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### 1AC---Innovation ADV

#### Advantage 1 is Innovation:

#### The Ninth Circuit’s decision in *FTC v. Qualcomm* permits ICT firms to engage in innovation-stifling conduct. Firms have been given free rein to license standard-essential patents (SEP’s) at a surcharge and evade commitments to license on Fair, Reasonable, and Non-Discriminatory (FRAND) terms.

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Standards can enhance competition and consumer choice, but they also massively inflate the value of patents deemed essential to the standard, and give their owners the power to sue companies that implement the standard for money damages or injunctions to block them from using their SEPs. When standards cover critical features like wireless connectivity, SEP owners wield a huge amount of “hold-up” power because their patents allow them to effectively block access to the standard altogether. That lets them charge unduly large tolls to anyone who wants to implement the standard.

To minimize that risk, standard-setting organizations typically require companies that want their patented technology incorporated into a standard to promise in advance to license their SEPs to others on fair, reasonable, and non-discriminatory (FRAND) terms. But that promise strikes at a key tension between antitrust and patent law: patent owners have no obligation to let anyone use technology their patent covers, but to get those technologies incorporated into standards, patent owners usually have to promise that they will give permission to anyone who wants to implement the standard as long as they pay a reasonable license fee.

Qualcomm is one of the most important and dominant companies in the history of wireless communication standards. It is a multinational conglomerate that has owned patents on every major wireless communication standard since its first CDMA patent in 1985, and it participates in the standard-setting organizations that define those standards. Qualcomm is somewhat unique in that it not only licenses SEPs, but also supplies the modem chips used by a wide range of devices. These include chips that implement wireless communication standards, which lie at the heart of every mobile computing device.

Although Qualcomm promised to license its SEPs (including patents essential to CDMA, 3G, 4G, and 5G) on FRAND terms, its conduct has to many looked unfair, unreasonable, and highly discriminatory. In particular, Qualcomm has drawn scrutiny for bundling tens of thousands of patents together—including many that are not standard-essential—and offering portfolio-only licenses no matter what licensees actually want or need; refusing to sell modem chips to anyone without a SEP license and threatening to withhold chips from companies trying to negotiate different license terms; refusing to license anyone other than original-equipment manufacturers (OEMs); and insisting on royalties calculated as a percentage of the sale price of a handset sold to end users for hundreds of dollars, despite the minimal contribution of any particular patent to the retail value.

In 2017, the U.S. Federal Trade Commission [sued](about:blank) Qualcomm for violating both sections of the Sherman Antitrust Act by engaging in a number of anticompetitive SEP licensing practices. In May 2019, the U.S. District Court for the Northern District of California agreed with the FTC, identifying numerous instances of Qualcomm’s unlawful, anticompetitive conduct in a comprehensive [233-page opinion](about:blank). We were pleased to see the FTC take action and the district court credit the overwhelming evidence that Qualcomm’s conduct is corrosive to market-based competition and threatens to cement Qualcomm’s dominance for years to come.

But this month, a panel of judges from the Court of Appeals for the Ninth Circuit unanimously [overturned](about:blank) the district court’s decision, reasoning that Qualcomm’s conduct was “hypercompetitive” but not “anticompetitive,” and therefore not a violation of antitrust law. To reach that result, the Ninth Circuit made the patent grant more powerful and antitrust law weaker than ever.

According to the Ninth Circuit, patent owners don’t have a duty to let anyone use what their patent covers, and therefore Qualcomm had no duty to license its SEPs to anyone. But that framing requires ignoring the promises Qualcomm made to license its SEPs on reasonable and non-discriminatory terms—promises that courts in this country and around the world have consistently enforced. It also means ignoring antitrust principles like the essential facilities doctrine, which limits the ability of a monopolist with hold-up power over an essential facility (like a port) to shut out rivals. Instead, the Ninth Circuit held rather simplistically that a duty to deal could arise only if the monopolist had provided access, and then reversed its policy.

But even when Qualcomm restricted its licensing policies in critical ways, the Ninth Circuit found reasons to approve those restrictions. For example, Qualcomm stopped licensing its patents to chip manufacturers and started licensing them only to OEMs. This had a major benefit: it let Qualcomm charge a much higher royalty rate based on the high retail price of the end user devices, like smartphones and tablets, that OEMs make and sell. If Qualcomm had continued to license to chip suppliers, its patents would be “exhausted” once the chips were sold to OEMs, extinguishing Qualcomm’s right to assert its patents and control how the chips were used.

Patent exhaustion is a century-old doctrine that protects the rights of consumers to use things they buy without getting the patent owner’s permission again and again. Patent exhaustion is important because it prevents price-gouging, but also because it protects space for innovation by letting people use things they buy freely, including to build innovations of their own. The doctrine thus helps patent law serve its underlying goal—promoting economic growth and innovation. In other words, the doctrine of exhaustion is baked into the patent grant; it is not optional. Nevertheless, the Ninth Circuit wholeheartedly approved of Qualcomm’s efforts to avoid exhaustion—even when that meant cutting off access to previous licensees (chip-makers) in ways that let Qualcomm charge far more in licensing fees than its SEPs could possibly have contributed to the retail value of the final product.

It makes no sense that Qualcomm could contract around a fundamental principle like patent exhaustion, but at the same time did not assume any antitrust duty to deal under these circumstances. Worse, it’s harmful for the economy, innovation, and consumers. Unfortunately, the kind of harm that antitrust law recognizes is limited to harm affecting “competition” or the “competitive process.” Antitrust law, at least as the Ninth Circuit interprets it, doesn’t do nearly enough to address the harm downstream consumers experience when they pay inflated prices for high-tech devices, and miss out on innovation that might have developed from fair, reasonable, and non-discriminatory licensing practices.

We hope the FTC sticks to its guns and asks the Ninth Circuit to go en banc and reconsider this decision. Otherwise, antitrust law will become an even weaker weapon against innovation-stifling conduct in technology markets.

#### Qualcomm’s ability to evade its FRAND commitment can be traced to a failure on the part of Standard Setting Organization’s (SSO’s) to reasonably define and enforce their IPR policies. Patent holdup is real, and antitrust enforcement is necessary to manage it.

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C. A Limited Role for Antitrust in Promoting, Not Impeding, Competition

We favor an important but limited role for antitrust to control patent holdup. One of the authors has previously expressed skepticism of broad antitrust enforcement against patent holdup.129 But the critical point Lemley made there is that, for the most part, we do not need antitrust if patent and contract law effectively enforce the private solutions SSOs have developed to the holdup problem.130 In his more temperate moments, Delrahim adds an important caveat that, if taken seriously, might align him more with us: “[A]ntitrust law should play no role in policing unilateral FRAND commitments where contract or common law remedies would be adequate.”131 Unfortunately, he seemed to drop that caveat in the joint December 2019 statement with the PTO abandoning long-standing policy on FRAND commitments. There, the Division and the PTO took the position that patentees should be entitled to a full range of patent remedies, explicitly including injunctions, even if they had committed to license the patents on FRAND terms.132 As Herbert Hovenkamp has noted, the Justice Department’s position contradicts established law on injunctive relief and FRAND.133

Even the more limited version of the statement is problematic. If courts effectively enforce FRAND commitments, most of the holdup problem can be solved without resort to antitrust. But antitrust still has an important role to play when contract law and anti-fraud laws fail to fully address the patent holdup problem.134

The FTC’s case against Qualcomm provides a good example of why antitrust is needed. In that case, the District Court found that Qualcomm had breached its FRAND commitment and used its monopoly power over modem chips to pressure its customers (Original Equipment Manufacturers, or “OEMs”) to pay a royalty surcharge for Qualcomm’s SEPs on top of the reasonable royalty rates that Qualcomm would otherwise have been able to obtain. Qualcomm imposed this surcharge when Qualcomm’s customers purchased modem chips from Qualcomm’s rivals.135 The District Court correctly found that Qualcomm’s royalty surcharge acted like a tax when Qualcomm’s customers purchased modem chips from Qualcomm’s rivals.136 Based on this reasoning, the District Court correctly found that Qualcomm’s “no-license/no-chips” policy harmed competition by raising rivals’ costs and thereby excluding them, and that this same conduct also harmed Qualcomm’s customers.137

The Ninth Circuit reversed, making basic errors of both economics and law.138 On the economics, the Ninth Circuit mistakenly concluded that “Qualcomm’s royalties are ‘chip-supplier neutral’ because Qualcomm collects them from all OEMs that license its patents, not just ‘rival’s customers.’”139 This is flatly incorrect, because the royalty surcharge reduces the gains from trade between an OEM and a rival modem-chip supplier but does not reduce the gains from trade between the OEM and Qualcomm.140 Based on this error, the Ninth Circuit states incorrectly: “The FTC identifies no such harm to competition.”141

On the law, the Ninth Circuit rejects the well-established principle that harming customers can be a way of harming competition: “[T]he primary harms the district court identified here were to the OEMs who agree to pay Qualcomm’s royalty rates—that is, Qualcomm’s customers, not its competitors. These harms were thus located outside the ‘areas of effective competition’—the markets for CDMA and premium LTE modem chips.”142 The notion that harms to customers in the relevant market are outside the scope of the antitrust laws is simply bizarre.

In any event, as noted above, the District Court also found harm to Qualcomm’s rivals in both of the relevant markets it identified. The Ninth Circuit further erred by stating that “the district court’s ‘anticompetitive surcharge’ theory fails to state a cogent theory of anticompetitive harm.”143 The Ninth Circuit’s logic at this point assumes that Qualcomm’s royalties reflect the value of its SEPs, but that is directly contrary to the District Court’s finding that Qualcomm used its monopoly over modem chips to obtain a royalty surcharge, above and beyond the royalties Qualcomm could obtain based on its SEPs.144 One cannot dismiss findings regarding the effects of a royalty surcharge by assuming away that very surcharge. Hopefully the Supreme Court will correct these blatant errors.

Qualcomm’s use of its separate monopoly power over modem chips to evade its FRAND commitment couldn’t be remedied in contract, making antitrust enforcement a necessity for reasons beyond simply enforcing the FRAND deal.145 In the standard-setting context, if a SEP owner breaches its FRAND commitment and is thereby able to charge unreasonably high royalties to device manufacturers, those royalties are likely to be passed through in large part to final consumers. Antitrust enforcement can protect consumers from these overcharges.146

But to the extent that antitrust can step back in some settings, that is only possible because the market participants have recognized and responded effectively to the patent holdup problem by requiring reasonable licensing terms, and because the courts have enforced that requirement in contract or patent law. The second prong of the Antitrust Division’s attack on FRAND commitments therefore undermines whatever merit there might be to the first prong. While on the one hand Delrahim says that we don’t need antitrust because contract and equity will solve the patent holdup problem, on the other hand he is advocating policies that make it harder for contract and patent law to solve that very problem. Threatening SSOs with liability—maybe even per se liability—for trying to stop SEP holdup undermines the very contractual solution on which Delrahim purports to rely. So too do Delrahim’s periodic claims that holdup is a good thing, or at least something we should accept,147 his incorrect claim that patent holdout is a bigger problem than patent holdup,148 and his advocacy for undoing or avoiding eBay and giving a patent owner the right to an automatic injunction.149 Indeed, under Delrahim, the Antitrust Division evidently objects even to voluntary commitments by patent owners not to seek an injunction as part of the standard-setting process.150 Ironically, this assault on SSOs and FRAND policies may actually necessitate more antitrust intervention in standard-setting. If the DOJ encourages companies like Qualcomm to ignore their FRAND commitments, and if the DOJ discourages SSOs from trying to solve the SEP holdup problem, or impedes their efforts to do so, antitrust may ultimately have to step in to protect a functioning market from SEP holdup.

CONCLUSIONS AND RECOMMENDATIONS

The theory of holdup is well-supported by a substantial body of empirical evidence. For valid conceptual and practical reasons, this empirical literature has not involved showing that large-scale actual holdups are common. Rather, the evidence generally comes in the form of efforts by private parties to contract around holdup.

The same types of evidence and the same standards regarding empirical work should be applied when testing the theory of patent holdup.

When such standards are applied, it is clear that the problem of patent holdup is substantial. Indeed, patent holdup, and especially SEP holdup, are very difficult strains of holdup to manage. Furthermore, the problem of patent holdup is quite common, since it arises whenever the efficient development of new products and services involves substantial investments that may turn out to be specific to another party’s patent portfolio. Not surprisingly, therefore, virtually all players in the high- tech industries affected by holdup participate in voluntary organizations where they agree to limit everyone’s rights (including their own) in an effort to pre-commit to avoid holdup.

Both the theory and the empirical work relating to patent holdup indicate that market participants have strong incentives to devise institutions to limit patent holdup. Considerable progress was made between 2006 and 2016 in controlling patent holdup in the United States, primarily through the courts, but also through competition policy enforcement. Unfortunately, some of that progress is now at risk due to a drastic shift in policy at the Antitrust Division of the Department of Justice. That shift is based on faulty economics, relies on flawed arguments, and is contrary to both patent law and the empirical evidence.

Rather than go backward, more forward progress is needed to manage and control patent holdup in general and SEP holdup in particular.

The costs caused by the problem of SEP holdup can be reduced if more SSOs follow the lead of the IEEE by clarifying and strengthening their patent policies. The SEP policies of many SSOs are certainly valuable, but efforts by Qualcomm and others to ignore or game their FRAND commitments show the necessity of SSOs being more explicit about just what their FRAND commitments entail.

The costs of SEP holdup can be reduced if the ITC joins the policy mainstream by recognizing that exclusion orders based on FRAND- encumbered SEPs are normally not in the public interest, provided the SEP owner has another available legal venue through which it can secure reasonable royalties. The White House reined in the ITC in 2013 when it sought to grant exclusion orders despite the patentee’s commitment to license the patents. The ITC should affirmatively apply that policy.

Most importantly, the courts should enforce reasonable SSO policies that target SEP holdup. Courts have been doing this as a matter of contract law, but patent owners seeking to engage in holdup have strong incentives to ignore or find ways to undermine, avoid, or evade their FRAND obligations. When they do so, antitrust must be willing to step in to protect competition and consumers by stopping patent holdup.

#### Weakened antitrust enforcement emboldens firms to follow Qualcomm’s lead, which collapses FRAND integrity.

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While the FRAND process has been highly productive, it is also fragile. Firms are tempted to make commitments at the beginning when the incentive to join is large, but renege on them later when they can profit by doing so. At least in this particular case, private FRAND enforcement had not worked very well. Qualcomm had been able to violate FRAND commitments in order to exclude rivals and obtain higher royalties than FRAND would permit, largely with impunity. Other firms will very likely follow Qualcomm’s lead. If that happens the FRAND system will fall apart, doing irreparable injury to the modern wireless telecommunications network or, at the very least, diminishing the leadership role of the United States in preserving effective network competition.

While governments can be heavily involved in standard set-ting,9 the implementation of technical standards in information technologies is largely the work of private actors. Government involvement is limited mainly to enforcement of contract, intellectual property, or antitrust law. As private actors, those involved in standard setting or compliance are fully subject to the federal antitrust laws.

This Article addresses one question: when is an SSO participant’s violation of a FRAND commitment an antitrust violation, and if it is, of what kind and what are the implications for remedies? It warns against two extremes. One is thinking that any violation of a FRAND commitment is an antitrust violation as well. In the first instance FRAND obligations are contractual, and most breaches of contract do not violate any antitrust law. The other extreme is thinking that, because a FRAND violation is a breach of contract, it cannot also be an antitrust violation. The question of an antitrust violation does not de-pend on whether the conduct breached a particular agreement but rather on whether it caused competitive harm. This can happen because the conduct restrained trade under section 1 of the Sherman Act, was unreasonably exclusionary under section 2 of the Sherman Act, or amounted to an anticompetitive condition or understanding as defined by section 3 of the Clay-ton Act.10 The end goal is to identify practices that harm com-petition, thereby injuring consumers.

The Ninth Circuit’s Qualcomm decision will make antitrust violations in the context of FRAND licensing much more difficult to prove, even in cases where anticompetitive behavior and consumer harm seem clear.11 Indeed, in this case the court itself acknowledged the harm to consumers but appeared to think that they were not entitled to protection.12 If this decision stands, FRAND obligations will to a larger extent have to be settled through private litigation and the federal antitrust enforcement agencies will have a diminished role. Anticompetitive behavior by one firm that is not effectively disciplined will lead others to do the same thing.

#### A trusted and credible system for ICT innovation is critical to rapid tech diffusion and growth---absent FRAND, the system will collapse.

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It is easy to take a pessimistic view about whether the system will break. If the current trend continues, the system is likely to break at some point for the simple reason that companies will not trust it anymore. The series of legal disputes witnessed over the past years – sometimes referred to as the “smartphone patent wars” – has been fodder for a pessimistic reading of “the two tales of SEPs”. While it is common in the business world that disputes over patents and licenses are settled in courts, various SEP disputes have revealed problematic aspects of the SEP market that are different from those disputes that follow the normal stream of business and contracts. Often, the SEP disputes are less concerned about the rights and boundaries of patents, and more about antitrust limits to market behavior: they concern market abusive practices and restrictions to competition as much as they are about intellectual property.

If the SEP system actually does break at some point, the consequences would be felt throughout the economy. SEPs have been a critical part of the ICT revolution. SEPs have allowed for the fast rates of innovation diffusion that the world has witnessed over the past quarter of a century. All the computer and Internet related products and services that people are now dependent upon for their private and professional lives are intricate webs of intellectual property. As many as 250,000 patents can be used to claim ownership of some technical specification or design element in a single smartphone (NYT 2012). A laptop, suggests one calculation, implements more than 250 interoperability standards (Biddle et al. 2010), and the number of SEP holders for 3G and 4G standards grew from 2 in 1994 to 130 in 2013 while the number of SEPs rose from fewer than 150 in 1994 to more than 150,000 in 2013 (Galetovic and Gupta 2016). The standardization-body ETSI has registered more than 150,000 declarations of SEPs from companies, and ETSI is just one of many bodies in the world of ICT standardization. For the 3G standard, the same body has about 24,000 patents that have been declared essential. Now, with the economy yet again on the threshold of big technological change, a trusted and credible system for creators and users of technology to standardize proprietary technology would be a boon for innovation, interoperability and – ultimately – the consumers.

And there are reasons for optimism. Although many of the problems in the SEP regimes need to be addressed, the numbers above indicate that the SEP system is in fact attractive to patent holders and SEP implementers. It is easy to see why: neither holders nor implementers are presented with alternative options that on the face of it would be far more profitable for them. In other words, there simply would not be as many patents declared as essential if both creators and users of technology believed the SEP system worked to their disadvantage or was grossly unfair. While the reality for some companies may be that legal disputes and unpredictability prompt them to find other ways than SEPs to get access to key technologies for their products, it remains the case that most stakeholders have strong economic incentives to maintain a balanced SEP system that is trusted.

First, standard essential patents are an asset for creators of technology because, by becoming essential to a standard, their volumes of sales for technologies that users value rise significantly. As many holders want to raise more revenues for their SEPs and – ideally – have the freedom to contract with buyers on their terms, they can expand their customer base when they agree to sell patented technology in accordance with a set of rules that are designed to prevent SEP holders exploiting the weakness of a customer that has grown dependent on having access to their technology.

Second, SEPs are hugely beneficial also to those that buy the licenses – the implementers or users. Through the SEP system, they can access technologies that are interoperable and work with different products and functionalities – and they can do it under conditions that, if history is a guide, in most cases give them stable and predictable terms of contract. As a consequence, both creators and users can focus on their competitive advantages and profit on the economies of scale and specialization. Downstream firms do not need to develop their own upstream technology and upstream firms do not need to package their technologies in end-customer products in order to make their products valuable.

Third, standard-setting organisations (SSOs) also have a big stake in an SEP system that works well – and, like creators and users of technology, they would stand to lose significantly if the SEP system were to collapse.

Lastly, the biggest beneficiaries are individual consumers – those who buy the end products using FRAND-conditioned SEPs. The advent of SEPs and the rules represented by FRAND have enabled a development of fast technology creation and contributed to the rapid diffusion in ICT goods and ICT-based services. The SEP system has also allowed for new competition, both between existing technologies and brands, and from new ones that have stepped into the market with the ambition to disrupt it, again to the benefit of the consumer. It is difficult to imagine that the ICT and digital development would have been as fast as it has been if SEPs had not been a central feature of the market.

The changing fortunes of companies operating in the cellular and smartphone market would not have been possible if there had not been an SEP system that supported competition. Now that the world economy is on the doorstep of new innovations that are dependent on a great number of input technologies – e.g. the Internet-of-Things, transport connectivity and intelligent vehicles – it is crucially important for the consumer that a balanced and functioning SEP system is maintained and that actors in the system converge towards it – which would ultimately meet their economic interests.

#### ICT innovation is key to post-COVID economic recovery and long-term growth.

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Introduction

As the global economy has entered recession in 2020, triggered by the COVID-19 pandemic, the human casualties, and economic damage are perceived to be very large. Even as the health crisis will gradually become manageable, the impact on economic growth can be long-lasting and the recovery path can take several years. In particular, growth drivers such as the pace of job creation, income generation and investment may take several years to get back to pre-crisis trends. Initially the productivity of those growth drivers may be of less concern as the mantra of ‘we’ll do what it takes to avoid worse’ is predominant in this phase of the crisis.

However, once the recovery gets underway the productive use of resources is key to sustained growth. While we do not ignore the short-term challenges of the economic recovery, our primary focus in this paper is on the productivity puzzle from a long-term perspective. Productivity is driven by technological change and innovation which, in turn, depends on investment in human and physical capital as well as in other ‘missing capitals’ often referred to as intangible assets. Indeed, those investments create a positive feedback effect, as the productivity it generates also helps to make more efficient usage of scarce resources in the future. When properly measured and valued, productivity also provides a critical yardstick to realise a fairer distribution of the gains from economic growth to those who bring the resources to bear. It thereby creates the incentives for people to produce and business to invest helping to drive economic growth and raise living standards.

Unfortunately, in the aftermath of the global financial crisis of 2008/2009, many economies around the world, especially advanced economies, have failed to recharge the economy by powering productivity as the key source of growth in the long term. Indeed the latest update of The Conference Board Total Economy Database (July 2020) points at significant weakening in labor productivity growth in Europe up to 2019 (figure 1a–c). While the United States experienced somewhat faster productivity growth from 2017 to 2019 than the Euro Area and the United Kingdom, it still has not recovered to the rates of productivity growth from before the global financial crisis either.

The slowdown in productivity growth over the past 15 years has been well documented. There are multiple causes including an exhaustion of catch-up potential in emerging markets impacting economies along entire global value chains, and the drag from the global financial crisis because of low demand and weak investment, too low interest rates causing misallocations an overreliance on cheap labor, and failing fiscal policies (Bauer et al., 2020; Cette et al., 2016; Crafts, 2018; Dieppe, 2020; Fernald et al., 2017; Syverson, 2016).1 Technical measurement issues regarding inputs and outputs may have played a role as well.

In our earlier work we have stressed the importance of time lags in the adoption of new technologies, and in particular the complexity in generating productivity growth from the latest round of new digital technologies since the early 2010s, including the move toward mobile, ubiquitous access to broadband, the rise of cloud storage and advances in artificial intelligence (AI) and robotics (van Ark, 2016a, 2016b; van Ark and O’Mahony, 2016; van Ark et al., 2016).

While the first priority for economic recovery from the COVID-19 crisis is to restore jobs, it is important that any employment-intensive growth path does go together with a productivity revival. In this paper, we argue that it is possible to avoid another productivity slowdown. Underneath the aggregate figures, there is evidence pointing toward a possible tipping point at which many advanced economies may expect to see more widespread impacts from the adoption and absorption of digital technology on productivity and GDP growth.

In Section 2 we review the latest literature on the productivity impacts of general purpose technologies (GPTs), including the notion of time lapses through which digital technologies result in faster productivity growth. We also look at patterns by which innovation and productivity effects GPTs emerge across industries and disperse across the economy. We explain why the New Digital Economy (NDE) is especially characterised by long lag effects.

In Section 3 we provide an empirical analysis of productivity growth by industry data to observe whether we can detect a distinct pattern across groups of industries pointing to a structural improvement in recent years. We use a taxonomy on digital intensity by industry which was recently developed by the Organisation for Economic Co-operation and Development (OECD) (Calvino et al., 2018), showing that the most digital-intensive industries have experienced a relatively strong performance in terms of labor productivity growth since 2007 and especially since 2013.

In Section 4 of the paper, we discuss the connection between labor and skills in the digital economy, which we believe provides the key to a productivity revival. We developed a new metric on innovation competencies by occupation on the basis of data from the O\*Net database on occupation-specific descriptors in the United States (Hao et al., 2018). When applied to the United Kingdom, we find that innovation competencies point at stronger productivity effects by industry.

In Section 5 we focus on how productivity has been behaving in the short-term during the COVID-19 recession. In particular, we address the potential trade-offs between traditional pro-cyclical recovery effects and scarring effects the recession leaves, especially on the labor market. We argue that increased adoption and usage of digital technologies during the COVID-19 crisis may create a positive productivity effect. In the final section, Section 6, we will review our hypothesis that a productivity revival could be imminent in the light of the recovery from the COVID-19 crisis. In order not to miss this opportunity again, as happened a decade ago, we argue that a coordinated effort from business and policy is needed, and has to be delivered in such a way that the gains from productivity will be more widespread and such that those who provide the resources for growth are incentivised to deliver them in an efficient way.

2. The productivity paradox of the New Digital Economy

It is well known that General Purpose Technologies (GPTs), defined as new methods of producing and inventing new goods and services which are important enough to have a long-term aggregate impact on the economy, can take a significant amount of time to translate to faster productivity growth at the aggregate level of the economy. This is inherent to the three critical characteristics of a GPT as identified by Bresnahan and Trajtenberg (1995).2

1. Pervasiveness –The GPT should spread to most sectors.

2. Improvement –The GPT should get better over time and, hence, should keep lowering the costs of its users.

3. Innovation spawning –The GPT should make it easier to invent and produce new products or processes.

Historical analysis has focussed on productivity trends in previous technology phases (Bakker et al., 2019; Crafts, 2004). Recent literature has shown that the information and communication technology (ICT) revolution of the past 50 years can be characterised as a GPT and doesn’t pale with previous GPTs such as steam technology, electricity and the combustion engine. For example, Hempell (2005) concludes that ‘investment in information and communication technologies (ICT) are closely linked to complementary innovations and are most productive in firms with experience from earlier innovations’. In a more recent analysis of the evolution of the Internet, Simcoe (2015) argues that the modularity of the internet has prevented a fall in return to investments in innovation by ‘facilitating low-cost adaptation of a shared general-purpose technology to the demands of heterogeneous applications’. In a review of the data, Liao et al. (2016) conclude that:

‘...ICT investment does contribute to productivity but not in the usual manner –we find a positive (but lagged) ICT effect on technological progress. We argue that for a positive ICT role on growth to actually take place, a period of negative relationship between productivity and ICT investment together with ICT-using sectors’ capacity to learn from the embodied new technology was crucial. In addition, it took a learning period with appropriate complementary co-inventions for the new ICT-capital to become effective and its gains to be realised. Our findings provide solid, further empirical evidence to support ICT as a general purpose technology’.

#### Growth solves nuclear war.

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What Is To Be Done?

The first marching order is to dodge any kind of perpetual war of the sort that George Orwell outlined in  “1984,” which engulfed the three super states of Eastasia, Eurasia, and Oceania, and made possible the totalitarian Big Brother regime. A long-running Cold War-type confrontation would almost certainly take another form than the one that ran from 1945 until the downfall of the Soviet Union.

What prescriptions can be offered in the face of the escalating competition among the three global powers? First, by staying militarily and economically strong, the United States will have the resources to deter its peers’ hawkish behavior that might otherwise trigger a major conflict. Judging by the history of the Cold War, the coming strategic chess match with Russia and China will prove tense and demanding—since all the countries boast nuclear arms and long-range ballistic missiles. Next, the United States should widen and sustain willing coalitions of partners, something at which America excels, and at which China and Russia fail conspicuously.

There can be little room for error in fraught crises among nuclear-weaponized and hostile powers. Short- and long-term standoffs are likely, as they were during the Cold War. Thus, the playbook, in part, involves a waiting game in which each power looks to its rivals to suffer grievous internal problems which could entail a collapse, as happened to the Soviet Union.

Some Chinese and Russian experts predict grave domestic problems for each other. They also entertain similar thoughts about the United States, which they view as terminally decadent and catastrophically polarized over politics, ethnicity, and the future direction of the country. So, the brewing three-way struggle also involves a systemic contest, which will test the competitors’ economic and political institutions.

At this juncture, the world is entering a standoff among the three great and several not-so-great powers. Averting war, while defending our interests, will prove a challenge, calling for deft policy, political endurance, and economic growth, as well as sufficient military force to keep at bay aggressive states or prevail over them if ever a war breaks out.

#### Absence of domestic 5G competition cedes leadership in technical standards to China.

Duan 19, \*Charles Duan is a senior fellow and associate director of tech & innovation policy at the R Street Institute, where he focuses his research on intellectual property issues; (February 5th, 2019, “Why China Is Winning the 5G War”, https://nationalinterest.org/feature/why-china-winning-5g-war-43347)

There is little doubt today that American superiority in the next generation of mobile communications, commonly called 5G, is a matter of extraordinary national concern. There is also little doubt that China is a strong competitor, already having outspent the United States by [$24 billion](about:blank#page=3) and planning [$411 billion](about:blank) in 5G investment over the next decade. The Chinese government has also laid out multiple national plans for establishing the country as a leader in mobile technology, and the Chinese firm Huawei is poised to be the [top smartphone manufacturer](about:blank) by 2020.

And what are United States companies doing about this? Bickering over patents.

For years, the leading American supplier of advanced mobile communications chips has been the San Diego-based Qualcomm. The company has been an innovator of mobile technology, but it has also been a remarkable innovator of convoluted legal strategies. As an ongoing Federal Trade Commission [lawsuit alleges](about:blank), Qualcomm has used its dominant position as a chip supplier and its extensive patent holdings to weave an intricate web of patent licensing across the mobile industry. The effect of that complex licensing scheme, the FTC claims, has been to force competitor chipmakers out of the market and to extract concessions and high patent royalties from smartphone and mobile-device makers.

Qualcomm today faces only one major U.S. competitor—Intel, whose chips Apple recently [started using](about:blank) instead of Qualcomm’s. Not surprisingly, Qualcomm has leveraged its patents to force a retaliatory investigation against Apple, the effect of which could be, as an administrative judge [recently determined](about:blank), to boot Intel out of the mobile-chip market and leave Qualcomm as a monopoly.

It is hard to imagine that this infighting among Apple, Intel and Qualcomm is getting the United States very far in 5G, and it is harder to imagine that Qualcomm’s desired outcome would do so, either. The best path, instead, is the obvious one: allowing competition and expanding the number of firms working on 5G.

Competition encourages companies to out-innovate each other in order to grab market share. Of particular importance to 5G, competition leads to [better cybersecurity](about:blank) in products, making them less vulnerable to hacking or misuse.

Competition is especially crucial when it comes to the technical standards that define how 5G works. These standards are the work of 3GPP, an international consortium of technology companies in the field. Chinese players such as Huawei and ZTE are major participants in 3GPP. Ensuring that 3GPP’s standards reflect American values requires having as many American companies at the negotiating table as possible—which is harder to achieve when those companies are trying to sue each other out of business.

Certainly patents themselves, as rewards for new inventions, are a driver of innovation in areas such as 5G. The problem, though, is not the existence of a patent system but the ever-expanding power of the patent laws, which encourage companies to pour dollars into complex patent licensing and assertion schemes—as companies like Qualcomm have done—rather than to perform the hard work of building new technologies. When innovation in patent strategy is more profitable than actual innovation, we lose the race to 5G and other technologies.

But don’t take my word for it. [Multiple members of Congress](about:blank), from both sides of the aisle, have denounced the use of patents to kick companies like Intel out of 5G development, predicting that such actions would “dampen the quality, innovation, competitive pricing, and in this case the preservation of a strong U.S. presence in the development of 5G and thus the national security of the United States.”

Or look to what China itself is doing. The Chinese government is handing out rewards left and right to encourage technology research and development. Indeed, it grants subsidies and financial benefits (ranging from the [ordinary](about:blank) to the [imperfect](about:blank) to the [bizarre](about:blank)) to encourage its citizens to file for patents. But while China specifically encourages filing for patents, it does little to encourage using them: Patent infringement awards in court are peanuts—often only [five figures](about:blank)—and most Chinese patent owners drop their patents [within five years](about:blank) of getting them. The message in China is clear: You will be rewarded for innovating, but not for quibbling over patents.

The United States should take the same tack if it wants to match China in 5G. Ever-stronger patent rights encourage counterproductive disputes that are a drag on industry, a drag on research and development, and ultimately a drag on domestic competitiveness on the global stage. If America wants to lead in 5G, then it must clear the path for strong competition among leading American technology companies.

#### Standards leadership allows China to export digital authoritarianism.

Drew et al. 21, \*Dr Alexi Drew, Research Associate, The Policy Institute, King’s College London; (May 7th, 2021, “The Critical Geopolitics of Standards Setting”, https://www.transatlantic-dialogue-on-china.rusi.org/article/the-critical-geopolitics-of-standards-setting)

However, this previously ‘western’ domain is challenged by a Chinese bloc of private industry actors with centrally directed, strategic motivations for their efforts who have managed to leverage the flaws of this system for political and economic advantage.  The market-driven self-regulation model of technical standards has proven itself unsustainable given the geopolitical power achievable through the control of these standards. The marketised approach is easily abusable by a technologically developed nation-state with geopolitical intentions firmly in mind.

Obscurity Through Complexity

Technical standards have the immediate appearance of being both apolitical and ethically neutral. This seems to set them apart from the debate over standards of state behaviour in [cyber space concerning espionage and actions below the threshold of armed conflict](about:blank). Yet, technological standards are unequivocally connected to normative practices of international behaviour and ethics. The extremely complex nature of the standards under consideration in bodies such as the International Organization for Standardization, the International Electrotechnical Commission (IEC), the International Telecommunications Union (ITU), and the Third Generation Partnership Project (3GPP) obscures the very tangible real-world impact that the standards they set have. The 3GPP is responsible for standards setting for mobile telecommunications. It covers everything from 5G through to autonomous vehicles and the Internet of Things. These are the bodies defining how the modern world is constructed.

On the one hand they appear quite benign, responsible for such banalities as the use of Universal Serial Bus (USB) connectors versus proprietary standards. This hardly seems a matter of national security importance. But the same process is responsible for what ultimately shape the basic operating parameters of facial recognition technology in closed circuit television systems, the level of centralised state control at the technical foundations of the internet, and the protections of personally identifiable data. These generate profound implications for international policy and ethics.

Internal Competition vs Strategic Direction

Technical standards setting processes have, historically, been dominated by private sector actors who have had both the capacity to develop a particular technology to the point of holding a significant market share, and the ability to use that market share to advocate for the standardisation of the technology in line with their own production. The market led approach has continued to be the prevailing model by which American companies have globalised the technical standards behind US dominated technological innovation. This privatised form of self-regulation for technology companies is only partially influenced by the approach taken within the EU where [some licensing of standards are controlled by state or EU led institutions.](about:blank)

In contrast to this approach the Chinese model has involved a high level of state-oriented direction, oversight, and direct engagement on the creation and signing off technical standards. Efforts to harmonise and centralise technical standards domestically have become increasingly internationalised as the CCP takes this centralised, strategic approach to technical standards setting bodies such as the ITU, 3GPP, and IEC. Technical standards have also become an increasingly central component of the Digital Silk Road with the openly expressed goal of increasing uptake of Chinese technical standards in partner countries.

The implications of this clash between a system of technical standardisation that is driven by the market versus one driven by an authoritarian government subsidised model are a direct challenge to the development of free, open, and ethical technology. Standardisation mechanisms have become political, or rather there has been a gradual realisation of the political power to be gained from the control of technical standards. While the PRC might have come to this awareness first, the US and Europe have since had a rude awakening about the missed opportunity. The privatised model of technical standards setting favoured by European and US markets relies upon the dynamics of financial competition to regulate behaviour. This is in stark contrast to the statist Chinese model.

#### Causes global backsliding.

Kendall-Taylor et. al 20 \*Andrea Kendall-Taylor, senior fellow and director of the Transatlantic Security Program at the Center for a New American Security, co-author of Democracies and Authoritarian Regimes; Erica Frantz is Assistant Professor of Political Science at Michigan State University; Joseph Wright is Professor of Political Science at Pennsylvania State University; (March/April 2020, “The Digital Dictators,” Foreign Affairs, [https://www.foreignaffairs.com/articles/china/2020-02-06/digital-dictators](about:blank))

The risk that technology will usher in a wave of authoritarianism is all the more concerning because our own empirical research has indicated that beyond buttressing autocracies, digital tools are associated with an increased risk of democratic backsliding in fragile democracies. New technologies are particularly dangerous for weak democracies because many of these digital tools are dual use: technology can enhance government efficiency and provide the capacity to address challenges such as crime and terrorism, but no matter the intentions with which governments initially acquire such technology, they can also use these tools to muzzle and restrict the activities of their opponents.

#### Democracy solves existential threats.

Diamond 19, Professor of Political Science and Sociology at Stanford University, Senior Fellow at the Hoover Institution, Senior Fellow at the Freeman Spogli Institute for International Studies, PhD in Sociology from Stanford University, (Dr. Larry, Ill Winds: Saving Democracy from Russian Rage, Chinese Ambition, and American Complacency, p. 199-202)

The most obvious response to the ill winds blowing from the world’s autocracies is to help the winds of freedom blowing in the other direction. The democracies of the West cannot save themselves if they do not stand with democrats around the world. This is truer now than ever, for several reasons. We live in a globalized world, one in which models, trends, and ideas cascade across borders. Any wind of change may gather quickly and blow with gale force. People everywhere form ideas about how to govern—or simply about which forms of government and sources of power may be irresistible—based on what they see happening elsewhere. We are now immersed in a fierce global contest of ideas, information, and norms. In the digital age, that contest is moving at lightning speed, shaping how people think about their political systems and the way the world runs. As doubts about and threats to democracy are mounting in the West, this is not a contest that the democracies can afford to lose. Globalization, with its flows of trade and information, raises the stakes for us in another way. Authoritarian and badly governed regimes increasingly pose a direct threat to popular sovereignty and the rule of law in our own democracies. Covert flows of money and influence are subverting and corrupting our democratic processes and institutions. They will not stop just because Americans and others pretend that we have no stake in the future of freedom in the world. If we want to defend the core principles of self-government, transparency, and accountability in our own democracies, we have no choice but to promote them globally. It is not enough to say that dictatorship is bad and that democracy, however flawed, is still better. Popular enthusiasm for a lesser evil cannot be sustained indefinitely. People need the inspiration of a positive vision. Democracy must demonstrate that it is a just and fair political system that advances humane values and the common good. To make our republics more perfect, established democracies must not only adopt reforms to more fully include and empower their own citizens. They must also support people, groups, and institutions struggling to achieve democratic values elsewhere. The best way to counter Russian rage and Chinese ambition is to show that Moscow and Beijing are on the wrong side of history; that people everywhere yearn to be free; and that they can make freedom work to achieve a more just, sustainable, and prosperous society. In our networked age, both idealism and the harder imperatives of global power and security argue for more democracy, not less. For one thing, if we do not worry about the quality of governance in lower-income countries, we will face more and more troubled and failing states. Famine and genocide are the curse of authoritarian states, not democratic ones. Outright state collapse is the ultimate, bitter fruit of tyranny. When countries like Syria, Libya, and Afghanistan descend into civil war; when poor states in Africa cannot generate jobs and improve their citizens’ lives due to rule by corrupt and callous strongmen; when Central American societies are held hostage by brutal gangs and kleptocratic rulers, people flee—and wash up on the shores of the democracies. Europe and the United States cannot withstand the rising pressures of immigration unless they work to support better, more stable and accountable government in troubled countries. The world has simply grown too small, too flat, and too fast to wall off rotten states and pretend they are on some other planet. Hard security interests are at stake. As even the Trump administration’s 2017 National Security Strategy makes clear, the main threats to U.S. national security all stem from authoritarianism, whether in the form of tyrannies from Russia and China to Iran and North Korea or in the guise of antidemocratic terrorist movements such as ISIS.1 By supporting the development of democracy around the world, we can deny these authoritarian adversaries the geopolitical running room they seek. Just as Russia, China, and Iran are trying to undermine democracies to bend other countries to their will, so too can we contain these autocrats’ ambitions by helping other countries build effective, resilient democracies that can withstand the dictators’ malevolence. Of course, democratically elected governments with open societies will not support the American line on every issue. But no free society wants to mortgage its future to another country. The American national interest would best be secured by a pluralistic world of free countries—one in which autocrats can no longer use corruption and coercion to gobble up resources, alliances, and territory. If you look back over our history to see who has posed a threat to the United States and our allies, it has always been authoritarian regimes and empires. As political scientists have long noted, no two democracies have ever gone to war with each other—ever. It is not the democracies of the world that are supporting international terrorism, proliferating weapons of mass destruction, or threatening the territory of their neighbors.

#### Absent FRAND, excessive IOT royalties undermine sustainable smart cities.

Schwartz 18, \*Matt Schwartz, Privacy Fellowship Coordinator at ACT, App Association; (March 2nd, 2018, “It’s Smart to be FRANDly: How the FRAND Commitment Will Determine the Future of Smart Cities”, https://actonline.org/2018/03/02/its-smart-to-be-frandly-how-the-frand-commitment-will-determine-the-future-of-smart-cities/)

In December, we [outlined](about:blank) the emergence of Smart Cities – cities that harness technological innovations like internet of things (IoT) devices and data analytics to improve essential infrastructure in growing urban centers. The technological foundation of Smart Cities aims to improve public safety, better allocate resources, and meet the needs of citizens more quickly.

A central element to Smart Cities is the comprehensive network of sensors and devices implemented within buildings, roads, traffic signs, and parking meters that allows them to interact with public, and potentially private-owned, infrastructure. These sensors will “speak” to one another, communicating information about energy usage, traffic density, or other elements of city management that have traditionally either been analyzed separately or not tracked at all. The potential of Smart Cities allows data to flow from previously disconnected branches of the city and be processed in real-time, unlocking previously unknown insights.

The powerful interoperability of Smart Cities will rely heavily on standardized technologies developed in organizations like the IEEE, which is responsible for standardizing the wi-fi technology we use every day. Standardized technologies often include standard-essential patents (SEPs), which, like their name suggests, are patents declared essential to an industry standard by a standards-setting organization. In simple terms, one cannot implement the standardized technology without using the patent.

Like regular patents, the users of SEPs must pay royalties or licensing fees to the patent owner before they may use it. For example, if a manufacturing company wants to make an IoT device interoperable with a 5G network, the manufacturer must pay a licensing fee to the owner of the SEP that is essential to the 5G standard. SEPs play a vital role in the new innovations we enjoy and have come to expect, and because of the value of these patents, SEP holders have the ability to demand high license fees from those who wish to implement the standard. To offset this competition issue, many SEP holders voluntarily agree to license their SEPs to any willing licensee under fair, reasonable, and non-discriminatory (FRAND) terms.

While wi-fi and LTE are standards that will be vital to Smart City deployment, countless new standardized technologies are being developed that will be integral to any fully-operational Smart City. With reasonable access to SEPs, assured by the FRAND commitment, innovators can enjoy the legal and business certainty they need to compete. While the meaning of the FRAND commitment continues to be refined – as evidenced by the development of SEP best practices recently launched by the App Association in Europe – its foundations are well-established.

But what happens when SEP holders do not abide by the FRAND licensing commitment, or simply refuse to license at all? Sadly, small and medium-sized companies would be forced to accept untenable licensing terms, but more realistically, they would be priced out of using the standard altogether. As a result, it would impose a barrier to innovation that would result in fewer products offered to consumers or cities eager to implement IoT technologies. For example, many hope the rise of autonomous vehicles will be seamlessly integrated into the Smart City network. But how beneficial would it be if only some autonomous vehicle brands are able to license the technology needed to communicate with traffic lights, simply because of the market power of a chipmaker? The FRAND commitment is an important backstop to that unfortunate possibility.

It is vital for SEP holders to honor FRAND licensing terms, if not for small and medium-sized innovators, then for the sustainability of future Smart Cities. FRAND creates a platform for innovation, providing a floor on which companies can stand, innovate, and compete. If the foundation of the FRAND commitment is reneged, American innovators pay a steep price – not only do they lose a key component of product development and market entry, but they are also left with years of expensive negotiations and litigation if they choose to challenge the licensing practice. What’s more, the confidence developed in the open standards development system is shaken, and Smart Cities have fewer choices in IoT solutions for their future.

To achieve the promise of Smart Cities, a balanced standards ecosystem is essential. We must allow small and medium-sized developers to leverage industry standards for innovation and prevent cost-prohibitive royalty structures and negotiating practices that are detrimental to competition, while also ensuring that SEP owners can protect their intellectual property and be fairly compensated for its use. The FRAND commitment continues to be the best framework to achieve this balance, and adherence to its principles will determine the future and success of Smart Cities.

#### Climate change is anthropogenic and causes extinction---5G-enabled smart cities solve.

Huseien 21, \*Ghasan Fahim Huseien is a research fellow at Department of Building, School of Design and Environment, National University of Singapore, Singapore; Dr. Kwok Wei Shah is presently an assistant professor and deputy program director with the Department of Building, School of Design and Environment, National University of Singapore, Singapore; (August 23rd, 2021, “Potential Applications of 5G Network Technology for Climate Change Control: A Scoping Review of Singapore”, https://www.mdpi.com/2071-1050/13/17/9720)

Currently, the entire planet is at risk due to continual climate change [1–3]. The recorded increase in average temperature across the world in the past hundred years, and the associated changes attributed to this, are known as global warming. Many scientists are convinced by the published evidence that this change is anthropogenic and resulted from the elevated emission levels of global greenhouse gases (GHGs) [4,5]. Gases such as water vapor, carbon dioxide, methane, nitrous oxide, and ozone are responsible for the absorption and emission of thermal radiation. These changes in the relative quantities of the GHGs induce a proportional change in the amount of preserved solar energy. Presently, the accepted indicator for global warming is the sustained rise in the mean temperature worldwide. This definition is designed to account for the fact that there may be some localized exceptions to this rise. For example, there may be cooling experienced in a region while the global temperature may increase altogether, hence the need for average temperature. A key concern with the GHGs trapping of more heat in the atmosphere is that it affects both climate and short scale weather patterns. Consequently, it results in greater numbers of adverse weather events such as storms, heat waves, cold snaps, droughts, and fires [6]. Climate-related risks to health, livelihoods, food security, water supply, human safety, and economic growth are projected to increase with global warming of 1.5 ◦C [7] and further increase further at 2 ◦C, as shown in Figure 1. In addition, the risks to global aggregated economic growth due to the climate change impacts are projected to be lower at 1.5 ◦C than at 2 ◦C by the end of this century.

Carbon dioxide has the most substantial effect on global warming [8]. Although it was once assumed to have an ~100 year lifespan in the atmosphere, careful studies revealed that the situation is far worse, with three-quarters of the gas expected to remain for a time in the region of up to ~1000 years, with the remainder lasting for an indefinite period of time [9]. It was indicated that the present impacts of humanity on the atmosphere can certainly cause a long term problem [10]. Carbon dioxide is released when oil, coal, and other fossil fuels are burnt for the energy we use to power our homes, cars, and smartphones. By lessening its usage, we can curb our own contribution to climate change while saving money. The first challenge is eliminating the burning of coal, oil, and, eventually, natural gas. Oil is the lubricant of the global economy as it is hidden inside such ubiquitous items as plastic and corn, fundamental to the transportation of both consumers and goods. Coal is the substrate, supplying roughly half of the electricity worldwide, a percentage that is likely to grow according to the International Energy Agency (IEA). In fact, buildings contribute up to 43% of all the greenhouse gas emissions worldwide [11], even though investing in thicker insulation and other cost-effective as well as temperature-regulating strategies can save money in the long run. Investment in new infrastructures, or radical upgradation of the existing highways and transmission lines, may help to reduce greenhouse gas emissions, yielding economic growth in the developing countries.

Nations across the globe have kept very high targets to reducing their GHG discharges [12,13]. In order to meet these goals, considerable reductions in city energy usage is required. At a global scale, urban communities represent over half (55%) of the population, which is predicted to reach 68% by the middle of this century [14]. Urban areas claim ownership of the highest levels of energy use, gas emission, and also the largest local economy. As such, it is crucial for urban areas to reduce their consumption and utilize renewable sources wherever available to reduce their gas discharge levels. Smart cities often utilize digital sensors to measure and transmit data about the levels of GHGs in the city at that moment, as a means of tackling them [15]. The efficacy of such a system is thus reliant on the network used to collate and analyze the data collected as an extant network. The mobile telecommunications networks offer a convenient solution to this desire, as their pre-existence has the clear benefit of reducing costs compared to the design and implementation of a novel system. It is recognized that smart cities will certainly act as the key players meeting these ambitious targets [16,17]. In this study, we focused primarily on the potential applications of 5G network technology to control climate change in Singapore. In addition, a clear overview of the sustainability benefits of introducing 5G technology compatible smart cities, buildings, and farms in all aspects of urbanization is provided. Herein, the main purpose is to tackle the negative outcomes associated with anthropogenic climate change, with a particular focus on the contributions that are best made by the telecoms network operators.

Climate change is one of the most challenging problems that humanity has ever faced. Presently, hundreds of millions of lives, innumerable species, entire ecosystems, health, economy, and the future habitability of this planet are at risk. Fortunately, climate change is solvable, we just need to wisely exploit the existing technologies and sciences. Climate change mitigation is a pressing international need in which many management actions are required. The development of 5G technology has been largely driven by smart mobile devices and advanced communication technologies. It may thus serve as a technical enabler for a whole new range of business opportunities, energy, and facilities management, together with industrial applications. Moreover, it may enable different devices to work together seamlessly. Definitely, the 5G cellular network technology is expected to revolutionize the global industries with profound effects on the savings of energy, waste generation and recycling, and water resources management, thus reducing the climate change impacts.

#### Neg studies rely on deeply flawed methodologies, don’t address relevant hypotheses, and are funded by Qualcomm.

Shapiro & Lemley 20, \*Carl Shapiro is the Transamerica Professor of Business Strategy Emeritus at the Haas School of Business, University of California at Berkeley; \*Lemley is the William H. Neukom Professor at Stanford Law School and a partner at Durie Tangri LLP; (2020, “THE ROLE OF ANTITRUST IN PREVENTING PATENT HOLDUP”, https://faculty.haas.berkeley.edu/shapiro/patentholdup.pdf)

C. Actual Patent Holdups Are Very Difficult to Measure

As with holdup in general, quantifying the frequency and magnitude of actual patent holdups is very difficult as a practical matter and not a useful way of assessing the importance of the patent holdup problem. Rarely can researchers observe the ex post price, because patent licensing terms are normally confidential. Even when researchers can observe the license fees, they are often embedded in a complex agreement. And even in those rare cases where researchers can accurately observe the ex post price, they are unlikely to observe the ex ante price, making it difficult if not impossible to measure the magnitude of the holdup.

Litigated cases also are problematic as a source of data to quantify the magnitude of actual patent holdups. A litigated case resulting in an award of reasonable royalties may well involve attempted holdup, but by definition it cannot provide smoking-gun evidence of actual holdup, at least if one accepts that the royalties awarded by the court are reasonable.64 Rather, at least since the Supreme Court eliminated the automatic entitlement to an injunction, litigation to judgment (which is rare) often reflects a refusal to give in to holdup by a defendant willing to take its chances in court. And the vast majority of patent cases settle. The terms of a settlement are rarely observable, so it is impossible to know whether those settlements reflected the value of holdup.

Notwithstanding these points, a number of authors have pointed to a lack of empirical evidence to argue that patent holdup either does not exist or is not a significant problem.65 Even taken on their own terms, many of these papers are deeply flawed. One such paper, which has often been cited by those who downplay the importance of patent holdup, purports to offer empirical evidence inconsistent with the hypothesis that SEP holdup has slowed innovation or harmed consumers.66 The conclusion to this Qualcomm-funded paper states, “[w]e cannot reject the hypothesis of no SEP holdup.”67 How do these authors reach this conclusion? They compare rates of change of quality-adjusted prices in “SEP- reliant” industries with “similar” non-SEP-reliant industries, primarily over the 1997-2013 period.68 For example, they show that quality-adjusted prices of cellular phones have fallen faster than the quality-adjusted prices of automobiles.69 This exercise does not address the relevant hypothesis: whether SEP holdup increased the price of cellular phones from what it otherwise would have been.70 The quality- adjusted prices of pharmaceuticals have risen much faster than automobiles over the same period of time, but that similarly is not proof that pharmaceuticals are subject to a patent holdup problem.

Beyond the obvious and fatal flaws in this empirical work,71 the whole line of inquiry is of limited relevance for the purpose of measuring the social costs of holdup or designing institutions to limit patent holdup, because it only looks for instances of actual patent holdup. As explained above, these instances are very difficult to detect and are only the tip of the iceberg in terms of the social costs of patent holdup.72 So far as we can tell, the vast majority of these papers have been funded by Qualcomm and other patent holders seeking to weaken the institutions designed to control patent holdup, increase their leverage in licensing negotiations, and thus increase their ability to monetize their patents.73

Despite the difficulties of observing the incidence and magnitude of actual patent holdups, we are able to observe the telltale signs of actual patent holdup. Transaction cost economics, and simple bargaining theory for that matter, tell us that actual patent holdup can be expected to occur when three conditions are present: (1) a firm has developed a new product independently; (2) that firm has made significant investments that are specific to one or more patents asserted against that product; and (3) the firm is not protected from patent holdup.74 As discussed above, conditions (1) and (2) are common in the high-tech sector, placing considerable weight on the institutions that protect firms from patent holdup.

The presence of those institutions is itself evidence that the patent holdup problem is real and significant. As we noted in Part I, companies try to structure their transactions to avoid holdup, developing institutions for that purpose. As we have seen, the traditional market solutions do not work well for patents. In most industries, the central mechanisms limiting patent holdup come from patent law, namely the rules governing injunctions and patent damages. In the high-tech sector, companies have overwhelmingly turned to SSOs in an effort to obtain global commitments to an ex ante royalty, which appear in the form of FRAND commitments. The near-universal recognition in the industry of the need for such a mechanism is strong evidence that companies view holdup as a problem they must build institutions to avoid.

#### Patent holdup is real and necessitates intervention, even if it can’t be systemically proven.

Contreras 19, \*Jorge Contreras, Professor, University of Utah S.J. Quinney College of Law; (2019, “MUCH ADO ABOUT HOLD-UP”, [https://www.illinoislawreview.org/wp-content/uploads/2019/08/Contreras.pdf](about:blank))

B. Protective Measures May Already Be Working to Reduce Hold-Up

Another important factor that should be considered regarding the purported lack of empirical evidence of systemic hold-up is the effect that existing policy measures have already had in reducing hold-up. As noted above, the threat of patent hold-up was a primary motivating factor for many SDOs to adopt policies requiring the disclosure and licensing of SEPs. These policies have been in place for decades. In the United States, the first such policy was adopted in 1959 by the American Standards Association (the predecessor to today’s American National Standards Institute (ANSI).102 Today, every one of the more than 200 ANSI-accredited developers of American National Standards must adhere to ANSI’s essential requirements, including the adoption of such a licensing policy for SEPs. Similar policies have existed in European and international standards organizations since at least the 1980s.103 These policies, which were developed by SDOs in large part to reduce the likelihood of hold-up within standard-setting systems, have had several decades to work, and it is likely that the lack of observed hold-up in some studies can be attributed to the successful operation of these policies.

Similarly, antitrust and competition enforcement agencies in the U.S. and Europe have been aware of the potential for hold-up connected with standardization for many years. Accordingly, they have brought enforcement actions when it has been alleged that hold-up behavior has resulted in a violation of the antitrust laws. High-profile enforcement actions against patent holders such as Rambus, 104 Google 105 and Qualcomm106 send powerful deterrent signals to the market and warn others not to engage in similar behavior lest they, too, become the subject of agency enforcement. Like SDO policies, it is likely that the general market awareness of agency interest in standard-setting and hold-up has, to a degree, limited the amount of hold-up that is actually attempted in the marketplace, thereby limiting the direct evidence of hold-up as a systemic problem.

But do the deterrent effects of SDO and agency efforts to reduce hold-up signify that hold-up is not a problem? Certainly not. To reach such a conclusion would be perverse: akin to claiming that burglary is not a problem in a neighborhood that experiences reduced burglary rates after it has implemented an active neighborhood watch program and enhanced policing.

C. Indicia of Healthy Markets do not Prove the Absence of Anticompetitive Conduct

As noted above, one of the principal arguments advanced by commentators seeking to refute the “hold-up theory” is that markets for telecommunications products, namely smart phones, are robust – evidenced by increasing product functionality, decreasing consumer prices and rapid innovation -- and that this degree of robustness indicates that hold-up cannot be a problem in these markets.107 If hold-up were a problem in these markets, they reason, we would see product stagnation, stable (but high) prices, and a lack of competition – features associated with classic examples of hold-up in markets for products such as natural resources and agricultural goods.108

But this argument relies on a false syllogism: hold-up results in market dysfunction; if a market functions well, then it cannot be subject to hold-up. The weaknesses in this argument are multifold. First, hold-up may exist in individual instances without sufficient weight to affect overall market characteristics, particularly in a large global market such as mobile telecommunications. Thus hold-up may exist, even in a market that outwardly appears to be functioning well. Second, there is no valid counterfactual to use to compare the health and robustness of the market for mobile telecommunications products.109 Other consumer electronics devices, such as televisions and DVD players, do not compare well with mobile telecommunications devices, which have taken on a unique character in the modern networked economy. Thus, observing the strength of the market fails to answer the critical questions “compared to what?” and how much stronger the market might be (through more product diversity, functionality, price reduction) without hold-up?

A simple historical illustration is useful in this context. During the decade leading up to the enactment of the Sherman Antitrust Act of 1890, several major U.S. commodity markets (e.g., steel, salt, petroleum, coal, sugar, lead, and others) came under intense scrutiny for a variety of allegedly anticompetitive industrial arrangements. One might have argued that these markets, had they been subject to the sorts of anticompetitive collusion that the Sherman Act sought to address, should have seen reductions of output and increases in price. Yet, between 1880 and 1890, U.S. output of salt, petroleum, steel, and coal all increased significantly, and prices of steel, sugar and lead all dropped significantly.110 Do these positive market indicia demonstrate that the subject markets were not subject to anticompetitive collusion, and that the Sherman Act was not necessary? Certainly, investigations of these industries revealed significant cartel behavior. I would suggest that few commentators today would argue that the coal, steel, sugar and other major industrial producers of the late nineteenth century were innocent of collusive and anticompetitive conduct, or that the Sherman Act was not a necessary and beneficial measure for the U.S. economy.111 Yet, had we relied solely on the positive characteristics exhibited by these markets as proof that anticompetitive conduct did not exist, then perhaps the Sherman Act never would have been enacted.

By the same token, the fact that global markets for standardized products such as computers and smart phones appear to be thriving does not itself refute the possibility of hold-up nor the existence of anticompetitive conduct in these markets. Nor does it allow regulators and policy makers to drop their guard or cease to monitor these important industries.

### 1AC---Cybersecurity ADV

#### Advantage 2 is Cybersecurity:

#### Aggressive patent strategies create structural flaws in 5G standardization that imperils domestic cybersecurity---market competition reduces vulnerability and severity of attacks.

Duan 20, \*Charles Duan is a senior fellow and associate director of tech & innovation policy at the R Street Institute, where he focuses his research on intellectual property issues; (2020, “OF MONOPOLIES AND MONOCULTURES: THE INTERSECTION OF PATENTS AND NATIONAL SECURITY”, Santa Clara High Technology Law Journal, 36(4), 369-405. Retrieved from [https://www2.lib.ku.edu/login?url=https://www.proquest.com/scholarly-journals/monopolies-monocultures-intersection-patents/docview/2442966690/se-2?accountid=14556](about:blank))

III. COMPETITION AND CYBERSECURITY

In addition to the historical review done so far, another approach to understanding the relationship among patents, competition, and national security is to consider the role of cybersecurity. There is little doubt that computer system vulnerabilities that enable hacking and spread of computer exploits are a threat to the nation’s defenses, so better cybersecurity is a key part of national security strategy.155

Strong competition can thus complement national security by enhancing domestic cybersecurity, and patent assertion that unduly weakens competition detracts from cybersecurity.156 Competition promotes better cybersecurity in at least two ways. First, multiple studies show that competition encourages firms to improve their products on multiple vectors including cybersecurity. Second, competition avoids a situation that security experts call a “monoculture,” which increases vulnerability to severe cyberattacks. As former Secretary of Homeland Security Michael Chertoff wrote recently, “We need competition and multiple providers, not a potentially vulnerable technological monoculture,” to guarantee national security.157 Thus, cybersecurity provides a useful lens for understanding how unfettered patent assertion and licensing can detract from national security.

A. Cybersecurity as Competitive Value-Add

Competition enhances national security by reducing the incidence of technical vulnerabilities. That effect is especially important for security sensitive systems such as mobile telecommunications.

Intuitively, a causal chain from competition to cybersecurity makes logical sense. Computer security is a value-added benefit to consumers, so firms in competitive markets are likely to use security to gain an edge over their competitors.158 In monopolized markets, though, there may be less external impetus to test products for flaws, and the monopolist may choose to focus less on security and more on new product features or increased product quality.

Economic research confirms these hypotheses about competition leading to better cybersecurity. A 2009 empirical study of web browsers considered the impact of market concentration on the amount of time that vendors took to fix security vulnerabilities as they were discovered.159 The study found that the presence of more competitors correlated with faster cybersecurity response—a reduction of 8–10 days in response time per additional market rival.160 Similarly, business researchers in 2005 modeled incentives for firms to engage in sharing of cybersecurity information, and concluded that the “inclination to share information and invest in security technologies increases as the degree of competitiveness in an industry increases.”161 Another study found that, where two software firms are in competition, at least one will be willing to take on some degree of risk and responsibility for cybersecurity, whereas a monopoly software firm will consistently fail to accept such responsibility.162 To be sure, an unpublished study from 2017 found that some market concentration can make firms more responsive to cybersecurity issues, but only to a point: “being in a dominant position reduces the positive effect of having less competitors on the responsiveness of the vendor,” and indeed the “more dominant the firm is, the less rapid it is in releasing security patches.”163 This research confirms that competition is more conducive to cybersecurity.

It is not hard to see how this applies to emerging communication technologies markets. In the absence of competition, the above research suggests that device manufacturers, chip makers, and software developers will lack incentives to respond to vulnerabilities, to share information about cybersecurity practices and issues, and to take responsibility for security matters. Mobile phone chips have had their share of cybersecurity failures already.164 The best way to flush out ongoing and future cybersecurity issues is to maintain competitive pressure at all levels of the supply chain.

B. Vulnerabilities of “Monocultures”

A second reason why monopoly undermines cybersecurity is that monopoly leads to a “monoculture” of single-vendor products, opening the door to massive systemic failure in the case of a cyberattack. Computer researchers developed the theory of software monocultures in the early 2000s, in response to the regular phenomenon of computer viruses and other attacks spreading rapidly by exploiting flaws in the dominant operating system at the time, Microsoft Windows.165 Where a computer system such as Windows has a commanding share of users, a virus that exploits a flaw in that system can quickly spread to infect a whole interconnected ecosystem. An operating system monopoly thus enables fast and easy spread of cyberattacks, and better cybersecurity would be achieved through greater diversity in online systems.166 As one research group posited, “a network architecture that supports a collection of heterogeneous network elements for the same functional capability offers a greater possibility of surviving security attacks as compared to homogeneous networks.”167

There has been considerable study of the theory that computer monocultures are naturally more vulnerable to attacks.168 In one study, computer science researchers reviewed a catalog of 6,340 software vulnerabilities recorded in 2007, to compare whether comparable software would share the same flaws.169 Of the 2,627 vulnerabilities applicable to application software (as opposed to operating systems, web scripts, and other software components), only 29 (1.1%) applied to substitute products from different vendors but providing the same functionality.170 By contrast, different versions of a single software product were found to share vulnerabilities 84.7% of the time.171 Thus, software monocultures share exploitable flaws even when there is some variation in versions across the monoculture; by contrast, diversity in software is almost guaranteed to prevent a single flaw from affecting all users.

In the case of 5G and wireless mobile communications, a monoculture is an especially concerning possibility. To the extent that systems such as smart city sensors or communication networks are widely deployed in a monoculture fashion, a widespread attack could have devastating consequences, potentially blacking out a region and affecting essential services such as 911.172 A monoculture that is vulnerable to so-called “rootkits” or “backdoors”—maliciously installed software that enable bad actors to commandeer systems—could also enable mass surveillance or spying by private hackers or foreign governments.173 The presence of systems from multiple vendors would mitigate these possibilities.

#### Insecure technical standards cause inevitable systemic grid collapse---extinction.

DeNardis 21, \*Dr. Laura DeNardis, PhD in Science and Technology Studies from Virginia Tech, Dean of the School of Communication at American University, and Gordon M. Goldstein, Adjunct Senior Fellow at the Council on Foreign Relations, (March 1st, 2021, “The Real Lesson of the Texas Power Debacle”, Lawfare, 3/1/2021, https://www.lawfareblog.com/real-lesson-texas-power-debacle)

The infrastructure was essential, ubiquitous and providing basic functionality for everything in daily life from water to heat and transportation. And in an instant it was gone, plunging tens of thousands of residents into a life-threatening crisis. This is, of course, the narrative of the recent debacle in Texas, where a winter storm overwhelmed the state’s electrical grid and brought the state to a near-total blackout. But it should also be interpreted as a preemptive warning of what Americans will face from the next generation of the internet and the new realm of cybersecurity risk it will dramatically amplify.

Both forms of infrastructure—a state-run electrical grid and the 5G and “internet of things” future to which we are rapidly hurtling—share three attributes. First, their construction reflects a lack of imagination about the danger that can quickly coalesce when seemingly remote threat scenarios become real. Second, compounding a lack of analytic imagination is an absence of preparedness. Third, for both the Texas electrical grid and the emerging internet, public policy protections are either meager or completely absent.

In planning for the resilience of its electrical grid, public officials in Texas discounted the potentially devastating disruption that could occur from unpredictable events—whether related to climate change or just a once-a-century anomaly. They also eschewed precautions other states take seriously by allowing for the interconnection of electrical grid supply chains across their borders, ostensibly because of their ideological rejection of federal regulatory oversight governing such arrangements.

As the United States builds out a new national 5G cyber-physical communications network through private service providers, Americans similarly discount the risks—myriad in their diversity and severity—that are orders of magnitude more significant than what Texas confronted recently. More physical things than people are already connected. The super empowered internet of tomorrow, known among some in the field as the “internet of everything,” will exceed by tens of billions of devices the number of connections between individuals simply communicating via social media or digital screens.

This confronts policymakers with an imminent threat: A cyber outage is no longer about losing digital communications but about losing basic societal functioning and even human life. The failure of imagination is to think of the SolarWinds attack on U.S. federal agencies and tech companies as a worst-case scenario. The failure of imagination is to think of cybersecurity through a content-centric lens rather than as possible attacks on the material world. The emergence of internet-connected cardiac devices, digitally dependent cars, and internet-connected agriculture systems portend the stakes of a cyberattack to health care, economic and social functioning, and food security.

The United States should be prepared for, and certainly not be caught by surprise by, such cyberattacks. Yet, the internet of everything is notoriously insecure. Internet-connected physical objects are not necessarily upgradeable. Nor do they come with adequate default security and encryption. The 5G infrastructure that helps connect digital objects has been at the center of debates over Chinese espionage. Industrial cyber-physical systems are based on technical standards that have not been collaboratively vetted for security and interoperability. One of the most infamous cyberattacks—the so-called Mirai botnet that took down major media sites and corporations—hijacked these insecure objects in homes to carry out the assault. The United States is not yet prepared.

Finally, in the race to conceive and deploy effective public policy responses, the U.S. government as a whole is hardly more anticipatory or synthesized in its response to potential calamity than the state of Texas. The focus of U.S. cyber policy remains on information policy issues such as disinformation, manipulation and violent speech rather than securing the digital world that now powers our material day-to-day lives. The Biden administration confronts an enormous challenge in crafting a comprehensive strategy to the cybersecurity risks foreshadowed by the ruinous experience in Texas and its management of vital infrastructure. While the digital world has leapt from two-dimensional to three-dimensional space, cyber policy has not at all jumped from 2D to 3D.

This failure of imagination, preparedness and policy protection must not be America’s cyber future; the stakes are far too high and the costs are far too great. The Texas disaster is a potent illustration of what has always been true: Our digital society and economy are extremely vulnerable and grow more porous and subject to penetration day by day. As digital sensors and cyber control systems become further embedded in physical infrastructure like energy systems, agriculture and transportation, there is no longer a separation between security of the “real” world and security of the online world. They are entangled and increasingly enmeshed—and policy has yet to catch up to either envisioning or mitigating the looming threats the U.S. confronts.

If the energy grid cannot weather a winter storm, how can it be expected to withstand a major cyberattack? What other vital forms of national infrastructure—ranging from water, bridges, highways and roads, and ultimately our day-to-day financial system—are comparably at risk? As Texas dramatizes, it is neither hyperbolic nor exaggerated to assert that our survival could now depend on securing the inevitable cyber-physical future that is accelerating with stunning rapidity.

#### Actors have the means and motivations to strike critical infrastructure.

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Among critical infrastructure sectors in the U.S., energy is perhaps the most crucial of the 16 sectors defined by the Department of Homeland Security. This sector is so vital because it provides the energy necessary to run every other critical infrastructure sector. However, the U.S. power grid, the backbone of the energy sector, is built upon an aging skeleton that is becoming increasingly vulnerable every day. Whether from terrorists or nation-states like Russia and China, the power grid is susceptible to not just physical attacks, but also to cyber intrusion as well. However, much of this threat can be mitigated if the U.S. takes the appropriate steps to safeguard the power grid and avoid a potential catastrophe in the future.

Since Sept. 11, 2001, terrorism on U.S. soil has been at the forefront of American consciousness. Critical infrastructure provides an appealing target because of the disproportionally large impact even a small attack can have on the sectors. In particular, the power grid represents a particularly lucrative target, both in terms of the ease of access and the large impact it can make. The National Research Council stated that the U.S. power grid is “vulnerable to intelligent multi-site attacks by knowledgeable attackers intent on causing maximum physical damage to key components on a wide geographical scale.”[1] Additionally, the physical security of transmission and distribution systems is difficult due to the dispersed nature of these key components, which in turn is advantageous to attackers as it reduces the likelihood of their capture.[2] From 2002-2012, approximately 2,500 physical attacks occurred against transmission lines and towers worldwide and approximately 500 attacks against transformer substations.[3] Terrorists have the motivation to attack the U.S. power grid but the very nature of the grid makes it highly vulnerable. The power grid is not only at risk from physical attacks, but also nation-state cyberattacks.

One nation that has shown both the capability and intent to use attacks against critical energy infrastructure is Russia, as demonstrated in their 2015 annexation of Crimea from Ukraine. A Russian cyber threat group known as Sandworm, which used its BlackEnergy malware, attacked Ukrainian computer systems that provide remote control of the Ukraine power grid.[4] This attack, and another in 2016, each left the capital Kiev without power, prompting cyber experts to raise concern about the same malware already existing in NATO and the U.S. power grids.[5] In any conflict between Russia and NATO, not only would similar cyberattacks pose a threat, but so would potential physical attacks severing fuel oil and natural gas lines to Western Europe. Russia has both the capability and intent to attack critical infrastructure, particularly power grids, during future conflicts in their “hybrid warfare” approach.

Another nation that has the capability to attack critical energy infrastructure is China, representing a threat to not just the U.S. energy infrastructure but also that of our allies whose support would be vital in a major conflict. A recent NATO report highlighted this threat from China’s Belt and Road Initiative, stating that “[China’s] foreign direct investment in strategic sectors [such as energy generation and distribution] …raises questions about whether access and control over such infrastructure can be maintained, particularly in crisis when it would be required to support the military.”[6] Like Russia, China has been active with cyber intrusions in U.S. energy infrastructure. The Mission Support Center at Idaho National Laboratory characterized these as attacks as “multiple intrusions into US ICS/SCADA [Industrial Control Systems/Supervisory Control and Data Acquisition] and smart grid tools [that] may be aimed more at intellectual property theft and gathering intelligence to bolster their own infrastructure, but it is likely that they are also using these intrusions to develop capabilities to attack the [bulk electric system], as well.”[7] China, therefore, has both the capability and intent to conduct cyber intrusions and attacks for myriad reasons.

Another arm of this threat is the reliance the U.S. energy industry has on imports from China, especially transformers. In early 2020, federal officials seized a transformer in the port of Houston that had been imported by the Jiangsu Huapeng Transformer Company before sending it to Sandia National Laboratory in Albuquerque. Sandia is contracted by the U.S. Department of Energy for mitigating national security threats.[8] The Wall Street Journal reported that “Mike Howard, chief executive of the Electric Power Research Institute, a utility-funded technical organization, said that the diversion of a huge, expensive transformer is so unusual – in his experience, unprecedented – that it suggests officials had significant security concerns.”[9] Previously destined for the Washington Area Power Administration’s Ault, Colo., substation, the transformer is believed to have been seized due to “backdoor” exploitable hardware emplaced by the Chinese prior to shipment.[[10]](about:blank#_ftn10) Shortly after these events, President Trump issued Executive Order 13920, “[Securing the United States Bulk-Power System](about:blank),” essentially limiting the import of Chinese-built critical energy infrastructure components due to concerns about cybersecurity.[[11]](about:blank#_ftn11) Interestingly, Jiangsu Huapeng “boasted that it supported 10 percent of New York City’s electricity load.”[[12]](about:blank#_ftn12)

Franklin Kramer, the former Assistant Secretary of Defense for International Security Affairs, testified before a U.S. House of Representatives Energy and Commerce subcommittee during an energy and power hearing in 2011 and said that a “highly-coordinated and structured cyber, physical, or blended attack on the bulk power system, however, could result in long-term (irreparable) damage to key system components in multiple simultaneous or near-simultaneous strikes.” He added that “an outage could result with the potential to affect a wide geographic area and cause large population centers to lose power for extended periods.”[[13]](about:blank#_ftn13) Even the inclusion of features such as smart grids to the overall grid structure poses new vulnerabilities through their connectivity. Kramer stated that “such connectivity means that the distribution system could be a key vector for a national security attack on the grid.”[[14]](about:blank#_ftn14)

#### Those attacks cause accidental nuclear escalation.

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Yet another pathway to escalation could arise from a cascading series of cyberstrikes and counterstrikes against vital national infrastructure rather than on military targets. All major powers, along with Iran and North Korea, have developed and deployed cyberweapons designed to disrupt and destroy major elements of an adversary’s key economic systems, such as power grids, financial systems, and transportation networks. As noted, Russia has infiltrated the U.S. electrical grid, and it is widely believed that the United States has done the same in Russia.[12](about:blank#endnote12) The Pentagon has also devised a plan known as “Nitro Zeus,” intended to immobilize the entire Iranian economy and so force it to capitulate to U.S. demands or, if that approach failed, to pave the way for a crippling air and missile attack.[13](about:blank#endnote12)

The danger here is that economic attacks of this sort, if undertaken during a period of tension and crisis, could lead to an escalating series of tit-for-tat attacks against ever more vital elements of an adversary’s critical infrastructure, producing widespread chaos and harm and eventually leading one side to initiate kinetic attacks on critical military targets, risking the slippery slope to nuclear conflict. For example, a Russian cyberattack on the U.S. power grid could trigger U.S. attacks on Russian energy and financial systems, causing widespread disorder in both countries and generating an impulse for even more devastating attacks. At some point, such attacks “could lead to major conflict and possibly nuclear war.”[14](about:blank#endnote14)

These are by no means the only pathways to escalation resulting from the offensive use of cyberweapons. Others include efforts by third parties, such as proxy states or terrorist organizations, to provoke a global nuclear crisis by causing early-warning systems to generate false readings (“spoofing”) of missile launches. Yet, they do provide a clear indication of the severity of the threat. As states’ reliance on cyberspace grows and cyberweapons become more powerful, the dangers of unintended or accidental escalation can only grow more severe.

#### Cyber-compromised NC3 causes nuclear war.

Klare 19, \*Michael T. Klare is a professor emeritus of peace and world security studies at Hampshire College and senior visiting fellow at the Arms Control Association; (November 19th, “Cyber Battles, Nuclear Outcomes? Dangerous New Pathways to Escalation”, [https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation](about:blank))

The Nuclear-Cyber Connection

These links exist because the NC3 systems of the United States and other nuclear-armed states are heavily dependent on computers and other digital processors for virtually every aspect of their operation and because those systems are highly vulnerable to cyberattack. Every nuclear force is composed, most basically, of weapons, early-warning radars, launch facilities, and the top officials, usually presidents or prime ministers, empowered to initiate a nuclear exchange. Connecting them all, however, is an extended network of communications and data-processing systems, all reliant on cyberspace. Warning systems, ground- and space-based, must constantly watch for and analyze possible enemy missile launches. Data on actual threats must rapidly be communicated to decision-makers, who must then weigh possible responses and communicate chosen outcomes to launch facilities, which in turn must provide attack vectors to delivery systems. All of this involves operations in cyberspace, and it is in this domain that great power rivals seek vulnerabilities to exploit in a constant struggle for advantage.

The use of cyberspace to gain an advantage over adversaries takes many forms and is not always aimed at nuclear systems. China has been accused of engaging in widespread cyberespionage to steal technical secrets from U.S. firms for economic and military advantages. Russia has been accused, most extensively in the Robert Mueller report, of exploiting cyberspace to interfere in the 2016 U.S. presidential election. Nonstate actors, including terrorist groups such as al Qaeda and the Islamic State group, have used the internet for recruiting combatants and spreading fear. Criminal groups, including some thought to be allied with state actors, such as North Korea, have used cyberspace to extort money from banks, municipalities, and individuals.[4](about:blank#endnote04) Attacks such as these occupy most of the time and attention of civilian and military cybersecurity organizations that attempt to thwart such attacks. Yet for those who worry about strategic stability and the risks of nuclear escalation, it is the threat of cyberattacks on NC3 systems that provokes the greatest concern.

This concern stems from the fact that, despite the immense effort devoted to protecting NC3 systems from cyberattack, no enterprise that relies so extensively on computers and cyberspace can be made 100 percent invulnerable to attack. This is so because such systems employ many devices and operating systems of various origins and vintages, most incorporating numerous software updates and “patches” over time, offering multiple vectors for attack. Electronic components can also be modified by hostile actors during production, transit, or insertion; and the whole system itself is dependent to a considerable degree on the electrical grid, which itself is vulnerable to cyberattack and is far less protected. Experienced “cyberwarriors” of every major power have been working for years to probe for weaknesses in these systems and in many cases have devised cyberweapons, typically, malicious software (malware) and computer viruses, to exploit those weaknesses for military advantage.[5](about:blank#endnote05)

Although activity in cyberspace is much more difficult to detect and track than conventional military operations, enough information has become public to indicate that the major nuclear powers, notably China, Russia, and the United States, along with such secondary powers as Iran and North Korea, have established extensive cyberwarfare capabilities and engage in offensive cyberoperations on a regular basis, often aimed at critical military infrastructure. “Cyberspace is a contested environment where we are in constant contact with adversaries,” General Paul M. Nakasone, commander of the U.S. Cyber Command (Cybercom), told the Senate Armed Services Committee in February 2019. “We see near-peer competitors [China and Russia] conducting sustained campaigns below the level of armed conflict to erode American strength and gain strategic advantage.”

Although eager to speak of adversary threats to U.S. interests, Nakasone was noticeably but not surprisingly reluctant to say much about U.S. offensive operations in cyberspace. He acknowledged, however, that Cybercom took such action to disrupt possible Russian interference in the 2018 midterm elections. “We created a persistent presence in cyberspace to monitor adversary actions and crafted tools and tactics to frustrate their efforts,” he testified in February. According to press accounts, this included a cyberattack aimed at paralyzing the Internet Research Agency, a “troll farm” in St. Petersburg said to have been deeply involved in generating disruptive propaganda during the 2016 presidential elections.[6](about:blank#endnote06)

Other press investigations have disclosed two other offensive operations undertaken by the United States. One called “Olympic Games” was intended to disrupt Iran’s drive to increase its uranium-enrichment capacity by sabotaging the centrifuges used in the process by infecting them with the so-called Stuxnet virus. Another left of launch effort was intended to cause malfunctions in North Korean missile tests.[7](about:blank#endnote07) Although not aimed at either of the U.S. principal nuclear adversaries, those two attacks demonstrated a willingness and capacity to conduct cyberattacks on the nuclear infrastructure of other states.

Efforts by strategic rivals of the United States to infiltrate and eventually degrade U.S. nuclear infrastructure are far less documented but thought to be no less prevalent. Russia, for example, is believed to have planted malware in the U.S. electrical utility grid, possibly with the intent of cutting off the flow of electricity to critical NC3 facilities in the event of a major crisis.[8](about:blank#endnote08) Indeed, every major power, including the United States, is believed to have crafted cyberweapons aimed at critical NC3 components and to have implanted malware in enemy systems for potential use in some future confrontation.

Pathways to Escalation

Knowing that the NC3 systems of the major powers are constantly being probed for weaknesses and probably infested with malware designed to be activated in a crisis, what does this say about the risks of escalation from a nonkinetic battle, that is, one fought without traditional weaponry, to a kinetic one, at first using conventional weapons and then, potentially, nuclear ones? None of this can be predicted in advance, but those analysts who have studied the subject worry about the emergence of dangerous new pathways for escalation. Indeed, several such scenarios have been identified.[9](about:blank#endnote09)

The first and possibly most dangerous path to escalation would arise from the early use of cyberweapons in a great power crisis to ~~paralyze~~ undermine the vital command, control, and communications capabilities of an adversary, many of which serve nuclear and conventional forces. In the “fog of war” that would naturally ensue from such an encounter, the recipient of such an attack might fear more punishing follow-up kinetic attacks, possibly including the use of nuclear weapons, and, fearing the loss of its own arsenal, launch its weapons immediately. This might occur, for example, in a confrontation between NATO and Russian forces in east and central Europe or between U.S. and Chinese forces in the Asia-Pacific region.

Speaking of a possible confrontation in Europe, for example, James N. Miller Jr. and Richard Fontaine wrote that “both sides would have overwhelming incentives to go early with offensive cyber and counter-space capabilities to negate the other side’s military capabilities or advantages.” If these early attacks succeeded, “it could result in huge military and coercive advantage for the attacker.” This might induce the recipient of such attacks to back down, affording its rival a major victory at very low cost. Alternatively, however, the recipient might view the attacks on its critical command, control, and communications infrastructure as the prelude to a full-scale attack aimed at neutralizing its nuclear capabilities and choose to strike first. “It is worth considering,” Miller and Fontaine concluded, “how even a very limited attack or incident could set both sides on a slippery slope to rapid escalation.”[10](about:blank#endnote10)

What makes the insertion of latent malware in an adversary’s NC3 systems so dangerous is that it may not even need to be activated to increase the risk of nuclear escalation. If a nuclear-armed state comes to believe that its critical systems are infested with enemy malware, its leaders might not trust the information provided by its early-warning systems in a crisis and might misconstrue the nature of an enemy attack, leading them to overreact and possibly launch their nuclear weapons out of fear they are at risk of a preemptive strike.

“The uncertainty caused by the unique character of a cyber threat could jeopardize the credibility of the nuclear deterrent and undermine strategic stability in ways that advances in nuclear and conventional weapons do not,” Page O. Stoutland and Samantha Pitts-Kiefer wrote in 2018 paper for the Nuclear Threat Initiative. “[T]he introduction of a flaw or malicious code into nuclear weapons through the supply chain that compromises the effectiveness of those weapons could lead to a lack of confidence in the nuclear deterrent,” undermining strategic stability.[11](about:blank#endnote11) Without confidence in the reliability of its nuclear weapons infrastructure, a nuclear-armed state may misinterpret confusing signals from its early-warning systems and, fearing the worst, launch its own nuclear weapons rather than lose them to an enemy’s first strike. This makes the scenario proffered in the 2018 NPR report, of a nuclear response to an enemy cyberattack, that much more alarming.

### 1AC---Solvency

#### Plan: The United States federal government should substantially increase prohibitions on private sector conduct that is more restrictive of competition than reasonably necessary to enable creation of information technology standards.

#### The plan requires SSO’s to administer reasonable action to prohibit ex post opportunism---that strengthens FRAND while enabling SEP holders to capture appropriate royalties.

Melamed & Shapiro 18, \*A. Douglas Melamed is Professor of the Practice of Law at Stanford Law School; \*Carl Shapiro is the Transamerica Professor of Business Strategy at the Haas School of Business at the University of California at Berkeley; (May 2018, “How Antitrust Law Can Make FRAND Commitments More Effective”, https://www-cdn.law.stanford.edu/wp-content/uploads/2018/05/How-Antitrust-Law-Can-Make-FRAND-Commitments-More-Effective.pdf)

3. Application of the Basic Legal Principles

The antitrust principle is straightforward: industry-wide collaboration through SSOs to establish procompetitive standards is permitted only if it is no more restrictive of competition than reasonably necessary to enable creation of the standards. When standard setting predictably creates technology monopolies that, if unrestrained, will enable anticompetitive ex post opportunism that would otherwise not occur, an SSO that does not take effective measures to prevent or minimize such ex post opportunism engages in conduct that is more restrictive of competition than necessary. In that case, the SSO and, in appropriate cases, its members, may well violate Section 1 of the Sherman Act.

Under this principle, SSO procedures and FRAND rules should be evaluated based on whether they lead to reasonable SEP royalties, using the competitive ex ante licensing standard discussed above, which has been adopted by the courts in patent law. Put differently, FRAND rules should be evaluated based on their ability to prevent SEP holders from obtaining more than the ex ante value of their technology from implementers.

This limitation would not prevent a SEP holder from proﬁting, perhaps greatly, from participating in the SSO and having its patented technology included in the standard. The SEP holder continues to be rewarded for its technology because the inclusion of its technology in the standard can still greatly increase the volume of licensing opportunities available to the SEP holder.

Whether a particular set of FRAND rules are sufficiently effective in preventing ex post opportunism will depend on the particular circumstances. The procedural unfolding of the case will also depend upon the circumstances. As a general matter, the case would probably be structured as an ordinary Rule of Reason case.82

First, the plaintiff would have to demonstrate harm to competition as a result of the collaboration of the SSO’s members, many of which compete with one another. In this case, the harm to competition would stem from the ability of the SEP holder to exercise monopoly power by obtaining royalties in excess of the competitive, ex ante level. The decision to include patented technologies in the standard would be the allegedly unlawful agreement. Notably, the court need not determine what a FRAND royalty is; it would suffice to determine that market power has been created or exercised, and that existing SSO rules and policies were not adequate to prevent the competitive harm. The defendant, which could be the SSO or perhaps one or more SSO members, would win at this point if the plaintiff failed to show harm to competition. If might fail if the standard faces substantial competition and the court concludes that the SEP holder therefore does not have market power or if the SSO’s rules and policies are found to be effective in preventing ex post opportunism, even if the plaintiff or even the court thinks that other rules and policies would be preferable.

Second, if the plaintiff makes the requisite showing of harm to competition, the defendant(s) would then have to show some procompetitive justiﬁcation— in this case, the beneﬁts of the standard. These two initial steps should be straightforward.

Third, if as is likely the defendant is able to show a procompetitive justiﬁcation, the plaintiff would have to show that the SSO could have used available, reasonable alternatives to realize the efficiency beneﬁts with less or none of the competitive harms. The plaintiff might identify reasonable alternatives that would have led to a different standard, based on including unpatented technology in the standard or perhaps involving fewer SEPs or fewer owners of SEPs, which would be less subject to patent holdup. More likely, the plaintiff could suggest alternative SSO rules that would not change the standard, but would reduce the likelihood or extent of ex post opportunism. For example, the plaintiff might suggest more rigorous FRAND-type rules, such as rules that set forth more precise principles on which FRAND royalties are to be determined and the circumstances under which SEP holders might seek injunctions.

Fourth, the burden would then shift to the defendant(s) to show that the beneﬁts of the standard could not have been realized if the SSO had adopted any of the proffered alternatives or that those alternatives were unrealistic.83 The plaintiff would be entitled to judgment if the court concludes that those beneﬁts could have been realized with less competitive harm if the SSO had adopted the standard with different IPR rules or policies.

Our overall sense, based on experience and the empirical literature, is that the extant FRAND rules are generally useful, but tend to be inadequate because they are imprecise and leave unresolved such critical issues as (a) the meaning of a reasonable royalty, even conceptually; (b) the meaning of “non-discriminatory;” (c) to whom licenses must be offered; and (d) under what circumstances may a SEP holder obtain an injunction.84 These imprecise FRAND commitments are therefore not sufficient to adequately prevent ex post opportunism. The recent revisions to IEEE’s FRAND policy represent a signiﬁcant step in the right direction, but even this advance leaves important questions unanswered.85 If FRAND rules are inadequate in these ways, litigation involving extant FRAND rules would likely be resolved only at the ﬁnal, fourth step. The defendant would be able to demonstrate the beneﬁts created by the standard; the plaintiff would be able to demonstrate the creation of market power and that other reasonable and practical rules or policies would ameliorate the problem. The case would thus turn on whether the defendant is able to demonstrate that signiﬁcant beneﬁts associated with standardization could not have been realized if the SSO had adopted those other rules or policies.

The court would have available a variety of possible remedies if the plaintiff prevails. Implementers that paid supracompetitive royalties or were unlawfully excluded in whole or in part from product markets as a result of the inadequate FRAND policies would be entitled to damages and, in some cases, to treble damages.86 If the unlawful SSO conduct is regarded as the collective action of the SSO and its members, which is likely to be the case in most instances, SSO members would be jointly and severally liable for the damages. Forward-looking injunctive relief aimed at restoring competition would need to be fashioned to the requirements of the individual case. For example, a court could order the SSO to adopt a new rule or policy proposed by the plaintiff. If the court is reluctant to take on that governance role, it might give the SSO a period of time—maybe ninety days—to develop a rule, subject to the court’s ultimate approval, which would adequately ameliorate the competitive problem created by the SSO. Alternatively or in addition, the court might order the parties to attempt to negotiate a rule or policy on which they can agree. And, depending on the circumstances, the court might order SEP holders, including at least those that were defendants in the case, to comply with the new SSO rules and policies.

#### Threatening antitrust liability lures SSO’s into adopting best practices.

Lemley & Shapiro 13, \*Mark Lemley is the William H. Neukom Professor at Stanford Law School and a partner at Durie Tangri LLP; \*Carl Shapiro is the Transamerica Professor of Business Strategy at the Haas School of Business, University of California at Berkeley and a Senior Consultant at Charles River Associates; (2013, “A SIMPLE APPROACH TO SETTING REASONABLE ROYALTIES FOR STANDARD-ESSENTIAL PATENTS”, (https://faculty.haas.berkeley.edu/shapiro/frand.pdf)

Under our approach, many of these issues should become moot, since the patentee cannot obtain an injunction (or transfer the patent to someone who can) against a willing licensee, and since competitors are not involved in jointly setting the reasonable royalty rate. If SSOs set clear, reasonable rules following the best practices we recommend, and parties follow those rules, there should be little or no need for antitrust to intervene. Indeed, even the risk of non-disclosure of a patent is lessened, since the patentee has committed to license its essential patents whether or not it discloses them. For the most part, the rules we have described are self-executing, meaning that even if a party tries to break the rules set by the SSO there still may be no need for antitrust to intervene. Thus, we suggest that parties who abide by these procedures—patentees, implementers, and the SSOs themselves—should be immune from antitrust liability for activities that merely follow those rules.107 They have entered into an arrangement that is on balance good for competition, one that allows patentees to receive reasonable royalties but prevents holdup and reduces the risk of monopolization by trickery.

The fact that antitrust remains a last resort available when SSOs don’t follow best practices may have two practical benefits, however. First, under our approach the promise of avoiding the risk of antitrust liability will be a powerful incentive for both SSOs and patent owners to adopt the best practices we propose. Second, the risk of antitrust liability may be relevant when an individual patentee wants to adopt best practices but the SSO governing the standard has not yet done so. We propose that a patentee that unilaterally commits to the FRAND procedures we describe here should be immune from antitrust liability for following these procedures.108 A patentee’s unilateral binding commitment to arbitration could be enforced whether or not it was elicited by an SSO. Thus, just as the prospect of antitrust immunity might lure SSOs to adopt best practices, it might also lure patentees to implement those practices even if the SSO has not done so. Given the large number of standard-essential patents based on preexisting standards,109 and given that SSOs tend to update their IP rules rather slowly,110 this is not a small matter.

#### Only antitrust enforcement creates a consumer-action feature that challenges SSO misconduct.

Melamed & Shapiro 18, \*A. Douglas Melamed is Professor of the Practice of Law at Stanford Law School; \*Carl Shapiro is the Transamerica Professor of Business Strategy at the Haas School of Business at the University of California at Berkeley; (May 2018, “How Antitrust Law Can Make FRAND Commitments More Effective”, [https://www-cdn.law.stanford.edu/wp-content/uploads/2018/05/How-Antitrust-Law-Can-Make-FRAND-Commitments-More-Effective.pdf](about:blank))

2. Why Antitrust Enforcement Is Necessary

Some SSO members have an interest in ensuring that the SSO takes steps to minimize the potential harms from the SEP holders’ monopoly power, and this undoubtedly explains in part why most SSOs have adopted FRAND policies or similar requirements. But, as shown in the economic model in the Appendix,73 SSOs cannot in general be counted on to adopt effective FRAND policies. The bases for this conclusion, which is central to our argument for the applicability of Section 1 to SSO FRAND rules, can be summarized as follows.74

First, the SSO members collectively have an interest in permitting SEP holders to charge supracompetitive royalties that elevate the downstream price of compliant devices to the monopoly level. Doing so will enable the members in aggregate to collect increased revenues from consumers, and thus to generate increased profits that in theory could be shared by all the members. In other words, supracompetitive royalties can enrich industry participants as a group at the expense of final consumers. This fact alone should serve as a clear and strong signal regarding the dangers of counting on SSOs to implement effective FRAND policies: if the SSO members negotiate efficiently, the outcome will be just as bad for consumers as if the members agreed to fix downstream prices.75 The fundamental problem is that final consumers are not at the table when the SSO rules are negotiated.

Second, SSO members that own SEPs but earn little or no profits as implementers have a powerful self-interest in being able to exercise the ex post monopoly power associated with their SEPs. Because SSO policies are usually determined by a consensus process, these members will likely be able to block the adoption of fully effective FRAND policies. Moreover, these SSO members often have the greatest interest in SSO patent policies. Since much of their income may be attributable to patent licensing, they can be expected to devote substantial resources to block the adoption of FRAND policies that effectively prevent patent holdup.

Third, even SSO members that earn significant profits as implementers may have mixed incentives if they also own SEPs, which can also lead to weak or in-effective FRAND rules. In the Appendix, we show that, if the requisite share of votes in the SSO are cast by firms whose share of SEP royalties is at least as large as their share of downstream profits, and if these firms can coordinate their voting over the FRAND rules, then an SSO unconstrained by antitrust laws will establish FRAND rules leading to an outcome no better for consumers than would result from an integrated monopolist controlling all SEPs and all downstream sales.76

Fourth, even SSO members that are downstream implementers and own few, if any, SEPs may have only a modest interest in promoting effective policies to restrict ex post opportunism. Because all implementers will be subject to the opportunism, all of them will face increased licensing costs, and therefore will likely be able to pass on most or all of the increased costs to their customers.77 Furthermore, these implementers might not be especially active or effective in the standard-setting process for free-riding or public-good reasons, especially if SEP royalties constitute only a relatively small portion of the costs of their standard-implementing products. Public choice theory predicts that the highly motivated SEP holders are likely to have the greatest influence over patent policies.

Empirical evidence bears out these concerns. As a starting point, we find it striking that SSO FRAND rules are almost always quite vague.78 Notably, SSOs in which SEP holders are more prevalent tend to have weaker FRAND rules.79 Further, to our knowledge, SSOs have made almost no effort to enforce their FRAND rules and have, instead, left enforcement efforts to others.80 This evidence raises serious doubts about the effectiveness of the existing FRAND rules in preventing ex post opportunism.

# 2AC---Doubles---vs Emory GK

## ON

### AT: No Patent Holdup

#### There’s no impact to winning this argument.

Cotter et al. 19, \*Thomas F. Cotter, Briggs and Morgan Professor of Law, University of Minnesota Law School; Innovators Network Foundation Intellectual Property Fellow; \*Erik Hovenkamp, Assistant Professor, USC Gould School of Law; \*Norman Siebrasse, Professor of Law, University of New Brunswick Faculty of Law; (2019, “Demystifying Patent Holdup”, https://scholarlycommons.law.wlu.edu/cgi/viewcontent.cgi?article=4667&context=wlulr)

B. Patent Holdup Is Not a Problem, Because It Is Not Systemic

A second, related argument is that there is no empirical evidence of patent owners engaging in pervasive, systemic patent holdup in the very industries holdup theorists are most concerned with (e.g., telecommunications).139 Indeed, according to the critics, if holdup were pervasive one would expect innovation and growth in the affected industries to “stagnate, wither, or die,”140 whereas if one looks “across human history, it is not clear that the commercialization of complex technologies has ever been faster than it is today in those industries that reform proponents point to as most plagued by the patent holdup ‘problem.’”141

Although we agree that whether, or to what extent, patent holdup occurs in the real world is ultimately an empirical matter, the implication that patent holdup is a problem only if it is “pervasive” or “systemic” is a non sequitur.142 If our analysis above is correct—that the ability to engage in patent holdup depends on path dependence, that settings conducive to patent holdup are not uncommon, and that the three components of a holdup royalty can exist independently of one another—patent holdup does not have to be systemic to be capable of reducing social welfare. Seeing how the empirical critiques of patent holdup do “not claim[ ] that individual firms never attempt to engage in behavior that can be characterized as holdup,”143 the conclusion that holdup is not systemic may well be accurate, for all we know, while still being of any limited relevance for purposes of determining whether injunctive relief should issue on the facts of any one particular case.144 If the choice were between always granting an injunction without tailoring or conditions, and never granting any form of injunctive relief, perhaps the question of whether holdup was systemic, at least in a particular industry, would be central. But the traditional approach to injunctive relief looks to the facts of the particular case.145

### AT: SSO Collusion Low

#### SSO collusiveness is increasing now.

Rutkowski 20, \*Anthony Rutkowski, Principal, Netmagic Associates LLC; (July 12th, 2020, “[Addressing Anticompetitive Behavior in Internet Standards Bodies](https://circleid.com/posts/20200711-addressing-anticompetitive-behaviur-in-internet-standards-bodies)”, https://circleid.com/posts/20200711-addressing-anticompetitive-behaviur-in-internet-standards-bodies)

A significant focus is emerging today on the anticompetitive behaviour of Silicon Valley companies directed at dominating critical sectors of the on-line marketplace, and a [U.S. Congressional hearing is scheduled](https://www.nytimes.com/2020/07/01/technology/amazon-apple-alphabet-facebook-congress-antitrust.html). Such practices can be pursued in many ways. One of the more elusive, but very effective anticompetitive playbooks—known legally as the “[antitrust conspiracy](https://www.justice.gov/atr/page/file/1091651/download)”—can occur in internet standards bodies. Where [dominating markets with running code is a way of life](https://truthonthemarket.com/symposia/should-we-break-up-big-tech-symposium/), internet standards bodies are invaluable strategic instruments.

Concerns about antitrust conspiracies have been around a long time and part of the fabric of most modern economies. In the U.S., the origins of antitrust conspiracy law extend back to the [Sherman Act passed in 1890](https://www.consumer.ftc.gov/sites/default/files/games/off-site/youarehere/pages/pdf/FTC-Competition_Antitrust-Laws.pdf) which makes it illegal for competitors to make agreements with each other that would limit competition. The U.S. Dept. of Justice recognizes three sub-types: price-fixing, bid-rigging, and market allocation. It is the antitrust market allocation conspiracy playbook that typically gets manifested in standards bodies and treated as an economic crime that harms innovation and the dynamics of a free market economy.

All internet standards setting organizations potentially have this kind of antitrust exposure. As the ITU [2014 Manual on competition law and standards](https://www.itu.int/en/ITU-T/Documents/Manual_Patents_Final_E.pdf) notes, “competition law, also referred to as ‘antitrust’ or ‘anti-monopoly’ law, is a form of market regulation that aims to create a competitive business environment through the prohibition of conduct that restricts access to a market or otherwise negatively affects domestic or international trade.” The most prominent provisions and active enforcement arise under [treaty instruments and Directives in Europe](https://ec.europa.eu/competition/antitrust/overview_en.html) and [several Antitrust Acts in the U.S.](https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws/antitrust-laws) In addition, judicial determinations emerging from litigating antitrust “cases in controversy” help amplify and clarify the statutory and regulatory provisions. A landmark U.S. Federal case arose almost a decade ago and dealt squarely with antitrust market allocation conspiracies in internet standards bodies.

Standards making activities are, by definition, aimed at agreeing on specifications where implementation will exclude non-compliant parties. However, as a practical matter, only certain kinds of standards making conduct is unlawful, such as 1) prohibitions on adopting competing standards, 2) excluding technologies and marketplace participants, or 3) colluding on dominating the marketplace. All the parties engaged in the activity, whether companies or individuals, can be culpable in abetting the restraints—notably including the standards body itself.

This article is the first in a series and describes the relevant antitrust conspiracy law, how it appeared and evolved in internet standards bodies, the ensuing litigation, and steps that have been taken to diminish the risk of the behavior occurring. It also suggests the need for a global dialogue on the topic.

1. Evolution of Standards Bodies and Relevant Antitrust Law

In the U.S., antitrust conspiracies to restrain trade within industry standards groups have been prohibited for many decades through Federal Trade Commission Act provisions. Some of the most famous cases involved company strategies to create standards groups whose sole purpose was to specify and approve only the company’s products.

However, anticompetitive conspiracy conduct in internet standards bodies was never relevant until the 1990s. Until that point in history, the network services and products offered to the public were commonly provided through national monopoly arrangements—in many cases by agencies of government that provided the product or service. The associated standards bodies were governmental or intergovernmental in nature. In other cases, the activities were undertaken through national governmental organizations that effectively provided antitrust liability protection for industry participants.

It wasn’t until the mid-1990s that internet standards bodies free from government oversight emerged that even enabled antitrust conspiracies to occur. One of the earliest and most prominent of the new bodies was the Internet Engineering Task Force (IETF), which was divested from its previous U.S. government agency educational and research sponsorship. The IETF’s origins, combined with the lack of definitive participant affiliations which had previously served it well as an academic activity, gave rise to potential antitrust conspiracy behavior as the work became increasingly valuable in the commercial marketplace. At that point, [the Internet Society purchased substantial antitrust litigation insurance protection](https://www.internetsociety.org/board-of-trustees/minutes/8) for those engaged in IETF standards decision-making activities in conjunction with the Society assuming IPR responsibility for its standards.

The IETF was among dozens of new private internet industry standards bodies that emerged during the 1990s driven by two powerful factors: 1) a rapidly expanding marketplace that necessitated more highly specialized industry standards bodies, and 2) targeted “strategic participation” by companies in those specialized markets. Unfortunately, such strategic participation has often led to decision-making positions in standards bodies being held by funded technical assets—increasing the risk of antitrust conspiracies.

The landmark decision of the U.S. Patent and Trademark Office in 2000 [that declared the term “internet” generic and available for anyone to use](https://ipmall.law.unh.edu/content/ttab-trademark-trial-and-appeal-board-1-internet-inc-v-internet-society-and-corporation), also helped propel a broad diversity of standards activities.

A realization of these fundamental changes in internet standards activities during the 1990s led to the creation of the [Global Standards Collaboration (GSC)](https://www.itu.int/en/ITU-T/gsc/Pages/default.aspx) organization—which met annually to treat major issues before internet standards bodies. It also brought together the legal counsel from the different bodies to treat growing concerns such as antitrust behavior.

As the specialized standards bodies continued to expand along with the ICT market, a series of high-profile anticompetitive abuses gave rise to an array of FTC actions and judicial decisions that revealed [the antitrust risks associated with manipulating standards-setting processes](https://www.mondaq.com/unitedstates/antitrust-eu-competition-/28999/the-antitrust-risks-associated-with-manipulating-the-standard-setting-process). However, it was not until 2011 that the world of antitrust conspiracy law and internet standards bodies changed forever.

2. Non-profit Standards Bodies Culpable for Antitrust Conspiracies

In 2011, a small provider of wireless internet-based location solutions sued several network technology giants and the supporting non-profit standards body in U.S. Federal Court. TruePosition Technologies alleged that three large equipment companies plus the standards bodies “conspired to exclude its positioning technology…from standards promulgated” by the bodies. Three years and ten days later, after 313 filed documents in the case, and millions of dollars of legal fees, the action ended with a settlement agreement. The court’s TruePosition Decision found that the ETSI (European Telecommunications Standards Institute) incorporated in France as a non-profit body, by supporting the 3GPP standards work had plausibly “joined the alleged [antitrust] conspiracy.”

A [summary of the key mandates](http://sullivanlaw.net/standard-setting-org-may-be-liable-for-antitrust-violations-of-member-leaders/) of the TruePosition Decision are:

Standards bodies must actively police the actions of their committees to prevent legitimate, pro-competitive standard setting from being subverted to private agendas of their participants

Standards Bodies should adopt antitrust and intellectual property policies to be signed by authorized signatories of all participants and reiterated at every meeting

Nonprofit standards associations are liable when members act in their name, even if the organization is not involved in standard setting

When volunteers are placed in standards leadership positions, nonprofit organizations must establish clear terms of reference for all leadership positions and make it clear where the leader’s authority begins and ends

It is essential to formulate—and to train leaders regarding—policies governing conflicts of interest, ethics, gratuities, anti-corruption principles, and related matters

After the TruePosition Decision, most internet standards bodies began working to implement the five mandates as best practices to identify and stop antitrust conspiracies.

3. Antitrust Conspiracy Law Best Practices

In 2014, the Director of the ITU Telecommunication Standardization Bureau which assumed responsibility for the Global Standards Collaboration activity, commissioned a compendium drawing from the TruePosition Decision—[Understanding patents, competition & standardization in an interconnected world](https://www.itu.int/en/ITU-T/Documents/Manual_Patents_Final_E.pdf). It perhaps remains as the most comprehensive treatment of the subject. The document notes that there are more than 800 organizations “developing, promoting or supporting ICT standards,” and articulates the basic purpose of competition law applicable to them.

Competition law and its associated monitoring and enforcement activities serve three main purposes: 1) prohibiting agreements, collaborations or practices between market players which may restrict free trading or competition between businesses; 2) prohibiting abusive conduct by a dominant market player; and 3) monitoring market concentration and mergers.

The Manual points to ETSI’s [Guidelines for Antitrust Compliance](https://www.etsi.org/intellectual-property-rights/antitrust-guidelines) as a particularly useful model for standards organizations. In addition to dealing with anticompetitive IPR practices, the Guidelines proscribe discussions concerning:

“preventing anybody from gaining access to any market or customer for goods and services;

refusals to deal or do business with competitors, vendors or suppliers

[and that] even the appearance of any discussion, communication or exchange of information that appears to be leading to restraints on competition of any kind should be carefully avoided.”

The Guidelines—which are prominent on ETSI’s website and referenced in every meeting agenda and by chairs at the outset of every meeting—also contain two specific, related mandates for participants:

C.4.3

In the event that a participant becomes aware of any discussion, communication or exchange of information that appears to be leading to restraints on competition of any kind, such participant should raise the issue, seek to terminate such discussion, communication or exchange of information or separate from it.

CC.5.3

Nobody should be coerced to adopt any ETSI document produced as the result of an ETSI Work Item (i.e., ETSI Standard, European Standard, ETSI Group Specification, ETSI Technical Specification, ETSI Technical Report, ETSI Guide or ETSI Special Report), nor should any efforts be undertaken that are intended to prevent the manufacture, sale, or supply of any product or services not conforming to any such adopted ETSI document.

In addition to the ITU and ETSI, most other internet standards bodies have dedicated antitrust conspiracy related materials and include, for example: [3GPP](https://www.3gpp.org/about-3gpp/legal-matters/21-3gpp-calendar/1616-statement-of-antitrust-compliance), [Bluetooth SIG](https://www.bluetooth.org/DocMan/handlers/DownloadDoc.ashx?doc_id=41773), [Broadband Forum](https://www.broadband-forum.org/about-bbf/how-we-work/policies-procedures/the-broadband-forum-antitrust-guidelines), [CA/Browser Forum](https://cabforum.org/wp-content/uploads/CA-Browser-Forum-Bylaws-v.-1.8-21-Dec-2017.pdf), [CableLabs](https://www.cablelabs.com/wp-content/uploads/2013/12/AntitrustGuidelines.pdf), [GSMA](https://www.gsma.com/aboutus/wp-content/uploads/2020/01/Antitrust-Policy-DECEMBER-2019.pdf), [IEEE](https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/antitrust.pdf), [ISO](https://www.iso.org/files/live/sites/isoorg/files/developing_standards/docs/en/competition_law_guidelines.pdf), [MEF](http://www.mef.net/Assets/IMTC/Document_Archives/Policy/BylawsApprovedMay92014_21662_2.pdf), [OASIS](https://www.oasis-open.org/policies-guidelines/antitrust), [OMA](https://www.omaspecworks.org/wp-content/uploads/2018/03/antitrustguidelines.pdf), [OMG](https://www.omg.org/cgi-bin/doc?omg/16-10-01.pdf), [W3C](https://www.w3.org/Consortium/Legal/2017/antitrust-guidance), [ZigBee Alliance](https://zigbeealliance.org/wp-content/uploads/2019/11/ZigBee-Alliance-Anti-Trust-Policy.pdf). Taken as a whole, this material effectively constitutes best practice for internet standards bodies for this kind of antitrust behaviour.

Almost all internet standards bodies have taken definitive steps to implement the five TruePosition mandates to avoid antitrust conspiracy culpability. Notable exceptions are the [Internet Engineering Task Force](https://www.ietf.org/) (IETF), the [IETF Trust LLC](https://trustee.ietf.org/), the [IETF Administration LLC](https://www.ietf.org/about/administration/), the [Internet Architecture Board](https://www.iab.org/internet-architecture-board-conflict-of-interest-policy/) (IAB), and the [Internet Assigned Numbers Authority](https://www.iana.org/) (IANA). Although all of these bodies have [treated IPR and other conduct with a Note Well](https://datatracker.ietf.org/submit/note-well/), there are no apparent policies or requirements dealing with antitrust conspiracy anywhere in their organizational materials except for an [IAB Conflict of Interest Policy](https://www.iab.org/internet-architecture-board-conflict-of-interest-policy/)—which is not the same. The IETF antitrust conspiracy risk is also significantly amplified by the ability of any party to participate in its standards making processes—especially the lists which drive much of the work—without any disclosure of who they represent or how they are funded or consideration of the anticompetitive effects. The one time that treatment of the antitrust conspiracy topic was considered by the IETF in 2012, it consisted of a [short email discussion list](https://mailarchive.ietf.org/arch/browse/antitrust-policy/), a Birds of a Feather (BOF) session, and [a slide presentation](https://datatracker.ietf.org/meeting/83/materials/slides-83-antitrust-1). Although a web page for continuing education and material was proposed, nothing further was done.

4. Focus on Antitrust Conspiracy in the Internet Marketplace Has Significantly Increased

Over the past several years, significant developments have occurred in both technical and legal domains. The developments are game-changers worth significant consideration by all internet standards bodies.

Competition authorities in the U.S. and Europe have voiced increasing concern about anti-competitive conduct and concentration in the network services industry—including the [behaviour of individual actors](https://www.jonesday.com/en/insights/2015/11/antitrust-alert--doj-statements-may-signal-civil-antitrust-enforcement-against-individual-employees). The concern is more than just hypothetical. The legal scholar and counsel who produced the IETF 2012 BOF presentation has recently [amplified on new antitrust concerns and needs](https://www.minnesotalawreview.org/wp-content/uploads/2019/02/Contreras_1fmt.pdf). The [European Commission has become especially active](https://www.wsj.com/articles/european-regulators-target-big-tech-companies-11579542357) over the past several years. The respected law firm of Skadden Arps, recently published [a special publication on the subject](https://www.skadden.com/-/media/files/publications/2020/01/antitrustenforcementcentersontechnologyindustry.pdf), noting:

Antitrust enforcers in the United States and European Union (EU) remained active in 2019, and recent developments at the Department of Justice (DOJ), Federal Trade Commission (FTC), state attorneys general (AG) offices and EU agencies signal even greater levels of activity in 2020. The common theme is increased attention to high-tech industries and digital markets, which are expected to face heightened scrutiny.

The IETF cluster of bodies is especially vulnerable because of inattention to process transparency, conflicts of interest, and anticompetitive effects. The [Glassey Complaint in U.S. Federal Court](https://iaoc.ietf.org/documents/Glassey-Partial-Summary-Motion-29Nov2014.pdf) several years ago emerged from these concerns and noted that even the simple inclusion of a product specification in an IETF standard was worth 2 to 4 million dollars.

Recently, the critical internet standards venues such as the CA/Browser Forum have substantially increased their attention to antitrust conspiracy exposure by [adopting revised bylaws and statements which are read](https://cabforum.org/wp-content/uploads/CA-Browser-Forum-Bylaws-v2.2.pdf) at each meeting similar to ETSI. Concerns over the need for the IETF to address this kind of [antitrust behaviour were raised at a Nov 2019 meeting BOF](https://datatracker.ietf.org/meeting/106/materials/slides-106-abcd-chair-slides-00) and [repeated at the March 2020 meeting open mike session](https://www.youtube.com/watch?v=rPEhLj-NPiA). However, when the question “what is the IETF LLC doing to ensure it complies with antitrust laws” was asked, the reply was, “we have looked at whether we want to do anything about antitrust…but there was nothing to do.” Today, no internet standards body can afford to dismiss the TruePosition mandates on antitrust behavior with “nothing to do.” Simply proffering a [Mission Statement](https://tools.ietf.org/html/rfc3935) is not enough.

5. Reducing Antitrust Conspiracy Risks

There is now a [very significantly increased focus by competition authorities](http://media.straffordpub.com/products/antitrust-risks-for-trade-associations-and-members-ensuring-compliance-amid-intensive-federal-scrutiny-2017-05-16/presentation.pdf) worldwide on antitrust conspiracies in internet standards activities to constrain market competition. The challenges are being faced by everybody today.

Hundreds, if not thousands of companies and ad-hoc non-profit organizations, have emerged in the ecosystem who are strongly incentivised to pursue antitrust conspiracy tactics in and among internet standards bodies to advance diverse agendas. Internet standards bodies are potentially being pitted against another to prevent competition. As the TruePosition court admonished—standards bodies must actively police the actions of their committees to prevent legitimate, pro-competitive standard setting from being subverted to private agendas of their participants.

## OFF

### 2AC---T---Prohibition

#### Counter-interpretation---rule of reason is a prohibition.

Light 19, Sarah E. Light Assistant Professor of Legal Studies and Business Ethics, The Wharton School, University of Pennsylvania., The Law of the Corporation as Environmental Law, 71 Stan. L. Rev. 137, 2019, Lexis/Nexis

While antitrust law can serve as an environmental mandate by prohibiting collusive behavior that keeps environmentally preferable goods from the market, there is also conflict between antitrust law's goals of promoting competition and environmental law's goals of promoting [\*177] conservation. 192 Because antitrust law's per se rule and rule of reason operate on a somewhat fluid continuum, 193 this Subpart discusses the two doctrines together. The per se rule operates as a prohibition, whereas the rule of reason operates as both a prohibition and a disincentive. As noted above, antitrust law generally prohibits certain types of market activity - price fixing, horizontal boycotts, and output limitations - as illegal per se, and harm to competition is presumed. 194 For example, if an industry association declines to award a seal of approval necessary for a product's sale without any good faith attempt to test the product's performance, but rather simply because that product is manufactured by a competitor, such an action would be illegal per se. 195 Under this Article's framework, a per se violation is thus a prohibition. The more fact-intensive inquiry under the rule of reason tests "whether the restraint imposed is such as merely regulates and perhaps thereby promotes competition or whether it is such as may suppress or even destroy competition." 196 While this extremely broad statement might suggest that any fact is relevant to the inquiry, the salient facts under the rule of reason are "those that tend to establish whether a restraint increases or decreases output, or decreases or increases prices." 197 If an anticompetitive effect is found, then the action is illegal and the rule of reason operates, like the per se rule, as a prohibition. 198 The rule of reason can also operate as a disincentive, even if no [\*178] court finds an anticompetitive effect, as uncertainty and litigation risk may discourage firms from undertaking legally permissible, environmentally positive industry collaborations. 199 Associations of firms have adopted numerous mechanisms of private environmental governance to address the management of common pool resources like fisheries, forests, and the global climate. 200 Examples include the Sustainable Apparel Coalition's Higg Index 201 and the American Chemistry Council's Responsible Care program. 202 But private industry standards raise special antitrust concerns. An agreement among competitors with respect to product or process specifications may exclude competitors who fail to meet such standards, raising the specter that such industry collaborations really constitute output limitations or efforts to limit competition. 203 While the U.S. Supreme Court has scrutinized private standard-setting associations carefully, 204 it has noted that if associations "promulgate … standards based on the merits of objective expert judgments and through procedures that prevent the standard-setting process from being biased by members with economic interests in stifling product competition … , those private standards can have significant procompetitive advantages." 205 In the absence of price fixing or a boycott, a rule of reason analysis generally applies to product standard setting by private associations. 206 The uncertain outcome [\*179] inherent in the application of antitrust law in this context could therefore serve as a potential disincentive to the adoption of private industry standards. 207 The challenge of course is that some form of explicit sanctions on noncompliant industry members may be necessary for private industry standards to be effective. In the context of private reputational mechanisms like the New York Diamond Dealers Club, 208 Barak Richman has pointed out that the Club's use of reputational sanctions and voluntary refusals to deal with actors who flout industry norms, while welfare enhancing, could nonetheless amount to violations of antitrust law. 209 This echoes the concern raised by Andrew King and Michael Lenox in their extensive empirical analysis of the Responsible Care program created by the Chemical Manufacturers Association (now the American Chemistry Council). 210 King and Lenox concluded that the absence of explicit sanctions on members who failed to meet the standards set by the program left the program vulnerable to "opportunism." 211 While they suggested that industry associations could look to third parties to enforce the rules, 212 an alternative way to facilitate the long-term environmental benefits of stronger sanctions would be to interpret antitrust law in conformity with the environmental priority principle presented below. 213 [\*180] In some instances, the conflict between the values of promoting competition and conserving environmental resources can be stark. 214 Jonathan Adler, for example, has identified this conflict in the context of fisheries - a tragedy of the commons situation in which some form of collective action is required to avoid overfishing. 215 He cites as an example Manaka v. Monterey Sardine Industries, Inc., in which a fisherman was excluded from a local fishing cooperative. 216 The fisherman sued the cooperative under the Sherman Act, and the court found an antitrust violation in his exclusion. 217 While the fishing cooperative's policies were no doubt exclusionary, Adler contends that they also promoted conservation by restricting catch. 218 The fishery collapsed by the 1950s, a collapse Adler hypothesizes might have been "inevitable" but that perhaps might not have occurred in the absence of the antitrust suit. 219 While a court performing a rule of reason analysis must consider whether a restraint on trade suppresses or destroys competition, Adler points out that courts may also "consider offsetting efficiencies from otherwise anticompetitive arrangements." 220 It is not clear, however, that the courts have consistently taken these factors into account. 221 Among other potential remedies, Adler argues that to resolve this tension between antitrust law, on the one hand, and private collective action to conserve environmental resources, on the other, courts should more actively consider the "ancillary conservation benefits of otherwise anticompetitive conduct." 222 Recognizing the long-term health of a fishery would be consistent with antitrust law's purpose of ensuring viable markets exist in the future, and consistent with the environmental priority principle introduced below. 223

#### Prohibit doesn’t require a ban.

Washington Court of Appeals 19 (KORSMO-judge. Opinion in State v. Kimball, No. 35441-5-III (Wash. Ct. App. Apr. 2, 2019). Google scholar caselaw. Date accessed 7/13/21).

His argument runs counter to the meaning of the word "prohibit." It means "1. To forbid by law. 2. To prevent, preclude, or severely hinder." BLACK'S LAW DICTIONARY 1405 (10th ed. 2014). As "severely hinder" suggests, a "prohibition" need not be an all or nothing proposition.

#### **Anticompetitive practices are strategies that have anticompetitive effects**

Wells 16, Executive Notes Editor, Washington University Global Studies Law Review, J.D., Washington University in St. Louis. (Todd Wells, “Exploring the Space for Antitrust Law in the Race for Space Exploration,” Washington University Global Studies Law Review, Vol. 15, 2016, LexisNexis)

Antitrust law attempts to fight anti-competitive actions. "Anticompetitive practices refer to a wide range of business practices in which a firm or group of firms may engage in order to restrict inter-firm competition to maintain or increase their relative market position and profits without necessarily providing goods and services at a lower cost or of higher quality." The Organization for Economic Cooperation and Development, Glossary of Statistical Terms, Anticompetitive Practices http://stats.oecd.org.proxy.library.georgetown.edu/glossary/detail.asp?ID=3145. Obviously, with such a broad definition of anticompetitive practices, many types of actions can fall under the regulation of anticompetitive law. This can cover forms of collusion, price fixing, bid rigging, bid suppression, complementary bidding, bid rotation, subcontracting, and market divisions. Price Fixing, Bid Rigging, and Market Allocation Schemes: What They Are and What to Look For, U.S. Dep't of Justice, http://www.justice.gov/atr/ public/guidelines/211578.htm. An even broader approach would put patents under antitrust law. "All of these developments, in Congress and the Courts, are in the spirit of harmonizing patent and antitrust law, generally in the direction of subsuming patent law under antitrust law. From the perspective of providing clarity and certainty for those who are the targets of patent and antitrust suits, harmonization has much appeal." Robin Feldman, Patent and Antitrust: Differing Shades of Meaning,13 Va. J.L. & Tech. 1, 7 (2008).

### 2AC---Regulation CP

#### Permutations:

#### 1---do both---concurrent enforcement by both antitrust and regulatory agencies solves the tradeoff link.

Varney et al. 20, \*Christine A Varney, Julie A North and Margaret Segall D’Amico are partners, and Molly M Jamison is an associate, at Cravath, Swaine & Moore LLP; (October 22nd, 2020, “Antitrust Remedies in Highly Regulated Industries”, https://globalcompetitionreview.com/guide/the-guide-merger-remedies/third-edition/article/antitrust-remedies-in-highly-regulated-industries#footnote-059)

Balancing remedies with regulation

As discussed above, there is a wide range of approaches for merger review between antitrust authorities and specialised regulatory agencies. Given the range of different approaches, it is difficult to make generalisations across either agencies or industries. What is clear is that there are certain strengths and weaknesses to a dual merger review and remedy approach. On the one hand, the dual review system has been criticised for its purported inefficiency and added costs of concurrent reviews by two agencies.[[84]](https://globalcompetitionreview.com/guide/the-guide-merger-remedies/third-edition/article/antitrust-remedies-in-highly-regulated-industries#footnote-007) On the other hand, others have touted the importance of consistent antitrust review[[85]](https://globalcompetitionreview.com/guide/the-guide-merger-remedies/third-edition/article/antitrust-remedies-in-highly-regulated-industries#footnote-006) and the avoidance of agency capture that a dual review system can accomplish. So how should antitrust authorities approach mergers in highly regulated industries? Should Congress do away with dual review and grant exclusive merger review jurisdiction to the DOJ or FTC? Or should the regulatory agencies be responsible for merger review and remedies in their areas of expertise? A review of past practices suggests that there is not a single right answer to these questions. However, in the current landscape there are considerations that could mediate some concerns about inefficiency and cost.

First, coordination between the relevant antitrust authority and regulatory agency can facilitate consistent outcomes and ensure that the appropriate remedies are ordered. The most common critique of having both antitrust and regulatory review of mergers is inefficiency. Having two federal agencies both expend time and resources reviewing mergers and imposing remedies is expensive for both taxpayers and the merging entities, and extends the time required to review transactions. Conflicting decisions – where one agency may approve a transaction while the other challenges it – also add to the risk of inefficiency. Better coordination and cooperation can mediate these concerns to an extent.[[86]](https://globalcompetitionreview.com/guide/the-guide-merger-remedies/third-edition/article/antitrust-remedies-in-highly-regulated-industries#footnote-005) As the American Antitrust Institute identified, increased cooperation should be a ‘high priority’, particularly in industries transitioning from regulated to a more competitive free market.[[87]](https://globalcompetitionreview.com/guide/the-guide-merger-remedies/third-edition/article/antitrust-remedies-in-highly-regulated-industries#footnote-004)

Second, antitrust authorities should continue to use regulatory agencies’ strengths to the fullest extent possible to construct appropriate remedies. Regulatory agencies have expert knowledge of the industry and often have access to far more information on the market than the DOJ or FTC would be able to gather on their own. The DOJ and FTC have to rely on receiving information from parties, competitors and customers in the market. Such information is often limited in scope and time period. By contrast, regulatory agencies, such as the FCC and Federal Reserve, have access to information on the market spanning decades and are better able to access necessary information that can save antitrust authorities time and cost. Moreover, regulatory agencies already have the ability to monitor and oversee industry actors. Reliance on the regulatory agencies’ ability to monitor could resolve the frequent concerns about imposing conduct remedies and the use of long-term consent decrees.[[88]](https://globalcompetitionreview.com/guide/the-guide-merger-remedies/third-edition/article/antitrust-remedies-in-highly-regulated-industries#footnote-003) The ability to impose effective conduct remedies may reduce the DOJ and FTC’s reliance on the one-time fix of a structural remedy and open the possibility of more tailored remedies.[[89]](https://globalcompetitionreview.com/guide/the-guide-merger-remedies/third-edition/article/antitrust-remedies-in-highly-regulated-industries#footnote-002)

#### 2---do the cp

Bradford and Chilton 18 (Anu Bradford, Henry L. Moses Professor of Law and International Organization, Columbia Law School. Adam S. Chilton, Assistant Professor of Law and Walter Mander Research Scholar @ the University of Chicago. “Competition Law Around the World from 1889 to 2010: The Competition Law Index” , Columbia Law School Scholarship Archive Faculty Scholarship, <https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=3519&context=faculty_scholarship> , 2018, date accessed 9/5/21)

The Scope Index is the closest to the CLI in that it also measures the law in the books, treating prohibitions as elements that increase the scope (or stringency) of the law and defenses as elements that reduce the scope (or stringency) of the law. Basic categories in the Scope Index and our CLI are also the same, even if somewhat differently labeled. For example, we refer to “anticompetitive agreements” where the Scope Index refers to “restrictive trade practices.”

#### Regulations fails:

#### 1---Deterrence---regulations don’t deter misconduct.

Dogan 08, \*Stacey L. Dogan, Professor of Law, Northeastern University; \*Mark Lemley, William H. Neukom Professor, Stanford Law School; of counsel, Keker & Van Nest LLP; (October 2008, “Antitrust Law and Regulatory Gaming”, https://scholarship.law.bu.edu/cgi/viewcontent.cgi?article=1873&context=faculty\_scholarship)

Our goal in this paper is not to persuade the reader that these particular examples of regulatory gaming violate the antitrust laws (though we think they do) or that other examples, such as regulatory price squeezes, do not violate the antitrust laws. Rather, our point is that whether or not particular acts of regulatory gaming harm competition is and should be an antitrust question, not merely one that involves interpreting statutes or agency regulations. Regulatory agencies and even Congress cannot prevent gaming ex ante. Experience with the pharmaceutical industry suggests that if Congress acts to squelch one form of gaming, companies will find other ways to game the system. And even if Congress or the regulating body can surgically fix a particular type of exclusionary behavior, such an ex post response (unlike the threat of antitrust treble damages) does nothing to compensate for past harm or to deter future gaming behavior. Some level of antitrust enforcement – with appropriate deference to firm decisions about product design and affirmative regulatory decisions that affect market conditions – provides a necessary check on behavior, such as product hopping, that has no purpose but to exclude competition.

#### 2---Extraterritorial---SSO’s are multinational private ventures---the 3GPP connects global standards bodies in the development of 5G.

Coopersmith 21, \*Jonathan Coopersmith is a Professor at Texas A&M University, where he teaches the history of technology; (March 31st, 2021, “[Let’s Thwart This Terrible Idea for Standards Setting”, https://spectrum.ieee.org/lets-thwart-this-terrible-idea-for-standards-setting)](Let’s%20Thwart%20This%20Terrible%20Idea%20for%20Standards%20Setting)

Technical standards hold the global economy together. They specify the characteristics or performance requirements of countless aspects of your world, and you’re completely oblivious to most of them. The code that converts your finger’s pressure on a keyboard key into a symbol on your computer screen? That’s the [ISO/IEC 646](https://www.iso.org/standard/4777.html) family of standards. And that television in your media room? It was transported across the sea in a shipping container, whose [corners interlocked](https://backspace00.wordpress.com/tag/iso-14961/) with those of adjacent containers in accordance with ISO standard 1496. You get the idea. Non-governmental technical committees, thousands of which are active at any time, create most of these standards. Their members are typically engineers and other experts representing the companies, universities, and other entities worldwide that are the main producers or purchasers of the object or the process being standardized. Most of the technical committees also have experts who explicitly represent the larger public interest. These are often engineers who volunteer their time and pay their own expenses. Standard-setting organizations (SSOs) and networks of SSOs organize these technical committees. The largest such network is the [International Organization for Standardization](https://www.iso.org/home.html) (ISO, founded in 1946) and its partner, the [International Electrotechnical Commission](https://www.iec.ch/homepage) (IEC, founded in London in 1906). Their members are national-level standard-setting bodies that exist in almost every country. Those bodies, in turn, have members from engineering societies (including the [IEEE](https://www.ieee.org/)), from trade associations in different industries, and from such other organizations as testing laboratories, companies, non-profits, and government agencies. In parallel with all of this conventional standards activity, at any given moment there are hundreds of corporate consortia creating anticipatory standards in new fields in which technologies are not yet stabilized. The 1906 London meeting establishing the IEC adopted a brilliant precept. It mandated that national delegations to the new international body should represent not governments but private or non-profit standards bodies. These delegations would consist of people representing manufacturers, purchasers, and independent engineers charged with representing the larger public interest. An exception was made for countries where the electrotechnical industry was so new that no private organization existed. During the Soviet era, the IEC and ISO allowed a second exception for countries with centrally planned economies. Over the past century, an ecology of technical committees, institutions, and their international community of engineers has grown and evolved stupendously but has nevertheless remained a largely private, non-governmental endeavor. The participating organizations typically cooperate with governments and include representatives of government organizations (often in their role as major purchasers), but they are in no way appendages of a national government. Of course, the evolution of the standards ecosystem reflects the spread and development of technologies. Outside the ISO/IEC network, global organizations produce standards for the internet (IETF, the [Internet Engineering Task Force](https://www.ietf.org/) -1986), the web (W3C, the [World Wide Web Consortium](https://www.w3.org/) – 1994), and mobile broadband standards ([3rd Generation Partnership Project](https://www.3gpp.org/), 3GPP – 1998). The 3GPP is an association of the Chinese, European, Indian, Japanese, Korean, and U.S. telecommunications-industry associations.

### 2AC---DPA Prohibit PIC

#### It’s legitimate---antitrust prohibitions can include exemptions.

Frederick 89 (Donald A. Frederick-Attorney-Adviser. “MANAGING COOPERATIVE ANTITRUST RISK” , United States Department of Agriculture, Agricultural Cooperative Service, Cooperative Information Report 38, <https://www.rd.usda.gov/files/cir38.pdf>, 1989, date accessed 9/5/21)

This exposes farmers to considerable antitrust risk unless their joint marketing activity is conducted in a manner exempt from antitrust prohibitions. As one judge phrased it:

“It is clear that if individual agriculturalists, through the medium of a cooperative, jointly fixed prices, reasonably or otherwise, without statutory authorization, they would be subject to prosecution.” (emphasis added) 14/

#### No extinction from disease.

Barratt 17, PhD in Pure Mathematics, Lecturer in Mathematics at Oxford, Research Associate at the Future of Humanity Institute. (Owen Cotton-Barratt et al, “Existential Risk: Diplomacy and Governance”, pg. 9, <https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf>)

1.1.3 Engineered pandemics

For most of human history, natural pandemics have posed the greatest risk of mass global fatalities.37 However, there are some reasons to believe that natural pandemics are very unlikely to cause human extinction. Analysis of the International Union for Conservation of Nature (IUCN) red list database has shown that of the 833 recorded plant and animal species extinctions known to have occurred since 1500, less than 4% (31 species) were ascribed to infectious disease.38 None of the mammals and amphibians on this list were globally dispersed, and other factors aside from infectious disease also contributed to their extinction. It therefore seems that our own species, which is very numerous, globally dispersed, and capable of a rational response to problems, is very unlikely to be killed off by a natural pandemic.

One underlying explanation for this is that highly lethal pathogens can kill their hosts before they have a chance to spread, so there is a selective pressure for pathogens not to be highly lethal. Therefore, pathogens are likely to co-evolve with their hosts rather than kill all possible hosts.39

### 2AC---States CP [Emory]

#### States fail:

#### 1---The Ninth Circuit imposed limitations on antitrust law to preserve its balance with patent law.

Martino et al. 20, \*[Matthew M. Martino](https://www.skadden.com/professionals/m/martino-matthew-m) [Tara L. Reinhart](https://www.skadden.com/professionals/r/reinhart-tara-l) [Steven C. Sunshine](https://www.skadden.com/professionals/s/sunshine-steven-c) [Julia K. York](https://www.skadden.com/professionals/y/york-julia-k), works with clients at Skadden, Arps, Slate, Meagher & Flom LLP; (August 14th, 2020, “Ninth Circuit Strikes Down Sweeping Injunction Against Qualcomm and Reins In Expansive Interpretation of Sherman Act”, https://www.skadden.com/insights/publications/2020/08/ninth-circuit-strikes-down-sweeping-injunction)

In its highly anticipated decision, the Ninth Circuit panel unanimously rejected the lower court’s reasoning, vacating the judgment and reversing the worldwide injunction against Qualcomm. The panel concluded that the district court had erroneously imposed the antitrust duty to deal on Qualcomm, had impermissibly looked outside the relevant antitrust market in order to infer an anticompetitive act and had relied on outdated evidence of agreements that were terminated before the suit was filed to justify a broad, forward-looking global injunction. The Ninth Circuit further rejected the argument that a SEP holder’s violation of FRAND commitments could independently create antitrust liability, instead pointing to patent and contract law as sources for potential remedies. The decision reflects a considered effort to rei

n in the district court’s expansive interpretation of general antitrust principles and their specific application to SEP holders, as well as recognition that the antitrust laws aim to preserve companies’ incentives to innovate and compete. Recognizing that while “[a]nticompetitive behavior is illegal under federal antitrust law[,]” the panel was adamant that “[h]ypercompetitive behavior is not.”[7](https://www.skadden.com/insights/publications/2020/08/ninth-circuit-strikes-down-sweeping-injunction" \l "ftn7)

Rejection of District Court’s Expansive Interpretation of Antitrust Laws

The Ninth Circuit decision contains several notable conclusions regarding the scope of Section 2 of the Sherman Act and what constitutes cognizable antitrust harm.

#### 2---Any confliction with patent law will be preempted.

Richard A. Samp 14, Chief Counsel of the Washington Legal Foundation, a nonprofit public interest law firm located in Washington, D.C., graduate of Harvard College and the University of Michigan Law School, 2014, “The Role of State Antitrust Law in the Aftermath of Actavis,” https://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1062&context=mjlst

On the other hand, state antitrust laws—like all state laws—are subject to the restrictions imposed by the Supremacy Clause of the U.S. Constitution,15 and are impliedly preempted to the extent that they conflict with federal law.16 Such a conflict arises when “compliance with both federal and state regulations is a physical impossibility,”17 or when a state law “stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.”18 On a number of occasions, the Supreme Court has concluded that state antitrust law is preempted because it conflicts with a federal statute other than federal antitrus

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t law.19 The Court has been particularly quick to find preemption when state antitrust law has an impact on labor law, an area in which federal law is pervasive.20 Indeed, on at least one occasion, the Court found that a claim arising under state antitrust law was preempted by federal labor law even though the Court concluded that the conduct that gave rise to the state claim could proceed as a claim under federal antitrust law.21 The Court explained that “Congress and this Court have carefully tailored the antitrust statutes to avoid conflict with the labor policy favoring lawful employee organization, not only by delineating exemptions from antitrust coverage but also by adjusting the scope of the antitrust remedies themselves.”22 The Court said that state antitrust laws “generally have not been subjected to this process of accommodation” and thus that “[t]he use of state antitrust law . . . [must] be pre-empted because it creates a substantial risk of conflict with policies central to federal labor law.”23 Accordingly, in any challenge to a “reverse payment” patent settlement arising under state antitrust law, a court will likely be required to address whether the claim conflicts with the “balance” between federal antitrust law and federal patent law established by the Supreme Court’s Actavis decision. If such state-law antitrust claims stand as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress in adopting the patent laws, it will be preempted by federal law.

### 2AC---Capitalism K

#### 2---Tech innovation dematerializes growth.

McAfee 19, \*Andrew Paul McAfee, a principal research scientist at MIT, is cofounder and codirector of the MIT Initiative on the Digital Economy at the MIT Sloan School of Management; (2019, “More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources and What Happens Next”, https://b-ok.cc/book/5327561/8acdbe)

There is no shortage of examples of dematerialization. I chose the ones in this chapter because they illustrate a set of fundamental principles at the intersection of business, economics, innovation, and our impact on our planet. They are:

We do want more all the time, but not more resources. Alfred Marshall was right, but William Jevons was wrong. Our wants and desires keep growing, evidently without end, and therefore so do our economies. But our use of the earth’s resources does not. We do want more beverage options, but we don’t want to keep using more aluminum in drink cans. We want to communicate and compute and listen to music, but we don’t want an arsenal of gadgets; we’re happy with a single smartphone. As our population increases, we want more food, but we don’t have any desire to consume more fertilizer or use more land for crops.

Jevons was correct at the time he wrote that total British demand for coal was increasing even though steam engines were becoming much more efficient. He was right, in other words, that the price elasticity of demand for coal-supplied power was greater than one in the 1860s. But he was wrong to conclude that this would be permanent. Elasticities of demand can change over time for several reasons, the most fundamental of which is technological change. Coal provides a clear example of this. When fracking made natural gas much cheaper, total demand for coal in the United States went down even though its price decreased.

With the help of innovation and new technologies, economic growth in America and other rich countries—growth in all of the wants and needs that we spend money on—has become decoupled from resource consumption. This is a recent development and a profound one.

Materials cost money that companies locked in competition would rather not spend. The root of Jevons’s mistake is simple and boring: resources cost money. He realized this, of course. What he didn’t sufficiently realize was how strong the incentive is for a company in a contested market to reduce its spending on resources (or anything else) and so eke out a bit more profit. After all, a penny saved is a penny earned.

Monopolists can just pass costs on to their customers, but companies with a lot of competitors can’t. So American farmers who battle with each other (and increasingly with tough rivals in other countries) are eager to cut their spending on land, water, and fertilizer. Beer and soda companies want to minimize their aluminum purchases. Producers of magnets and high-tech gear run away from REE as soon as prices start to spike. In the United States, the 1980 Staggers Act removed government subsidies for freight-hauling railroads, forcing them into competition and cost cutting and making them all the more eager to not have expensive railcars sit idle. Again and again, we see that competition spurs dematerialization.

There are multiple paths to dematerialization. As profit-hungry companies seek to use fewer resources, they can go down four main paths. First, they can simply find ways to use less of a given material. This is what happened as beverage companies and the companies that supply them with cans teamed up to use less aluminum. It’s also the story with American farmers, who keep getting bigger harvests while using less land, water, and fertilizer. Magnet makers found ways to use fewer rare earth metals when it looked as if China might cut off their supply.

Second, it often becomes possible to substitute one resource for another. Total US coal consumption started to decrease after 2007 because fracking made natural gas more attractive to electricity generators. If nuclear power becomes more popular in the United States (a topic we’ll take up in chapter 15), we could use both less coal and less gas and generate our electricity from a small amount of material indeed. A kilogram of uranium-235 fuel contains approximately 2–3 million times as much energy as the same mass of coal or oil. According to one estimate, the total amount of energy that humans consume each year could be supplied by just seven thousand tons of uranium fuel.

Third, companies can use fewer molecules overall by making better use of the materials they already own. Improving CNW’s railcar utilization from 5 percent to 10 percent would mean that the company could cut its stock of these thirty-ton behemoths in half. Companies that own expensive physical assets tend to be fanatics about getting as much use as possible out of them, for clear and compelling financial reasons. For example, the world’s commercial airlines have improved their load factors—essentially the percentage of seats occupied on flights—from 56 percent in 1971 to more than 81 percent in 2018.

Finally, some materials get replaced by nothing at all. When a telephone, camcorder, and tape recorder are separate devices, three total microphones are needed. When they all collapse into a smartphone, only one microphone is necessary. That smartphone also uses no audiotapes, videotapes, compact discs, or camera film. The iPhone and its descendants are among the world champions of dematerialization. They use vastly less metal, plastic, glass, and silicon than did the devices they have replaced and don’t need media such as paper, discs, tape, or film.

If we use more renewable energy, we’ll be replacing coal, gas, oil, and uranium with photons from the sun (solar power) and the movement of air (wind power) and water (hydroelectric power) on the earth. All three of these types of power are also among dematerialization’s champions, since they use up essentially no resources once they’re up and running.

I call these four paths to dematerialization slim, swap, optimize, and evaporate. They’re not mutually exclusive. Companies can and do pursue all four at the same time, and all four are going on all the time in ways both obvious and subtle.

Innovation is hard to foresee. Neither the fracking revolution nor the world-changing impact of the iPhone’s introduction were well understood in advance. Both continued to be underestimated even after they occurred. The iPhone was introduced in June of 2007, with no shortage of fanfare from Apple and Steve Jobs. Yet several months later the cover of Forbes was still asking if anyone could catch Nokia.

Innovation is not steady and predictable like the orbit of the Moon or the accumulation of interest on a certificate of deposit. It’s instead inherently jumpy, uneven, and random. It’s also combinatorial, as Erik Brynjolfsson and I discussed in our book The Second Machine Age. Most new technologies and other innovations, we argued, are combinations or recombinations of preexisting elements.

The iPhone was “just” a cellular telephone plus a bunch of sensors plus a touch screen plus an operating system and population of programs, or apps. All these elements had been around for a while before 2007. It took the vision of Steve Jobs to see what they could become when combined. Fracking was the combination of multiple abilities: to “see” where hydrocarbons were to be found in rock formations deep underground; to pump down pressurized liquid to fracture the rock; to pump up the oil and gas once they were released by the fracturing; and so on. Again, none of these was new. Their effective combination was what changed the world’s energy situation.

Erik and I described the set of innovations and technologies available at any time as building blocks that ingenious people could combine and recombine into useful new configurations. These new configurations then serve as more blocks that later innovators can use. Combinatorial innovation is exciting because it’s unpredictable. It’s not easy to foresee when or where powerful new combinations are going to appear, or who’s going to come up with them. But as the number of both building blocks and innovators increases, we should have confidence that more breakthroughs such as fracking and smartphones are ahead. Innovation is highly decentralized and largely uncoordinated, occurring as the result of interactions among complex and interlocking social, technological, and economic systems. So it’s going to keep surprising us.

As the Second Machine Age progresses, dematerialization accelerates. Erik and I coined the phrase Second Machine Age to draw a contrast with the Industrial Era, which as we’ve seen transformed the planet by allowing us to overcome the limitations of muscle power. Our current time of great progress with all things related to computing is allowing us to overcome the limitations of our mental power and is transformative in a different way: it’s allowing us to reverse the Industrial Era’s bad habit of taking more and more from the earth every year.

#### Transition turns environment quickly.

Smith 19, assistant professor of finance at Stony Brook University. (Noah, April 5th, “Dumping Capitalism Won’t Save the Planet”, <https://www.bloomberg.com/opinion/articles/2019-04-05/capitalism-is-more-likely-to-limit-climate-change-than-socialism>, accessed 7/15/19, MSCOTT)

The climate threat is certainly dire, and carbon taxes are unlikely to be enough to solve the problem. But eco-socialism is probably not going to be an effective method of addressing that threat. Dismantling an entire economic system is never easy, and probably would touch off armed conflict and major political upheaval. In the scramble to win those battles, even the socialists would almost certainly abandon their limitation on fossil-fuel use — either to support military efforts, or to keep the population from turning against them. The precedent here is the Soviet Union, whose multidecade effort to reshape its economy by force amid confrontation with the West led to profound environmental degradation. The world's climate does not have several decades to spare.

### 2AC---FTC DA [Emory]

#### 1---FTC is excessively devoting resources to enforcing patent holdup.

Morris 9/17/21, \*Angela Morris, Deputy editor at IAM Media; (September 17th, 2021, “The FTC creates a potential new US headache for SEP owners”, https://www.iam-media.com/frandseps/the-ftc-creates-potential-new-us-headache-sep-owners)

SEP owners that may already be wary of potential Biden Administration regulatory changes now have a new threat to keep them up at night. Over the summer the Federal Trade Commission [announced an expanded view](https://www.jdsupra.com/legalnews/the-ftc-expands-section-5-enforcement-7020931/) of its standalone enforcement authority to curb anti-competitive misconduct; and [now the agency has made it clear](https://www.ftc.gov/news-events/press-releases/2021/09/ftc-streamlines-investigations-in-eight-enforcement-areas) that priority targets include “abuse of intellectual property” and “monopolistic practices”. The agency’s description of the “anticompetitive and deceptive conduct” it seeks to curtail in the technology sector most likely will encompass alleged misconduct by standards essential patent (SEP) owners and their commitments to licensing on FRAND terms, according to IP and antitrust attorney Tim Syrett. “The FTC has previously conducted two investigations where it found that SEP holders seeking injunctions against licensees was anti-competitive and presented a threat to innovation,” Syrett, who is a partner in Wilmer Hale in Washington DC, explains via email. “That may be an area where the FTC wants to continue to devote resources and is certainly an area where there can be harm to competition because of the hold-up power of SEPs.” He adds that investment-backed patent assertion entities and patent aggregation organisations may also have reason to fear ITC investigations. “Investment-backed patent assertion entities can obscure information about who actually owns or has an interest in patents that can harm both licensing and litigation,” says Syrett. “Further, we have seen a concerning rise of patent assertions where the incentives of investors to obtain outsized returns from patents trump any reasonable valuation of the patents’ worth, which can harm competition in the licensing of patents.” IP owners in the pharmaceutical, technology and gasoline refining industries should also take note of the development, since the commission indicated that it would investigate potential abuses of IP rights that create anti-competitive and deceptive conduct in those spaces. Big Tech companies and other large businesses would be advised to pay attention as well, given that another stated FTC aim is to target alleged abuses of their market power that stop entrepreneurs from competing. The two resolutions were among a group of eight that a divided commission passed this month on a 3-2 vote, as the agency seeks to handle increased workload from high merger filings. Both resolutions, effective for 10 years, direct the agency to use its compulsory processes to obtain documents and testimony through either demands or subpoenas to investigate allegations that would be a violation of Section 5 of the FTC Act.

**2---The FTC lacks resources to enforce privacy. [KANSAS]**

John O. **McGinnis**\* **and** Linda **Sun**\*\* **20** – \*George C. Dix Professor, Northwestern University, and Associate-Designate, Wilmer Pickering Hale & Dorr LLP. “Unifying Antitrust Enforcement for the Digital Age.” Northwestern Public Law Research Paper No. 20-20. https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3669087

The FTC needs more **resources** to adequately address the nation’s growing privacy concerns. Currently, the FTC oversees both consumer protection—encompassing privacy—and antitrust,249 making the FTC the chief federal agency on privacy policy and enforcement250 and the nation’s de-facto privacy agency.251 The agency has long-standing experience in enforcing privacy statutes252 and also has special privacy assets, such as an internet lab capable of high-quality tech forensics to track invasions of privacy.253 The FTC, however, has failed to keep pace with the massive growth of privacy concerns—a phenomenon also driven by modern technology. Very few Americans feel conﬁdent in the privacy of their information in the digital age.254 According to a 2019 study, over 80% of Americans feel that they have little to no control over the data collected on them by companies and the government.255 To adequately address privacy concerns, the FTC needs more resources.256 The agency has been explicit that it needs more manpower to police tech companies. In requesting increased funding from Congress, FTC Director Joseph Simons said the money would allow the agency to hire additional staff and bring more privacy cases.257 A former director of the FTC’s Bureau of Consumer Protection, which houses the privacy unit, has called the FTC “woefully understaffed.”258 As of the spring of 2019, the FTC had only forty employees dedicated to privacy and data security, compared to 500 and 110 employees at comparable agencies in the UK. and Ireland, respectively.259 Without more lawyers, investigators, and technologists, the FTC will be forced to conduct privacy investigations less thoroughly, and in some cases, **forgo them altogether**.260 Currently, the FT C’s resources are **spread thin across multiple missions**, to the **detriment of its privacy efforts**. Removing the agency’s antitrust responsibilities would reallocate resources from the antitrust department to its privacy unit and other areas of consumer protection. Further, it would free up the scarce time of the commissioners to oversee this essential effort.261

#### 3---Link turn---the plan shores private enforcement to remedy patent holdup.

Speegle 12, \*Adam Speegle, J.D., (May 2012, “Antitrust Rulemaking as a Solution to Abuse on the Standard-Setting Process Setting Process”, <https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1128&context=mlr>)

This too is not fatal to the approach. The proposed rule uses a light touch in that it only buttresses rules established by SSOs. Because the rule would support actions by the private sector to manage their own activities rather than introducing additional agency oversight, Congress would be unlikely to react the way it did when the FTC's activism in the consumer protection arena evoked fears of excessive government intervention. One final concern with the approach is that it will demand more of the FTC in a regulatory capacity than the FTC is capable of handling. For example, under any rule where the FTC would be called upon to enforce RAND terms, the FTC might fall into the role of license-rate regulator, determining which licensing fees are reasonable and which are unreasonable. But the FTC is a relatively small institution with limited resources.1 62 Some are concerned that under such a scenario the Commission would have to bring on new staff with expertise in the technology sector to monitor the reasonableness of licensing terms arising from SSO commitments.163 This concern is unlikely to be serious under the proposed formulation. As to the problem of determining "reasonableness," the FTC has already developed expertise in this area and, in fact, recently authored a report putting forth workable solutions to the problem of calculating "reasonableness" in the context of RAND commitments. 64 Further, the FTC would not need to establish itself as a monitoring body and would not incur the related costs of increases in staff and resources. Rather, enforcement of the proposed rule would operate similarly to the FTC's enforcement of its consumer protection rules. Under that regime, companies and individuals report fraudulent activity that violates one of the FTC's rules, which the Commission then investigates and, at its discretion, prosecutes. 16 Because the burden would be on the private sector to report in such a regime, the FTC would not need to monitor SSO activity. And as with consumer protection enforcement, a small number of decisive enforcement actions against abusive firms should act as a deterrent sufficient to decrease the FTC's litigation workload. 166 Thus, despite some legitimate concerns with the approach of enforcement by rule, those concerns are not fatal to the strategy. Moreover, the next Section demonstrates that there are also general benefits to enforcement by rule that weigh in favor of the approach.

#### 5---Private enforcement replaces limited FTC resources.

Lacour 08, \*Justin Lacour, J.D. Candidate, June 2009, St. John's University School of Law; M.F.A., 2004,  
University of Massachusetts; B.A., 2001, University of Houston; (Summer 2008, “Unclear Repugnancy: Antitrust Immunity in Securities Markets After Credit Suisse Securities (USA) LLC v. Billing After Credit Suisse Securities (USA) LLC v. Billing”, <https://scholarship.law.stjohns.edu/cgi/viewcontent.cgi?article=1084&context=lawreview>)

This loss is of no small significance. The Supreme Court has recognized that Congress created treble damages remedies for antitrust violations to encourage private antitrust suits, since these private suits provide significant supplement to the limited resources available to government agencies for enforcing the antitrust laws. 248 The availability of treble damages encourages private antitrust litigants to act as "'private attorneys general'" by bringing actions against anticompetitive behavior that might otherwise escape the antitrust enforcement efforts

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of government agencies. 249 The supervision provided by a regulatory agency cannot control all of the activities of a regulated firm, and budgetary constraints may limit its effectiveness. 250 It is unlikely that the "overworked and understaffed" SEC would be able to prevent all antitrust violations within the securities markets. 25 1 In much recent securities law jurisprudence, courts have often chosen to defer to the SEC when possible, thus subjecting cases to "minimal judicial review." 252 Such deference to an agency, however, is only appropriate

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when the agency has superior resources or experience-otherwise, a court is the better vehicle for adjudication. 253 Furthermore, while a regulatory agency may be able to provide the equivalent of injunctive relief to aggrieved parties, the agency cannot provide private damages, and certainly not treble damages. 254 Thus, the "flexible arsenal of antitrust remedies"-injunction, private damages, and criminal sanctions-would be lost, replaced by cease and desist orders, rules, and fines, which do not benefit the aggrieved party. 255

#### 6---The prospect of antitrust intervention deters violations.

Cheng 13, \*Thomas Cheng, B.A. (Yale), J.D. (Harvard), B.C.L. (Oxon); Attorney & Counsellor, New York State; Associate Professor, Faculty of Law, The University of Hong Kong; (2013, “Putting Innovation Incentives Back in the Patent-Antitrust Interface”, <https://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=1195&context=njtip>), ability edited

Imposing a duty to license on opportunistic patentees may solve this problem. If these patentees know that the courts may step in and mandate licensing at a reasonable royalty rate,214 they will be induced to enter into negotiations with follow-on innovators in good faith.215 The threat of compulsory licensing may become a default background legal rule against which negotiations between initial and follow-on innovators take place. The instances in which the courts need to intervene could be few.

#### 7---No normal-means link.

U.S. DOJ N.D., (Department of Justice, “Antitrust Enforcement and the Consumer”, https://www.justice.gov/atr/file/800691/download)

3. How Are Antitrust Laws Enforced?

There are three main ways in which the Federal antitrust laws are enforced:

• Criminal and civil enforcement actions brought by the Antitrust Division of the Department of Justice.

• Civil enforcement actions brought by the Federal Trade Commission.

• Lawsuits brought by private parties asserting damage claims.

The Department of Justice uses a number of tools in investigating and prosecuting criminal antitrust violations. Department of Justice attorneys often work with agents of the Federal Bureau of Investigation (FBI) or other investigative agencies to obtain evidence. In some cases, the Department may use court authorized searches of businesses and secret recordings by informants of telephone calls and meetings. The Department may grant immunity from prosecution to individuals or corporations who provide timely information that is needed to prosecute others for antitrust violations, such as bid rigging or price fixing.

A provision in the Clayton Act also permits private parties injured by an antitrust violation to sue in Federal court for three times their actual damages plus court costs and attorneys’ fees. State attorneys general may bring civil suits under the Clayton Act on behalf of injured consumers in their States, and groups of consumers often bring suits on their own. Such civil suits following criminal enforcement actions can be a very effective additional deterrent to criminal activity.

### 2AC---Japan DA [Emory]

#### 2---AND NEC deal overwhelms

<<Japan only has a small share, so there’s only a risk the plan opens the market up for them>>

<<protectionism’s high now, so motive to cooperative is strong>>

<<Japan doesn’t care because they have their own 5G>>

Nikkei Staff 20, (Nikkei Staff, 6-25-2020, "NTT to take 5% stake in NEC for Japanese 5G alliance," Nikkei Asia, https://asia.nikkei.com/Spotlight/5G-networks/NTT-to-take-5-stake-in-NEC-for-Japanese-5G-alliance)

TOKYO -- Japanese telecom conglomerate Nippon Telegraph & Telephone will take a 5% stake in electronics company NEC as part of a tie-up to develop fifth-generation wireless technology, Nikkei learned Wednesday. The deal, estimated at 60 billion yen ($562 million), will make NTT the third-largest shareholder in NEC. Shares in NEC rose 4.5% at one stage in morning trading in Tokyo on Thursday. The partnership aims to ensure Japan has its own homegrown 5G technology in light of the clash between the U.S. and China -- both leaders in this crucial field -- and with protectionism on the rise in the world more broadly. The two companies are expected to work on equipment for 5G core networks, which manage communication lines. NEC will also collaborate on next-generation 6G networks and NTT's proposed Innovative Optical and Wireless Network, or IOWN, high-speed broadband infrastructure. NTT aims to have network infrastructure in place by 2030 that can carry 100 times more data than at present. Globally, 5G networks are expected to become the foundation for innovations such as smart factories, self-driving vehicles and telemedicine. The market for core systems and base stations has largely been a three-way race among Huawei Technologies, Ericsson and Nokia, which together control 80% of the base station market. Japan, which launched commercial 5G service in March, relies on foreign players for the basic technology underlying its networks. Huawei has been active in the European market since the 4G era and has built strong relationships with the telecom companies. Out of the 91 5G commercial contracts Huawei had with global telecom companies as of February, roughly 50 were in Europe. Huawei's products are estimated to be 20% to 30% cheaper than competing products from Ericsson and Nokia.

The NTT-NEC tie-up aims to change that.

NEC also hopes to use the deal to accelerate its expansion overseas. The company boasts a high market share in Japan, with its equipment used in the 5G networks of carriers such as NTT Docomo and Rakuten, but it lags far behind the big three elsewhere. NEC recently announced an agreement with Rakuten, a newcomer to Japan's wireless scene, to jointly develop core network technology with an eye toward marketing 5G systems abroad. Though Huawei is a major player in the market for 5G gear such as base stations, distrust toward China has been growing in the U.S. and Europe, due partly to the coronavirus pandemic. Calls are mounting in London to block the company from the U.K.'s 5G networks, and the government has reportedly entered talks with NEC about providing equipment. NEC said in a statement on Thursday in response to Nikkei's report: "We are in talk with NTT about capital and business alliance, and plan to bring up the discussion in today's board of directors meeting." Masahiko Ishino, senior analyst at Tokai Tokyo Research Institute, said the market had "positive views on [businesses that look to] the new future." NTT's IOWN would lead to quick communication that consumed less energy than other networks, Ishino said.

#### 3---The plan can only benefit Japan

Alan Weissberger 3-15-2021, "Huawei or Samsung: Leader in 5G declared Standard Essential Patents (SEPs)?," Technology Blog, https://techblog.comsoc.org/2021/03/15/huawei-or-samsung-leader-in-5g-declared-standard-essential-patents-seps/

Chart, bar chart

Description automatically generated

#### 4---Internal link says 5G leadership is key— only the plan solves [KANSAS]

Patrick M. 1NC Cronin 4/15/21. Asia-Pacific Security Chair @ Hudson. "U.S.-Japan Alliance in Full Bloom". https://www.hudson.org/research/16835-u-s-japan-alliance-in-full-bloom

Even if seldom mentioned by name, China is the unmistakable fulcrum around which alliance policy on all issues turns. Competition with China is primarily economic and technological, but these issues often spill over into security and human rights.

Economically, a rebounding U.S. economy and Japan will collaborate to strengthen the resilience of vital supply chains. Semiconductor chips are essential for all electronics, and Suga and Biden are determined to ensure their availability. Equally, the U.S. and Japan have an opportunity to leverage their two-year-old digital trade agreement to help negotiate a multilateral accord and establish high international standards for finance and commerce in the cyber age.

As a dominant player in semiconductor manufacturing and a member of APEC and the World Trade Organization, Taiwanshould play a part in both supply chain security and digital trading standards. Indeed, bolstering Taiwan’s place in the global economy of other democracies is a far better means of thwarting Beijing’s intimidation strategy against Taiwan than just sailing near the Taiwan Strait with an aircraft carrier.

The commanding heights of the 21st century economy center on technology. So, while the United States and Japan retain a strong interest in economic cooperation with China, those relations become considerably sharper over leading-edge technologies such as 5G telecommunications, artificial intelligence and quantum computing. Biden and Suga should showcase their commitment, not against China, but in favor of technological innovation and secure connectivity.

An excellent way for the alliance to demonstrate a commitment to practical technology cooperation would be to work together to expand investment in 5G Open Radio Access Networks (ORAN). Given the concerns surrounding allowing China to dominate fifth-generation telecommunications infrastructure, the United States and Japan need to scale up a cloud-based software alternative. The good news is that Japan’s Rakuten is already a leader in demonstrating ORAN’s feasibility, and there is bipartisan support in Congress for increasing U.S. investment in modular 5G.

The alliance also requires deeper cooperation on cybersecurity. Of five issues highlighted at the recent 2 + 2 meeting between U.S. and Japan defense and foreign ministers, cyberspace was the most traditional national security issue. Japan is inching closer toward becoming a de facto sixth member of the Five Eyes intelligence-sharing arrangement, and the Biden administration should encourage that trajectory. A stronger digital alliance can, in turn, advance cyber resilience throughout the Indo-Pacific region.

#### 5---Multiple thumpers to economic cooperation.

Goto 21, Deputy Director for Geoeconomics and Senior Associate for Northeast Asia, Asia Program (Shihoko, April 20th, “When Trade No Longer Hampers U.S.-Japan Ties,” *Wilson Center*, <https://www.wilsoncenter.org/blog-post/when-trade-no-longer-hampers-us-japan-ties>, Accessed 09-19-2021)

That isn’t to say trade relations between Japan and the United States are now smooth sailing. The U.S. trade deficit with the world’s third-largest economy runs to nearly $68 billion, and although the two sides signed a merchandise trade deal in 2019, the Japanese auto industry remains a point of contention for the United States. Indeed, Japan’s auto exports account for about $54 billion, or close to 80 percent, of the overall trade deficit. Meanwhile, the Biden administration is not expected to lift tariffs on steel and aluminum anytime soon, nor is it expected to make efforts to join the CPTPP in the near future, much to the frustration of Tokyo.

#### 6---BUT US-Japan economic cooperation in the Indo-Pacific is inevitable for security reasons — link can’t change that.

Goto 21, Deputy Director for Geoeconomics and Senior Associate for Northeast Asia, Asia Program (Shihoko, April 20th, “When Trade No Longer Hampers U.S.-Japan Ties,” *Wilson Center*, <https://www.wilsoncenter.org/blog-post/when-trade-no-longer-hampers-us-japan-ties>, Accessed 09-19-2021)

Yet instead of trying to negotiate a breakthrough on the trade front, the Biden-Suga meeting focused on bilateral economic relations based on their shared threat of dealing with China’s ambitions to challenge the regional status quo. Until recent months, Tokyo had aspired to maintain solid relations with China whilst furthering ties with the United States, most notably by endeavoring to decouple economic interests with Beijing from the security threat that China has increasingly been posing upon Tokyo. After the joint 2+2 joint security meeting in Tokyo in March, however, the two countries declared that China’s behavior is “inconsistent with the existing international order, presents political, economic, military, and technological challenges to the Alliance and to the international community.”

Since then, Tokyo has moved even closer to Washington publicly in pushing back against China, as the bilateral statement noted “the importance of peace and stability across the Taiwan Strait,” marking the first time since 1969 that Japan and the United States publicly referred to Taiwan which remains a core interest for China. In short, Japan’s hedging against the United States and maintaining a balancing act between China and the United States is now over. Not only is its security interests even more closely aligned with that of the United States, Japan’s economic interests are now more intertwined with that of the United States than ever.

Rather than focusing on the trade balance, Tokyo and Washington’s economic relations will concentrate more on economic resilience and maintaining free and fair economic rules of engagement in the Indo-Pacific. At the same time, the two countries are expected to work more closely together on competing against China in emerging technologies, from 5G to AI and information sciences.

# 1AR

### 1AR---AT: No Patent Holdup

#### FRAND is fragile and will collapse under the weight of the Ninth Circuit’s ruling.

Hovenkamp 20, \*Herbert J. Hovenkamp is James G. Dinan University Professor at the University of Pennsylvania Law School and the Wharton School of the University of Pennsylvania; (2020, “FRAND and Antitrust”, <https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=3095&context=faculty_scholarship>)

CONCLUSION

Oversight of FRAND obligations is one area where it is critical for the courts to keep an eye on longer run concerns for innovation. FRAND has evolved into a highly successful but nevertheless vulnerable mechanism for facilitating joint innovation and product development. Indeed, for networked technologies such as cellular phones it is difficult to see how coordinated development by numerous competitive firms could be achieved without the significant coordination and technology sharing that FRAND enables. That system will be undermined, however, if one firm is able to renege on its voluntarily entered obligations, because others will then do the same. The regime of collaborative innovation that FRAND contemplates would very likely fall apart, and at great harm to competition and economic welfare. The Ninth Circuit’s 2020 Qualcomm decision indicates that this fear is more than fanciful. Unless corrected, Congress may have to intervene in order to protect a system that has been an important driver of innovation and economic growth.

## K---Capitalism

### 1AR---AT: Cap

#### Western IR explains China’s behavior---suggesting otherwise ignores decades of Chinese history, which is equally as orientalizing.

Chong 20, PhD, associate professor of political science at the National University of Singapore and a Harvard-Yenching Institute Visiting Scholar for 2019-2020. (Ja Ian, 11/9/20, "Roundtable 12-2 on *Thucydides’s Trap? Historical Interpretation, Logic of Inquiry, and the Future of Sino-American Relations*", *H-Diplo | ISSF*, https://issforum.org/roundtables/12-2-thucydides)

Chan’s finding that misplaced worries about the PRC and its intentions stem in part from misunderstandings of perspectives on international politics that are informed by theories from “the West” rather than China deserves elaboration and debate. So-called “Western” international relations theories often have parallels in the Chinese tradition, broadly construed. Work analyzing Spring and Autumn, Warring States, Song, and Ming documents indicate that the strategic thought that is prominent in these periods closely resembles statecraft familiar to those in the contemporary “West.”[16] Texts as varied as the Han-era annals Records of the Grand Historian and the Ming-era fiction Romance of the Three Kingdoms will suggest the same.[17] Parallels between “Western” and “Chinese” approaches to politics are unsurprising. Several millennia of collective human experience, thought, and debate over statecraft, conflict, as well as governance are almost certainly bound to produce similarities in responses.

Dividing the world into “Western” and “Chinese” views of the world ignores the fact the PRC has disagreements with ostensibly “non-Western” polities such as India, Indonesia, Japan, Korea, and Vietnam, each with their own distinct philosophical traditions.[18] Also, despite sharing cultural origins, people in the PRC and on Taiwan disagree fundamentally issues of political valAues and rights, not the relatively simple issues of who should rule China or what a Chinese state should entail geographically.[19] Moreover, the PRC’s ruling Chinese Communist Party draws at least some of its inspiration from European thinkers in the form of Karl Marx and Vladimir Lenin. Successive dynasties from historical China also proved themselves very adept at conquest—that is how regimes and empires get built.[20] Attributing tensions between the United States and PRC to culture suggests an overly monolithic view of the rich and varied philosophical and political traditions both major powers draw from, giving them less credit than is due.[21]

To claim that contemporary international scholarship and U.S. policy are unable to adequately understand China because they are “Western” may oversimplify the nature and seriousness of problems dogging U.S.-China relations and their consequences for the world. Relegating difference to culture is not only Orientalizing, it can encourage a misplaced expectation that understanding can bring some sort of happy, mutually acceptable outcome. Perhaps Beijing and Washington understand each other well. They simply disagree fundamentally over values and interests in ways that make finding mutually acceptable accommodation increasingly difficult. This does not have to imply that either side is morally superior or normatively “better” than the other, just that understanding provides little promise for improving relations and avoiding confrontation. Better accounting for such possibilities invites fuller consideration of the roles that agency and contingency play in major power relations, two features that Chan clearly identifies as critical in the volume.

#### Resource abundance is growing---we have 500% better access to resources than in 1980.

Bailey ’19 (Ronald; science correspondent for Reason magazine, member of the Society of Environmental Journalists and the American Society for Bioethics and Humanities, writer of multiple books, formerly wrote for Forbes, and testified in front of Congress; May 31st; “Earth Is Nearly 520 Percent More Abundant Now Than in 1980”; <https://reason.com/2019/05/31/earth-is-nearly-520-percent-more-abundant-now-than-in-1980/>; accessed 7/18/19; MSCOTT)

Good news: The Earth was 518.98 percent more abundant last year than it was in 1980. So says the latest edition of the Simon Abundance Index, which tracks the relative availability of 50 fundamental commodities over time. The index, which was first unveiled last year by Marian Tupy of the Cato Institute and Gale Pooley of Brigham Young University–Hawaii, was inspired by economist Julian Simon's famous win over population bomber Paul Ehrlich in a bet on whether the prices of a basket of non-renewable resources would rise or fall between 1980 and 1990. They fell by more than 50 percent, and in 1990 Ehrlich mailed Simon a check for $576.07. In constructing the index, Tupy and Pooley first measure the "time price" of that basket of 50 commodities—that is, the amount of time that a person has to work in order to earn enough money to buy something. They calculate this by multiplying the World Bank's average global GDP per person with the Conference Board's estimate of annual hours worked. Tupy and Pooley find that from 1980 and 2018, the average time price of the basket of 50 basic commodities fell by 72.3 percent. In other words, the time it took to earn enough money to buy one unit in that basket of commodities in 1980 bought 3.62 units in 2018. Tupy and Pooley then use the time price of the commodities and the change in global population to estimate overall resource abundance. In their words: The Index represents the ratio of the change in population over the change in the time price, times 100. It has a base year of 1980 and a base value of 100. In 2018, the Index reached a level of 618.98. That is to say that the Earth was 518.98 percent more abundant in 2018 than it was in 1980. The compounded growth rate of abundance came to 3.44 percent per annum, which means that the affordability of our basket of commodities doubled every 20.49 years. Back in 1981, Simon argued compellingly that human minds are the ultimate resource. "There is no physical or economic reason," he wrote, "why human resourcefulness and enterprise cannot forever continue to respond to impending shortages and existing problems with new expedients that, after an adjustment period, leave us better off than before the problem arose." Tupy and Pooley confirm Simon's insight by noting that between 1980 and 2018, the world's population increased by 71.2 percent. The time price of commodities fell by 72.3 percent. Consequently, the time price of commodities declined by 1.016 percent for every 1 percent increase in the world's population. In other words, over the last 38 years, every additional human being born on our planet appears to have made resources proportionately more plentiful for the rest of us

#### No peak oil

Conca 17

Jame, A scientist in the field of the earth and environmental sciences for 33 years, specializing in geologic disposal of nuclear waste, energy-related research, planetary surface processes, radiobiology and shielding for space colonies, subsurface transport and environmental clean-up of heavy metals. I am a Trustee of the Herbert M. Parker Foundation, Adjunct at WSU, an Affiliate Scientist at LANL and consult on strategic planning for the DOE, EPA/State environmental agencies, and industry including companies that own nuclear, hydro, wind farms, large solar arrays, coal and gas plants. I also consult for EPA/State environmental agencies and industry on clean-up of heavy metals from soil and water. For over 25 years I have been a member of Sierra Club, Greenpeace, the NRDC, the Environmental Defense Fund and many others, as well as professional societies including the America Nuclear Society, the American Chemical Society, the Geological Society of America and the American Association of Petroleum Geologists, 3/2/17 (“No Peak Oil For America Or The World”, <https://www.forbes.com/sites/jamesconca/2017/03/02/no-peak-oil-for-america-or-the-world/#70c90d6c4220>, Accessed 1/11/19)//DG

Oil is more plentiful than you can imagine. And we keep figuring out easier and more economical ways to get it out of the ground.

In 1938, the famous geologist M. King Hubbert came up with the concept of peak oil, which is defined as having extracted half of the recoverable, conventional oil reserves. After that, oil production declines and cannot keep up with growing demand as the population continues to rise.

We used to think about Peak Oil like this – the reserves are finite, we know where they are and how long they will last, and we will start running out soon. But with recent technological innovations, we keep finding new oil deposits that are now recoverable and a peak won’t happen for a century or more. Source: Association for the Study of Peak Oil & Gas (ASPO)

In Hubbert’s time, most of the conventional oil reserves had already been discovered. Hubbert went on to predict that U.S. production would peak in 1969, and it did appear to peak in 1970. World reserves were supposed to peak around 2010 (see figure).

However, about 20 years ago, the industry really leapt forward on the technologies to find oil and to extract it. Particularly fracking.

This changed everything.

BP’s Spencer Dale summed it up nicely, “For every barrel of oil consumed over the past 35 years, two new barrels have been discovered.” And this shows no sign of slowing down any time soon. Peak oil has moved to a long time from now.

### 1AR---Solves Warming---5G

#### Aff solves warming:

#### 1---5G and smart cities.

Ekudden 21, CTO and Head of Technology & Strategy @ Ericsson, holds a Master of Science degree in Electrical Engineering from the Royal Institute of Technology in Stockholm, Sweden. (Erik, 1-21-2021, "How 5G enables acceleration of climate action ", *Ericsson*, https://www.ericsson.com/en/blog/2021/1/digitalization-5g-climate-action)

Digitalization is an enabling technology representing a fast, scalable tool to help address climate change. Indeed, digital technology may be the most powerful, scalable tool the world has to tackle climate change. As an accelerator, it has the potential to reduce global emissions by up to 15 percent by 2030.

According to McKinsey, enterprise leaders have seen the Covid-19 crisis bring about some three to four years of digital change in the space of only a few months. In some cases, the move to digital products and channels has been accelerated by a staggering seven years. Given the investments made and expectation that changes will be long-lasting, there exists for many sectors of society a corresponding opportunity to hasten the advance of digitalization and meet 2030 CO2 milestones sooner. This hastening would be welcomed given the scale of the challenge at hand and consequences of climate change.

5G’s unique transformative capabilities

On the frontline of digitalization lies 5G, itself an exponential technology, a platform enabling technologies all-manner such as Artificial Intelligence (AI), the Internet of Things (IoT) and Extended Reality (XR). Through these technologies, enterprises can build of known and future unknown, disruptive uses.

The uses, applicable across various sectors, can drive down costs, energy usage, emissions, waste and mitigate climate change. Perhaps the most obvious use during Covid-19 has been video conferencing and telemedicine in employment and health sectors, which negated travel.

The Exponential Roadmap, revised in January 2020 prior to Covid-19’s onset, shows from now until 2030, sector by sector, the solutions to be taken to help the sectors halve their greenhouse gas emissions by 2030. The Roadmap, of which Ericsson is the leading business sector partner, is consistent with the Paris Agreement’s goal to keep global average temperature “well below 2°C” and aiming for 1.5°C above pre-industrial levels.

Across sectors, including those highlighted below which might be ripe for acceleration, the Exponential Roadmap puts forward concrete solutions to meet 2030 targets. Technology lies at the heart of many of the solutions. Their deployment, however, requires policies, finance and leadership to see them realized at sufficient speed and scale.

If we establish 5G infrastructure faster, we can help halve emission

s across sectors. 5G is an innovation platform which can support a myriad of uses that can help tackle climate change.

Exponential Roadmap: Solutions to cut greenhouse gas emissions in industry, buildings, transport and energy

**[Graph omitted]**

The solutions are not hypothetical, they just need to be scaled up. Looking at energy, when it comes to enabling the transition to renewable sources, investment in the smart grids of tomorrow is necessary. ICT and connectivity can enable better performance and protect power grids, including the possibility of remote control and automation in the event of power failure. This is key in enabling the transition to renewable energy, and where the UN estimates that up to 85 percent of electricity must be renewable by 2050.

Taking steps in energy will impact the emissions of other sectors too, where the Exponential Roadmap finds around a third of industry emissions relates to energy supply, rising to two thirds in buildings, for example.

### AT: Unsustainable---Peak Metal

#### Peak metals wrong.

McAfee 19, \*Andrew Paul McAfee, a principal research scientist at MIT, is cofounder and codirector of the MIT Initiative on the Digital Economy at the MIT Sloan School of Management; (2019, “More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources and What Happens Next”, https://b-ok.cc/book/5327561/8acdbe)

Overcoming the Limits

A great way to see what happens when capitalism and tech progress combine is to look back at 1972’s The Limits to Growth, which we first came across in chapter 4. It’s a fascinating document for two reasons. First, it’s one of the most Malthusian books written since Malthus. It’s far gloomier than anything Jevons came up with. The team behind The Limits to Growth tried to model the future of the exponentially growing world economy and concluded, “We can thus say with some confidence that, under the assumption of no major change in the present system, population and industrial growth will certainly stop within the [twenty-first] century, at the latest. The system… collapses because of a resource crisis.”

Second, The Limits to Growth provided an invaluable service by recording what the known global reserves of important resources were in 1972. “Known global reserves” are the deposits of a resource that can be profitably extracted given the prevailing knowledge and state of technology. The authors of The Limits to Growth included the known reserves of many resources to show how inadequate they were in the face of exponential growth of both output and resource consumption. The authors had little reason to suppose in the early 1970s that either kind of growth would stop on its own. As we saw in chapter 4, resource consumption went up in lockstep with overall economic output all throughout the twentieth century up to Earth Day. Few people expected that to change. The team behind The Limits to Growth certainly didn’t.

The most generous estimate of future resource availability included in The Limits to Growth assumed that exponential consumption would continue, and that proven reserves were actually five times greater than commonly assumed. Under these conditions, the team’s computer models showed that the planet would run out of gold within twenty-nine years of 1972; silver within forty-two years; copper and petroleum within fifty; and aluminum within fifty-five.

These weren’t accurate predictions.

We still have gold and silver, and we still have large reserves of them. In fact, the reserves of both are actually much bigger than in 1972, despite almost half a century of additional consumption. Known global reserves of gold are almost 400 percent larger today than in 1972, and silver reserves are more than 200 percent larger. And it’s probably not too early to say that we’re not going to run out of copper, aluminum, and petroleum as quickly as estimated in The Limits to Growth. Known reserves of all are much larger than they were when the book was published. Known aluminum reserves are almost twenty-five times what they were in the early 1970s.

How could these predictions about resource availability, which were taken seriously when they were released, have been so wrong? Because the Limits to Growth team pretty clearly underestimated both dematerialization and the endless search for new reserves. Capitalism and tech progress combine to drive both of these trends—the use of fewer resources and the hunt for more of them—and neither of these two drivers is about to become less powerful. So we’ll continue to innovate our way to greater dematerialization while we keep finding more reserves.

The counterintuitive conclusion from this line of reasoning is that resource scarcity isn’t something we need to worry about. The earth is finite, so the total quantity of resources such as gold and petroleum is limited. But the earth is also very, very big—big enough to contain all we need of these and other resources, for as long as we’ll need them. The image of a thinly supplied Spaceship Earth hurtling through the cosmos with us aboard is compelling, but deeply misleading. Our planet has amply supplied us for our journey. Especially since we’re quickly slimming, swapping, optimizing, and evaporating our way to dematerialization.