share the common purpose of promoting innovation and enhancing consumer welfare.”
- (2). “[T]he Agencies apply the same [antitrust] analysis to conduct involving [IP] as to conduct involving other forms of property, taking into account the specific characteristics of a particular property right[.]”
- (3). “[T]he Agencies do not presume that [IP] creates market power in the antitrust context[.]”
- (4). “If an [IPR] does confer market power, that market power does not by itself offend the antitrust laws.”⁵⁰

But merely paying lip service to these important principles does not mitigate the harmful overreach of past Government actions.

40 Brief of the American Society of Composers, Authors and Publishers as *Amicus Curiae* Supporting Defendant-Appellee Broadcast Music, Inc. at *1, *United States v. Broad. Music, Inc.*, No. 16-3830-cv (2d Cir. Aug. 24, 2017) [hereinafter ASCAP Br.].

41 See, e.g. Statement of the Department of Justice on the Closing of the Antitrust Division’s Review of the ASCAP and BMI Consent Decrees, Aug. 4, 2016, 2, 5–6.

42 See *id.*, at 2–3, 5–6, 11–16; ASCAP Br., *supra* note 40, at 1, 4, 6–7.

43 Letter from Maria A. Pallante, Register of Copyrights, United States Copyright Office, to Doug Collins, Vice Chairman Subcommittee on Courts, Intellectual Property and the Internet, United States House Concerning PRO Licensing of Representatives (Jan. 29, 2016), at 1–3.

44 See, e.g. *id.* at 23–24, 27–29.

45 See *id.* at 14, 17–20, 26–27

46 *United States v. Broad. Music, Inc.*, 207 F. Supp. 3d 374, 376 (S.D.N.Y. 2016).

47 *United States v. Broad. Music, Inc.*, No. 16-3830-cv, 2017 U.S. App. LEXIS 25545 (2d Cir. Dec. 19, 2017).

48 See, e.g. Brief for Consumer Action and Public Knowledge in Support of Plaintiff-Appellant at 3, *Broad. Music* (June 2, 2017) (making a “hold-up” argument).

49 *United States v. Westinghouse Elec. Corp.*, 648 F.2d 642, 648 (9th Cir. 1981).

50 U.S. DEP’T OF JUSTICE AND F.T.C., ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY 2, 4 (2017).

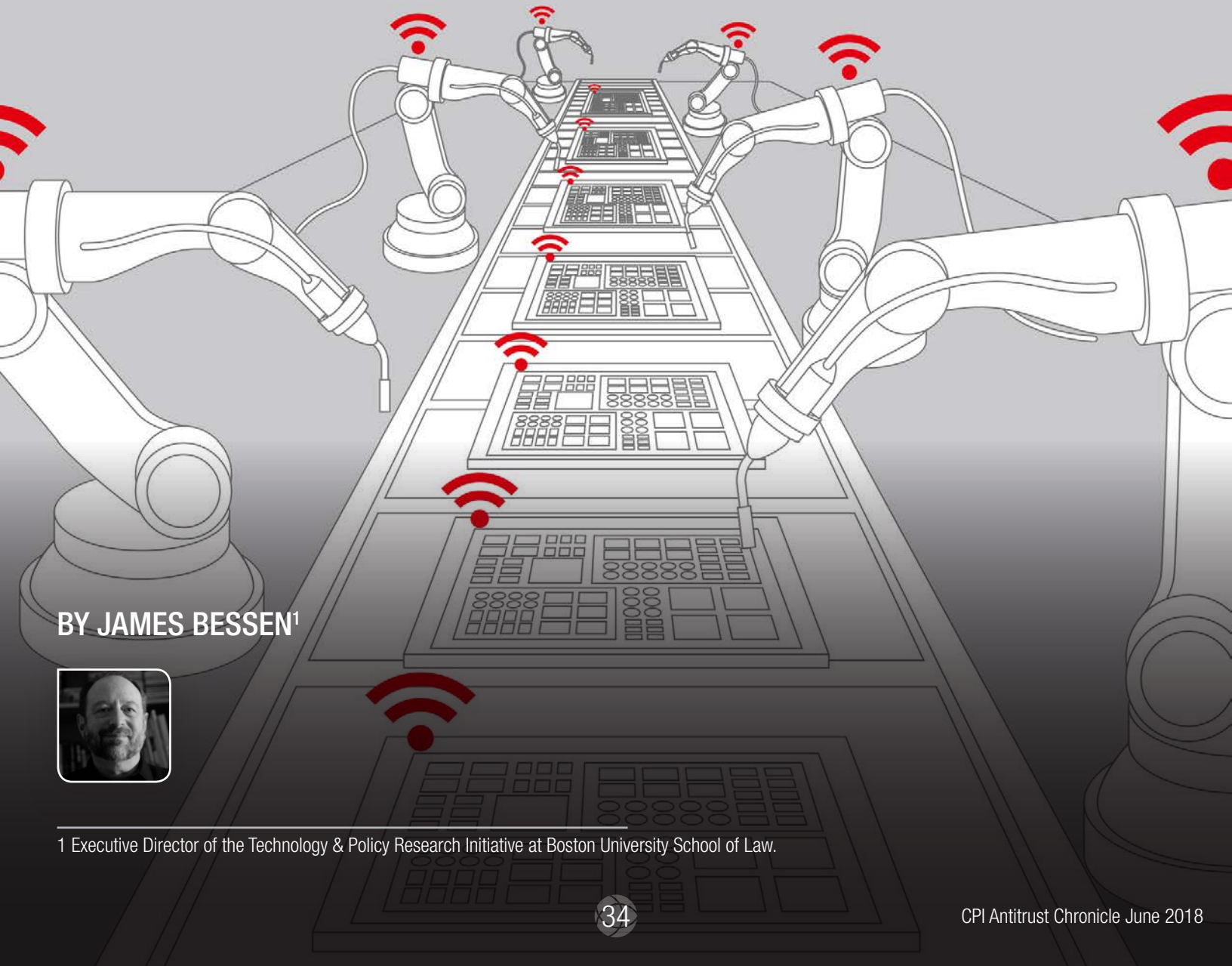
As it has historically, antitrust law can and should patrol instances in which IPRs are wrongfully obtained, wrongfully exercised, or used as a pretext to impose costs or controls on subject matter that is not validly protected by IPRs. But antitrust authorities should not challenge the exercise of IPRs, even if that exercise leads in the short term to higher prices or to purportedly negative market outcomes. As we have seen, IPR issues have legal and market solutions outside of antitrust enforcement. The DOJ and FTC would do well to heed Commissioner Ohlhausen's emphasis on "regulatory humility"⁵¹ and advice that "responsible policymakers should be reluctant to diminish IP rights,"⁵² and should instead "approach questions of reform cautiously, and . . . insist upon evidentiary showings of harm before allowing anecdotal, but quantitatively deficient, claims of patent abuse to drive policy."⁵³ For even if an IPR results in high profits to its owner, that is what the patent and copyright systems are designed to accomplish: reward innovators and creators for the long-term benefit of our country. We disrupt the rewards for innovation and creativity enshrined in our Constitution at our peril.

51 Fed. Trade Comm'n, F.T.C. File No. 121-0081, Statement of Commissioner Maureen K. Ohlhausen: In the Matter of Robert Bosch GmbH at 2.

52 Ohlhausen, *Patent Rights*, supra note 38, at 148.

53 Id. at 146.

THE POLICY CHALLENGE OF ARTIFICIAL INTELLIGENCE



BY JAMES BESSEN¹



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I. INTRODUCTION

The new technologies of the “Fourth Industrial Revolution” promise to bring dramatic social and economic changes. Already, machines can drive cars, they can outperform humans at analyzing X-rays and playing games, and a host of new materials and 3D printing are changing manufacturing. Commentators have raised concerns that these new technologies may destroy jobs or reduce wages, perhaps creating social and political upheaval. Also, these new technologies will surely bring challenges to intellectual property (“IP”) and antitrust regulation, including concerns about the ownership of Big Data and privacy, the ability of anyone with a 3D printer to become a manufacturer by downloading designs off the Internet and more.

Yet to a great degree, the role of IP and antitrust in the new era will be a continuation of their role in today’s technologically advanced sectors. And here the news is not all good, particularly in regard to information technology (“IT”). Across all major sectors of the economy, large firms are becoming more dominant in their markets and IT is a major reason for this. Leading firms in each industry are able to use proprietary IT systems to gain market share at the expense of smaller rivals. This might not seem like bad news, especially for the shareholders of large firms, but it is evidence of a slowdown in the spread of technical knowledge throughout the economy. The result is not only rising industry concentration, but also slower average productivity growth and growing wage inequality.

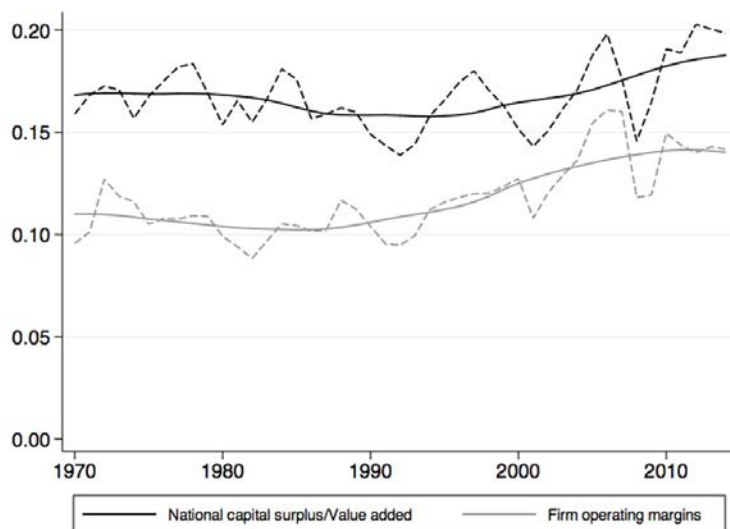
Perhaps the biggest challenge that new information technologies may pose to IP and antitrust policy is their effect on the diffusion of knowledge. The “Progress of Science and the Useful Arts” depends both on the development of new innovations and on the spread of related knowledge so that new techniques can be used widely. Both IP law and antitrust law pay heed to balancing these concerns, balancing innovation incentives against the need for disclosure and competition, balancing concerns about market power against considerations of efficiency.

The current trend of rising industry concentration implies that this balance has been lost with regard to information technology and policies are not sufficiently encouraging the diffusion of knowledge. While technical factors such as economies of scale and network effects surely contribute to the growing dominance of large firms, the policy challenge is to offset this trend. To date, IP and antitrust policy have not been doing enough and they might be making things worse. Moreover, emerging information technologies, most importantly machine learning, may well exacerbate these problems.

II. RISING INDUSTRY CONCENTRATION

Industry concentration has been rising across sectors in the U.S. since the 1980s. Autor et al. find that from 1982 to 2012 the share of shipments made by the top four firms in four-digit industries grew 4.5 percent in manufacturing industries, 4.4 percent in service industries, 15.0 percent in retail industries, and 2.1 percent in the wholesale sector.² What is driving this change and what is its significance?

Figure 1. Operating Margins



² See also, White & Yang (2017) on trends in aggregate concentration.

Some see rising concentration as a sign of decreasing competition that might lead to higher prices, less innovation, and greater wage inequality.³ This view is bolstered by evidence of a concomitant rise in profit margins and markups.⁴ Figure 1 shows the recent rise in profits. The black line, also drawn from the National Accounts, represents the ratio of the net operating surplus to gross value added for the corporate sector (nonfinancial and financial). The gray line is the ratio of aggregate operating income after depreciation to revenues for firms publicly listed in the U.S. Rising profit margins might also be a sign of declining competition.

However, that is not necessarily the case. The interpretation depends on what is causing the rise in industry concentration and firm profit margins. Declining competition is one possibility. Grullon et al. attribute the rise in industry concentration partly to lax antitrust enforcement of mergers and acquisitions.⁵ Gutierrez and Philippon suggest that growing federal regulation might be creating entry barriers, also reducing competition. If these views are right, then perhaps antitrust enforcement needs to be strengthened or other policy changes made to increase competition.⁶

III. THE PRODUCTIVITY GAP

But another possibility is that some firms — but not all — benefit significantly from new technologies. That is, top firms may be growing larger and taking greater market share not because of mergers or cartelization, but because they are more productive and are thus able to lower prices or provide greater quality products and services.

Concerns about rising industry concentration and its effects are not new. Starting with Demsetz, economists recognized that high industry concentration might be a sign of superior performance rather than an indicator of insufficient competition.⁷ In the 1970s, Peltzman documented rising concentration in manufacturing industries, but he argued that these increases were largely the result of technological progress, and therefore antitrust authorities need not be concerned.⁸ Scherer attributed the increases largely to economies of scale, arguing that antitrust authorities could distinguish genuine scale economies from attempts to limit competition through acquisition where they could perform their valuable role.⁹

Something similar seems to be happening today. Thanks to new technology, top firms earn higher profits and realize larger market share, hence higher concentration. In a careful analysis, Autor et al. find strong evidence that market share is being reallocated to “superstar” firms that outperform rivals; they are more productive hence they grow faster.¹⁰ In this case, the superior performance of these leading firms might result from greater innovation and might produce greater social benefit. But what might cause the top firms to grow faster? The authors speculate that the underlying cause might actually be *greater* competition caused by globalization or better comparative price information made available by the Internet or other technology. In their model, greater competition, captured by an increase in the elasticity of demand, increases the market advantage of more productive firms.

Yet greater competition does not seem to entirely explain the reallocation. For one thing, if greater competition were driving the rise in industry concentration, we might expect this effect to be greatest in those industries most affected by global trade. The evidence, however, suggests that industry concentration is increasing across almost all sectors.

3 The Economist, “Too much of a good thing,” March 26, 2016.

4 Rognlie, “Deciphering the fall and rise in the net capital share: accumulation or scarcity?,” Brookings papers on economic activity 2015.1 (2016): 1-69; Barkai, “Declining labor and capital shares,” Stigler Center for the Study of the Economy and the State New Working Paper Series 2 (2016); De Loecker & Eeckhout, *The Rise of Market Power and the Macroeconomic Implications*, No. w23687. National Bureau of Economic Research, 2017.

5 Grullon, Larkin & Michaely, “Are US Industries Becoming More Concentrated?” Working Paper (2017).

6 Gutiérrez & Philippon, “Declining Competition and Investment in the U.S.” NBER Working Paper (2017).

7 Demsetz, “Industry structure, market rivalry, and public policy,” *The Journal of Law and Economics* 16, no. 1 (1973): 1-9.

8 Peltzman, “The gains and losses from industrial concentration,” *The Journal of Law and Economics* 20, no. 2 (1977): 229-263.

9 Scherer, “The causes and consequences of rising industrial concentration,” *The Journal of Law and Economics* 22, no. 1 (1979): 191-208.

10 Autor, Dorn, Katz, Patterson & Van Reenen “The Fall of the Labor Share and the Rise of Superstar Firms.” No. 23396. National Bureau of Economic Research, Inc, 2017.

But there is another factor that seems to be affecting the market share of superstar firms. Several studies point to a growing divergence in firm productivity within industries; the gap between the top performing firms and the rest is growing.¹¹ Thus, resources might also be shifting to top firms as their relative productivity grows.

Figure 2. Labor Productivity Growth Among Publicly Listed Firms, U.S. (Compustat)

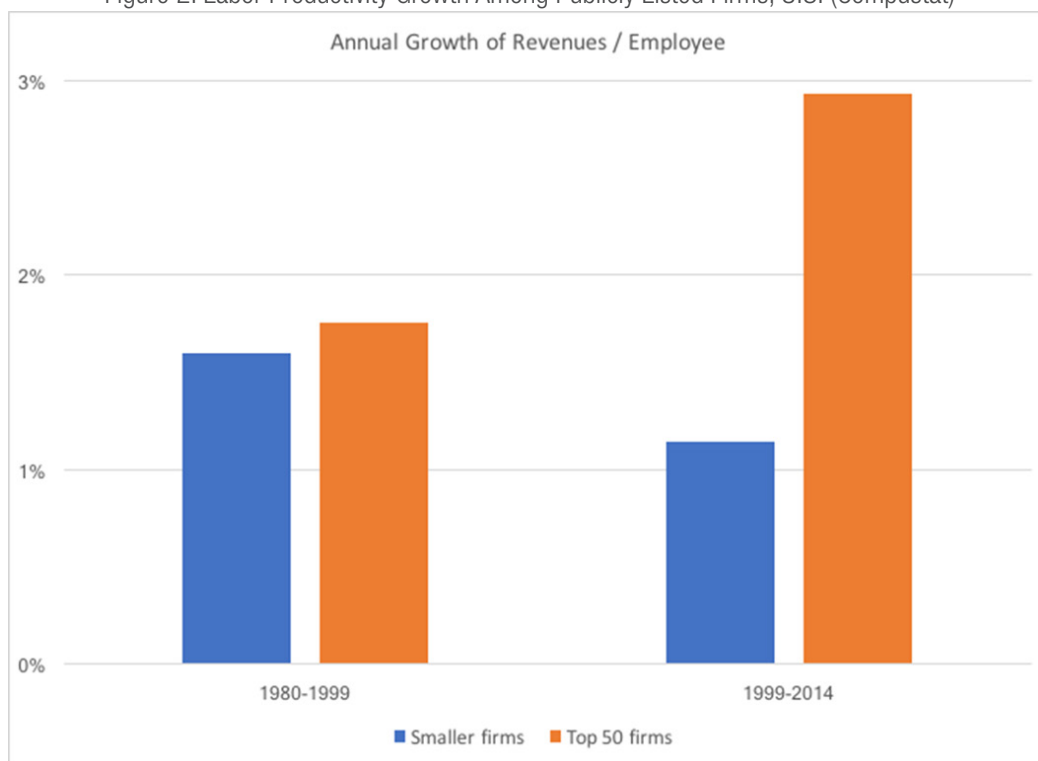


Figure 2 shows the annual growth rate of revenues per employee for publicly listed firms in the U.S. breaking out the performance of the 50 largest firms from the rest. From 1980 through 1999, the productivity of the largest firms grew at about the same rate as the productivity of the rest of the firms. But from 2000 through 2014, the productivity of the largest firms grew substantially faster. This meant that the market shares of the largest firms increased substantially because revenues per employee increased.

IV. “IT” AND LARGE FIRMS

But what is driving this productivity gap? New evidence is emerging that it is substantially driven by new information technology systems. This might seem counterintuitive because many basic components of information technology — low cost personal computers, pre-packaged software, networking hardware, etc. — are available off-the-shelf to both large firms and small firms. Indeed, for this very reason it has been argued that IT “levels the playing field.”

But there are different types of IT. While putting word processors on desks is not likely to generate competitive advantage, that is not the case with proprietary mission-critical IT systems. Firms have heterogeneous abilities to develop cutting edge IT systems because they have managers or software developers with different abilities. Also, software development typically requires large upfront fixed costs but has low marginal costs. Because of this cost structure, IT systems can have large economies of scale. In addition, some IT systems might exploit network effects. For example, Hughes & Mester see both fixed IT development costs and network effects in payment systems contributing to substantial scale economies in banking.¹² Similarly, IT systems have helped Walmart achieve more efficient logistics, higher turnover of inventory, and greater product variety at lower cost. And the huge investments in IT systems needed to design and manufacture jumbo jets has put this market beyond the reach of all but Boeing and Airbus.

11 Andrews, Criscuolo & Gal, *The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy*, No. 5. OECD Publishing, 2016; Berlingieri, Blanchenayc & Criscuolo, “The great divergence,” OECD working paper (2017); Decker, Haltiwanger, Jarmin & Miranda, “Declining Dynamism, Allocative Efficiency, and the Productivity Slowdown,” *American Economic Review* 107, no. 5 (2017): 322-26.

12 Hughes & Mester, “Who said large banks don’t experience scale economies? Evidence from a risk-return-driven cost function,” *Journal of Financial Intermediation* 22, no. 4 (2013): 559-585.

These proprietary IT systems used by large banks and Walmart and Boeing are crucially different from the general use of IT because they provide competitive advantage. By contrast, for example, many restaurants use off-the-shelf point of sale systems. These provide improved service but, because these systems are also widely available to competitors, they are not likely to provide a substantial competitive advantage that allows a restaurant to gain substantial market share. But firms with successful proprietary systems might well grow faster than other firms in the same industry. Proprietary IT thus provides a specific mechanism that can help explain the reallocation to more productive firms, rising industry concentration, also growing productivity dispersion between firms within industries, and growing profit margins.

When the scale economies and network effects of proprietary systems are particularly strong, they may give rise to “winner-take-all” or “winner-take-most” markets. For example, IT platforms enable Amazon to dominate the market for online retail. But that does not appear to be the situation in most industries. While industry concentration has been rising across all major sectors, most industries cannot be accurately characterized as “winner-take-most,” for example, the top four firms capture the majority of revenues in just over a quarter of six-digit NAICS industries.

Nevertheless, rising industry concentration is a general concern and empirical evidence finds a major role of IT in this trend. There is a large literature on why productivity varies substantially between firms in the same industries. Some research specifically finds that the growth in the dispersion of productivity and wages is at least partly accounted for by information technology.¹³

A key question is why information technology should be associated with *widely* disparate levels of productivity. While the hardware components of IT systems are usually generic commodities, the systems themselves typically involve proprietary software and complementary human or organizational capital. There is a significant literature that identifies IT-related differences in productivity arising from complementary skills, managerial practices, and business models that are themselves unevenly distributed. Skills and managerial knowledge needed to use major new technologies have often been unevenly distributed initially because much must be learned through experience, which tends to differ substantially from firm to firm.

Recent empirical research makes three major findings:

1. Industry use of IT systems is associated with higher industry concentration ratios (shares of sales to the top firms) and with more rapid growth in concentration ratios.¹⁴ The effect is large — it accounts for most of the observed rise in concentration ratios. Moreover, an instrumental variable analysis provides evidence that the relationship is causal, that is, investments in IT systems *caused* the increase in industry concentration.
2. IT systems use is strongly associated with the growth in operating profit margins of publicly listed firms in the U.S. from 2000 to 2014.¹⁵ Relatedly, Calligaris, Criscuolo, and Marcolin find that digitization is associated with rising firm markups (the premium of prices over marginal cost) for firms in OECD nations from 2001 through 2014.¹⁶ Bessen finds that IT systems account for most of the increase in operating margins over this period and again, the relationship appears to be causal.
3. It's the top firms that are benefitting from these trends. Industry use of IT systems is associated with larger revenues per establishment and higher labor productivity among the top four firms within each industry, both in absolute terms and relative to other firms in the industry.

In contrast, the empirical evidence does not support the hypothesis that rising industry concentration and rising operating margins result mainly from less competitive industry structures. Industry measures of merger and acquisition activity and of entry are not associated with increases in industry concentration. And once IT and intangibles are taken into account, the residual trend in operating margins is not positive, weighing against a general decline in competition as the source of the increase in margins.

13 Abowd, Haltiwanger, Lane, McKinney & Sandusky, “Technology and the demand for skill: an analysis of within and between firm differences,” No. w13043. National Bureau of Economic Research, 2007; Doms, Dunne & Troske, “Workers, wages, and technology,” *The Quarterly Journal of Economics* (1997): 253-290.

14 Bessen, “Information Technology and Industry Concentration,” Boston Univ. School of Law, Law and Economics Research Paper No. 17-41 (2018).

15 *Id.*

16 Calligaris, Criscuolo & Marcolin, “Mark-ups in the digital era,” OECD (2018).

Thus, the evidence points to technology and, in particular, information technology as a major driver of rising industry concentration. The top firms within industries are able to harness the technology to become more productive and to grow faster. In this way they come to increase their dominance over markets and to raise their profits. Overall, the analysis here suggests that the recent overall rise in industry concentration is not mainly the result of anticompetitive activity that should worry antitrust authorities.

V. THE POLICY CHALLENGE

Of course, this is not all bad news. IT systems appear to bring real economic benefits — both to consumers and shareholders — in terms of greater output per worker even it does raise industry concentration. While there may be other reasons to question antitrust policies,¹⁷ the general rise in industry concentration does not appear to raise troubling issues for antitrust enforcement at this point by itself.

But the rise in industry concentration raises policy concerns nevertheless. The growing productivity gap between the leading firms and the rest implies that the efficiency gains from IT are not being shared as widely as was the case with past technologies. Increasingly, it seems, top performing firms utilize new technologies productively while their rivals cannot. Concentration appears to be rising because of “barriers to technology” if not actually barriers to entry.

But the impact is significant to society. Aggregate productivity growth has slowed because the rate at which new technology is diffused has slowed. The decline in productivity growth since the late 1990s has been of general concern. Some economists, such as Robert Gordon, argue that there has been a slowdown in the rate of innovation. However, the evidence noted here about the performance of top firms (e.g. Figure 2) suggests that there is no slowdown in *their* productivity growth. Instead, careful research decomposing the sources of productivity growth finds that much of the slowdown can be attributed to the growing failure of productivity growth to spread to most firms.¹⁸ Moreover, the slowdown in diffusion affects wage inequality. Research also shows that more productive firms pay more and that a substantial part of the growth in wage inequality is associated with growing differences between firms.

A key goal of IP policy has been to promote the diffusion of new ideas. A key goal of antitrust policy has been to reduce barriers so that rivals can compete effectively. These goals have always been balanced against the objective of providing strong incentives to innovate and to encourage greater efficiency. But the evidence reviewed here shows that over the last 15 years or so, that balance has been lost. There has been too little diffusion of new knowledge leading to slower productivity growth and greater economic inequality.

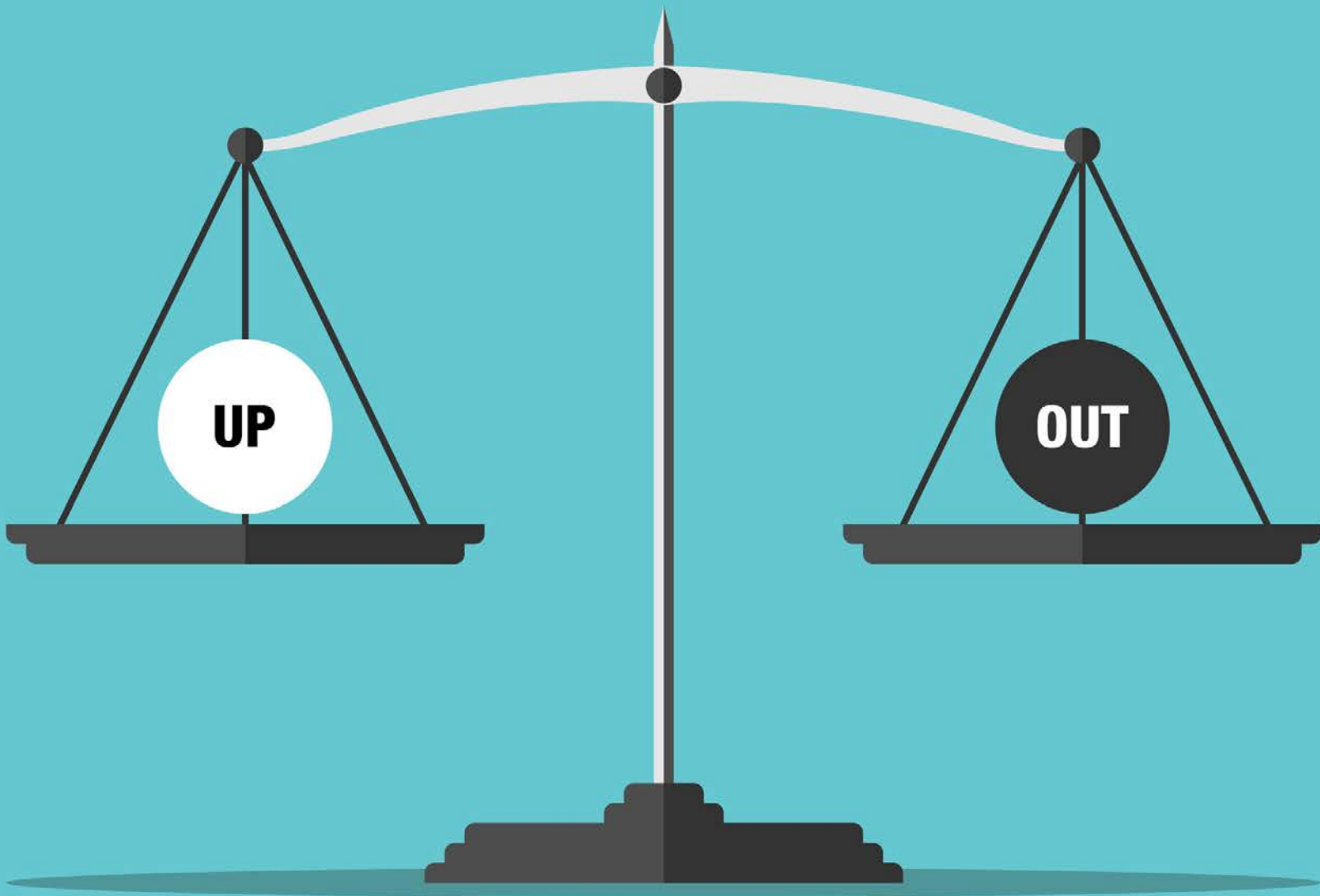
Although IP and antitrust policies might not be the primary cause of the decline in diffusion, they should play a role in reversing the trend. The worry is that in some areas policy, too, has shifted against diffusion. To the extent that rising use of employee noncompete agreements limits the ability of technical employees to take their skills to new firms, diffusion is slowed. Similarly, for extensions of trade secrecy law to cover knowhow or the presumption of inevitable disclosure. Patents are required to disclose the technical information needed to “enable” the invention, but perhaps these requirements are ineffective, especially in IT fields. And if patents are not licensed, they become a barrier to diffusion. Perhaps some forms of compulsory licensing might overcome this problem. Moreover, machine learning technologies portend even greater difficulties encouraging diffusion in the future because use of these technologies requires not only skilled employees, but also access to critical large datasets.

Policy measures to improve the diffusion of knowledge might have the effect of reducing innovation incentives to some extent. There is often a tradeoff. However, over the last 15 or 30 years, the evidence suggests that innovation incentives have grown stronger while the rate of diffusion has slowed. Patenting rates are up dramatically as are rates of patent litigation; trade secret litigation and litigation over noncompete agreements are also up sharply. These data suggest that the incentives to obtain and enforce IP rights may have increased, although this evidence is hardly conclusive. The productivity of the top firms has accelerated as seen in Figure 2. Nevertheless, the net result has been that the spread of productive knowledge has been substantially restricted from what it was 15 years ago. Fixing this problem might require some lessening of innovation incentives. It is also a problem that involves multiple areas of IP and antitrust policy; the net economic effect of each cannot be properly evaluated in isolation from the overall effect on knowledge diffusion. The challenge both today and in the future for both IP and antitrust policy is to facilitate the diffusion of new technical knowledge and right now the trend seems to be in the wrong direction.

¹⁷ See, for instance, Kwoka Jr, “Does Merger Control Work: A Retrospective on US Enforcement Actions and Merger Outcomes,” *Antitrust LJ* 78 (2012): 619.

¹⁸ Decker, Haltiwanger, Jarmin & Miranda, “Declining Dynamism, Allocative Efficiency, and the Productivity Slowdown,” *American Economic Review* 107, no. 5 (2017): 322-26.

ENABLING TECHNOLOGY, SOCIAL RETURNS TO INNOVATION, AND ANTITRUST: THE TRAGEDY OF DEPRESSED ROYALTIES



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I. INTRODUCTION

Advancements in science and technology fuel today's innovation economy. Science is usually funded by the public, because scientists possess few methods to capture monetary value from their efforts. Technological development likewise has elements of the same value capture problem. Many inventions and technologies cannot be naturally protected and easily brought to market by the inventor. In recognition of this issue, intellectual property rights ("IPRs"), and in particular the patent system were devised to encourage inventions. No advanced society has succeeded without an intellectual property system.

However, patent rights sometimes appear to stand in the way of commercial players who, like many others in society, would like something for nothing (or very little). Patented technology is a most tempting theft opportunity, since the technology is already in the public domain, its use is often difficult to monitor, and infringement seems to the myopic to be harmless since it doesn't obviously appear to diminish what is left for others.

Infringers use legalistic fig leaves to clothe such theft. In real commercial circumstances, the antitrust laws can sometimes be invoked against purported monopoly pricing, despite a patentee's right to exclusive use, for a period of time, of the patented invention. Society should stand alert. As Nobel Laureate economist Douglass North has reminded us:

Throughout man's past he has continually developed new techniques, but the pace has been slow and intermittent. The primary reason has been that the incentives for developing new techniques have occurred only sporadically. Typically, innovations could be copied at no cost by others and without any reward to the inventor or innovator. The failure to develop systematic property rights in innovation up until fairly modern times was a major source of the slow pace of technological change.²

Recent efforts to enlist antitrust as a lever against patents have threatened to undermine incentives for R&D in several important areas. Subtle theory-based antitrust arguments around patent hold up are a handy disguise for implementers and antitrust agencies to use to under-reward and thereby under-incentivize legitimate innovators.³

II. GENERAL PURPOSE / ENABLING TECHNOLOGY

The concept of "general purpose technologies" ("GPTs") entered the economics of technical change literature about three decades ago, motivated by observations from economic historians that (1) certain key technologies were central to economic growth, and (2) complementary assets were important to the creation, diffusion and adoption of new technologies.

Oversized gains to the economy and consumers can be traced to GPTs. Bresnahan & Trajtenberg,⁴ who had respectively studied the computing and computed tomography ("CT") scanner industries, defined three characteristics of a GPT; it is (1) pervasive; (2) suited to ongoing technical improvement; and (3) given to complementary innovations. In other words, GPTs affect entire industries, get even better over time, and spawn other innovations as invention in one area triggers discoveries and creates opportunities elsewhere.

Bresnahan & Trajtenberg recognize that the GPT notion is not entirely novel, resembling as it does Mokyr's⁵ *macro invention*, Dosi's⁶ *technological paradigm*, Usher's⁷ *strategic invention*, and other authors' *enabling technology*. A GPT/enabling technology exerts its effect over a protracted period — years and decades. Further invention is often the result of collaboration among individuals with disparate skills. For example, Rosenberg's⁸ study of the machine tool industry identifies such mechanisms over seven decades of engagement.

² North, *Structure and Change in Economic History*, 1981, New York: W.W. Norton & Company, p. 164

³ There is a need to understand how antitrust and other anti-patent policy interventions can, in the context of enabling technologies, have particularly deleterious consequences. There is also a need to understand how the domestic orientation of the debate/discussion in the U.S. and EU has negatively impacted inventors and innovation not domiciled in the U.S. or EU. Antitrust should become cognizant of global ramifications.

⁴ Bresnahan, "General Purpose Technologies." *Economics of Innovation*, vol. 2, North-Holland, 2010, Ch. 18, pp. 763 -791. Also: Bresnahan & Trajtenberg, "General Purpose Technologies: Engines of Growth?" *Journal of Econometrics* 65:1 (January 1995), pp. 83-108.

⁵ Mokyr, *The Gifts of Athena: Historical Origins of the Knowledge Economy*. Princeton University Press, 2002.

⁶ Dosi, "Technological Paradigms and Technological Trajectories." *Research Policy*, vol. 11, 1982, pp. 147-162.

⁷ Usher, *A History of Mechanical Inventions*. Harvard University Press, 1954.

⁸ Rosenberg, "Technological Change in the Machine Tool Industry, 1840-1910," *The Journal of Economic History* 23:4 (December 1963), pp. 414-443.

Enabling inventions may not be immediately identifiable. For example, when the laser was invented around 1960, it was of scientific interest but had no obvious application. Today, lasers are ubiquitous, implemented in applications ranging from CD players and supermarket checkout stands to weapons systems, with other uses in surveying, medicine, telecommunications, manufacturing, entertainment, and more.

The threshold for a GPT is very high, but an enabling technology (present but not well defined in the literature), is simply a junior GPT, meeting criteria (2) and (3), above, but not necessarily having measurable economy-wide impacts. The traditional list of GPTs is relatively short and include blockbusters such as the printing press, the steam engine, electricity, radio, and the Internet. Enabling technologies might not be thought of individually as “growth engines” by economic historians, but each is nevertheless important to particular firms and industries. In their countless ubiquity they can often disrupt the *status quo* and generate very considerable spillover benefits.

Both GPTs and enabling technologies exhibit large positive spillover effects of two kinds: static and dynamic.⁹ *Static* spillovers are externalities that do not change behavior by other economic agents, either at the time or in the future. *Dynamic* spillovers from an innovation alter the current and future value of existing technologies and open further technological opportunities for other agents. Profiting from such innovation is complex and difficult.

Few investments can match the social benefit to society of GPTs/enabling technologies. Protecting and amplifying society’s reward structure for the creators of such beneficial technology should have high priority.

It is especially difficult to design workable business models to capture the fruits of R&D when an invention has a plethora of applications. The inventor must be willing and able to make downstream investments in multiple verticals, or rely on licensing. Accordingly, a proper functioning market for technology (often characterized by vibrant licensing activity) keeps investment flowing into the R&D activities that generate enabling technologies and GPTs. However, there are inherent limits to the licensing model.

III. THE COMMON STREAM (AND MULTIPLE APPLICATIONS) OF ENABLING TECHNOLOGY

Certain economic activities have especially large positive spillovers because of the problems of appropriability, as recognized in the standard economic treatment:

... the primary output of resources devoted to invention is the knowledge of how to make new goods and services, and this knowledge is nonrival: use by one firm does not preclude its use by another. To the extent that knowledge cannot be kept secret, the returns to the investment in knowledge cannot be appropriated by the firm undertaking the investment, and therefore such firms will be reluctant to invest, leading to the underprovision of R&D investment in the economy.¹⁰

Numerous studies have measured spillovers to investment on R&D. A consensus finding is that social returns are three to six times the magnitude of private returns. Table 1 summarizes a few of the relevant studies.

9 Carlaw & Lipsey, “Externalities, Technological Complementarities and Sustained Economic Growth.” *Research Policy*, vol. 31, no. 8-9, Dec. 2002, pp. 1305–1315.

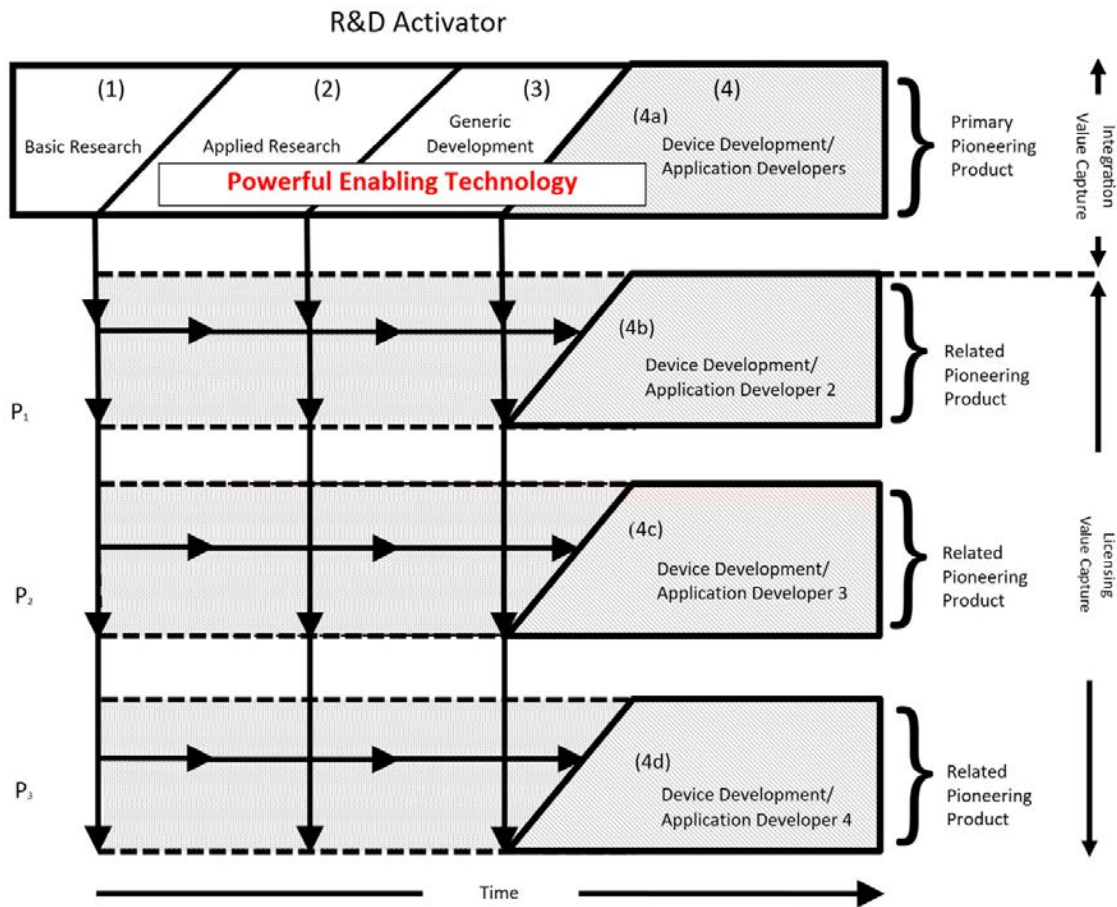
10 Hall & Lerner, “The Financing of R&D Innovation.” *Economics of Innovation*, vol. 1, North-Holland, 2010, Ch. 14, p. 611.

TABLE 1: COMPARISON OF FIRM-LEVEL RETURN WITH SOCIAL RATES OF RETURN

Study	Private Return	Social Return	Notes
Mansfield et al. (1977) ¹¹	25%	56%	Median values across 17 product and process innovations
Tewksbury et al. (1980) ¹²	27%	99%	Median returns across 20 product and process innovations
Teece et al. (2000) ¹³	21%	29% to 62%	Estimated returns to Pilkington plc's intellectual property portfolio for the float glass process
Bloom et al. (2013) ¹⁴	21% to 40%	55% to 74%	Estimated returns to R&D for 700 firms with at least one patent

In the typical spectrum of scientific and technological activities, the appropriability problem is greatest for basic research and less severe (possibly nonexistent) as development activity approaches the final customer/user. This is illustrated below in Figure 1 for a “generic” or enabling technology where the enabling R&D supports not only one pioneering product but multiple related pioneering products, such as devices or applications.

FIGURE 1: ENABLING TECHNOLOGIES SUPPORTING A PIONEER PRODUCT AND MULTIPLE RELATED PRODUCTS P1, P2, P3



11 Mansfield, Rapoport, Romeo, Wagner & Beardsley, (1977), “Social and private rates of return from industrial innovations,” Quarterly Journal of Economics, 91(2), 221-240.

12 Tewksbury, Crandall & Crane, (1980), “Measuring the societal benefits of innovation,” Science, 209(4457), 658-662.

13 Teece, Grindley & Sherry, (2002), “The Glass Industry and the Pilkington Float Process,” in Teece, ed., Managing Intellectual Capital: Organizational, Strategic, and Policy Dimensions, New York: Oxford University Press, 225-276.

14 Bloom, Schankerman & Van Reenen, (2013), “Identifying technology spillovers and product market rivalry,” Econometrica, 81(4), 1347-1393.

Note: Dotted areas are avoided costs due to the generic multiproduct nature of enabling technology. R&D for the primary pioneering product supports multiple (technology-related) products.

Activities (1) through (3) on the left of the top bar in figure 1 are, or turn out to be, “general purpose,” investments in that they effectuate multiple lateral or downstream (application) innovations/implementations. Product developments 4(a), 4(b), 4(c), and 4(d) all feed from common stream activities (1), (2), and (3), which may be performed by government labs, private R&D labs, universities, or some combination among them.

If individuals and companies are unwilling to risk the necessary investment at the socially desirable levels, two other possibilities present themselves: (1) Government can directly fund the activity; (2) Stakeholders can form consortia to fund upstream enabling technology . . . but such “collusive” activity may be limited by the antitrust laws, as well as by the ever-present lack of predictability of application areas.¹⁵

Licensing is a fallback business model for capturing value far beyond the core pioneering product. However, as discussed below, the licensing model requires judicial and public policy support. In their absence, it will likely fail, and investment in breakthrough generic R&D will likely suffer too.

These common stream enabling investments are precious. The social rates of return associated with them are likely very high, much higher than the tripling of private returns generally associated with a broad array of technologies. Put differently, enabling technologies will surely generate the highest social return, even allowing for diligent appropriability efforts by inventors for their investors.

As a practical matter, governments tend to financially support basic, applied, and generic research where positive spillovers are so significant that value capture is difficult no matter what business model is employed. In the U.S., national security imperatives propel such investment too, delivered through organizations such as by DARPA and ARPA.

However even with government subsidy, these types of generic research can remain undersupported despite the high payoff to consumers and to society. Hence, *policy* support (including from the judiciary) for research on enabling technologies which does in fact attract private funding is essential. Put differently, if government financial support isn’t available or is insufficient, private investment in enabling technology should attract positive judicial and policy support.

IV. THE BUSINESS MODEL CHALLENGE FOR ENABLING TECHNOLOGIES

Commercialization strategies available to the developers of GPTs/enabling technologies are typically devoted to licensing of patents and trade secrets. As a practical matter, pioneers of upstream enabling technologies are not necessarily proficient in the relevant downstream applications (“verticals”).

This “capability mismatch” generates a need to license technology.¹⁶ One remarkable feature of modern market economies is that markets for innovation and technology do in fact exist.¹⁷ Their fragile existence is a tribute to the sophisticated nature of property rights and contract law and their proper enforcement in a modern private enterprise economy.

Some firms (e.g. AT&T in the 1940’s with the transistor) have invested heavily in enabling technologies. Their appropriability problem was, in this and other cases in the mid-20th-century telecom industry, “solved” in the U.S. because AT&T enjoyed a special fee that regulators imposed on telephone subscribers to help offset the cost of research at Bell Labs, the heart of AT&T’s system of innovation.

In other cases, the pioneer lost out. EMI in the U.K. invented the CAT scanner and lost in the marketplace to General Electric, Siemens and others. Pilkington invested in the float glass process (arguably an enabling technology) on its own, reaping benefits until antitrust intervened. Qualcomm in the U.S. invented the key technology behind CDMA, the 3G wireless standard, which it has successfully licensed.

15 Nelson, “The Simple Economics of Basic Scientific Research.” *Journal of Political Economy*, vol. 67, no. 3, June 1959. In the paper, Nelson explains why basic research is hard for specialized (i.e. undiversified) firms to support. He raises a general problem, applicable to enabling technologies too. Quite simply, value capture from early stage generic research and development is difficult.

16 See Teece, “Profiting from Innovation in the Digital Economy,” *Research Policy* (forthcoming, 2018); Teece, “Reflections on ‘Profiting from Innovation,’” *Research Policy* 35:8 (December 2006), 1131–1146; Teece, “Profiting from Technological Innovation,” *Research Policy* 15:6 (December 1986), 285–305.

17 Teece, “The Market for Know-how and the Efficient International Transfer of Technology,” *The Annals of the Academy of Political and Social Science* 458:1 (November 1981), 81–96. Also see Arora, “Markets for Technology: The Economics of Innovation and Corporate Strategy,” MIT Press, 2004.

Despite occasional success stories, licensing is not an especially effective tool with which an inventor can capture value. Patents licenses are not self-enforcing — the power of the court is needed. All licenses are negotiated in the shadow of the court. Without proper enforcement, and the readiness of a court to enforce patents, licensing agreements yield little value. This helps explain Nobel Laureate Ken Arrow's puzzle:

Patent royalties are generally so low that the profits from exploiting one's own invention are not appreciably greater than those derived from the use of others' knowledge. It really calls for some explanation, why the firm that has developed the knowledge cannot demand a greater share of the resulting profits (Arrow, 1962, p. 355).¹⁸

He was still puzzled 50 years later:

Why is it that royalties are not an equivalent source of revenues? In simple theory, the two should be equivalent. Indeed, if there is heterogeneity in productive efficiency, ... then it should generally be more profitable to the innovator to grant a license to a more efficient producer... I have the impression that licensing is a minor source of revenues (Arrow, 2012, p. 47).¹⁹

The puzzle can be resolved once one takes into account the reluctance of the court to enjoin. In the U.S., the Supreme Court's *eBay Inc. v. MercExchange LLC* decision in 2006 amplified this problem.²⁰

Because of these inherent business models and enforcement difficulties, antitrust must tread carefully in the licensing space. As noted, the wonder of technology markets disguises a fragility that antitrust authorities should recognize. Failure to do so is likely to be even more harmful to the economy and consumers than it is to private interests — because it chills technology markets, and discourages investment in R&D, particularly that which supports challenging blue-sky initiatives. It is not just that royalties get chiseled down; the bigger problem is that market transactions evaporate and are steered into the courthouse, at great cost to society, the parties, and the smooth functioning of markets for know how/technology.

V. MOBILE (WIRELESS) TECHNOLOGY AS ENABLING TECHNOLOGY

In recent decades, one of the most outstanding displays of powerful enabling technology at work has been mobile wireless. In the main, this has been privately funded. Technical developments in wireless have involved a great deal of discovery, testing and validation by business enterprises mainly in the U.S. and Europe. Each new generation of mobile wireless communication technology requires billions of R&D dollars invested over the course of a decade to develop and formalize standards. The standards process for wireless is orchestrated by the European Telecommunications Standards Institute ("ETSI").

The mobile wireless sector affords numerous examples that illuminate the issues of value capture. The key advances leading the digital communications revolution began with many proprietary technologies. These were then codified in a series of wireless standards, each of which provided a step change improvement in communication performance running from 2G in the early 1990s through the current 4G. Major revision to standards has been more than incremental. Each generation has dramatically improved performance in transmission capacity, service quality, congestion management, cell handover, and signal quality.

5G, the next generation, is on a path to be rolled out beginning in 2020 with further enhancements to latency and speed. This cluster of inventions will facilitate new, wireless-based business models in industries dealing with massive quantities of data or mission-critical processing. Each generational advance makes new types of data services possible.

The required technological advances have been enabled by armies of engineers at numerous companies, including AT&T, IBM, TI, Motorola, Siemens, and Ericsson with research labs distributed around the world. The other current major wireless technology developers are Qualcomm (which also sells chips using its technology and licenses its patented technology), Nokia, (which is now almost exclusively a telecom equipment supplier), and InterDigital, (a pure licensing company).

18 Arrow, "Comment on The Origins of the Basic Inventions Underlying Du Pont's Major Product and Process Innovations, 1920 to 1950," in *The Rate and the Direction of Inventive Activity: Economic and Social Factors*, 355 (Nelson ed., 1962).

19 Arrow, "The Economics of Inventive Activity Over Fifty Years, in the Rate and the Direction of Inventive Activity Revisited 43," 47 (Lerner & Stern eds., 2012).

20 *eBay Inc. v. MercExchange LLC*, 547 U.S. 388 (2006)

Complex and interdependent wireless technologies embodied in the mobile data revolution have laid the foundation for multiple, connected business ecosystems for a range of new services such as streaming media, cloud computing, the Internet of Things, and mobile payment systems.

In the case of smartphones, 4G standard technology stimulated sales of smartphones, particularly those that could use the new technology most beneficially and compellingly. Some of the technology has been embodied in a baseband (modem) chip, but most of the value extends beyond the chip to the smartphone and even to the network.

Improvements in standardized communication technology, rolled out in carrier networks, and employed on consumer and business devices, in time enables new and better apps like Facebook and Netflix. Better apps feed back to the demand for devices, particularly those with technologies and features that are highly complementary to the standardized technology. Hence implementers that attract and use the most complements benefit the most.

When private parties negotiate for legal access to patented wireless technology, the value generated by the technology ought to be taken into account. Certainly, the bargaining range ought to be impacted by such considerations, thereby allowing the patent owner to claim a portion of the spillover or broader (social) value to be taken into account but typically only that piece that the licensee would directly benefit from.

Dynamic efficiency for ongoing innovation justifies a portion of this downstream value to flow upstream to the wireless interface technology developers. Such royalties ought not be thought of as a “tax” in any meaningful sense — royalties simply are the transfer of financial resources needed to keep the research enterprise advancing.

VI. THE FRAND ROYALTY APPROACH

A. FRAND and the Innovation System

The need for a forward-looking approach to technology development on mobile wireless was recognized from the outset by ETSI. The original architects of ETSI IPR policies sought a “balancing of the interests” of technology contributors (patent owners) and implementers. ETSI 3GPP started as a European governmental initiative, to assemble a broad set of actors committed to fairness and benefits to the broader telecommunications sector (ecosystem) and consumers. This broad constituency is still apparent today and includes chipset designers and fabricators, handset and base station makers, cellular service providers, app developers and, of course, consumers.

The standards development system was not designed to favor one constituency over the others. Indeed, initial versions of the ETSI IPR policy which didn’t attract technology developers were all rejected in favor of versions that yielded balance. Where standards technology contributors enable so much of the subsequent downstream innovation, it is critical that technology developers not be short changed. This conclusion is not only consistent with ETSI IPR policy; it is economically desirable and therefore entirely reasonable from a public policy perspective.

Standard development organizations (“SDOs”) require their members who own patented technologies, before technologies are accepted into a standard, to agree to make licenses to their patents available on FRAND terms. What is “fair and reasonable” (“FR”) and what is “non-discriminatory” (“ND”) often raise questions. In this paper I will only address the FR aspect of FRAND, in the context of ETSI.

There is little doubt, and Dr. Bertram Huber an ETSI founder confirms this view,²¹ that ETSI was concerned with establishing a vigorous standards process to support the development of a robust telecommunication industry in Europe and around the world. ETSI requires FRAND commitments from its technology contributors, with the expectation that implementers would take a license under FRAND terms.

The mobile phone industry was very much in its infancy at the time ETSI was founded. The focus then and now is on what, in modern language, we think of as creating a robust innovation ecosystem.

...the ETSI IPR POLICY seeks a balance between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPRs. ... IPR holders whether members of ETSI and their AFFILIATES or third parties, should be adequately and fairly rewarded for the use of their IPRs in the implementation of STANDARDS and TECHNICAL SPECIFICATIONS.²²

²¹ Author conversations with Dr. Bertram Huber, 2017.

²² ETSI Rules of Procedure, November 30, 2011, Annex 6: ETSI Intellectual Property Rights Policy, p.34.

In what follows, I give consideration to the issues, with specific reference to ETSI policy. I also consider the cost of error and elaborate the point that under-rewarding the patent holder of an enabling technology has very high societal costs, and should be avoided.

B. Social Value Criteria

There should not be a rule that would prevent the parties from casting their eyes in all directions to see the total value which they create, and endeavor to realize a portion of that in some fashion. Certainly a “social planner” (a hypothetical omniscient “architect” endeavoring to design a robust ecosystem) would do so. Even in the absence of horizontal spillovers, economic principles, support the notion that the rewards for early stage innovators should include some of the anticipated surplus that subsequent stakeholders (i.e. implementation/application stakeholders) garner through use of standards technology. Downstream value is revealed only over time.²³ Nor should there be a cap in the price of the royalty base as more expensive smart phones are likely to make more intensive use of more advanced standardized technology. One way to take account of uncertainty is to use a royalty base consistent with a likely value meter, such as the smart phone rather than the cellular chipset.

In short, the relevant lens for assessing full value ought to be the ecosystem, not a particular segment which might use the patented technology. This happens, for good reasons, to be consistent with industry practice.

The reason for looking at full or total value as a starting point for FRAND negotiations is because doing so is consistent with economic reasoning and ETSI’s goals and policies. It’s also what willing licensors and willing licensees, guided by an ecosystem “architect” or “regulator,” would naturally focus on in guiding negotiations. Such negotiations would increase the likelihood of rewarding upstream technology contributors commensurate with what’s needed to draw forth the investment in upstream innovation at levels likely to keep the ecosystem robust. If licensing negotiation between parties must somehow be blind to the downstream value that is created, the inherent underinvestment problems owing to inadequate rewards will only be amplified.

VII. FROM HOLD UP TO HOLD OUT: TIME TO CLOSE THE DEBATE?

A. Intellectual History

A vigorous telecommunication industry requires a robust innovation ecosystem. Various parties and occasionally antitrust regulators have clumsily tried to undo ETSI’s good design around FRAND issues.²⁴

As mentioned earlier, there is a penchant for absconding with the fruits of innovation — particularly once those inventions are disclosed to implementers. Patent infringement is facilitated if “fig leaves” are available to disguise the infringer’s motive. For the last decade or so, the antitrust theory of patent hold up has been just such a fig leaf.

The intellectual history on patent “hold up” and “hold out” theory is checkered. It is also a red herring. The first (mis)application of the hold up concept to the realm of patents was Shapiro in 2001.²⁵ While IP scholars subsequently became aware of these patent hold up theories, scholars and practitioners close to the world of licensing understood this work to be theoretical musing and little else.

Opportunism that lies at the heart of the idea is frequently observed. But guile is also needed.²⁶ If a patent owner promised to charge one rate, and specific investment was made on the basis of that promise, and patent owners subsequently, without good reason, changed their minds, then the Williamsonian criterion for hold up might be met. But such situations are likely to be rare. More commonly, the patent owner merely promises to make licenses available on FRAND terms, but *without* specifying in great detail until later on what rates it would seek to charge.

23 E.g. microprocessors were first used and made for the Japanese Busicon calculator, but rapidly found other applications. (See Hoff, “The Birth of the Microprocessor and Beyond.” *Stanford University*, Stanford Engineering, available at: <https://engineering.stanford.edu/news/ted-hoff-birth-microprocessor-and-beyond>.) In advance it’s impossible to know all of the potential applications, but they can be anticipated to some degree.

24 ETSI of course leaves the rate to negotiations between the parties under the shadow of the FRAND commitment.

25 Shapiro, “Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting,” in *Innovation Policy and the Economy* 1, edited by Jaffe, Lerner & Stern, 2001, Cambridge: National Bureau of Economic Research and The MIT Press, pp. 119-150.

26 See Williamson, “Markets and Hierarchies: Analysis and Antitrust Implications, A Study in the Economics of Internal Organization,” Free Press (1975); “The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting,” Free Press (1985).

Numerous implementers making standards-compliant products have latched onto the patent holdup argument, claiming that hold up in the context of standard essential patents (“SEPs”), is the norm. Only in recent years has policy concern over hold *out* (i.e. implementers not taking licenses but nevertheless using the technology) arisen even though it has been a perennial problem in the marketplace. Indeed, the current head of the DOJ Antitrust Division, correctly in my view, states that “collective hold out” behaviors in standard settings are more pernicious than unilateral hold up by SEP holders.²⁷ The belated recognition of hold out is what may have led Contreras to argue that:

To the extent that hold-up impedes the efficient operation of standard-setting processes, SDOs can, and have, adopted internal procedures, including disclosure and licensing requirements, to curtail that behaviour . . . it may thus be time to close the debate over the systemic prevalence of this form of behaviour. (p24)²⁸

Hold up theories have begun to wane for a lack of evidence. Furthermore, it is widely accepted that contractual mechanisms (by which SDOs seek enforceable FRAND commitments from SEP holders) are already in place to deal with patent hold up.

There is an emerging consensus that it is time to shut down this antitrust ruse, at least until evidence of hold up emerges. However, even if the debate is drawing to a close in the U.S., we are nevertheless left with (a) foreign competition agencies and bureaus now using the hold up argument to favor national champions and (b) a sense that perhaps the debate has come to a stalemate with arguments and evidence on both sides. The assessment in (b) is inappropriate because the antitrust frameworks that look at both hold up and hold out are both static and too narrow. The social returns to innovation issues discussed earlier have been ignored. Had they been recognized, the academy might not have lead the judiciary and policymakers astray.²⁹ The occurrence of “hold out” has greater cost than “hold up.” This is especially true for emerging technologies, into which category many wireless technologies fall. When emerging technologies are at issue, and dynamic consideration are taken into account, the merits favor erring on the side of worrying about hold out, and depressed royalties.

B. The Asymmetric Cost of Error Associated with Antitrust Interventions

The empirical economics literature shows no evidence of patent hold up; moreover, litigation has yet to establish that patent hold has taken place. Yet there are numerous instances of hold out as evidenced by protracted litigation in multiple jurisdictions around large SEP portfolios as to which there is no ambiguity of patent validity and infringement.

Consistent with ETSI goals, analyzing the situation from an economic perspective leads to several observations:

1. Implementers are third-party beneficiaries of a FRAND contract between the SDO and owners of standard essential patents, so:
 - a. FRAND requires making licenses available. The patent owner has, for most practical purposes, foregone the option of avoiding dealing with an opportunistic implementer.
 - b. Forward vertical integration by the patent owner often doesn’t work to protect the inventor against harm from hold out. The patent holder’s capabilities may not favor pursuing such a business model.
 - c. Implementers can refuse to pay, whereas the patent holder cannot physically withhold the technology once patents are published. In short, *de facto* infringement is an option for implementers. Denial of access to the patented technology isn’t possible without the association of costs. It is therefore not surprising to see infringement for many years by putative licensees.
2. The shadow of litigation covers royalty negotiations. If a court determining infringement awards too low a royalty, the innovator remains undercompensated. “Too high” an awarded royalty has very little negative social impact because it would be a relatively rare blip against the dominate forces under-rewarding enabling technology. Awards that are “too low” have outsized negative impacts once externalities are taken into account. Awards “too high” (by private rate of return criteria) may nevertheless remain too low by *social* reward criteria.

27 Delrahim, “Take It to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law,” Remarks delivered at USC Gould School of Law, Los Angeles CA, November 10, 2017, at 5, available at: <https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-usc-gould-school-laws-center>.

28 Contreras, “Much Ado About Holdup,” (February 13, 2018). University of Illinois Law Review, Forthcoming. Available at: <https://ssrn.com/abstract=3123245> or <http://dx.doi.org/10.2139/ssrn.3123245>.

29 Barnett, “Has the Academy Led Patent Law Astray?” Berkeley Technology Law Journal, Issue 4, vol. 32, (2018), pp. 1313–1380.

In short, the cost of error is not symmetric, especially when enabling technologies are implicated. The antitrust standards literature to date has been remiss in not balancing the interests of patent holders and implementers, and in not adopting the proper dynamic perspective.

VIII. A NOTE ON “EX-ANTE” FRAND ROYALTIES

Some antitrust economists nonetheless cling to the hold up fiction. They suggest that the way to handle it is to set royalties at some level they call “*ex-ante*.” There are, as explained elsewhere,³⁰ multiple meanings of *ex-ante*. Advocates of an *ex-ante* approach have left its meaning indeterminate. *Ex-ante* means “before.” But before what? The usual interpretation is *after* the technology exists, and thus after the innovator has sunk its investment in developing the technology, at least to the point where it can be considered for incorporation into the standard, but *before* the SDO chooses which technology to incorporate into the standard, and *before* implementers have made any investments in making standards-compliant products. As such, what is often termed *ex-ante* is more properly thought of as “*interim*”: after one party (the innovator) has made its investment, but before the other party (the implementer) has made its investment.

Even some theoretical notion of *ex-ante* value (e.g. setting royalties consistent with bargaining power anchored to an inventor’s irreversible investment but before an implementer’s irreversible investment) such a rate may remain incalculable without indicating dynamic consideration.

One consequence of the oft-times advocated *ex-ante* approach is to bestow all the gains from standardization to the implementers. Even without spillovers, neither economic theory (nor equity) justifies this approach, especially if the very success of the standard owes partially to the patented technology that was selected. Excluding the developers from claiming some share of the gains from standardization is also inconsistent with ETSI’s desired balancing of interests.

Moreover, even if a SEP does not rise to the level of an enabling technology, inventors may remain under-rewarded, because of the inadequacy of value capture business models; additional compensation would encourage the higher level of investment that social dynamic requires.

The *ex-ante* approach follows from an implicit claim that hold up is ubiquitous. Indeed, the claim is sometimes made that an opening offer for anything other than the “*ex-ante*” value (whatever that is) is tantamount to evidence of hold up. This of course makes no commercial common sense and implicitly defines as a violation of antitrust law any sharing/balancing (which is in fact necessary to comply with ETSI’s IPR policy!).

It is also important to note that if a technology were so superior that it would be used whether adopted as a standard or not, or so superior as to have no commercially viable alternatives, then its incorporation into the standard does not confer any additional market power beyond that already present in the patent, and the standard makes little difference to the royalties the technology would command in a well-functioning market.

Advocates of the *ex-ante* approach like to argue that setting a low royalty rate is warranted because it is compensated for by the greater value the standard confers, and in particular the fact that patent holders whose technology is chosen for incorporation into a standard will get a “volume effect” of being able to seek royalties on all standards-compliant products which they would not have in the absence of standardization. However, causation could run the other way: a standard may only succeed because of the powerful (patented) technologies embedded in it. The volume effect may be as much a result of patent technologies’ success as it is the cause. Endogeneity likely exists.

IX. THE PROBLEM OF DEPRESSED ROYALTIES

The forces at work in a market economy even with reasonably well developed intellectual property rights tend to result in royalty rates that are too low. These forces can be summarized as follows:

1. Spillover from enabling technologies are likely very considerable. Technology is accordingly underpriced because of inherent appropriability problems.
2. Patents are not self-enforcing because patented technology is disclosed when a patent is granted; once in a standard, it is disclosed yet again, (as standards are published).

30 Teece and Sherry. “Licensing and Standards Setting: The Multiple Meanings of ‘Ex Ante’ Negotiations and Implications for Public Policy.” *Tusher Center for the Management of Intellectual Capital*, 21 May 2015, businessinnovation.berkeley.edu/wp-content/uploads/businessinnovation-archive/documents/Tusher-Center-Working-Paper-10.pdf.

3. Implementers are in no hurry to take a license. They can run out the clock on the term of the patentee's grant. When there is no effective threat of injunction³¹ infringers might merely pay damages (plus prejudgment interest, often at low rates).³²
4. When a patent owner encounters a recalcitrant licensee, of which there are likely many if implementers aren't themselves SEP owners who might cross-license, then the patent owner sometimes discounts royalty rates still further in order to prime a bandwagon effect. This factor may depress observed royalty rates below the first-best.
5. Antitrust allegations against a patentee, such as "hold up," are sometimes used to blunt allegations of willful infringement by a would-be licensee. Antitrust at a minimum causes uncertainty which can retard the advance of a licensing program. This tactic muddies the water to an infringer's advantage. *Unilateral* "hold out" typically is not treated symmetrically under the antitrust laws, which seeks to deter *coordinated* effort to boycott or otherwise use monopsony power against the patent owner.
6. Given the absence of any criteria put forward today by hold up champions — no workable structure was put forward by Shapiro in his original article — the hold up theory is tailor-made for politically motivated competition authorities to simply announce that proposed royalty rates are "too high," on antitrust grounds. An antitrust theory not properly grounded in markets *as they operate* invites mischief by national governments seeking to advantage domestic industry at the expense of domestic consumers, foreign competitors and technology creators.

X. SUMMARY

Empirical studies show that almost all classes of R&D activity are under-supported. Two in particular are grossly undercompensated: (a) basic research and even applied research (b) enabling (or general purpose) technologies. Accordingly, when courts or regulators are reviewing or setting royalty rates then consideration needs to be given to amplifying, not diminishing, incentives for upstream investment in R&D. Such investment is perhaps among the most precious that society makes.

FRAND issues are contract issues, not antitrust issues. Should courts be tempted to frame patent hold up issues as antitrust issues, then that frame should be rigorous and robust. Broader dynamic considerations must be brought into play. Enabling technologies warrant special care in the intellectual property commons. The mistake of undercompensating technology creators would lead to the tragedy of diminished innovation, and, as a longer term consequence, less competition. A properly functioning technology market can do better.

31 The difficulties of securing injunctions in many jurisdictions means that licensees have little to fear from being shut out of the market. Hence, drawing out negotiations is relatively costless to the implementer (other than the prospect of having to pay prejudgment interest on a damages award). Meanwhile patent owners are denied cash, making the funding of ongoing research difficult especially in for a public company for which quarterly earnings forecasts can be missed if license income flows slower than expectations.

32 Epstein & Noroozi, "Why Incentives for 'Patent Holdout' Threaten to Dismantle FRAND, and Why It Matters," Berkeley Technology Law Journal, Issue 4, vol. 32, (2018), pp. 1381 – 1430.

STANDARDS DEVELOPMENT ORGANIZATIONS AS TWO-SIDED MARKETS

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Payment cards are the natural first thought when economists mention two-sided platforms. But while American Express and its legal battles grab the headlines, the same fundamental platform economics at issue for credit and debit cards play out in technology standards development as well.² In standards-development organizations (“SDOs”), the two sides are represented by the technology contributors – the innovators that provide the technologies (frequently patented) that define the standards – and the standard implementers, the firms that manufacture and distribute to the marketplace the products and services embodying the standard. SDOs provide a platform for the various interests to collaborate in the creation and commercialization of new technology offerings.

The governance, intellectual property (“IP”), and dispute resolution rules that SDOs enact for guiding members’ actions in developing new technology standards help to balance (or, when the SDO gets it wrong, work to unbalance) the interests of these two groups. As with all two-sided markets, getting the balance right is crucial for the survival of the SDO. SDO membership is generally voluntary; if the rules favor one side too heavily, membership from the other side can wither away, ultimately shrinking or even killing the overall SDO platform.

Consider SDO IP policies first. The majority of SDOs have an IP policy in place that includes two basic components: patent disclosure and patent licensing. Within this general framework, the individual policies vary considerably in their specifics.³ For example, some SDOs request disclosure of any known patent or patent application potentially relevant for a standard under development.⁴ Others take a narrower approach, calling only on the members who propose a new standard to disclose their patents.⁵

The exact disclosure rule chosen by an SDO is a matter of balance. SDOs want members to have sufficient information on the patent landscape to make informed decisions when developing a new standard. SDOs especially want to prevent any “patent ambush” opportunities,⁶ where patent holding members fail to disclose relevant patents until after the standard is codified. But how balance is achieved can differ depending on the industry (or industries) impacted by the SDO, how patent intensive the technology field is, and what expectations are from end consumers of the standard. These factors, among others, drive the differences we see in IP policies across SDOs.

In addition to patent disclosure, the other common feature of an IP policy is rules of some sort guiding disclosed patent licensing. SDOs have a vested interest in ensuring that the standards they publish can be widely commercialized, meaning SDOs have an interest in ensuring access to essential patents on reasonable terms and conditions. Just as with disclosure rules, we see a great deal of diversity in how SDOs approach the access issue as a means of balancing the needs of different members.

A minority of SDOs mandate royalty-free licensing: by joining the SDO, a firm commits to license any relevant patents it might have on a zero-price basis, though restrictions on licensed products or geographic scope are typically allowed. This approach makes business sense when the standards cover products or features that are complementary to member companies’ primary lines of business. For example, Bluetooth and USB are two royalty-free standards. Widespread adoption of these standards increases the utility of the products they are embedded in (laptops, for instance), enabling higher product sales, higher product prices, or both. While mandatory royalty-free licensing limits participation from innovators that depend on royalty revenues to fund R&D and operations, in these two (and a few other applications, namely in the internet space), this limitation has been deemed a worthwhile tradeoff.

The majority of SDOs around the world, however, have opted for some form of FRAND licensing, asking for member commitments to license any patents essential for the practice of the standard on fair, reasonable, and non-discriminatory terms. Within the larger FRAND tent, we see a number of options. Some SDOs opt for relatively simple FRAND promises. The European Telecommunications Standards Institute (“ETSI” the SDO that oversees the most widely adopted smartphone standards), is an example here: it asks for “the owner to give within three months an

2 As the Federal Trade Commission’s incoming Bureau of Economics Director has explained. See, Kobayashi & Wright, “Intellectual Property And Standard Setting,” in ABA Handbook On The Antitrust Aspects Of Standards Setting, first edition (2010).

3 See, e.g. Layne-Farrar, “Proactive or Reactive? An Empirical Assessment of IPR Policy Revisions in the Wake of Antitrust Actions,” Antitrust Bulletin, Vol. 59, Issue 2, 2014 (hereafter, Layne-Farrar 2014); see also Tsai & Wright, “Standard Setting, Intellectual Property Rights, and the Role of Antitrust in Regulating Incomplete Contracts,” 80 Antitrust L.J. 1 (2015). The variations in specific policies imply that in any litigation, the language in the particular policy at issue needs to be consulted. See, e.g. Layne-Farrar & Wong-Ervin, “An Analysis of the Federal Circuit’s Decision in Ericsson v. D-Link,” CPI Antitrust Chronicle, March 2015 (1).

4 The European Telecommunications Standards Institute (ETSI) fits this description. See: <http://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf>.

5 U.S. Pharmacopeia (“USP”), an organization that defines prescription drug standards, is an example here. See: <http://www.usp.org/about/leadership/policies-rules>.

6 See, e.g. In re Rambus Docket No. 9302 (FTC June 19, 2002); *Rambus, Inc. v. F.T.C.*, 522 F.3d 456, 469 (D.C. Cir. 2008), cert. denied, 129 S. Ct. 1318 (2009). For a history of all filings, see: <http://www.ftc.gov/os/adjpro/d9302/index.shtm>.

undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and non-discriminatory terms and conditions,” specifying only general licensing guidelines, such as that the license must cover manufacture, sale, lease, and repair of covered equipment.⁷

Other SDOs call for FRAND commitments with detailed restrictions. For example, among other restrictions, IEEE specifies that parties must consider the smallest salable patent practicing unit (“SSPPU”) as the royalty base in private bilateral negotiations and prohibits standard essential patent (“SEP”) holders signing onto the policy from seeking injunctions until all other adjudications have been pursued and concluded.⁸ These FRAND limitations were adopted at IEEE in 2015 and to date IEEE remains the only SDO to call for SSPPU licensing and to impose an explicit prohibition on seeking injunctions.

One SDO, the VITA Standards Organization, goes even further than IEEE: it mandates FRAND licensing with maximum rate disclosure made at the time the patents are disclosed.⁹ That VITA calls for *ex-ante* royalty rate disclosures, while no other SDO does, is the result of unique factors at VITA. In particular, the small number of SDO members facilitates trust and compromise, the low-patent environment due to mainly government contract applications for the standards lowers tensions over licensing policies, and the small size of the industry served further lowers the money at stake for patent licensing.

Note that the differences between ETSI’s and IEEE’s IP policies stem not from differences in membership, but rather from differences in other SDO policies – namely, the governance rules. While both SDOs have large, heterogeneous memberships, with innovator and implementer members of all sizes, geographic locations, and industry niches, their rules for adopting and changing internal policies differ significantly. ETSI sets its governance rules through SDO-wide consensus voting. In contrast, IEEE has a small task force structure for determining its governance rules. This structural difference means that any changes to IP policies require broad membership-wide support at ETSI, while at IEEE such changes can be enacted through a series of small subgroup votes.¹⁰ For this reason, while ETSI considered a prohibition on injunctions as part of its FRAND policy debate in 1993, ETSI members rejected that policy and it has not successfully resurfaced since then.¹¹

Many in the wireless telecom community expressed concerns that IEEE’s imposition of FRAND licensing restrictions in 2015 tipped the balance in favor of implementers, to the detriment of innovators.¹² In response, some IEEE members have refused to adopt the new FRAND commitment and have instead submitted “negative LOAs” – letters of assurance stating that the SEP holder will not follow the new FRAND policy.¹³ The lack of positive LOAs increases the uncertainty regarding access to essential patents for firms implementing IEEE standards.

OASIS provides another example of how participation can be impacted when an SDO shifts the balance in IP policy rules. This consortium, which develops standards for internet security among other technology areas, moved from a FRAND licensing policy to a *de facto* royalty-free

7 <http://www.etsi.org/about/how-we-work/intellectual-property-rights-iprs>.

8 <http://standards.ieee.org/develop/policies/bylaws/sect6-7.html>.

9 <https://www.vita.com/Disclosure>. For a discussion of this policy, see Layne-Farrar, “Ex Ante Rate Disclosure In Tech Standards, A Decade Later,” Law360, December 11, 2017.

10 <https://www.ieee.org/content/dam/ieee-org/ieee/web/org/about/whatis/ieee-policies.pdf>. See also the U.S. Department of Justice Business Review Letter on the IEEE IP policy change, which discusses the votes that led to the passage of the change, <https://www.justice.gov/atr/response-institute-electrical-and-electronics-engineers-incorporated>.

11 See, e.g. Layne-Farrar, “Proactive or Reactive? An Empirical Assessment of IPR Policy Revisions in the Wake of Antitrust Actions,” Antitrust Bulletin, Vol. 59, Issue 2, 2014.

12 See, e.g. <https://www.essentialpatentblog.com/2015/02/ieee> and Petit, “The IEEE-SA Revised Patent Policy and Its Definition of ‘Reasonable’ Rates: A Transatlantic Antitrust Divide?,” (2016) Fordham Intellectual Property, Media & Entertainment Law Journal, Vol. XXVII. European SDOs CEN and CENELEC also criticized the IEEE policy change, noting that “CEN and CENELEC do not support initiatives taken by some SDOs to provide guidance on, or impose compliance with, FRAND pricing, valuation and rate-setting methodologies. Such initiatives create high risks of antitrust liability under the rules on anticompetitive agreements. They should therefore be avoided.” CEN and CENELEC position on: Standard Essential Patents and Fair, Reasonable and Non-Discriminatory (“FRAND”) Commitments, September 2016, available at: https://www.cencenelec.eu/news/press_releases/Pages/PR-2016-006.aspx.

13 See, e.g. Mallinson, “Development of Innovative New Standards Jeopardised by IEEE Patent Policy,” Wise Harbor, September 2017, p. 1, available at: https://www.4ipcouncil.com/application/files/6015/0479/2147/Mallinson_IEEE_LOA_report.pdf. See also, Corden, Miller, Wongsaroj & Wood, “Commercial and economic impacts from IPR policy changes: A report for Qualcomm,” Plum Research, March 2017, available at: <http://plumconsulting.co.uk/commercial-economic-impacts-ipr-policy-changes/>.

policy in 2005. In the wake of the change, OASIS membership fell by one third.¹⁴ The composition of members changed as well, away from software developers (which rely on licensing fees for revenues) and toward not-for-profit entities.¹⁵ Compositional changes of this sort can affect both the level and quality of innovations contributed to SDOs for the development of new standards.

Most SDOs recognize the importance of reaching the right balance in setting the specific terms of their IP policies. For example, the European Committee for Standardization (“CEN”) and the European Committee for Electrotechnical Standardization (“CENELEC”) observed in a 2015 position paper that “the patent policies of CEN, IEC [International Electrotechnical Commission] and ISO [International Standards Organization] have proven an efficient mechanism to address SEP matters if and as they arise. Any changes to our policies, therefore, would not only be unnecessary, but likely be of harm [to] well-functioning standards setting processes.”¹⁶

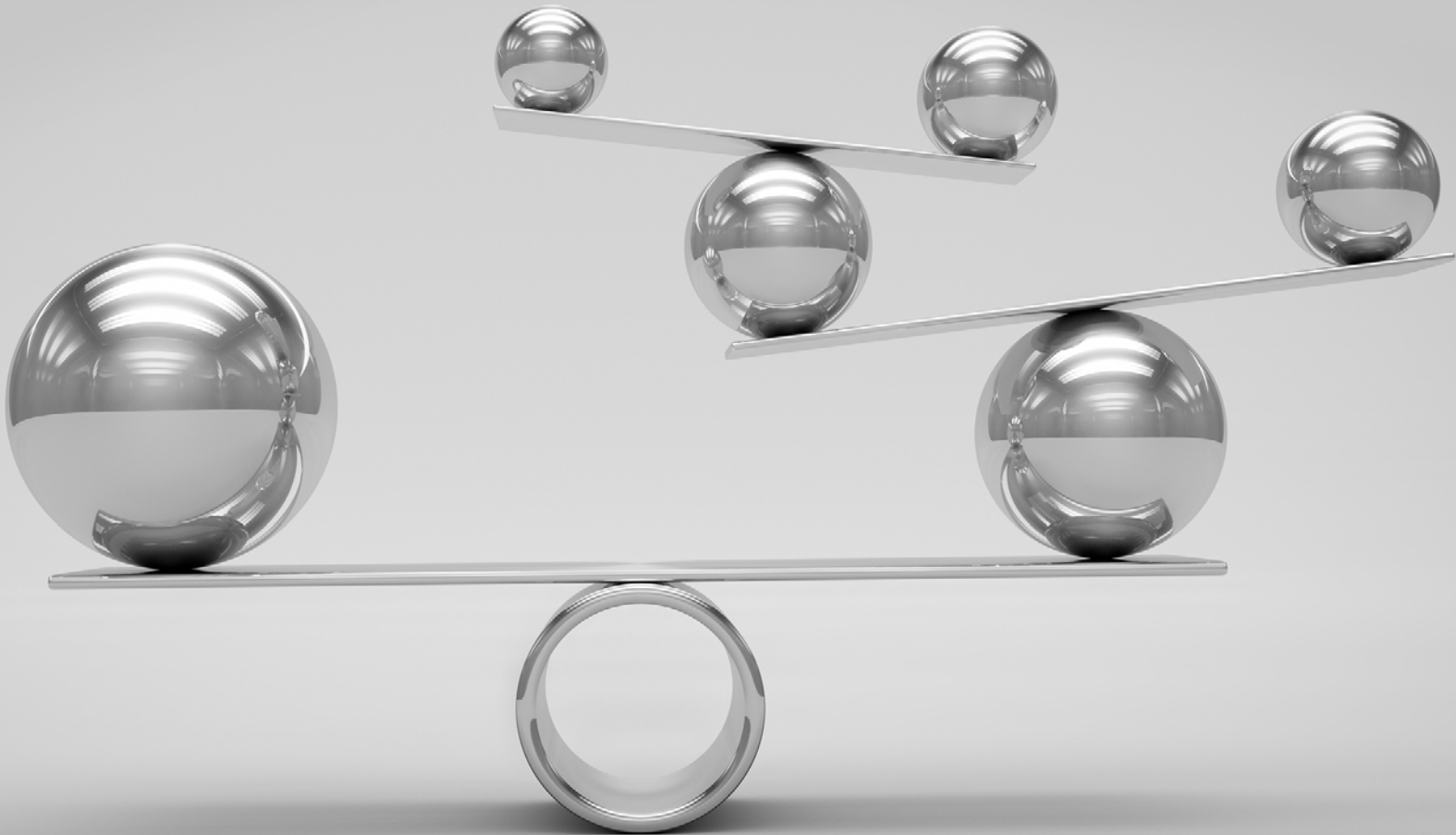
The bottom line for SDOs is therefore the same as it is for any other two (or more) sided platform: balancing “prices” across the sides of the platform – in the case of SDOs, these prices are the rules that determine the costs of participating – is a crucial task for maintaining active participation in the SDO, the survival of the platform, and the value of the products and services that it provides.

14 Baron & Spulber, “Technology Standards and Standard Setting Organizations: Introduction to the Searle Center Database,” February 2, 2018, p. 27 and Figure 6, available at: <https://ssrn.com/abstract=3073165>.

15 Stoll, “Are You Still In? The Impact of Licensing Requirements on the Composition of Standards Setting Organizations,” Max Planck Institute for Innovation and Competition, Research Paper No. 14-18, 2014.

16 CEN and CENELEC response to the European Commission’s Public Consultation on Patents and Standards Supported by ISO and IEC, “A modern framework for standardization involving intellectual property rights,” February 2015, available at: https://www.cencenelec.eu/news/press_releases/Pages/PR-2016-006.aspx.

COMPETITION, INNOVATION AND INTELLECTUAL PROPERTY...THE ELUSIVE BALANCE



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I. INTRODUCTION

There is usually general agreement in international fora on the need to promote innovation and to guarantee an adequate level of reward for innovators through protection of their intellectual property rights (“IPR”). It is also widely accepted that promoting competition provides incentives for innovation and that innovation disrupts markets and creates benefits for consumers and for society as a whole. But there is significantly less consensus on the level of protection that can be extended to IP rights holders. If their rights give them substantial market power, they have the potential to cut out competition and frustrate follow-on innovation.

This is only one of the areas of disagreement and controversy within and between the various antitrust jurisdictions across the world. Because this and other antitrust issues create considerable uncertainty on how competition law will be enforced, there are constant calls from the business community for more international convergence in antitrust and a better balance between competition and IP law enforcement.

This article reviews the international landscape of antitrust enforcement, assesses the progress on international convergence and the prospects for further improvements, especially in relation to the interaction between antitrust and property rights.

II. ACHIEVING INTERNATIONAL CONVERGENCE: THE CHALLENGES

The outreach of many firms in today’s world may be global but the challenge for them of dealing with the divergences between jurisdictions on antitrust law as well as protection of intellectual property remains considerable. Although most countries in the world now have competition and IP laws on their statute books, a significant minority do not. And even where these laws exist, the prescriptions and policies which stem from them are often very different, with some aiming to ensure that intellectual property rights are not undermined by antitrust action and others taking the view that sometimes the possession of IP rights gives the holders market power which they can abuse.

The institutions set up to enforce competition law, and the processes which they follow, are also very diverse. In most countries, competition agencies themselves are empowered to take direct action against anticompetitive transactions and conducts, even if their decisions are subject to review by courts. In others, a competition agency must prosecute any deal or practice before a court that takes the final decision itself.

The same diversity of approaches applies in respect of protection of intellectual property rights. In some jurisdictions, the protection available is quickly and easily obtained, and strong. In others, it is a long and complex process and enforcement is weak.

Beyond the differences between national regimes, efforts to ensure a balanced approach in the international enforcement of antitrust law on the one hand and IP law on the other, also depend for their success on the awareness of international standard-setting agencies of the implications of their decisions for competition. That is not always their first concern.

III. ACHIEVING INTERNATIONAL CONVERGENCE: THE PROGRESS SO FAR

Despite these obstacles, a lot of progress has been made over the last twenty years in international convergence of antitrust regimes. In this respect credit is due in large measure to the efforts of the OECD’s Competition Committee as well as to the International Competition Network, which brings together heads of all the competition authorities in the world, together with representatives of the legal community and of business itself. The major achievements relate to the establishment of best practice standards in areas such as *institutional design* (in particular how to guarantee the objectivity and independence of an antitrust authority), *due process* (how to ensure that the rights and obligations of all parties to a competition law investigation are fully respected), the focus on *facts-based investigations with increased use of economics and econometrics*, and *techniques and tests of merger control* and antitrust enforcement, especially *action against cartels*.

These positive developments in terms of international convergence in antitrust have not always related directly to the interaction between intellectual property rights, innovation and competition. But they have had an impact in enabling antitrust agencies, patent authorities and courts throughout the world to learn from each other and develop more convergent approaches to transactions and conducts which have an impact in several jurisdictions. At the same time, there has been growing recognition of the impact that IP rights can have on the dynamic of competition (or lack of it) in the increasing number of markets in which data, information and knowledge are key parameters in determining how firms compete.

Yet even if there has been some progress, the substantive policy and procedural differences between antitrust jurisdictions still present firms with considerable obstacles when they are trading and investing in different countries.

There has been growing international acceptance of the U.S.-conceived notion of the so-called “effects” doctrine. Each national authority limits its concerns to the impacts of a transaction or conduct in its own jurisdiction. But frequently it does not make sense either for a firm or for an antitrust authority to tailor the remedies to fit the situation in each individual country. If the markets are global, or nearly global, an effective remedy must make sense for the whole market.

IV. THE IMPACT OF POLICIES AND REGULATION BEYOND ANTITRUST

If the challenges of promoting sufficient convergence among antitrust authorities were not enough, national regulation around intellectual property, as well as regulation in other policy areas such as data protection, data privacy, and national security make the picture even more complicated. In some countries, price regulation (however frowned on by market-oriented economists) has also been the chosen solution to perceived problems of excessive pricing, including fees and royalties linked to property rights.

V. PROMOTING POLICY CONVERGENCE WITHIN JURISDICTIONS

Even with any jurisdiction, it may be difficult to get more convergence, either between different policy fields or over time. The ongoing debate on the interaction between antitrust and IPR in the area of standard essential patents (“SEPs”) illustrates some of the difficulties. In the U.S., some have regarded “hold-up” as the major infringement issue. More recently “hold-out” has been of more concern. In India, the Competition Commission has tended to impose some restrictions on injunctive relief for holders of SEPs but Indian courts have been more concerned to protect the rights of patent-holders.

In Europe, there are frequent differences of view within the European Competition Network (composed of National Competition Authorities and the European Commission). The most recent relate not so much to IPR issues but to how to handle possession of big data and whether to treat data privacy as a factor in an antitrust assessment given its impact on consumer welfare and choice. Perhaps these intra-jurisdictional debates and divergences simply underline the fact that many problems of international convergence reflect genuine policy choices of different authorities over time. In addition, decisions taken by antitrust authorities or courts may be decisive in their own jurisdictions but often relate to specific cases and facts which may or may not be replicated elsewhere.

VI. GUIDELINES AS A PATH TOWARDS CONVERGENCE?

In striving to promote convergence, all major antitrust jurisdictions have made attempts to produce guidelines on how antitrust laws will be applied in specific areas.

Markets are increasingly global, with complex digital systems and subsystems at the basis of many products and services, especially in the IT sector itself but also cross-cutting in all sectors. This emphasizes the importance of providing business with some ground rules as to how antitrust and IP law can positively interact for the benefit of both business and consumers. Telling business where it can innovate, expand or merge without infringing the law is arguably essential for a vibrant digital economy.

Over time, one can say that the U.S.² and EU Merger^{3,4} Guidelines, subject to various revisions, have withstood the test of time. One could say the same thing for the EU’s Guidelines on horizontal cooperation agreements.⁵ The European Commission’s Guidance on enforcement priorities⁶ in control of abuse of dominance under article 102 TFEU has had a rougher ride although it has the merit of having narrowed down the definition of anticompetitive foreclosure of competitors.

2 U.S. DOJ/FTC Horizontal Merger Guidelines of 19/08/10.

3 EU Guidelines on Horizontal Mergers, OJ C 31 of 05/02/04.

4 EU Guidelines on Vertical and Conglomerate mergers, OJ C265 of 18/10/08.

5 EU Guidelines on Horizontal Cooperation Agreements, OJ C11 of 14/01/11.

6 European Commission Guidelines on enforcement priorities under article 102 TFEU, OJ C 45 of 24/02/08.

The European Commission's Recent Communication on SEPs⁷ covers issues such as disclosure of patents and the conditions necessary for successful injunctive relief. To that extent, it clarifies the areas where U.S. and EU antitrust authorities may reach divergent conclusions. In addition, the EU's 2004 IP Rights Enforcement Directive⁸ is designed to ensure that remedies for violation of IPR remain equitable and proportionate, both from the point of view of innovators and investors and from that of implementers.

Court decisions bring some but not total clarity, for example the ECJ's Decisions on *ZTE/Huawei*,⁹ and the European Commission's settlement of the *Motorola*¹⁰ and *Samsung*¹¹ cases. In any event, international convergence in court decisions depends crucially on more convergence between legislators, and on more cooperation between agencies across jurisdictions. In Europe, we have regrettably too few antitrust decisions to build a coherent policy. This puts even more responsibility on the shoulders of the antitrust agencies and other agencies of government to get the policy messages right.

In India, in contrast, there is now considerable case law for example on SEP-related injunctions, including recourse to interim arrangements.

Yet there is a continuing global debate on the confrontation between antitrust and IPR. And there is a focus on whether the FRAND or non-FRAND royalties charged by patent holders are genuinely justified by the link between the patented technology and the business subsystem or system on which the royalty calculations are based. With respect to international convergence, the U.S. authorities have at least clarified many issues of process through the recently adopted International Guidelines.¹²

VII. DEVISING CROSS-JURISDICTIONAL REMEDIES IN GLOBALIZED MARKETS: SUBSTANCE AND PROCESS

More immediate progress can be made through further cooperation in devising remedies which are consistent between each other and make sense in different jurisdictions. There are still obstacles: due process, time-lines, cooperation of the parties, consent of intervening parties, incentives for forum shopping, regulatory gaming and capture, big vs small, big vs big...But progress needs to be made.

One of the key challenges today is how to intervene effectively in IT markets. On the one hand, as Jorge Padilla has emphasized at the Leadership conference, we need to research problems more deeply, take a holistic approach, analyze the potential problems at each layer of the value chain, look at the overall vertical impacts as well as network effects and economies of scale and scope. On the other hand, if an antitrust agency is to intervene effectively in a market, it needs to do it in a timeframe which allows it to help solve the problem as originally identified, and not impose a remedy when the market has already moved on. At the same time, it should not intervene too quickly if this risks damaging competition rather than helping it. This is a challenge shared by all agencies but it is an important one. And frequently younger agencies rush in where angels fear to tread.

VIII. THE CHANGING NATURE OF INTERNATIONAL CONVERGENCE

There has been another important development in the antitrust landscape. Twenty years ago, the debate on the potential for international convergence in antitrust, as well as in IP law, was a transatlantic one, dominated by the U.S. agencies (FTC and DOJ) on the one hand and European agencies on the other (European Commission and national European agencies such as the Bundeskartellamt). Today the debate involves a number of agencies from other prominent countries, in particular China, India, Brazil, Korea, Japan. The UK will also soon have a separate voice from the EU. New ground (in terms of policy and case law) is being opened up in many jurisdictions. India is an obvious example. But as a result, the "comity challenge" is even more difficult than in the past. In addition, the debate twenty years ago was about international convergence in antitrust alone whereas today, as was emphasized earlier, we need to look out of the antitrust silo at the wider scope for convergence in antitrust,

7 European Commission Communication on Standard Essential Patents, COM (2017) final of 29/11/17.

8 EU IP Rights Enforcement Directive, 2004/48/EC, of 29/04/2004.

9 ECJ Decision, *Huawei v. ZTE*, C-170-13, of July 16, 2015.

10 Commission Decision in Case AT.39985, *Motorola*, of 29/04/14.

11 Commission Decision in Case AT.39939, *Samsung*, of 29/04/14.

12 U.S. DOJ/FTC Guidelines for International Enforcement and Cooperation, of 13/01/17.

wider economic and social legislation, as well as intellectual property law. This requires a lot more interagency cooperation within jurisdictions even before we get started in international convergence.

Ideally there should be much more progress in convergence of law and policy. That is a long-term process with work to be done at the OECD and at the ICN as well as by standard-setting organizations. Moreover, if the effort is to have value-added, the result cannot simply be a lowest common denominator of general objectives and common processes.

IX. TOWARDS A “RIGHT” BALANCE BETWEEN IPR PROTECTION AND COMPETITION LAW ENFORCEMENT

As I emphasized at the beginning of this article, everyone seems to be in favor of competition, of innovation and of guaranteeing innovators' adequate rewards for their efforts. However, to be credible, we need to make every effort to create the right balance between protecting IP rights on the one hand and stimulating follow-on innovation, competition and consumer welfare on the other hand. Standardization can help incentivize and propagate innovation, including licensing of standard-essential patents on FRAND terms. But the challenge of finding the elusive “right balance” between IPR and competition is by no means confined to SEPs. It applies to patent protection as a whole.



