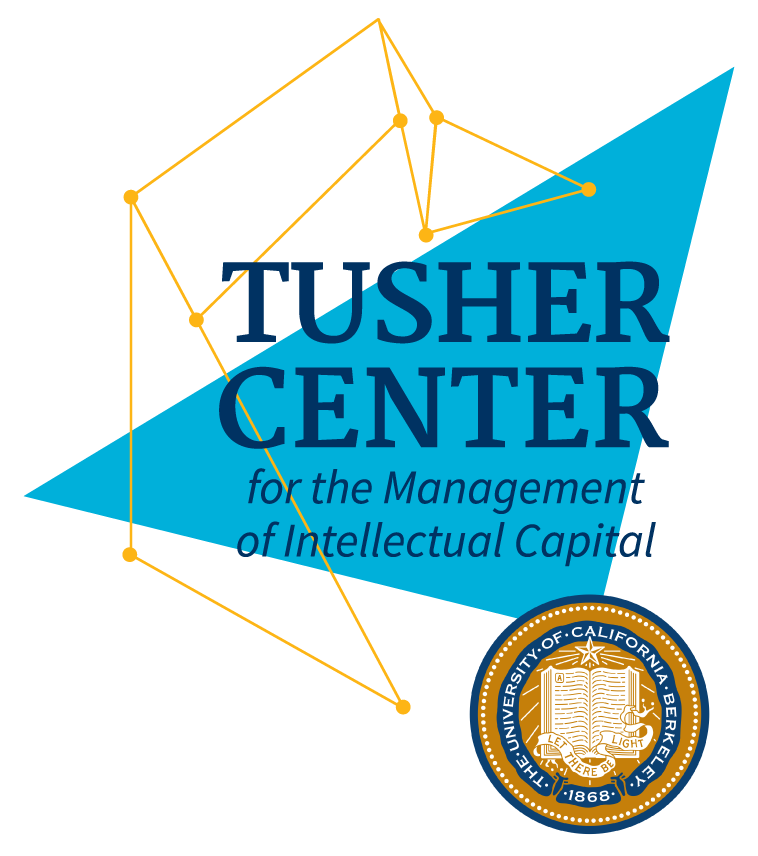
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**Pivoting toward Schumpeter:**

**Makan Delrahim and the Recasting of U.S. Antitrust**

**Towards Innovation, Competitiveness, and Growth**

**David J. Teece[[1]](#footnote-1)**

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COMMENT

ASSISTANT ATTORNEY GENERAL

Makan Delrahim, head of the U.S. Depart ment of Justice’s Antitrust Division and a patent lawyer, has signaled a subtle but important shift in antitrust policy in the United States, particularly where intellectual property and competition policy issues interact or appear to collide. He has carefully noted that competition law and intellectual property law share the common purpose of promoting innovation and enhancing consumer welfare. However, if he is to be believed, we are henceforth not going to be waylaid by economic theory alone. He has recently noted that when competition law is “thoughtfully applied,” and “when informed by economic experience” (i.e., not just by theory), “these complementary bodies of law yield exciting results: a strong dynamic economy with rich and varied choices for consumers.”1

This article will examine some of Delrahim’s recent speeches to determine whether his instincts are Schumpeterian2 and what a tilt away from static competition and towards dynamic competition might look like. By Schumpeterian, I do not refer to Schumpeter’s quixotic approach to bigness: sometimes claiming large firms and monopoly power assist innovation, and sometimes not.3 I instead refer to Schumpeter’s view that, whatever is the preferred firm and industrial structure to support innovation, in the end, it is innovation that most powerfully drives competition. Moreover, innovation is about “new combinations.”4 Schumpeter was not explicit about what this meant for antitrust and technology policy. However, he noted that, with respect to innovation-led competition versus static competition, the former is “much more effective than the other as a bombardment is in comparison with forcing a door.”5 He saw innovation as “the powerful lever that in the long run expands output and brings down prices.”6

For 30 years or more, a small group of economists has been calling for a pivot in antitrust in favor of (Schumpeterian) dynamic competition over static competition. We may soon witness such a pivot, led by Makan Delrahim. Global competition, with new players employing effective industrial policies, now requires it.

Competitiveness, Industrial Policy and Technology Policy

At a 1988 conference that began to explore the relationship between antitrust, industrial policy, and technology policy, Thomas Jorde and I, echoing Schumpeter, called for a change in antitrust thinking. We proclaimed that

the kind of competition embedded in standard microeconomic analysis may not be the kind of competition that really matters if enhancing economic welfare is the goal of antitrust. Rather, it is dynamic competition propelled by the introduction of new products and new processes that really counts. If the antitrust laws were more concerned with promoting dynamic rather than static competition, which we believe they should, we expect that they would look somewhat different from the laws we have today.7

At the conference, Phillip Areeda declared that “for 100 years, the Sherman Act has been at the core of American industrial policy. Whether antitrust law can meet the challenge of that office for the next century” depended, according to Areeda, “on (1) its receptivity to the principle of efficiency, growth, and innovation; (2) its ability to implement its principles in practice; and (3) the availability of supplemental mechanisms to insulate an occasional arrangement from the usual antitrust tribunals.”8 Areeda’s identification of innovation and growth as antitrust issues was noteworthy. This message, however, was ignored until quite recently.

As Gregory Sidak and I noted recently, “The conference was de signed to alert the law and economics community to a set of emerging issues on antitrust and innovation. In hindsight, we believe that the conference was a watershed event. A slow and reluctant awakening to antitrust and innovation issues is now well underway.”9 Unfortunately, the positive developments have tended more toward “slow” than “well underway.”

There have undoubtedly been minor efforts at the margin to bring innovation issues into sharper focus. For instance, Michael Katz and Howard Shelanski in 2005 signaled a shifting of the intellectual winds. They argued that “the challenge has been taken up,” but there is little evidence that it has, at least not in a robust fashion.10 In 2003, Robert Crandall and Cliff Winston of the Brookings Institute showed some skepticism with respect to the claimed benefit of current antitrust efficacy, noting that they “find little empirical evidence that past interventions have provided much direct benefit to consumers.”11 Even such a heraldic challenge did not stir the mainstream antitrust community to come forth with evidence to contradict them. Since Schumpeter taught us that innovation was key to consumer benefits, the Crandall and Winston assessment would not surprise a Schumpeterian. As noted earlier, Schumpeter was clear that sooner or later innovation brings down prices more assuredly than anything else, but this is not the orientation of current enforcement action.

Given strong economic evidence that innovation drives productivity, sharpens competition, and creates new products,12 a serious consumer-oriented antitrust policy, with an intermediate to long-term orientation, must necessarily focus primarily on supporting and advancing innovation. There are good reasons for antitrust policy to keep a consumer welfare focus, but there is no good reason to look at just short-term consumer benefits. Surely, the long-term matters too.13 After all, our social discount rates are single-digit.

The reality is that current (and historical) market shares are of little moment when it comes to analyzing dynamic competition. Innovations by businesses are the fundamental drivers of competition, and market concentration has little to do with the strength of innovation. Current market shares and market positions are often at best only a very weak proxy for competitive position. Rather, innovation, market structure, and firm size are jointly determined.14 Moreover, relationships vary across industries, and the nature of the technology itself also impacts sectoral patterns of innovation.15 Additionally, the technological opportunity and the appropriability regime impacts the intensity of innovation, market concentration, and entry.16 This is well recognized in the strategic management and innovation literatures, but it has yet to bleed over to the antitrust literature, other than through occasional remarks such as those from Katz and Shelanski.17 Makan Delrahim has declared his position in the past, for instance in his Separate Statement to the Antitrust Modernization Commission 2007 report:

Although the benefits of static efficiency are very important, they are incremental gains. In contrast, the other type of efficiency, dynamic efficiency, results when an entirely new technology is developed and made available to consumers. Dynamic efficiency has much more dramatic effects on consumer well-being, and therefore is an appropriate focus of attention for policymakers.18

The issue I put forward for consideration here is wheth er a focus on (long-run) dynamics rather than (short-run) static competition ought now to be the focus of antitrust. I then review Makan Delrahim’s speeches to ascertain if, explicitly or implicitly, that is the direction of travel he is seeking to establish. To crystallize the issue, I will describe both static competition and dynamic competition in turn. In doing so, I recognize that these styles of competition sometimes do not have bright lines separating them. Certainly, Schumpeter did not provide any crisp delineation.

Dynamic vs. Static Competition in Antitrust

Jurisprudence

***General.*** Antitrust agencies routinely claim to favor both innovation and competition. However, they have unnecessarily seen the tension between short-term (static) competitive analysis, with its emphasis on achieving low prices in the here and now, and the dynamic issues raised by intellectual property (and associated royalty payments). Royalties, in the short run, raise prices of licensed goods relative to the prices that would prevail absent payments. However, payments to licensors support innovation by helping innovators achieve the economic returns necessary to draw forth the critical investment dollars needed to support R&D and continuing innovation.

Schumpeter spoke of “creative destruction”; today we talk of “disruption” to markets and incumbents, which is the elixir of competition. Notwithstanding this well-accepted perspective, our antitrust agencies, and sometimes the courts, have not just been IP unfriendly—they have been innovation unfriendly, and have done little to promote technology-driven “disruption,” or economic competitiveness writ large.19

One U.S. example from the past in which antitrust authorities and the courts did not pay sufficient attention to relevant innovation issues was the breakup of AT&T in 1982. There was virtually no consideration given in the modified final judgment to the survival of a robust Bell Labs, arguably western civilization’s greatest scientific and commercial research laboratory. This failure resulted in unnecessary collateral damage to an otherwise beneficial divestiture.

This is not an isolated example. In 2015, the DOJ gave a favorable business review letter to the IEEE approving the organization’s controversial changes to its Intellectual Property Rights (IPR) policy, essentially inviting collusion by implementers against inventors involved in the standard-setting process at IEEE. In 2016, the FTC required semiconductor maker NXP to divest its radio frequency power business (and technology) as a condition for its acquisition of Freescale Semiconductor. This resulted in a sale to Jianguang Asset Management Co., which had financial support from the Chinese government. While possibly sensible from a shortterm consumer prospective, the action resulted in critical technologies migrating to China, leading to a loss in U.S. economic welfare, and likely in long-run consumer welfare, too. By contrast it is hard to find circumstances where the DOJ or the FTC had taken up the cudgel for innovators and patent owners. This failure has serious longer-term negative implications for U.S. producers as well as for consumers.

A “neo-Schumpeterian” framework for antitrust analysis that favors dynamic competition over static competition would put less weight on market concentration in the assessment of market power and more weight on assessing technological opportunity, potential competition, and appropriate enterprise-level capabilities.20 It would also accept the importance of intellectual property protection to vigorous innovation, particularly where enabling technologies are important to competition and economic welfare.

***Mergers.*** The one area where the agencies have already begun to give some attention to innovation is with respect to mergers. The 2010 Merger Guidelines note that “the agencies may consider whether a merger is likely to diminish innovation competition . . . . [T]he curtailment of innovation could take the form of reduced incentive to continue with an existing product-development effort or reduced incentive to initiate development of new products.”21 Neither the DOJ nor the FTC has made much of the considerable benefits to innovation from mergers when they help in the commercialization of innovation by lining up complementary innovations and/or complementary assets.22 A more nuanced approach to innovation and competition would see issues going both ways. That does not seem to be recognized in either the U.S. or Europe.

The European Commission recently broadened its analysis to examine whether a merger could reduce innovation. In Dow/Dupont, it explored whether post-merger, the parties would have fewer incentives to maintain R&D spending and develop new pesticides, with respect not only to current products but also to new products not yet in the new product development pipeline. The Commission cleared the merger subject to Dupont’s commitment to divest its global R&D organization, which seems like a problematic move. The European Commission rejected the notion that its implicit theory of harm was speculative, referring to economic studies that conclude that any merger “tends to reduce overall innovation.”23

The EU’s chief competition economist Tommaso Valetti reportedly24 laid out his views of competition and innovation by referencing, but not developing, a capability theory of innovation, noting that in agrochemicals, “only a few have the capability to do innovation at every stage and in every segment.”25 While it is encouraging that Mr. Valetti would highlight capabilities, there is no capability theory that he seems to develop or even mention. He noted the lack of relevant research on innovation and competition in the field of industrial organization, but said nothing of the much larger literature in innovation studies, much of it inspired by Schumpeter, which looks at not only value creation but also value capture.26 He concluded that there is a need for further research “on the nature of future competition between the merging companies on the basis of their R&D activities and innovation capabilities.” This research would be jump-started if industrial organization economists would review and incorporate the very extensive literature on innovation in the fields of innovation studies, strategic management, and entrepreneurship.

In addition, European Competition Commissioner Margrethe Vestager has noted that “protecting innovation is important to a merger policy” and that “when we look at high-tech mergers, we don’t just look at whether they raise prices. We also assess whether they could be bad for innovation.”27

Whether it is mergers or intellectual property, or whether it is Europe or the United States, or the courts or the competition agencies, there appears to be a slip between the cup and the lip inasmuch as the agencies do not seem to understand the drivers of national or firm-level innovation. As two prominent American scholars have noted, “Antitrust has long acknowledged the importance of innovation but has struggled to incorporate it within the contours of its analysis.”28 That struggle has its roots in the inability of antitrust economists to take the study of innovation seriously, for to do so would involve abandoning a good deal of their own intellectual capital, as Thomas Kuhn pointed out 50 years ago.29 In short, the dynamic competition paradigm is itself disruptive to mainstream (incumbent) antitrust scholarship.

Indeed, the existing industrial organization literature is hung up on the rather tired market power-innovation nexus, frequently misframed as the Schumpeter-Arrow debate. As Sidney Winter points out, there are many rich frameworks available in the innovation studies scholarly literature.30 Nor is the issue simply firm-level incentives to innovate. As noted, technological opportunity, appropriability, organizational structure, culture, and capabilities—all topics largely outside the paradigm for competition economists—matter a great deal. In particular, the proper analysis of issues, such as cannibalization and the closeness of competitors, which some competition agencies are now focusing on, require a difficult analysis of firm-level dynamic capabilities.

***Patents.*** With respect to patents, the assumption of market power from patents, even patent portfolios, needs to be severely challenged. Antitrust economists often fail to understand that a patent is not issued with an automatic right to an injunction stapled to it. Text books, and much economic theory, frequently (implicitly) assume that a patent covers technology essential to competition in a market and also comes with the automatic right to exclude. The exclusion, of course, requires a court or analagous body to issue an injunction against an infringer. In reality, the former condition rarely holds, and injunctions are often very difficult to secure.

Antitrust scholars too often worry about patent thickets but rarely if ever about patents that might be unnecessarily curtailed or weakened because of the actions of the Patent Trial and Appeal Board (PTAB). They worry about the impact of royalties on prices today, but rarely about a whittled-down panoply of consumer choice and benefits in the future that results when innovators are shortchanged. In short, static competition issues too often have trumped concerns about dynamic competition at the antitrust agencies and in the courts.

Mr. Delrahim’s speeches are promising in that, while relating primarily to antitrust patent issues, they indicate the presence of an authentic champion of high powered innovation-driven competition at the DOJ’s Antitrust Division. If so, he will need to work hard with staff to break free of the “static model” that the economics profession injects into antitrust analysis.

The Delrahim Speeches

Mr. Delrahim has recently given several major speeches on antitrust issues. On November 10, 2017, he gave a speech entitled *Take It to the Limit: Respecting Innovation Incen tives in the Application of Antitrust Law* at USC Gould School of Law.31 In that speech, Mr. Delrahim gave what I believe to be a salutary reappraisal of antitrust issues regarding standards development and patents. On February 1, 2018, he gave a speech entitled *Com petition, Intellectual Property, and Econom ic Prosperity* in Beijing.32 On March 18, 2018, he gave a speech entitled *The ‘New Madison’ Approach to Antitrust and Intellectual Prope rty Law* at University of Pennsylvania Law School.33This article examines these three recent speeches from an economic and public policy perspective. I begin with the second, as it is the most general. All three are tantalizing, and suggest a pivot in the direction of recognizing innovation as the key driver of competition.

***The China Speech: The Primacy of Dynamic Com- petition.*** In Beijing, Mr. Delrahim noted that

experience and economic research have taught us that intellectual property rights are the key to unlocking the innovation that drives our economy. Intellectual property laws provide incentives for investment in research and development and these are the processes through which new products and services are ultimately offered to consumers, improving their lives, and stimulating the economy along the way. . . . The key component of promoting innovation and spurring advances in science and technology is enforcing intellectual property rules. Protecting the inventions that result from research and development is essential to any pro-growth and competitive economic agenda.34

In summary, Mr. Delrahim emphasized:

China has had a long history of invention as well, and as it continues to shift toward a market-based economy, one of the most important decisions it will make is to protect and reward innovation. With an eye to promoting dynamic competition, I humbly submit that competition law enforcers around the world must give careful consideration to the interests that drive innovation, including by allowing innovators to reap the full rewards of their investment in research and development.35

Thus, the focus of sound analysis must be less on shortterm pricing and more on the innovation and growth that delivers value to consumers over the longer term. Mr. Delrahim went on to say, “We must also approach remedies for violation of antitrust law with caution. I am generally skeptical of behavioral remedies, and even more so when it comes to mandating licensing requirements that could skew incentives away from technological advancement.”36 He was clear that his emphasis on humility when it comes to competition law enforcement in the IP context

should not be taken to imply that there are no circumstances in which the exercise of patent rights should attract antitrust scrutiny. While I support the thoughtful and deliberate application of the competition laws to the exercise of IP rights, I do not believe in wholesale exemptions from those laws. In the United States, patent holders are not immune from the antitrust laws . . . .37

Mr. Delrahim went on to discuss the growth of Chinese dedicated IP courts and the role that their development played in protecting IP owners. He noted:

It is probably not a coincidence that these reforms have occurred at the same time that Chinese companies have transformed from net implementers of IP rights to important innovators and holders of IP rights. Almost daily, I see news reports evidencing the furious pace of innovation that is underway here.38 He further noted:

This exciting new environment means that now, more than ever, the promotion and protection of patent rights is critical . . . . As China continues its transformation to an innovation economy, I believe that progress can be amplified— and its prosperity increased—through policies that promote and protect IP rights, including thoughtful competition law enforcement and effective adjudication of IP related disputes.”39

***The USC Speech: Hold-out Is a More Serious Prob- lem Than Hold-Up.*** The issue of standards-essential patents (SEPs), commitments to make licenses to such patents available on “fair, reasonable, and non-discriminatory” (FRAND) terms, and the proper treatment of these issues under the antitrust law have attracted both voluminous literature and a wealth of case law in recent years. In his USC speech, Mr. Delrahim said, and Schumpeterian scholars would agree, that “fresh thinking about the implications of SSOs (standards-setting organizations) and the proper role of antitrust law is long overdue.”40

Mr. Delrahim acknowledges that, in addition to concerns about “patent hold-up,” in which the owner of an SEP seeks to charge standards implementers excessive royalties for their use of its patented technology, there are concerns about what has been termed “patent hold-out.” Sometimes referred to as “reverse hold-up,” hold-out occurs when implementers seek to pay insufficiently low royalties or no royalties for their use of standardized technology.41 Mr. Delrahim (in my view, correctly) noted:

Too often lost in the debate over the hold-up problem is recognition of a more serious risk: the hold-out problem. . . . The hold-out problem arises when implementers threaten to under-invest in the implementation of a standard or threaten not to take a license at all until their royalty demands are met.42

It is important to note that patents are not self-enforcing and that patent holders, unlike suppliers of tangible inputs into the production process, cannot physically withhold their patented technology from implementers who do not pay for it. Instead, they have little choice but to resort to costly, timeconsuming, and risky patent infringement litigation to enforce their rights. I agree with Mr. Delrahim that the potential for hold-out is significant. Indeed, unauthorized and unpaid use of patented technology is rampant in many industries, and such widespread infringement can adversely affect patent holders’ abilities to receive adequate compensation for their contributions.43 I welcome Mr. Delrahim’s acknowledgment that hold-out may be “a more serious risk” than hold-up—a position that, until now, has generally not been acknowledged by the competition authorities.

Mr. Delrahim said, “I view the collective hold-out problem as a more serious impediment to innovation,”44 though he did not define what he meant by “collective hold-out” or give an example. He acknowledged that “the hold-up and hold-out problems are not symmetric,”45 correctly pointing out that “innovators make an investment before they know whether that investment will ever pay off,” while “the implementer has some buffer against the risk of hold-up because at least some of its investments occur after royalty rates for new technology could have been determined.”46

I have previously noted47 that so-called *ex ante* licensing— by which is typically meant licensing that occurs *after* the technology developer has made the sunk-cost investment to develop its technology (at least to the point where it can be considered for incorporation into the standard), but *before* implementers make their investments in developing and making standards-compliant products, and in some cases before the technology has been chosen for incorporation into the standard—is better thought of as “interim” licensing, because it occurs after one party has made its investment but before the other party has. I applaud Mr. Delrahim’s acknowledgment of this fundamental temporal asymmetry and its public policy implications.

He also acknowledged that “[u]nfortunately, in recent years, competition policy has focused too heavily on the socalled unilateral hold-up problem, often ignoring what fuels dynamic innovation and efficiency . . . . Every incremental shift in bargaining leverage toward implementers of new technologies acting in concert can undermine incentives to innovate.”48

There is a large, well-established empirical literature in economics on the private versus social rates of return to innovation,49 which demonstrates that even successful innovators capture only a small fraction of the social benefits arising from their innovations. Firms contemplating investing in R&D run the risk that they will encounter “dry holes” or will be beaten to the finish line by others; *ex ante*, the rewards from successful innovation have to compensate for the risks associated with unsuccessful innovation. Anything that reduces the returns to innovation can significantly reduce the incentives to innovate.

Since innovation is a key driver of economic development and growth, misguided efforts to curtail hold-up run the risk of encouraging hold-out and thus derailing economic growth. Given the importance of standards in encouraging interoperability and compatibility among the offerings of various firms and facilitating competition, I believe that the competition authorities should tread warily before intervening. Mr. Delrahim’s USC speech reflects a long-overdue reappraisal of the issues associated with patents and standards.

Mr. Delrahim also proposed that “antitrust law should not police FRAND commitments to S[S]Os.”50 FRAND commitments made to SSOs are contractual, and implementers are third-party beneficiaries of such commitments. Accord ingly, implementers can and do use the legal process to enforce contractual FRAND commitments. I see no reason to believe that the courts are either unable or unwilling to enforce such commitments, nor that the courts systematically misinterpret them, and thus see little need for antitrust intervention in what is fundamentally a contractual matter.

I note that implementers have made no comparable contractual commitments to take licenses, to *pay* royalties to those whose technology they use to make standards-compliant products. This asymmetry is another reason why I believe that the antitrust authorities should tread warily in this area.

Mr. Delrahim concluded that “the Antitrust Division will, therefore, be skeptical of rules that SSOs impose that appear designed specifically to shift bargaining leverage from IP creators to implementers.”51 I concur with such a policy. I believe that had Mr. Delrahim’s views been in place at the time of the 2015 DOJ IEEE business review letter, it is unlikely that the DOJ would have approved the new IEEE IPR policy.52

***The Pennsylvania (Madison) Speech: Antitrust and Intellectual Property.*** In his University of Pennsylvania (*Madison*) speech, Mr. Delrahim contrasted the approaches to patents taken by Thomas Jefferson and James Madison.53 He advocated for what he termed a “New Madison” approach to patent protection. He says:

The New Madison approach . . . has four basic premises that are aimed at ensuring that patent holders have adequate incentives to innovate and create exciting new technologies and that licensees have appropriate incentives to implement those technologies. [The four premises are (1)] that hold-up is fundamentally not an *antitrust* problem, and therefore antitrust law should not be used as a tool to police FRAND commitments that patent-holders make to standard setting organizations, [(2) that] standard setting organizations should not become vehicles for concerted actions by market participants to skew conditions for patented technologies’ incorporation into a standard in favor of implementers because this can reduce incentives to innovate and encourage patent holdout, [(3) that] because a key feature of patent rights is the right to exclude, standard setting organizations and courts should have a very high burden before they adopt rules that severely restrict that right or—even worse—amount to a de facto compulsory licensing scheme, [and (4) that] consistent with the fundamental right to exclude, from the perspective of the antitrust laws, a unilateral and unconditional refusal to license a patent should be considered *per se* legal.54

Mr. Delrahim notes that “[s]tating that a patent holder can derive higher licensing fees through hold-up simply reflects basic commercial reality. Condemning this practice, in isolation, as an antitrust violation, while ignoring equal incentives of implementers to ‘hold out,’ risks creating ‘false positive’ errors of over-enforcement that would discourage valuable innovation.”55 He further argues:

Advocates of using antitrust law to reduce the supposed risk of patent hold-up fail to identify actual harm to the competitive process that warrants intervention. If an inventor participates in a standard-setting process and wins support for including a patented technology in a standard, that decision does not magically transform a lawful patent right into an unlawful monopoly. To be sure, that decision gives the patent holder some bargaining power in claiming a piece of the surplus created by standardization. And, it would require the patent holder to live up to commitments as they would have bargained for it, enforceable by contract laws. But standard-setting decisions are intended to be recognition that technology is superior to its alternatives. A favorable SSO decision, like a patent itself, is a reward for an innovator’s meritorious contribution whose wide-ranging benefits can ripple throughout the economy, contributing to dynamic competition.56

I agree, and I note that Mr. Delrahim’s reference to the patent holder’s “claiming a piece of the surplus created by standardization,” while fully consistent with the cooperative nature of standards-setting and the fact that, in cooperative conduct, the gains from trade are to be divided between the participants, is inconsistent with some language in recent court decisions. These decisions have found that the patent holder should not obtain any of the gains from standardization but that its rewards should be limited to a royalty measured by the *ex ante* value of the now-standardized technology.57

Perhaps Mr. Delrahim’s most trenchant observation is:

It is therefore unsurprising that proponents of using antitrust law to police FRAND commitments principally rely on models devoid of economic or empirical evidence that holdup is a real phenomenon, much less one that harms competition. Since hold-up theories gained traction in the early 2000s, it is striking that they remain an empirical enigma in the academic literature.58

I agree. The lack of empirical support for the proposition that hold-up is anything more than a theoretical possibility is striking.59

Other Topics

***Patent Royalties as Transfer Payments.*** It is worth noting that, while technology implementers treat royalty payments as a private cost, from a societal perspective it is better to think of royalty payments as *transfer payments* (while they are, admittedly, compensatory payment for the use of real, albeit intangible, resources) from implementers to patent holders.60 When royalties are paid, in the short run, the implementer has less money, but the patent holder has more money. Royalties are a private cost to implementers, but not a societal cost.61 This implies that royalty payments should not be seen as real resource costs,62 while the R&D effort to develop standardized technology clearly does involve real resource costs. In particular, this implies that SSOs, when acting pursuant to the interests of implementers (who tend to be the majority of SSO participants), have a societally inefficient incentive to avoid incorporating royalty-bearing technology into standards. Mr. Delrahim does not address this issue. This is another reason to be wary of antitrust intervention on the side of collective buyer-side action by SSO implementer members. As Mr. Delrahim put it, “Antitrust enforcers should scrutinize concerted action within SSOs that causes competitive harm to the dynamic innovation process.”63 In my view, this issue has received inadequate attention in the existing literature.

***Availability of Injunctive Relief.*** Another topic that is currently being hotly debated is whether SEP holders who have made FRAND commitments should be allowed to seek and/or obtain injunctive relief against unlicensed implementers (or whether the fact that the patent holder has agreed to accept royalty payments means that the patent holder will not suffer “irreparable harm” if an injunction is not issued). Mr. Delrahim correctly noted that “patents are a form of property, and the right to exclude is one of the most fundamental bargaining rights a property owner possesses. Rules that deprive a patent holder from exercising this right–– whether imposed by an SSO or by a court––undermine the incentive to innovate and worsen the problem of hold-out.”64 He argued (I believe correctly), “We should not transform commitments to license on FRAND terms into a compulsory licensing scheme,” though we acknowledge that the courts will have to determine what FRAND licensing terms are should the parties be unable to reach an agreement. Again, I wish that Mr. Delrahim’s position had been adopted by the DOJ at the time it approved the change in the IEEE’s IPR policy, which explicitly provided that a patent holder that had made a FRAND commitment should not be allowed even to seek (much less receive) injunctive relief against unlicensed infringers.

***Miscellaneous.*** Other questions raised include (a) what the appropriate royalty base and/or damages base is for SEPs, and in particular whether the royalty/damages base should be the “smallest saleable patent-practicing unit” (SSPPU), a recent court-developed doctrine65; and (b) wheth er and to what extent courts need to consider issues such as “patent thickets” and/or “royalty stacking” in determining patent infringement damages. With respect to the former, Mr. Delrahim said that “its use as a requirement by a concerted agreement of implementers as the exclusive determinant of patent royalties may very well warrant antitrust scru tiny.”66

Conclusion

Favoring innovation-driven competition involves more than simply looking at the incentive impact of mergers. Antitrust policy needs to pivot to a deeper understanding of innovation processes and competition over the long run. The singular focus on short-term price impacts infects too many aspects of our national policy; public capital markets, in particular, tend to be short term. Antitrust should not be augmenting the bias. It must escape its deleterious penchant to favor the present, especially if this means penalizing the future. The focus on consumer benefits has in practice become a focus on shortterm (measurable) consumer benefits, not the present value of present and future benefits. By sleight of hand, the absence of a robust approach to innovation, and operating inside the relics of the structuralist paradigm, antitrust practice has become very short-term in orientation, without any declaration to that effect. A loss of long-run economic and consumers’ welfare naturally follows.

Just because it is hard to measure long-term benefits is no excuse to ignore them. A better proxy when addressing Sherman Act Section 2 issues is to ask whether the behavior and/or the transaction in question likely enhances firm-level capabilities, especially a firm’s innovative and dynamic capabilities. It is these capabilities that “provide the powerful lever that in the long run expands output and brings prices down,” to quote Schumpeter again.

The Chicago school’s focus on consumer benefits was remiss in ignoring innovation (by porting in simple static economic models) and in not pointing out that a long-run view matters most. Stating the goal that way would have forced scholars to focus on innovation, which is largely absent from the neoclassical microeconomic view of the supply side which undergirded the Chicago school advice. In this regard, the post-Chicago perspective was no better, and in some ways, worse.

It is time for a Schumpeterian perspective to gain serious traction, especially given the global challenge that the United States and Europe now face. Makan Delrahim is possibly leading the antitrust community in new and exciting directions. At a minimum, he is torpedoing antitrust theories that don’t have empirical evidence to support them. He is the guardian of innovation as a crtical driver of competition. By prioritizing innovation, he also puts high-powered competition first, and America first, because the United States remains, by a modest (though declining) margin, the world’s greatest innovator. Nation states have a chance of doing better and holding their own in global competition if their antitrust agencies change gears and become champions of innovation-enabled competition. This implies a review of a whole raft of public policy issues, of which IP is just one. Education, science, technology, and technology policy and industrial policy, along with trade policy, are implicated as well.

As Areeda reminded us 30 years ago, the U.S. antitrust laws are an important part of U.S. industrial policy.67 It is time for this to be explicitly recognized.68 If antitrust is to remain relevant in a world where other nation-states have robust industrial policies, and these infect their antitrust policies, the U.S. needs greater policy coherence among anti- trust, industrial policy, and technology policy. The dynamiccompetition paradigm is both the easiest and the best intellectual paradigm for the competition agencies and the courts to employ to unshackle antitrust from its neoclassical straightjacket. Doing so will allow it to prioritize primary (i.e., dynamic) competition over its weaker sibling, which is secondary (i.e., static) competition, thereby enhancing not just consumer welfare, but economic welfare, too.

Innovation and growth, criteria that Areeda indicated antitrust must embrace, are naturally brought into focus with the prioritization of dynamic competition. Makan Delrahim is carrying the torch in this direction. His initial focus has been on the patent-antitrust interface, but his intellectual paradigm (and his respect for innovation as the primary driver of competition and the need to support investment in R&D and related activities) can take him further. If he is able to go further, he will preserve a place for antitrust through the rest of this century. Should he fail, national imperatives at home and abroad will otherwise confine antitrust to a diminishing role in a broader gestalt of technology and industrial policies that will disrupt antitrust policy as we currently know it.

1. Makan Delrahim, Assistant Atty Gen., Antitrust Div., U.S. Dep’t of Justice, Competition, Intellectual Property, and Economic Prosperity, Remarks Before the US Embassy in Beijing (Feb. 1, 2018) [hereinafter Delrahim, Competi tion], https://www.justice.gov/opa/speech/assistant-attorney-generalmakan-delrahim-delivers-remarks-us-embassy-beijing.
2. The three Delrahim speeches I have reviewed took place between November 2017 and March 2018.
3. *See, e.g.*, Franco Malerba & Luigi Orsengio, *Schumpeterian Patterns of Innovation*, 19 CAMBRIDGE J. ECON. 47 (1995).
4. Schumpeter may have borrowed the concept from Adam Smith, who prominently featured the idea in the *Wealth of Nations*, where he emphasized that an aspect of an ever deeper division of labor was the emergence of a separate industry, which today we would think of as being concerned with R&D and innovation. Smith spoke of “philosophers or men of speculation, whose trade it is, not to do anything, but to observe everything. And who, upon that account, are often capable of combining together the most distant and dissimilar objects.” (1 ADAM SMITH, WEALTH OF NATIONS 9 (Oxford Univ. Press, Glasgow ed. 1976)).
5. JOSEPH A. SCHUMPETER, SOCIALISM, CAPITALISM AND DEMOCRACY (1942).
6. *See id.*
7. *See, e.g.*, Thomas M. Jorde & David J. Teece, *Introduction*, ANTITRUST,

INNOVATION, AND COMPETITIVENESS 5 (Thomas M. Jorde & David J. Teece eds., 1992).

1. Phillip Areeda, *Antitrust Law as Industrial Policy*, *in* ANTITRUST, INNOVATION, AND COMPETIVENESS, *supra* note 7, at 29.
2. J. Gregory Sidak & David J. Teece, *Dynamic Competition in Antitrust Law*, 5 J. COMPETITION L. & ECON. 581 (2009).
3. Michael L. Katz & Howard A. Shelanski, *“Schumpeterian” Competition and Antitrust Policy in High Tech Markets*, 14 COMPETITION 47 (2005).
4. Robert Crandall & Cliff Winston. *Does Antitrust Policy Improve Consumer Welfare? Assessing the Evidence*, 17 J. ECON. PERSP., Fall 2003, at 3.
5. For a survey of the literature, see Bronwyn H. Hall, *Innovation and Pro- ductivity* (NBER Working Paper No. w17178, 2011), https://ssrn.com/ abstract=1879040.
6. A longer-term focus implicitly enables innovation and capability-strengthening issues to be taken into account. It favors a de facto economic welfare perspective, not just a short-term consumer gains orientation.
7. Wesley M. Cohen & Richard C. Levin, *Empirical Studies of Innovation and*

*Market Structure*, *in* 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 1059 (Richard Schmalensee & Robert Willig eds., 1989).

1. Keith Pavitt, *Sectoral Patterns of Innovation: Towards a Taxonomy and a Theory*, 13 RESEARCH POL’Y 343 (1984).
2. Sidney J. Winter, *Schumpeterian Competition in Alternative Technological Regimes*, 5 J. ECON. BEHAV. & ORG. 287 (1984).
3. The reason might be that many antitrust scholars are quite closed-minded and fearful of their own capital being cannibalized when it comes to accepting economic concepts outside the neoclassical microeconomic framework. This tends to trap many antitrust scholars into focusing on a narrow set of incentive and “anti-cannibalism” issues associated with current market position, and little else.
4. ANTITRUST MODERNIZATION COMMISSION, REPORT & RECOMMENDATIONS 406 (2007) (Separate Statement of Commissioner Delrahim).
5. The antitrust laws were also leveraged by RCA’s competitors to force it to share its patents with domestic rivals for free, incenting it to license to foreign companies for whatever it could get. This boosted the prospects of the Japanese electronics industry, but arguably cost jobs and prosperity for millions of Americans.
6. *See supra* note 9, at 619.
7. *See* U.S. Dep’t of Justice & Fed. Trade Comm’n Horizontal Merger Guidelines Section 6.4 (2010) (discussing “Innovation and Product Variety”). That section notes that “the Agencies may consider whether a merger is likely to diminish innovation competition by encouraging the merged firm to curtail its innovative efforts below the level that would prevail in the absence of the merger.” It also acknowledges that “the Agencies also consider whether the merger is likely to enable innovation that would not otherwise take place, by bringing together complementary capabilities that cannot be otherwise combined for some merger-specific reason.”
8. David J. Teece, *Profiting from Innovation in the Digital Economy: Enabling Technologies, Standards, and Licensing Models in the Wireless World*, RESEARCH POL’Y (forthcoming 2018) [hereinafter Teece, *Profiting from Inno vation*].
9. Giulio Federico, Gregor Langus & Tommaso Valletti, *A Simple Model of Mergers and Innovation* (CESifo Working Paper Series No. 6539, June 29, 2017), https://ssrn.com/abstract=3005163.
10. Asher Schechter, *Mergers Are Bad for Innovation*, PROMARKET, http:// promarket.org/mergers-bad-innovation/ (Sept. 29, 2017).
11. *See id.*
12. A good introduction to this field is Jan Fagerberg & Bart Verspagen, *Innovation Studies—The Emerging Structure of a New Scientific Field*, 38 RESEARCH POL’Y (2009).
13. Margrethe Vestager, Comm’r, European Comm’n, Competition: The Mother of Invention, Remarks Before the Ministry of Economic Affairs, European Competition and Consumer Day in Amsterdam, Netherlands (Apr. 18, 2016), https://ec.europa.eu/commission/commissioners/2014-2019/vestager/ announcements/competition-mother-invention\_en; *see also* Andrea Lofaro et al., *An Innovation in Merger Assessment?: The European Commission’s Novel Theory of Harm in the Dow/Dupont Merger*, ANTITRUST, Fall 2017, at 100.
14. Richard J. Gilbert & Hillary Greene, *Merging Innovation into Antitrust Agency Enforcement of the Clayton Act*, 83 GEO. WASH. L. REV. 1919 (2015).
15. THOMAS KUHN, THE STRUCTURE OF SCIENTIFIC REVOLUTIONS (1970).
16. Sidney G. Winter, *The Logic of Appropriability: From Schumpeter to Arrow to Teece*, 35 RESEARCH POL’Y 1100 (2006).
17. Makan Delrahim, *Take It to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law*, Remarks as Prepared for Delivery at USC Gould School of Law (Nov. 10, 2017) [hereinafter Delrahim, *Limit*], https://www. justice.gov/opa/speech/file/1010746/download.
18. Delrahim, Competition, *supra* note 1.
19. Delrahim, The “New Madison” Approach to Antitrust and Intellectual Prop erty Law, Remarks as Prepared for Delivery at University of Pennsylvania Law School (Mar. 16, 2018) [hereinafter Delrahim, Madison], https://www. justice.gov/opa/speech/file/1044316/download.
20. Delrahim, Competition, *supra* note 1.
21. *Id.*
22. *Id.*
23. *Id.*
24. *Id.*
25. *Id.*
26. Delrahim, *Limit*, *supra* note 31, at 14.
27. David J. Teece, *The ‘Tragedy of the Anticommons’ Fallacy: A Law and Economics Analysis of Patent Thickets and FRAND Licensing*, 32 BERKELEY TECH. & L.J. No. 4 (forthcoming 2018) [hereinafter Teece, *Anticommons Fallacy*].
28. Delrahim, *Limit*, *supra* note 31, at 5.
29. Firms are reluctant to pay royalties if they see their rivals apparently getting away with not paying, even if they know that the other firm may ultimately face liability for patent infringement. Since patent infringement litigation is costly and time consuming, this adversely affects patent holders’ abilities to license their technologies.
30. Delrahim, *Limit*, *supra* note 31, at 5.
31. *Id.*
32. *Id.*
33. David J. Teece & Edward 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, Haas School of Business, University of California, Berkeley, May 21, 2015), http://business innovation.berkeley.edu/wp-content/uploads/businessinnovation-archive/ documents/Tusher-Center-Working-Paper-10.pdf.
34. Delrahim, *Limit*, *supra* note 31, at 6.
35. This is summarized in Teece, *Anticommons Fallacy*, *supra* note 40 and Teece, *Profiting from Innovation*, *supra* note 22.
36. Delrahim, *Limit*, *supra* note 31, at 7.
37. *Id.* at 11.
38. David J. Teece, *Are the IEEE Proposed Changes to IPR Policy Innovation Friendly?* (Tusher Center for the Management of Intellectual Capital, Working

Papers, Feb. 2, 2015), http://businessinnovation.berkeley.edu/intellectualcapital/working-papers/.

1. Delrahim, Madison, *supra* note 33, at 5.
2. *Id.*
3. *Id.* at 8.
4. *Id.*
5. *See, e.g.*, Ericsson Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1232 (Fed Cir. 2014). (In the SEP context/FRAND licensing, “The patentee’s royalty must be premised on the value of the patented feature, not any value added by the standard’s adoption of the patented technology. 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 standard’s adoption of that technology.”).
6. Delrahim, Madison, *supra* note 33, at 9.
7. Alexander Galetovic & Stephen Haber, *The Fallacies of Patent-Holdup Theory*,

13 J. COMPETITION L. & ECON. 1 (2017); Anne Layne-Farrar, Patent Holdup and Royalty Stacking Theory and Evidence: Where Do We Stand After 15 Years of History, Paper Prepared for OECD Directorate for Financial and Enterprise Affairs Competition Committee (Dec. 17–18, 2014), https:// www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/ COMP/WD%282014%2984&doclanguage=en (“Despite the 15-years proponents of the theories have had to amass evidence, the empirical studies conducted thus far have not shown that holdup or royalty stacking is a common problem in practice.”).

60 David J. Teece and & Edward F. Sherry, *Standards Setting and Antitrust*, 87 MINN. L. REV. 1931 (2003).

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