# 1nc – Rutgers rr – round 4

**offcase**

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#### Bedoya’s confirmation is likely, BUT opposition to the antitrust agenda threatens to indefinitely deadlock meatpacking enforcement – and everything else

Moran 1-6-22 (Max Moran, Research Director of the Personnel Team at the Revolving Door Project, studied International Relations and Journalism at Brandeis University, “Merrick Garland Is Undermining the Biden Antitrust Strategy,” The American Prospect, 1-6-2022, https://prospect.org/justice/merrick-garland-is-undermining-biden-antitrust-strategy/)

The Biden administration is threatening new anti-monopoly enforcement actions against the Big Four meatpacking companies, in part to counter inflation at the grocery store and in part to address decades of exploitation of small farmers. On Monday, the president dispatched Agriculture Secretary Tom Vilsack and Attorney General Merrick Garland to hear grievances from small ranchers, while the White House builds a new web portal to gather complaints. While the White House’s proposals for funding small meat processors to increase competition are rather unsatisfying, the enforcement piece could have a real impact.

This initiative has caused the usual grumbling from neoliberal economists, and the usual corrections to the usual grumbling. But no one has yet explained how Biden plans to actually follow through on his threat—a problem for which Garland is partly to blame.

As The Information’s Josh Sisco reported on Tuesday, there are currently just two deputies trying to manage the entire DOJ Antitrust Division (ATR) alongside Assistant Attorney General Jonathan Kanter, who was confirmed only two months ago. ATR typically has at least 12 deputies and top advisers in the “front office” who oversee about 700 career staffers. And that was under past administrations, which didn’t have nearly as ambitious an antitrust agenda as Biden’s. Reversing four decades of Borkian antitrust sloth requires a cohesive and energetic senior leadership team.

Meanwhile, the Federal Trade Commission, the executive branch’s other main antitrust enforcer, remains in a 2-2 partisan deadlock, as Senate Republicans blockade Biden nominee Alvaro Bedoya from being confirmed as a commissioner. He has a path to 51 Senate votes, but arcane (and unnecessary) procedural hurdles have slowed the process to a crawl, hindering the other avenue to antitrust action.

Biden can only do so much to move Bedoya’s nomination. But in theory, nothing prevents him from hiring whomever Kanter personally trusts to help execute their shared agenda. The deputies at ATR are not Senate-confirmed positions. So what’s causing the chaos?

The problem isn’t procedural; it’s political. In addition to diversity concerns, Sisco reports that “ideological divisions” about anti-monopoly enforcement within the Biden administration are causing fights over any potential selection for the ATR deputies.

These divisions should be familiar to anyone who followed the initial fight over antitrust nominees during the Biden transition last year. While Biden himself seems sold on the benefits of a strong anti-monopoly agenda, Garland testified last year that he sees no problem with hiring big corporations’ preferred defense attorneys to oversee their former firms and clients. Garland and other anonymous voices floated a slew of names to run ATR throughout last year—anyone but Kanter, whom progressives favored.

While Garland lost that initial fight, he seems content to starve Kanter of resources as a work-around, even if it means sabotaging his own president’s agenda. Garland, after all, appears to consider it core to his job to throttle the better parts of the Biden administration for the sake of an imagined apolitical comity. He rushed to the Trump administration’s defense over the objections of the White House many times over the last year, and continues to undermine environmental action wherever he can. It’s perfectly in keeping with his priorities to undermine antitrust enforcement too.

The corporate revolvers and pro-monopoly hacks Garland boosted also haven’t gone anywhere. Again according to Sisco, Sonia Pfaffenroth is now in the mix for one of those coveted jobs in the ATR “front office.” Pfaffenroth revolved from Arnold & Porter into the Obama ATR and back over the last two decades. In private practice, she’s defended pharmaceutical firms, fossil fuel companies, and mining companies from class actions, price-fixing cases, and of course antitrust lawsuits.

One should look to Pfaffenroth’s record from her past stint at ATR to get a sense of what a second go-around might look like. Under the Obama administration, Pfaffenroth blessed tie-ups between Virgin America and Alaska Airlines, as well as US Airways and American Airlines. Today, just four mega-airlines control 80 percent of U.S. air traffic.

Pfaffenroth even approved the $107 billion merger between Anheuser-Busch InBev and SABMiller, allowing 30 percent of the world’s beer market volume and 60 percent of the world’s beer market profits at the time to be controlled by one firm. Today, AB InBev has essentially hacked the multitiered regulatory system that kept the alcohol market competitive for decades. In some cases, AB InBev’s distributors only allow craft brewers to distribute their drinks to retailers if they keep overall production low. This bottlenecking, alongside the pandemic, has been devastating for craft brewers.

Pfaffenroth’s record at ATR reveals someone whose poor judgment has harmed major American industries. But her judgment is reflective of the failed antitrust status quo, and in antitrust and everything else, Garland sees maintaining the status quo as inherently salutary. Where you or I might see bad calls, Garland likely sees jurisprudence executed according to a well-worn book. Whether the book is right or wrong is immaterial, in his eyes.

To state the obvious, Biden ought to reject Pfaffenroth and empower Kanter with deputies ready to throw that book aside, or else his antitrust agenda on meatpacking and everything else will get tossed on the growing pile of broken promises that are cratering his approval ratings. Doing so, however, will require standing up to Garland.

Thus far, Biden has appeared reluctant to do so, for fear of threatening the attorney general’s independence. There’s a kernel of truth here, after the Justice Department was turned into the president’s personal law firm under Trump. But there is a big difference between deploying the DOJ’s resources to help friends and target enemies and ensuring the DOJ has the staff and leadership necessary to execute its policy agenda. One is a blatant abuse of power, the other a clear presidential prerogative.

It’s an awkward situation for a president, but Biden must recognize that achieving his goals—especially the ones that improve working people’s economic fortunes—does far more for the health of the nation than sticking to a failed principle for its own sake. The president badly needs to remember that the buck stops not at Main Justice, but the Oval Office. Biden can demonstrate his commitment to fulfilling his promises and vision by empowering those of his appointees who are showing the necessary courage.

#### It’s NOT about Bedoya – it’s a referendum on the scope of the current agenda – deadlock is the point

Murphy 21 (Kathleen Murphy, Senior Reporter at FTC Watch, former Section Research Manager, Specialist at Congressional Research Service, former Managing Editor at CQ Roll Call and Bill Analysis Editor at Congressional Quarterly, “Bedoya’s confirmation hearing draws closer,” FTC Watch, Issue 1016, 11-1-2021, <https://www.mlexwatch.com/articles/13940/print?section=ftcwatch>)

When Alvaro Bedoya, President Joe Biden’s nominee to the Federal Trade Commission, faces US senators, he will be asked about his scholarly views on privacy. But the hearing also gives senators a chance to assess the agenda of the last FTC nominee they confirmed, Chair Lina Khan.

The Senate Commerce, Science and Transportation Committee is set to consider Bedoya’s nomination, although no hearing date has been set. It’s most likely to occur the week of Nov. 15 or early December, based on the 2021 Senate calendar.

Serving on the FTC means Bedoya, a Georgetown University professor and former congressional lawyer, would end a 2-2 split and give Democrats a majority to implement the chair’s policies. Bedoya, founding director of the Center on Privacy & Technology at Georgetown Law, would replace former Commissioner Rohit Chopra who left Oct. 8 to serve as director of the Consumer Financial Protection Bureau.

Biden nominated Bedoya in mid-September. Khan, meanwhile, started serving as FTC chair in mid-June after an 83-day confirmation process. (See FTCWatch, No. 1002, March 29, 2021.)

‘99% about FTC Chair Lina Khan’

Michael Keeley, co-chair of the antitrust practice at Axinn, Veltrop & Harkrider, tweeted: “Bedoya confirmation is going to be 99% about FTC Chair Lina Khan, and 1% to do with Alvaro Bedoya. (And hopefully 0% about the Vertical Merger Guidelines.)”

Keeley said he expects the focus of the hearing to be assessing the wisdom of the policies being pursued by Khan.

#### Plan expands opposition, derailing confirmation

Kovacic 20 (William E. Kovacic, former FTC Chair, Global Competition Professor of Law and Policy, George Washington University Law School, JD Columbia University, “Keeping Score: Improving the Positive Foundations for Antitrust Policy,” U. of Pennsylvania Journal of Business Law, 23(1), 2020, https://scholarship.law.upenn.edu/jbl/vol23/iss1/3/)

THE POLITICAL ASSAULT ON THE FTC

From the late 1960s through the 1970s, the FTC pursued an extraordinarily ambitious agenda of competition and consumer protection matters.107 Significant antitrust litigation included challenges to dominant firm misconduct and collective dominance, distribution practices, horizontal restraints, and facilitating practices. 108 Many matters involved powerful economic interests,109 and in a number of cases the Commission sought structural relief in the form of divestitures or the compulsory licensing of intellectual property. 110 In 1974, the agency also initiated a program that required certain large firms to provide “line-of-business” data concerning a range of performance indicators.111

In the same period, the Commission used a mix of litigation and rulemaking to transform its consumer protection agenda.112 Through policy guidance and litigation, the agency introduced its advertising substantiation program that required firms to have support for factual claims made in their advertisements.113 The Commission initiated over twenty-five rulemaking proceedings and promulgated final rules involving a broad collection of product and service sectors.114

As a group, the FTC’s competition and consumer protection initiatives aroused fierce opposition from the affected firms and industries, which contested the agency’s actions in court and before Congress. 115 The complaints of industry resonated with a large, powerful bipartisan coalition of legislators116 who criticized the Commission’s activism, proposed various measures to curb the agency’s authority, 117 and ultimately adopted a number of restrictions in The Federal Trade Commission Improvements Act of 1980 (FTC Improvements Act). 118 In 1980, bitter opposition to elements of the FTC’s competition and consumer protection programs led Congress to allow the FTC’s funding to lapse, forcing the agency to temporarily cease operations. 119 Perhaps emboldened by the weak political support the Commission enjoyed before 1981, when the Democrats controlled the White House and both chambers of Congress, the Reagan administration briefly resumed the assault on the agency’s funding. In January 1981, David Stockman, Ronald Reagan’s first Director of the Office of Management and Budget (OMB), launched a short-lived effort to eliminate funding for the FTC’s competition policy program.120

The congressional and executive branch officials who criticized the FTC in this period advanced two positive claims to justify recommendations for withdrawing authority or funding for the Commission. One claim was that the agency’s choice of competition and consumer protection programs had contradicted congressional guidance about how the FTC should use its authority and resources.121 Many legislators complained that the agency had disregarded the legislature’s preferences and used its powers in ways that Congress never contemplated to fall within the FTC’s remit.122 As Congress considered bills in 1979 to limit the Commission’s powers, Congressman William Frenzel captured the prevailing legislative mood:

It is bad enough to be counterproductive and therefore highly inflationary, but the FTC compounds its sins by generally ignoring the intent of our laws, and writing its own laws whenever the whimsey strikes it . . .

Ignoring Congress can be a virtue, but the FTC’s excessive nose-thumbing at the legislative branch has become legend. In short, the FTC has made itself into virulent political and economic pestilence, insulated from the people and their representatives, and accountable to no influence except its own caprice.123

The Commission, Frenzel concluded, was “a rogue agency gone insane.”124

The accusation of Commission disobedience figured prominently in Senate deliberations on the 1980 FTC Improvements Act. In less-flamboyant but still pointed terms, the chief Senate sponsors of the FTC Improvements Act said restrictions were necessary to curb the agency’s unauthorized adventurism. Senator Howard Cannon explained: “The real reason that we have proposed this legislation for the FTC is because the Commission appeared to be fully prepared to push its statutory authority to the very brink and beyond. Good judgment and wisdom had been replaced with an arrogance that seemed unparalleled among independent regulatory agencies.”125

The accusation of disregard for congressional will soon echoed in statements by high level officials in the newly arrived Reagan administration. OMB Director Stockman recited a variant of this theme in an appearance before a House of Representatives Committee early in 1981 to address his proposal to eliminate funding for the agency’s competition mission. Stockman said, “ . . . in recent years the FTC has served the public interest very poorly, in major part because it has sought to expand its power and influence beyond that envisioned by Congress.”126

Beyond generalized claims of institutional disobedience, the accusation of disregard for congressional will was invoked to justify proposals to impose restrictions on specific FTC initiatives. For example, in the fall of 1979, the Senate Commerce Committee held hearings on a proposal by Senator Howell Heflin to eliminate the FTC’s power to order divestiture or other forms ofstructural relief in non-merger cases.127 This was a shot across the bow of the FTC’s pending “shared monopoly”128 cases involving the breakfast cereal and petroleum refining sectors, where the FTC had requested structural relief (divestitures and, in the cereal case, compulsory trademark licensing) to restore competition.129 Congress did not adopt the Helfin proposal, but the idea of eliminating or restricting the FTC’s power to seek divestiture remained a serious threat to the agency. Roughly a year after the Commerce Committee hearings on the Heflin amendment, on the day before the balloting in the 1980 presidential elections, Vice-President Walter Mondale appeared at a campaign rally in Battle Creek, Michigan (the headquarters of the Kellogg Company). The Vice-President assured his audience that, if he and President Jimmy Carter were reelected, the Carter administration would seek legislation to ban the FTC from obtaining divestiture in the breakfast cereal shared monopolization case.130

A second, related claim was that the FTC had abandoned any adherence to sound administrative practice and descended into utterly irrational decision making. The agency was not merely disobedient (“rogue”) but crazy (“insane”), as well.131 Here, again, Congressman Frenzel pungently made the point. The FTC, Frenzel said, “is a king-sized cancer on our economy. It has undoubtedly added more unnecessary costs on American consumers who it is charged with protecting, than any other half dozen agencies combined.” 132 David Stockman’s initial broadside against the Commission in February 1981 echoed this sentiment. In a newspaper interview, Stockman said the FTC “is a passel of ideologues who are hostile to the business system, to the free enterprise system, and who sit down there and invent theories that justify more meddling and interference in the economy.”133

The accusation of disobedience and the diagnosis of insanity fit poorly, or at least awkwardly, with the positive record of the FTC’s activities in the 1970s. As discussed immediately below, the rogue agency story clashes with the many instances, especially between 1969 and 1976, in which congressional committees and key legislators directed the agency to carry out an aggressive, innovative enforcement program against major commercial interests. In 1969, numerous legislators endorsed the view of two external studies that the FTC had used its authority timidly and ineffectively.134 Leading members of Congress demanded that the agency transform its competition and consumer programs or face extinction.135

Congress described the content of the desired transformation in several ways. At a high level, oversight committees and individual legislators called for a dramatic boost in the agency’s appetite to undertake ambitious, risky projects—to replace a cautious, risk-avoiding decision calculus with a bold philosophy that erred in favor of intervention and used the agency’s elastic powers innovatively. Congress’s admonition to be aggressive and use power expansively emerged again and again in confirmation proceedings and routine oversight hearings.136 During hearings in 1970 to confirm Caspar Weinberger to be the Commission’s new chair, Senator Warren Magnuson, Chairman of the Senate Commerce Committee, told the nominee to “maintain the right kind of morale by recruiting strongly and expanding . . . Trade Commission programs in order to perform the job well.”137 In setting out this charge, Magnuson seemed to recognize that the FTC would have to be steadfast in resisting backlash—including from Congress—that would emerge as the FTC went about “expanding” its programs. The Commerce Committee Chairman said Congress was calling on the FTC to perform “tasks that require a great deal of attention and a great deal of fortitude not to respond to any pressures that come from any place.”138

Weinberger’s successor, Miles W. Kirkpatrick, received similar, and even more explicit congressional guidance, to apply the Commission’s powers broadly and aggressively. In 1969, Kirkpatrick had chaired a blueribbon American Bar Association panel whose report recommended the FTC implement an ambitious antitrust agenda that involved significant doctrinal, operational, and political risks.139 In his appearances as FTC chair before congressional committees, Kirkpatrick often heard legislators applaud the risk-preferring approach of the ABA study. In Kirkpatrick’s first appearance before the Commission’s Senate Appropriations subcommittee in 1971, the Subcommittee Chairman, Senator Gale McGee, provided the following guidance:

I think this is one of the Federal commissions that has a much larger responsibility and capability than sometimes it has been willing to live up to for reasons of congressional sniping at it in some respects or pressures put on it through the industry and the like.

Too often it has been either shy or bashful. . . . That is why we were having a rather closer look at your requests just in the hopes of encouraging you, if anything, to make mistakes, but I think the mistakes you are to make ought to be mistakes in doing and trying rather than playing safe in not doing. I believe that is the most serious mistake of all . . . you are not faulted for making mistakes. You may be for making it twice in a row, for not learning properly but, we would rather you make a mistake innovating, trying something new, rather than playing so cautiously that you never make a mistake. . . . 140

In his appearance before the same subcommittee a year later, Senator McGee observed with approval that Kirkpatrick had “responded to the criticism . . . by both Mr. [Ralph] Nader and the American Bar Association by moving aggressively against some of the major industries in the United States.” 141 Recognizing that the approach he described could elicit opposition from affected business interests, McGee promised that he and his colleagues would exercise best efforts to watch the agency’s back: “[I]f you step on toes you are going to catch flak for it, but I hope we will be able to push this even more aggressively by backing you more completely with the kind of help that I think you require.”142 McGee closed the proceedings with militant instructions:

“Stay with it and flex your muscles, clinch your fists, sharpen your claws, and go to it. We think this is desperately important in the interest of the Congress, whose creature you are, and the consumer whose faith and substantive capabilities in surviving hang very heavily upon what you succeed in doing.”143

Kirkpatrick served as the FTC’s chair for just over twenty-nine months. The Commission’s new chair, Lewis Engman, received the same policy guidance that Congress had provided Weinberger and Kirkpatrick. At Engman’s confirmation hearing before the Senate Commerce Committee early in 1973, Senator Frank Moss observed:

Under . . . Weinberger and Kirkpatrick, the Commission has taken on new life beginning with the search for strong and imaginative, rigorous developers and enforcers of the law and reaching out with innovative programs to restore competition and to make consumer sovereignty more than chamber of commerce rhetoric. 144

With evident approval, Moss recounted how the FTC had “stretched its powers to provide a credible countervailing public force to the enormous economic and political power of huge corporate conglomerates which today dominate American enterprise.” 145 The members of the Senate Commerce Committee, Moss concluded, “consider it one of our solemn duties to protect the Commission from economic and political forces which would deflect it from its regulatory zeal.” 146 Member after member of the Commerce Committee echoed Moss’s message to Engman. Senator Ted Stevens, an Alaska Republican, told the nominee, “I am really hopeful that . . . you will become a real zealot in terms of consumer affairs and some of these big business people will complain to us that you are going too far. That would be the day, as far as I am concerned.”147

The FTC got the message. The words and actions of Weinberger, Kirkpatrick, Engman, and other FTC leaders in this period reflected a preference for boldness, aggressiveness, innovation, and zeal. In a letter to Senator Edward Kennedy in July 1970, Weinberger reported that the FTC was trying “to make the most of that other resource given to us by Congress – our statutory powers.” 148 Weinberger said the Commission had “encouraged the staff to make recommendations to us which will probe the frontiers of our statutes,” had made progress in “[p]robling the outer limits” and “exploring the frontiers” of the agency’s authority, and had shown it “is receptive to novel and imaginative provisions in orders seeking to remedy unlawful practices.”149 In a speech to a professional association in 1971, Kirkpatrick reported that the Commission was “moving into ‘high gear’ in the task of preserving and promoting competition in the American economy.”150 He said he and his fellow board members “fully intend to be in the vanguard of exploration of the new frontiers of antitrust law.”151

By mid-1974, the FTC had launched several significant cases involving monopolization and collective dominance, including pathbreaking shared monopolization cases against the breakfast cereal152 and petroleum refining industries.153 With these matters underway, Engman in 1974 appeared at a congressional hearing of the Joint Economic Committee and received criticism that the FTC had been insufficiently active in challenging monopolies.154 The Joint Committee’s chairman, Senator William Proxmire, told Engman “the FTC, like a number of other regulatory agencies seems to concern itself with minor infractions of the law, and to spend much of its time on cases of small consequence.”155 Perhaps astonished to hear that cases to break up the nation’s leading breakfast cereal manufacturers and petroleum refiners involved minor infractions or matters of small consequence, Engman replied, “The Federal Trade Commission today is very aggressive. . . . We have seen a total turnaround in terms of the types of matters which are being addressed by the Bureau of Competition.”156

Beyond general policy exhortations to exercise power boldly and to err on the side of intervention, of doing too much rather than too little, Congress in the early to mid-1970s instructed the Commission to focus attention on specific commercial sectors and competitive problems within them. In the face of severe fuel shortages and price spikes for petroleum products in the early 1970s, numerous legislators demanded that the FTC conduct investigations and challenge the conduct of large, integrated petroleum companies. 157 Many insisted that the FTC use its competition mandate to force integrated refiners to deal on equitable terms with independent refiners and distributors.158 The Commission’s decision to file the Exxon shared monopoly case, which sought extensive horizontal and vertical divestiture remedies, can be explained as a response to these demands.159 In the same period, Congress applied strong pressure upon the FTC to examine and correct what it believed to be serious structural obstacles to effective competition in the food manufacturing industry.160 Here, also, the agency’s decision to prosecute the shared monopolization case against the country’s leading producers of ready-to-eat breakfast cereals can be seen as a response to this concern and faithful to the congressional prescription that the FTC use novel, innovative approaches to cure competitive problems.161 In these and other matters, the Commission explored the frontiers of its powers in the development of new cases.162

When one aligns the guidance of Congress in the early to mid-1970s about the appropriate content of FTC policy making with the FTC’s activity in the decade, it is apparent that the critique of the agency as disobedient to legislative will is a fiction, or at least badly misleading. A more accurate positive depiction of events in the 1970s is that the Commission faithfully followed legislative instructions given from 1970 up through the mid-1970s about the appropriate philosophy and means of enforcement, and that, as the decade came to a close, Congress changed its mind about what the FTC should do and how it should do it. As described below in Section IV.D., 163 that change in legislative temperament and the response by Congress to industry backlash against the FTC’s program have important implications for how the FTC plans programs and selects projects in the future. Accurate positive analysis reveals that the agency was not disobedient to Congress but was inattentive to the operation of a political feedback loop that exposes Congress to industry pressure once the FTC implements programs that involve significant economic stakes and endanger powerful commercial interests.164

Nor does a careful study of the positive record of the 1970s show that the FTC policy making was “insane.” Measured by its contributions to institution-building, the Commission did many things that epitomize good public administration. It carried out important organizational and personnel reforms that upgraded its operations and personnel.165 As explained more fully below, the agency also improved its mechanisms for setting priorities and selecting projects to achieve them and strengthened investments in policy research and development (including a program to evaluate the effects of completed cases).166 The FTC successfully carried out new regulatory duties entrusted by Congress in the 1970s; most notable was the implementation of the premerger notification mechanism that Congress created in the Hart-Scott-Rodino Antitrust Improvements Act of 1976.167 In all of these areas, the Commission of the 1970s made enduring enhancements to the institution and set important foundations for successful programs that followed in the next forty years. An insane agency could not have done so.

Another focal point for attention in assessing the FTC’s performance in the 1970s was the quality of its substantive agenda. Was the FTC’s substantive program in the 1970s “insane”? Many Commission competition and consumer protection initiatives in the 1970s encountered grave problems. FTC efforts to execute the bold, innovative, risk-preferring program that Congress had called for earlier in the decade generated a number of serious project failures.168 Insanity, on the part of individual leaders or the institution as a whole, does not explain the failures. These outcomes have more prosaic causes whose understanding is important to the future formulation of competition policy. Chief among the FTC’sflaws were a lack of historical awareness about the political hazards associated with undertaking an agenda of bold, innovative cases against powerful commercial interests; inadequate appreciation for the demands of bringing large numbers of difficult cases and promulgating ambitious trade regulation rules would impose on the agency’s improving but uneven human capital; and underestimation of the change in the center of gravity of economic learning that supports the operation of the U.S. antitrust system. As described below, many of these failings are rooted in weaknesses in the FTC’s knowledge in the 1970s of the positive record of its past enforcement experience.169

B. The Inadequate and Misdirected Enforcement Activity Narrative

Like the hyperactivity narrative described above, the inadequate activity narrative relies heavily on enforcement data to support the view that the federal antitrust agencies have brought too few cases overall and, when filing cases, have focused resources on the wrong types of matters.

Implicit or explicit assumptions about the level of enforcement activity have provided a central foundation in the modern era for broad normative claims of poor system performance. One collection of inadequacy critiques attacks federal enforcement program of the Reagan administration – a period characterized by what one journalist described as an “almost total abandonment of antitrust policy.” 170 In 1987, in discussing Reagan-era federal antitrust enforcement, Professor Robert Pitofsky said the DOJ and the FTC had produced “the most lenient antitrust enforcement program in fifty years.” 171 Professor Milton Handler remarked that in the Reagan era “a policy of nonenforcement has set in, much to the distress of those who believe that without antitrust the free market cannot remain free.” 172 Professors Lawrence Sullivan and Wolfgang Fikentscher observed, in addressing the treatment of civil nonmerger matters, “enforcement ceased.”173

A second body of commentary assails the work of the federal agencies in the George W. Bush administration. For example, in 2008, during his campaign to gain the Democratic Party’s nomination for the presidency, Barack Obama said the George W. Bush administration “has what may be the weakest record of antitrust enforcement of any administration in the last half-century.” 174 The Obama statement did not compare activity levels across all administrations over the 50-year-long comparison period, but the statement suggested that the general claim was based on variations in activity over time.

A third version of the inadequacy narrative marks the beginning of the decline of effective enforcement at the outset of the George W. Bush administration and extending through the present.175

A fourth variant writes off the entire period from roughly 1980 onward as an antitrust catastrophe.176 After noting that for most of the 20th century “antitrust enforcement waxed or waned depending on the administration in office,” Professor Robert Reich recently wrote that “after 1980 it all but disappeared.”177 He added that Presidents Bill Clinton and Barack Obama “allowed antitrust enforcement to ossify, enabling large corporations to grow far larger and major industries to become more concentrated.” 178

Presented below are categories of arguments that rely upon specific assertions about the positive record of modern antitrust enforcement. These arguments make positive claims regarding either the amount of activity, the reasons for observed behavior, or both.

GENERAL CRITICISMS OF ANTITRUST ENFORCEMENT: BORK, REAGAN, AND THE DESTRUCTION OF U.S. COMPETITION POLICY

Many commentators have offered explanations for why federal antitrust enforcement became inadequate after the late 1970s. One major positive explanation is that the modern Chicago School of antitrust analysis, grounded largely in the writings of Robert Bork, inspired a severe retrenchment of enforcement at the DOJ and the FTC and led the federal courts to narrow antitrust doctrine since the late 1970s.179 A major focus of this discussion of the causes for changes in enforcement involves rules governing the treatment of dominant firms.180

A second cause offered to explain a redirection of enforcement is the ascent to the presidency of Ronald Reagan and his appointment of permissive leadership to the DOJ and the FTC.181 The Reagan administration is said to have inherited a generally well-functioning antitrust enforcement system and run it into the ground.

The Chicago School, Bork-centric, and Reagan-centric explanations for policy change can be misleading due to mischaracterizations of what took place and their tendency to omit other forces that had helped narrow the scope of antitrust enforcement. Bork and the Chicago School unmistakably have exerted a significant impact upon modern antitrust policy, but the retrenchment of antitrust enforcement in some areas cannot accurately be attributed to them entirely or, for a number of important developments, even principally. 182 Many proponents of the inadequacy narrative make little or no mention of the role of modern Harvard School scholars, such as Philip Areeda and Donald Turner, in leading courts and enforcement agencies to move the antitrust system toward a less interventionist stance.183

Areeda and Turner encouraged courts to forego reliance on noneconomic goals in deciding antitrust cases. 184 The two Harvard scholars also advocated the adoption of stricter procedural and doctrinal screens to counteract what they perceived to be flaws in the U.S. system of private rights of action.185 The inadequacy narrative often overlooks the influence of the modern Harvard School and thus misses how much the permissiveness of modern antitrust policy reflects the Harvard School’s concern that private rights of action over-deter legitimate business conduct by dominant firms.186 This yields a faulty positive diagnosis of the forces that have reduced the reach of the U.S. antitrust regime. As noted below, understanding how the institution-grounded limitations proposed by the modern Harvard School have imposed greater demands on plaintiffs has important implications for government plaintiffs seeking to devise a strategy to reclaim doctrinal ground lost since the 1970s.187

Similar imprecision and omission characterize the portrayal of the Reagan administration as the force that swung antitrust policy away from a sensible interventionist equilibrium and gave it a durably noninterventionist orientation. Some elements of the Reagan-centric narrative turn events 180 degrees around from their positive roots.188 More significant, the narrative does not address how badly the Congress and the White House had damaged the FTC’s stature and operations before Ronald Reagan took office in late January 1981. By the end of 1980, the Commission had been shoved into the equivalent of political bankruptcy by a Congress and a White House under the control of the Democratic Party.189

By treating the 1980 presidential election as the cause of an abrupt change in federal antitrust enforcement policy, the Reagan-centric inadequacy narrative fails to grasp the significance of the political assault, led by Democrats, against the FTC in the late 1970s. Recognition of how the FTC’s relationship with Congress changed over the course of the 1970s forces one to confront the question of why an agency that enjoyed powerful congressional support through much of the decade came to grief so quickly. The episode has a sobering cautionary lesson for contemporary policy making: it demonstrates how quickly congressional attitudes can change once powerful business interests affected by FTC actions bring their resources to bear upon Congress, and how turnover in the legislature can erode vital political support. An accurate positive account of the 1970s suggests that an agency should strive to complete its cases and rulemaking initiatives as expeditiously as possible, lest long lags between the start and conclusion of matters expose the agency to debilitating political backlash. This policy making prescription becomes apparent only by forming an accurate picture of what happened to the FTC in the 1970s.

#### Solves rural political alienation

Kelloway 21 (Claire Kelloway, senior reporter and researcher with the Open Markets Institute, primary writer of FoodAndPower.net, former sustainability fellow with Bon Appetit Management Company, BA political science, concentration in political economy and sustainable development, Carleton College, “How Biden can rein in the Big Meat monopoly,” Vox, 2-24-2021, https://www.vox.com/future-perfect/22298043/meat-antitrust-biden-vilsack)

Taking on Big Meat wouldn’t just help consumers, farmers, and meatpacking workers; one poll found 82 percent of independent rural voters would be more likely to vote for a candidate who supports “a moratorium on factory farms and corporate monopolies in food and agriculture,” so it could also help halt Democrats’ losing streak in rural areas and heartland states.

As progressives take their campaign against consolidation into a higher gear with a friendlier administration in power, Big Meat needs to be on the priority list.

#### That’s the root cause of US populism

Rodriguez-Posea 21—(Professors of Economic Geography at the London School of Economics). Andrés Rodríguez-Posea, Neil Lee, & Cornelius Lipp. August 11, 2021. “Golfing with Trump. Social capital, decline, inequality, and the rise of populism in the US”. Cambridge Journal of Regions, Economy and Society. Accessed 10/2/21.

We hypothesise that low social capital alone is unlikely to have triggered the swing of voters to Donald Trump and that interpersonal inequality at the local level is unrelated to increases in Trump’s vote share. We propose that it is precisely the long-term economic and demographic decline of the places that still rely on a relatively strong social capital that is behind the rise of populism in the US. Strong, but declining communities in parts of the American Rustbelt, the Great Plains, and elsewhere, reacted at the ballot box to being ignored, neglected and being left-behind.

The results of the analysis show that increases in populist vote in the US are fundamentally driven by the economic and demographic decline of strongly cohesive midtown and rural America. These places still have greater levels of social capital than more dynamic and unequal areas of the US. This social capital has played a role in the swing of votes within communities driven by a growing feeling of frustration, increasingly known as the rising geography of discontent (McCann, 2020) or the politics of resentment (Cramer, 2016). In small cities and rural areas of the US, scattered predominantly across the Rustbelt and the Great Plains, the rise in populist vote represents a reaction of strong communities in which individual losses are identified with collective losses. These so-called ‘places that don’t matter’ (RodríguezPose, 2018) have had enough of seeing their people leave and their jobs go and have used the ballot box to exact revenge on a system they consider offers little to them. By contrast, the more dynamic, mainly urban, areas of the US, where society is often less cohesive, where there is less social capital and where interpersonal inequalities are significantly higher, have, for the moment, shunned the calls of populism.

We argue that our results have implications beyond the United States. In particular, work across Europe, including studies considering Brexit (e.g., Carreras et al., 2019; Lee et al., 2018) and Euroscepticism more generally (Dijkstra et al., 2020), have highlighted the importance of long-term decline in explaining the growth in populism. Yet the focus has tended to be on income and industrial decline, rather than employment and population decline, as a cause. The decline of previously tight-knit communities has been underplayed in this literature, but our results provide an important justification to investigate whether they can be generalised outside the United States.

The paper is structured as follows. The next section studies the rise of Trumpism in the US. This is followed by a section looking at explanations for the growth of the Trump vote, focusing, in particular, on social capital, interpersonal inequality, and long-term economic and demographic decline. The methods and data used in the analysis are presented in the ensuing section, which is followed by the econometric analysis. The main conclusions of the study are put forward in the final section.

The rise of populism in the US

On 8 November 2016, Donald Trump was elected president of the US. Trump, a businessman with limited previous political experience, managed against the odds first to secure the Republican Party nomination and then the presidency on a political platform with strong nationalist and authoritarian populist tendencies (Norris and Inglehart, 2019).

Trump’s election was achieved on the wings of winning the electoral votes of crucial swing states, such as Pennsylvania, Ohio, Michigan and Wisconsin. In these states, like very much everywhere else in the US, the votes for the Democratic candidate, Hillary Clinton, were geographically concentrated in the larger cities. Clinton triumphed in cities like Philadelphia, Pittsburgh, Columbus, Cincinnati, Cleveland, Detroit, Milwaukee and Madison, and took some university towns in Ohio and Pennsylvania. The suburbs, towns and rural areas, by contrast, provided fundamental support for Donald Trump (Rodden, 2019).

Figure 1 shows the Trump margin, the swing in the share of votes towards the Republican Party between the 2012 presidential election, when Mitt Romney was the Republican presidential candidate, and the 2016 election. The Trump margin is highest in most of the mid-Atlantic, Midwest, and Great Plains states. The greatest swing took place in an arch surrounding the Great Lakes, drawing a semicircle expanding from northern Maine in the East to north-eastern Minnesota in the West (Figure 1).

The geography of the Trump margin changed relatively little in the 2020 election (Figure 2). Despite losing the election to Joe Biden, Donald Trump increased his margin relative to the votes obtained by Mitt Romney in 2012 across many rural and small-town counties where he had already prevailed four years earlier. He also managed to make forays into territories traditionally relatively hostile to the Republican Party, such as southern Texas and parts of New Mexico (Figure 1). However, the main geographical traits of the 2016 election remained untouched in November 2020. The Trump margin was, once again, highest in rural and small-town communities around the Great Lakes, the Midwest and the Great Plains.

In contrast, Donald Trump attracted less votes along both coasts and in large urban agglomerations everywhere in the US (Figure 1).

Possible explanations for the rise of Populism

Why did Donald Trump get elected in 2016? Why did he almost get re-elected in 2020? What are the reasons behind the rise of authoritarian populism in the US?

The rise of Trumpism in the US has coincided with that of forms of authoritarian populism in other western democracies. Especially in the second half of the 2010s, researchers have tried to investigate the causes of populism from different perspectives. The main divide in the studies of populism has been between those focusing on cultural parameters versus those emphasising economic explanations.

Those examining culture and values have centred their explanations around the role of values (Norris and Inglehart, 2019). Citizens embracing populism are those that feel ill at ease with what they increasingly regard as a different society from the one they grew up in or with the image of society transmitted to them by their parents and family. These citizens generally regard globalisation, migration and multiculturalism as key factors behind the rise of economic (but also cultural and identity) insecurities (Norris and Inglehart, 2019; Salmela and von Scheve, 2017). The change in cultural values threatens their identity and undermines family and religious traditions, transforming the environment they live in into one they no longer feel comfortable with (Norris and Inglehart, 2019). Gradually, this insecurity has morphed into anger and resentment towards a system that, in their view, no longer values them (Salmela and von Scheve, 2017).

Economic explanations revolve around the economic insecurity brewed by deregulation and globalisation (Guiso et al., 2017). Factors such as the openness to trade and the exposure to Chinese goods (Autor et al., 2013, 2016; Colantone and Stanig, 2018) rank high in this strand of research. Recent economic transformations are exploited by populists, invoking protectionism while stoking economic nationalism, such as in Donald Trump’s ‘Make America great again’ 2016 campaign slogan. Post-financial crisis austerity has also been considered a driver of discontent (Gray and Barford, 2018).

Cultural and economic transformations are causing rising resentment with a system, which is increasingly reflected in the electoral ballot. Voters supporting populist options are both swayed by their individual characteristics, such as age, race, education, exposure to new technologies, health, work status or welfare dependency, as well as by the conditions of the places where they live (Alabrese et al., 2019).

At the intersection between culture and economics, two factors were signalled by Putnam as the main risks for American democracy. Social capital, as ‘the performance of […] democratic institutions depends in measurable ways upon social capital’ (Putnam, 2000: 349), and interpersonal inequality and the increasing polarisation of American society.

Putnam argued these trends went hand in hand and reinforced one another (Putnam, 2000: 359): ‘the last third of the twentieth century was a time of growing inequality and eroding social capital. By the end of the twentieth century, the gap between rich and poor in the United States had been increasing for nearly three decades, the longest sustained increase in inequality in at least a century, coupled with the first sustained decline in social capital’.

In the next subsections, we look at the potential role of both factors in the rise of populism, as well as that of long-term economic and demographic decline as a possible alternative.

Social capital as a driver of populism

Social capital has become one of the dominant concepts in the social sciences. The concept draws on a longstanding body of research, which suggests that social networks matter for all sorts of social and economic outcomes. Coleman (1988) defined social capital as a resource considering (a) obligations and expectations, (b) information channels and (c) social norms. These three aspects of social relationships reduce the coordination costs of shared action and improve outcomes, moving away from a static view of social relations and economic activity as being about individualised actors, towards a view that economic activities are relational rather than simply transactional (Rodríguez-Pose and Storper, 2006). Putnam took on this concept and defined it as ‘the features of social life— networks, norms and trust—that enable participants to act together more effectively to pursue shared objectives’ (Putnam, 1995: 664).

Most views of social capital consider it a force for good. In his work on the strength of weak ties, Granovetter (1973) showed the importance of social relations in enhancing economic outcomes, while Putnam (2000: 394) indicated that social capital ‘strengthens our better, more expansive selves’.

Hence, the long-term decline of social capital in the US posed a serious threat to American society and its democracy, as it pushes citizens to free-ride ‘by neglecting the myriad civic duties that allow […] democracy to work’ (Putnam, 2000: 349).

However, there are also longstanding concerns that it can have negative consequences. Olson (1965) viewed associational behaviour as lapsing into special interest groups. Overall, closed networks may enable the development of social capital, but they can also allow the development of group-think and incentives to engage in factional behaviour rather than in the general interest (Rodríguez-Pose and Storper, 2006) and prevent the progress of new ideas and social change (Coleman, 1988). In short, a tight-knit community can entrench the ‘forces of tradition’ and restrict social change (Farole et al., 2011: 68).

In terms of how social capital can affect voting behaviour, social capital is often seen as a pillar of a functioning democracy, something which goes back to Alexander de Tocqueville and his argument that civic association underpinned the US democratic model. Similarly, Putnam (1993) argues that the lack of adequate social capital in southern Italy undermined democracy and legitimate political representation. His arguments for the US are that declining social capital not only depresses civic engagement and political participation but that it also destroys connectedness and trust. The increasingly empty public forums that became the norm in the last third of the 20th century represented a threat to American democracy (Putnam, 2000: 412).

In this respect, social capital can be considered as a form of protection against populism or demagoguery. Pre-dating the post-crisis resurgence of populism, Fieschi and Haywood (2004) indicated that a lack of trust in political institutions could fuel populism. Both Putnam (1993; 2000) and Fieschi and Haywood (2004) viewed social capital as essential for a healthy democracy and having a purely negative impact on populism (i.e., where there is greater trust, political relationships are healthier and more mutually respectful, and so populists are less able to blame elites).

But this positive view of social capital has, more recently, also been challenged. Satyanath et al. (2017), for example, showed that German states with higher levels of social capital, proxied by associational behaviour, facilitated a rapid expansion of Nazi ideas and, in turn, Hitler’s accession to the Chancellery through higher shares of votes for the Nazi party. The presence of large and dense networks involving high levels of trust expedited a swift flow of information and a more rapid exposure to Nazi party propaganda.

Interpersonal inequality and populism

Putnam (2000) saw rising interpersonal inequality as the other main risk for American democracy. For him, the increase in interpersonal inequality and the decline of social capital were two sides of the same coin. On the one hand, the rise in inequality of the last third of the 20th century (Katz and Murphy, 1992) disrupted participation and reduced civic engagement. On the other, the decline in social capital accelerated the disintegration of American communities and eased the implementation of policies and the passing of legislation that fermented greater inequality. This process also had a geographical component as ‘the American states with the highest levels of social capital are precisely the states most characterised by economic and civic equality’ (Putnam, 2000: 359). This view of interpersonal inequality as a threat to democracy and, therefore, a driver of populism has been shared by many economists who have examined the roots of the recent rise of authoritarian populism in developed countries. The rise in wealth polarisation in American society, as well as elsewhere in the developed world, is a fundamental factor for the increasing support of extreme antisystem options at the ballot box. Economic transformations in recent decades, and, above all, globalisation and automation, have driven ‘multiple, partially overlapping wedges in society’ (Rodrik, 2018: 23). One of these wedges concerns income and wages. The economic system has been leaving increasing shares of the population behind, in conditions that are financially insecure (Eichengreen, 2018; Guiso et al., 2017). The concentration of wealth in a dwindling number of hands (Milanovic, 2016; Piketty and Saez, 2014)—the top 1% (Dorling, 2019)—and the parallel rise in the people at risk of poverty in developed countries (O’Connor, 2017; Rodrik, 2018) is considered tainted with a stigma of unfairness (Rodrik, 2018: 23). Citizens have come to believe that the growing wealth of the elites has been earned unfairly and, consequently, the tolerance towards inequality has decreased (Pastor and Veronesi, 2018). Hence, interpersonal inequality, often confounded with economic unfairness (Starmans et al., 2017), is, from this perspective, pushing voters towards illiberal and anti-system parties at the ballot box. Inequality is perceived to drive a reaction against the status quo, resulting in an erosion of democratic institutions and leading to nativism and plutocracy (Milanovic, 2016).

For Putnam (2000: 359) ‘there is every reason to think that the twin master trends of our time—less equality, less engagement—reinforce one another’. Thus, fighting the decline of social capital is also a way to prevent the rise of inequality and vice versa. It is also the best way to combat the challenges besieging American democracy.

The role of long-term economic decline

Putnam’s work is about all sorts of decline. From that in civic engagement or in political participation to declines in bowling or card playing. All these declines are meticulously documented in Bowling alone. Yet, there is one type of decline that is conspicuously absent from Putnam’s (2000) analysis: that of smalltown and rural America. Similarly, the growth of territorial inequalities and the rising geographical polarisation in the US does not feature prominently in Putnam’s work.

However, the demographic and economic decline of small-town and rural America has been documented for quite some time (e.g., Fuguitt et al., 1989; Johnson, 2006). Small towns and large swaths of rural areas have been losing population and jobs throughout the second half of the 20th and the beginning of the 21st century. The decline of these areas has been matched by the evolution of many large cities, such as Detroit, Cleveland, Buffalo, Milwaukee or Toledo, once among the most dynamic industrial hubs in the US (Hartt, 2018). Many of these cities articulated, and still articulate, large hinterlands in ‘Rustbelt’ states.

Such decline has had important implications for social capital. According to Putnam (2000: 207), ‘the decline in social connectedness over the last third of the twentieth century might be attributable to the continuing eclipse of smalltown America’. This is because small-town and rural America have for long been the centres of civic engagement. In these areas, people have been and remain community-oriented (Wuthnow, 2019: 4). During most of America’s history this feeling of community, widespread across the whole of the US, was regarded as a force for good. ‘Residents of small towns and rural areas are more altruistic, honest and trusting than other Americans’, noted Putnam (2000: 205). They are viewed as deeply proud, caring about their communities and wanting the best for them (Wuthnow, 2019). Communities with a better endowment of social capital have been perceived as better able to cope with all sorts of economic and social challenges (Rupasingha et al., 2006).

However, when these communities suffer long-term population and economic decline and when the way of life that created and sustained the feeling of community ebbs away (Rodríguez-Pose, 2018; Wuthnow, 2019),2 the very social capital behind the cohesiveness and former dynamism of these areas can also channel the growing anger and resentment felt by those being left behind. When the feeling of neglect becomes widespread, when there is growing resentment about the rising economic gulf between large cities and small communities (Cramer, 2016: 83), social capital at a local scale can become the mechanism to diffuse that anger and outrage at a system they feel no longer represents and serves them. Areas with a strong social capital develop a consciousness that helps shape their political views (Cramer, 2016) and this consciousness is inherently related to place. Locals concerned about the many problems afflicting their communities, from population loss, brain drain and ageing to social disintegration and increasing drug addiction, feel that their plights are ignored by the federal government (Wuthnow, 2019) and can react collectively at the ballot box. In this respect ‘place matters because it functions as a lens through which people interpret politics’ (Cramer, 2016: 12). This consciousness is both rooted in place and class, but also ‘infused with a sense of distributive injustice’ (Cramer, 2016: 12). And it may also be the mechanism that feeds the increasing call for attention of places that have seen far better times, have been devastated by economic processes such as globalisation or automation and where people are becoming effectively stuck because of lack of capacity and/or opportunities for mobility (Rodríguez-Pose, 2018: 202). These processes have contributed to render their economies redundant and, often, undermine the self-esteem and sense of purpose of many local dwellers. Such consciousness is contributing to spread out a geography of discontent (Dijkstra et al., 2020; McCann, 2020) and a politics of resentment (Cramer, 2016) to areas that have had a rough ride linked to both economic and cultural transformations and have seen their friends and neighbours leave, their jobs dwindle, and their services gradually disappear (Collantes and Pinilla, 2019; Guilluy, 2019). Social capital can, in this respect, provide the vehicle for this anger to come out into the open at the ballot box (Rodríguez-Pose, 2018) or, increasingly, through rebellion and revolt (Guilluy, 2019).

Bringing together social capital, inequality, and demographic and economic decline

What can be expected from the combination of dwindling social capital, rising inequality, and the demographic and economic decline of many cities, small towns, and rural areas in the US? Depending on the perspective adopted, two potential outcomes can emerge.

On the one hand, as posited by Putnam (2000), the threats posed by populist tendencies to American democracy could be addressed by redressing the decline of social capital and the increase in inequality. Anger at the system would, therefore, be more prevalent in those places where there is a combination of high inequality and low social capital. That is, predominantly, in large American cities. In these places ‘efforts to strengthen social capital should go hand in hand with efforts to increase equality’ (Putnam, 2000: 359).

On the other, remnants of strong social capital that foster a pervasive consciousness within declining cities, especially in small towns and rural areas across the US, could have served as a means to channel the growing anger of long-term decline to the ballot box in numbers and ways that would be impossible in places with lower social capital stock.

The evidence of the 2016 and 2020 presidential elections points to the latter explanation. The demographically and economically more dynamic, mainly urban areas in the US, where society is less cohesive, but where interpersonal inequalities are significantly higher, shunned the calls of populism and voted in large numbers for the Democratic candidates. By contrast, many long-term declining communities with strong social capital embraced Donald Trump in far greater numbers than they had supported Mitt Romney, a far more mainstream Republican presidential candidate, in 2012.

Hence, in this paper, we will argue that the rise of populism in the US, as proxied by the swing to Donald Trump, is not related, as feared by Putnam (2000), to low levels of social capital, high interpersonal inequality, or their combination, but mainly to long-term economic and demographic decline. We will also argue that strong social capital, civic engagement and cohesiveness may have contributed to the revenge at the ballot box of places left behind (Wuthnow, 2019) that have felt neglected and snubbed for a considerable amount of time (Cramer, 2016; McCann, 2020). Their strong social identity and local consciousness—in other words, their social capital—may have expedited the rise of Trumpism in ways that would have been impossible in the most dynamic US cities and towns. This form of American populism will thus be mainly driven by the long-term economic and demographic decline of the strong communities that built America, while the rise of interpersonal inequality, something that could generate future conflict, is, for the moment, not associated with populism.

Model and data

Model

In order to demonstrate that:

(a) Economic and demographic decline are fundamental factors in the rise of the Trump vote and that this process has become exacerbated in the tightly-knit communities with strong social capital that have witnessed an erosion of their relevance;

(b) This process is not limited to the aftermath of the crisis, but goes back a long way, with roots that can be traced to, at least, the 1970s; and

(c) Trumpism is more connected with long-term decline than with local interpersonal inequality, which tends to be far higher outside those tightly-knit communities;

we will analyse the swing of votes to the Republican Party between the 2012, on the one hand, and the 2016 and 2020 presidential elections—the Trump margin—on the other and regress it on the three factors that might have driven the surge in vote for Trump: social capital, interpersonal inequality, and economic and demographic decline. In view of the theoretical framework developed above, we will also look at the interactions between those factors, as the Trump vote could have increased in a) those places having suffered a long-term decline that are more unequal; in b) places with high social capital that are more unequal; and c) in places having suffered a long-term decline, with a strong level of social capital.

The model adopts the following form:

TMc,20xx−2012 = α + β1 Income pcc,2016 + β2 Inequalityc,2016

+β3 Social Capitalc,2016 + β4 Economic

& Demographic Changec,2016−t + γ1X¯c,t + νs + εc

where,

TMc, 20xx−2012 represents the Trump margin, that is the change in the share of the vote between Donald Trump in 2016 or 2020 and Mitt Romney in 2012;

Income pcc,2016 denotes the income per capita in a county in 2016;

Inequalityc,2016 is a measure of income inequality within a county in 2016;

Social Capitalc,2016 depicts the level of social capital in a county in 2016;

Economic & Demographic Changec,2016−t indicates changes in employment, population, average earnings, and average wages in a given county between 2016 and any year marking the start of a decade, going back to 1970;

X¯c,t is a vector of other variables that could have affected a shift in the vote for Donald Trump. These include variables that have been identified in the scholarly literature as factors behind the rise in Trump and/or populist vote, including population density, levels of unemployment, education, the racial composition, the sex ratio, the age structure, the share of married adults, or the local impact of imports from China at the county level;

finally,

νsis a state − level f ixed − ef fect, while εc

denotes the error term.

Data

Geographical units

The analysis is conducted at county level. This approach allows us to investigate very long-term impacts on local areas in a consistent way. However, one critique of using counties as our unit of analysis is the ecological fallacy, as we are generalising from the individual to the county level. This is unlikely to be a major problem here, however, as studies show that local context is an important determinant of individual attitudes (e.g., Reeves and Gimpel, 2012).3 As the data are drawn from multiple sources and cover the last five decades, there was a need for some matching to reflect changes in county boundaries over the period of analysis. The data have, therefore, been levelled at the county geographical division used by the Bureau of Economic Analysis (BEA) in 2017. As county boundaries underwent extensive changes, particularly in the state of Virginia, some modifications have been included. In the case of Virginia 51 counties in the state have been assembled into 23 ‘county compounds’, or county-equivalents. Alaska, which also underwent considerable modification in local boundaries, is excluded from the analysis. In the rest of the US, county adjustments are either inexistent or very minor. 3067 of the 3143 county or county-equivalents across the US are included in the analysis.4

Dependent variable and independent variables of interest

The dependent variable in our model is the ‘Trump Margin’ (Figure 1), which represents the difference in the share of voter support for Donald Trump in the 2016 or 2020 presidential election relative to that of the previous Republican candidate, Mitt Romney, in 2012. It uses data drawn from the MIT Election Data and Science Lab for 2012 and 2016 and from McGovern et al (2020) for 2020. Following Goetz et al. (2019) and Agnew and Shin (2019), we use the difference in share instead of Trump’s overall share of votes, as we deem that this margin better signifies the increase in populist vote between both elections.5

The three main independent variables of interest depict (following the theoretical discussion above) social capital, interpersonal inequality and economic and demographic decline.

The measure for social capital is based on an update by researchers at Penn State for the year 2014 of Rupasingha’s et al. (2006) index. Rupasingha et al. (2006) created—inspired by Putnam’s (1993, 2000) concept of civic engagement and using principal component analysis—a social capital index at county level for the US including four key components. These were: a) the number of non-profit organisations in a county, excluding those with an international approach; b) the census response rates in 2010; c) voter turnout in the 2012 presidential election and d) a number of associational indicators, including bowling centres, business, civic and social associations, golf courses and country clubs, labour, professional, religious and political organisations, fitness and recreational sports centres and sports teams and clubs, with all these factors aggregated and divided by population. The four factors included in the index were standardised. The first principal component is considered as the index of social capital.

Mapping this index at county level provides a very uneven geography of social capital across the US. The highest levels of social capital were concentrated around the Midwest and, especially, the Great Plains states. Both Dakotas, Iowa, Kansas, Minnesota, Montana, Nebraska and Wyoming boasted the highest level of social capital. Social capital was also high in the northwest (Oregon and Washington state) as well as in some areas around the Great Lakes, such as Wisconsin, rural Illinois, Ohio, eastern Pennsylvania and parts of New England. Social capital was, by contrast, significantly weaker in the South, particularly in Kentucky and Tennessee, and in some Mountain states, such as Arizona, Nevada and Utah (Figure 3).

The second independent variable of interest, Interpersonal inequality, is based on data drawn from the 2013–2017 5-year American Community Survey (ACS). At the core of the analysis is the 2016 county-level Gini index of incomes in a county. Two alternative measures are considered for robustness. These are the share of the population in the county in the top income quintile and that in the top 5% of income.

Income inequality in the US is highest in the Deep South, particularly in states such as Alabama, Arkansas, Louisiana, Mississippi, South Carolina and eastern Kentucky, as well as in the largest urban agglomerations, such as New York City, Los Angeles, Chicago, Houston, Miami, Detroit and the Bay Area (Figure 4). The lowest differences in income inequality are found in Midwestern states, and mainly in small-town and rural communities in Illinois, Indiana, Iowa, Missouri, Ohio and Wisconsin, as well as in some parts of the Mountain states such as Nevada, Utah or Wyoming (Figure 4).

The third and final independent variable of interest is Economic and demographic decline. In the econometric analysis, we use four different proxies: three for economic change (employment change, change in average earnings per job, and change in average wages and salary) and population change as a proxy for demographic change. The benchmark measure of change at the county level is employment change between 1980 and 2016. However, in successive parts of the analysis all four economic and demographic change indicators are considered, covering, by decade, the period between 1970 and 2016. The data for 2016 are drawn from the 2013–2017 5-year ACS. For earlier years, we resort to Bureau of Economic Analysis data. To ensure a normal distribution of residuals, all change variables are transformed logarithmically.

Figure 5 provides an indication of economic change across counties in the US. It represents changes in employment between 1980 and 2016. As expected, the biggest growth in employment over that period of 36 years took place along the Pacific coast, in the north-east urban corridor, and in southern Florida. The lowest levels of employment growth occurred in the Great Plains states, along a strip running from East Texas in the south to North Dakota in the north (Figure 4). Many areas south of the Great Lakes and in the South have also performed relatively badly in employment terms. However, all is not gloom around the Great Lakes, as the area between Chicago and Milwaukee witnessed considerable growth in employment, as did most of the counties on the shores of Lake Erie.

Control variables

In addition, several control variables, representative of factors that have been associated with the rise of populism in the US and elsewhere, are included in the analysis. First, we consider income per capita in 2016, as variations in the territorial levels of wealth have been related to populist vote. Population density has been highlighted by certain authors (e.g., Rodden, 2019) as a driver of populism. Traditional parties, and mainly those of the left, are increasingly struggling in suburbs and rural areas of the US (Rodden, 2019). Population density at the county level is represented by its value in 2016. Unemployment is frequently regarded as another determinant linked to the rise of discontent and populism (Algan et al., 2017; Guriev, 2018). We control for the unemployment rate at the county level in 2016. Education is also a prominent factor behind the rise in antisystem voting. Low levels of education have been seen to be crucial for Brexit, the election of Donald Trump and the rise of populist alternatives elsewhere (e.g., Essletzbichler et al., 2018; Goodwin and Heath, 2016; Sides et al., 2017). We, therefore, use an indicator of the percentage of adults with higher education in each county in 2016. The racial dimension has been recurrent in the analysis of the outcome of the 2016 US presidential elections, with some accounts highlighting that the role of race and racial attitudes may be more important than economic factors (e.g., Morgan and Lee, 2018; Reny et al., 2019; Sides et al., 2017). We control for the share of black population in 2016 in US counties and, in alternative specifications, for the share of whites in that year. Demographic variables have also featured prominently (e.g., Goodwin and Heath, 2016). We include three such variables: the sex ratio of the population, the young-age dependency ratio and the share of married adults. Finally, the ‘China shock’ is often signalled as a trigger of discontent at the ballot box (Autor et al., 2016). We, therefore, include a measure of imports from China at county level.

A list of the variables in the analysis, together with their definitions and sources, is included in Supplementary Table A1 in the Supplementary Appendix.

Descriptive analysis

What is the connection between the dependent variable (the Trump margin) and the independent variables of interest? Plotting the correlation between the Trump margin in the 2016 and 2020 US presidential elections and the three independent variables of interest reveals that the correlation between social capital, inequality and employment change since 1980, on the one hand, and the Trump margin, on the other, is, at best, tenuous. The strongest correlation is between employment change and the swing in votes towards Donald Trump. Counties with a greater decline in employment over the period of analysis supported Donald Trump in far greater shares than they supported Mitt Romney in 2012. The link between interpersonal inequality and the increase in the Republican vote is inexistent, while places with a higher social capital 2014 showed marginally higher shifts in votes towards Donald Trump (Figure 6).

The correlations among the independent variables of interest are similarly weak. There is no link between inequality and changes in employment, while counties with higher levels of social capital have, on average, slightly lower interpersonal inequality and witness marginally lower employment growth since 1980 (Figure 7). The link between county size and any of the correlations is highly imperfect, although larger counties are somewhat more unequal, have lower social capital, and experience, with notable exceptions, greater employment growth (Figure 7).

Econometric analysis

Basic model

The question is whether these relationships stand when all these factors are included together with additional controls in a regression analysis. The results of regressing model (1), using simple ordinary least squares (OLS) and including state fixed-effects, are presented in Table 1. Regressions 1 through 5 report the estimation for the 2016 election, while Regression 6 does it for the 2020 election. We run both elections separately as the conditions of both elections were very different: in 2016 Trump voters were electing an outsider with a limited track record in politics, while in 2020 they were voting for an incumbent president.

The results highlight that, once the income per capita of the different counties in the US and the conditions of their state are controlled for, interpersonal inequality, long-term employment change and differences in social capital across US counties are connected to a swing towards Donald Trump in the 2016 presidential election (Table 1, Regression 4).

However, this connection is not always in the direction expected by Putnam (2000) in Bowling alone. The combination of social capital and lower inequality as a protector of American democracy is not discernible. While richer counties shifted towards Trump’s populist positions in lower numbers than poorer counties both in 2016 and 2020, more unequal areas of the country were less swayed by Trump’s brand of populism. By contrast, places with greater civic engagement and a stronger social capital opted in larger numbers for the more extreme option in 2016, although the connection is not significant in the 2020 election, once other control variables are included. Counties that have witnessed considerable destruction of employment since 1980 were also convinced to a greater extent by Trump’s discourse than areas that experienced greater job creation (Table 1). These results are robust to including the three independent variables of interest together in the regression (Table 1, Regression 4) and additional controls expected, according to the literature, to affect populist vote (Table 1, Regressions 5 and 6). They are also robust to clustering the standard errors at county level (Supplementary Table A2). The coefficient for inequality, which is significant and negative when all the controls regressed together in the 2016 election (Regression 5), becomes insignificant in the 2020 election (Regression 6). In 2016 citizens living in the more unequal counties of the US were far less inclined to swing towards Donald Trump, but this relationship became weaker four years later.6

The coefficients for the control variables are generally in line with expectations. More densely populated counties, counties with a higher share of university graduates, those with a higher share of black population, those less affected by imports from China, and those with a younger population swung less to Trump (Table 1). The unemployment rate yields insignificant coefficients in both elections, while the increase of support for Donald Trump is higher in places with a lower share of married adults.7

These results are robust to changing the share of black population in a county by that of whites (Supplementary Table A5), with counties with a greater share of white population swinging towards Donald Trump, and to changes in the measurement of inequality at the county level. Counties with a greater percentage of people in the top income quintile (Supplementary Table A6) and those with a higher proportion of individuals in the top 5% of the income distribution (Supplementary Table A6) had a lower Trump margin in 2016, but not in the 2020 elections.

The introduction of interactions between the independent variables of interest barely alters the results emanating from the basic model. Changes in employment since 1980 and all the control variables, including income per capita at the county level, yield the same sign in the coefficients and similar levels of significance. Once again, counties that have seen a greater employment decline put more trust in Donald Trump than they did in Mitt Romney (Table 2). Social capital remains positive and significant, apart from Regression 2, where it becomes insignificant for the 2016 election, and insignificant in 2020. While inequality displays a negative coefficient that is significant for the 2016 election and in 2020, when the interaction between employment change and inequality is considered (Table 2).

The significant interactions are those between employment change and interpersonal inequality in 2016 and 2020 and between employment change and social capital in 2020. In the case of the former, both coefficients are positive and significant, meaning that the swing to Donald Trump was more pronounced not only in poorer counties, in those with lower interpersonal inequalities, and those that had suffered a long-term employment decline, but also in counties where high levels of employment growth were matched by a high degree of interpersonal inequality (Table 2, Regressions 1 and 4). In the case of the latter, citizens living in counties with higher levels of social capital voted less for Trump in 2020, if employment had grown more than elsewhere in the previous 40 years (Table 2, Regression 6).

Different types and time horizons of decline

So far, we have concentrated just on one side of economic and demographic change: employment change since 1980. What happens if we consider different types of decline? In Table 3 we take into consideration, not just employment change, but also population change (Regressions 2 and 6), change in average earnings per job (Regressions 3 and 7), and in average wages and salaries (Regressions 4 and 8).

The results indicate that long-term employment and population decline over a period of almost 40 years has been strongly connected with a swing to Donald Trump at the ballot box in both 2016 and 2020 (Table 3, Regressions 1, 2, 5 and 6). Declines in average earnings and in wages and salaries are, in contrast, disconnected from the Trump margin in 2016. By contrast, counties that increase their average earnings per job and average wages and salaries, once other factors are controlled for, swung more towards Trump in 2020. In these counties presence of strong social capital was also linked to a higher Trump margin (Table 3, Regressions 7 and 8).

These results chime well with the literature highlighting that the rise of populism in the US has more to do with racial issues than individual economic factors (Norris and Inglehart, 2019; Reny et al., 2019) and with a sense of alienation of the white working classes (Cramer, 2016; Morgan and Lee, 2018; Walley, 2017), what Kimmel (2017) calls ‘angry white men’. However, they also powerfully relate to the literature that has focused on geographical dimensions and, in particular, with long-term economic decline, mostly in Europe (e.g., Guilluy, 2019; Rodríguez-Pose, 2018) but, increasingly, in the US (e.g., Wuthnow, 2019). However, in contrast to the findings for Europe, where the rise of anti-system voting at the ballot box has been linked to economic and industrial decline, but not to employment and demographic decay (Dijkstra et al., 2020), in the US it is the slow demise of still strong communities that have been losing employment and population for some time that triggers the reaction at the ballot box to a far greater extent than declines in earnings and salaries. Once we have established that long-term unemployment and demographic decline have a powerful connection to Trump’s vote margin, the question is whether this association waxes or wanes with time. Table 4 looks at the change in these relationships over time, including the link with changes in average earnings and wages and salaries, since 1970 in ten-year intervals. This implies that the regressions are the same as in Table 3, only substituting the time covered in each of the economic and demographic decline variables. Only the coefficients for these variables are reported, as there are no significant changes in the other coefficients.

The coefficients displayed in Table 4 show that the link between employment and population decline at the county level and Trump’s vote margin is not a recent phenomenon. The coefficients for employment and population change are always negative and highly significant, regardless of the period and election considered. Counties that have been shedding employment and losing population since the 1970s have been more inclined to support Donald Trump than they did Mitt Romney in 2012. Having said that, the dimension of the negative coefficients is generally larger for the more recent periods than for longer time spans. The 2008 Great Recession has provided a springboard for the rise of populist discourse and a populist candidate, but the seed of discontent was planted, as indicated by Cramer (2016), quite some time earlier.

Table 4 once again points to the fact that this reaction at the ballot box is more about the long-term decline of communities shedding jobs and people than about the loss of earnings, wages, and salaries. The coefficients for the change in average earnings per job are mostly insignificant. However, it is often the case that counties witnessing a higher increase in wages and salaries swung more towards Donald Trump, particularly in the 2020 election. Hence, ‘it is not the very poor that are threatening the political system but the large numbers of still relatively well-off people—often seen as the threatened middle classes—still living relatively comfortable lives but in declining places’ (Rodríguez-Pose, 2020: 1–2).

Conclusions

Two decades ago, Putnam (2000) warned that American democracy was at risk from the twin challenges of the decline in civic engagement and social capital on the one hand, and the rise in interpersonal inequality on the other. More Americans bowling alone and engaging to a far lesser extent than before in local communities and an increasingly divided society from an economic perspective represented a twin threat to the democratic institutions that had been built since independence.

Sixteen years later his forecast materialised with the election of Donald Trump, an outsider and political novice with strong populist tendencies, who first stunned the Republican Party elite by securing its presidential nomination, and then went on to beat the Democratic party candidate, Hillary Clinton, in the November 2016 election.

Yet, the election of a candidate that, by shaking the system, has stretched American democracy to the limit, may have had little to do with declining social capital and rising interpersonal inequality and much more with the long-term employment and population decline of many formerly prosperous American communities. These communities are precisely those where social capital—the very form of capital that, according to Putnam (2000), was supposed to provide the glue for America’s democratic institutions—has held stronger than elsewhere.

This is what this paper has shown. By combining social capital with interpersonal inequality and long-term economic and demographic decline at county level in the US and linking it to the swing to Donald Trump at the ballot box in the 2016 and 2020 presidential elections, it has revealed that the rise in discontent identified by some scholars (e.g., Cramer, 2016; Kimmel, 2017; Wuthnow, 2019) is at the root of the Trump electoral tsunami. However, this analysis has provided evidence for the deep geographical roots of this phenomenon. It is not just simply the white working class that is rebelling against the system. There are plenty of white working-class voters on the West Coast, along the eastern megalopolis or in American large cities, as well as in medium-sized cities, towns and rural areas that did not swing and/ or did not vote for Donald Trump. It is middleand working-class individuals, who live in communities that have seen better times and have for long experienced a slow, but relentless employment and population decline, and where social capital has remained relatively strong, that cast the decisive votes to put Donald Trump in office in 2016. The link between social capital and the Trump margin became weaker in the 2020 election when considering population and employment decline, but not when taking into account changes in earnings per job and in wages and salaries. Hence, social capital and local civic engagement may not have acted as the positive forces envisaged by Granovetter (1973) or Putnam (2000), but, in most cases, more in the negative way suggested by Satyanath et al. (2017), through mechanisms possibly linked to local consciousness and identity (Cramer, 2016).

The long-term economic and demographic decline of many tightly-knit American communities has driven the rise of Trumpism. A decline that can be traced back to the last quarter of the 20th century and that has created a malaise that goes well beyond the crisis and that is increasingly manifesting itself at the ballot box. Declining, but still rather cohesive communities with strong social capital are the drivers of this process. In mostly small-town and rural areas of the US, the rise in the populist vote is a consequence of a reaction of communities in which individual losses are strongly identified with collective losses. And social capital may act as one of the transmission mechanisms. Individuals living in these communities know that a loss for one is a loss for all. Therefore, the rise of populism in the US is fundamentally linked to the geography of decline; to places that, despite remaining relatively homogeneous in terms of interpersonal inequality, have witnessed considerable employment and demographic decay over the long term. The Great Recession of 2008 may have ignited the fuse that resulted in the election of Donald Trump as president, but the discontent has roots that are far deeper.

#### It's an independent existential risk and magnifies all others

Andrew Leigh 21, Australian member of Parliament, former professor of economics at the Australian National University, 2021, What's the Worst That Could Happen?: Existential Risk and Extreme Politics, unpaginated ebook version

How likely is it that humanity could end? Experts working on catastrophic risk have estimated the chances of disaster for a wide range of the hazards that our species faces. Adding up the threats, philosopher Toby Ord estimates the odds that humanity could become extinct over the next century at one in six, with an out-of-control superintelligence, bioterrorism, and totalitarianism among the largest risks. He argues that most of the risks have arisen because technology has advanced more rapidly than safeguards to keep it in check. To encapsulate the situation facing humanity, Ord titled his book The Precipice.

A one in six chance of going the way of dodos and dinosaurs effectively means we are playing a game of Russian roulette with humanity’s future. Six chambers. One bullet. Even the most foolhardy soldier usually finds an excuse not to play Russian roulette. And that’s when just their own life is at stake. In considering extinction risk, we’re contemplating not one fatality but the death of billions or possibly trillions of people—not to mention countless animals.

It can seem impossible to imagine our species becoming extinct due to a catastrophe such as nuclear war, asteroids, or a pandemic. But in reality, the danger surpasses plenty of perils we already worry about. One way to put catastrophic risk into perspective is to compare it with more familiar risks. If extinction risk poses a one in six risk to our species over the next century, then it means that it is far more hazardous than many everyday risks. Specifically, it suggests that the typical US resident is fifteen times more likely to die from a catastrophic risk—such as nuclear war or bioterrorism—than in car crash.2

Extinction risk outstrips other dangers too. Ask people about their greatest fears, and you’ll get answers like “street violence,” “snakes,” “heights,” and “terrorism."4 But in reality, these are much less hazardous than catastrophic risks. People in the United States are 31 times more likely to die from a catastrophic risk than from homicide. Catastrophic risk is 3,519 times likelier to kill than falls from a height, and 6,194 times more likely to kill than venomous plants and animals. If you have ever worried about any of these threats, you should be more fearful about cata- strophic risk. Extinction risks aren’t just more dangerous than any of them; they are more hazardous than all of them put together. Catastrophic risk poses a greater danger to the life of the typical US resident than car accidents, murder, drowning, high falls, electrocution, and rattlesnakes put together.

A one in six risk is just the danger in a single century. Suppose that the risk of extinction remains at one in six for each century. That means there’s a five in six chance humanity makes it to the end of the twenty-first century, but less than an even chance we survive to the end of the twenty-fourth century. The odds that we survive all the way to the year 3000 are just one in six. In other words, if we continue playing Russian roulette once a century, it’s probable that we blow our brains out before the millennium is halfway through, and there’s only a small chance that we make it to the end of the millennium.

Part of the reason humans undervalue the future is that it’s hard to get our heads around the idea that our genetic code could live on for millions of years. At present, the best estimates are that our species, Homo sapiens, evolved around three hundred thousand years ago.1 That means we have existed for about ten thousand generations. But we have another one billion years before the increasing heat of our sun brings most plant life to an end.1 That’s plenty of time to figure out how to become an interstellar species and move to a more suitable solar system. Humans could live to enjoy another thirty million generations on earth.

Thinking about the mind-boggling scale of these numbers, I’m reminded of the Total Perspective Vortex machine, created by Douglas Adams in The Restaurant at the End of the Universe. Anyone brave enough to enter sees a scale model of the entire universe, with an arrow indicating their current position. As a result, their brain explodes. As Adams reflects, the machine proves that “if life is going to exist in a universe of this size, then the one thing it cannot afford to have is a sense of proportion.”

Still, let’s try. Imagine your ancestors a hundred generations ago. They are your great-great-great-great-great-great-great- great-great-great-great-great-great-great-great-great-great-great- great-great-great-great-great-great-great-great-great-great-great- great-great-great-great-great-great-great-great-great-great-great- great-great-great-great-great-great-great-great-great-great-great- great-great-great-great-great-great-great-great-great-great-great- great-great-great-great-great-great-great-great-great-great-great- great-great-great-great-great-great-great-great-great-great-great- great-great-great-great-great-great-great-great-great-great-great- great-great-great-grandparents. These people lived around 1000 BCE, at the start of the Iron Age. They might have been part of Homeric Greece, ancient Egypt, Vedic age India, the preclassic Maya, or Zhou Dynasty China.

Contemplate for a moment about what the hundred genera- tions between our Iron Age ancestors and today have achieved. They built the Taj Mahal and Sistine Chapel, the Angkor Wat and Empire State Building. Thanks to them, we can relish the poetry of Maya Angelou, novels of Leo Tolstoy, and music of Ludwig van Beethoven. An abundance of inventions has delivered us deli- cious food, homes that are comfortable year-round, and technol- ogy that provides online access to a bottomless well of entertain- ment. If time machines existed, we might pop in to visit our great100 grandparents, but few would volunteer to stay in the Iron Age.

Yet humanity is really just getting started. If things go well, it’s ten thousand generations down, thirty million to go. Imagine what those future generations could do, and how much time they have to enjoy. Here’s one way to think about what it means to have thirty million generations ahead. Suppose humanity’s potential time on the planet was shrunk down to a single eighty- year life span. In that event, we would now be a newborn baby— just nine days old. Homo sapiens is a mere 0.03 percent through all we could experience on earth.

We won’t meet most of those who follow us on the planet, but we should cherish future generations all the same. If you value humanity’s past achievements—the Aztec and Roman civiliza- tions, art of the Renaissance, and breakthroughs of the Industrial Revolution—then the generations to come are just as worthy. This is what political philosopher Edmund Burke meant when he described society as “a partnership not only between those who are living, but between those who are living, those who are dead, and those who are to be born.’- To appreciate the past is akin to admiring the achievements of distant places. Like geography, his- tory helps us better understand the way of the world.

Politicians like me like to speak fondly about looking after "our children and our grandchildren.” But it usually stops after a generation or two. Policy pays little heed to the many generations that will follow. For my own part, it took a coronavirus-induced shutdown to have the time to spend reflecting deeply about the long term. This book had been rattling around in my head for years, but it was only when all my meetings, events, and travel were canceled that I had the time to write it. Pandemics are one of the threats to humanity that I’ll discuss in this book, but in this instance, it provided a chance to reflect on the long term. It’s tempting to ignore the distant future. It’s easier to love the grandchildren whom we hug than the great-great-great-grand- children whom we’ll never get to smile on. But that doesn’t make those far-flung generations any less important. Via my wife, our children can trace their lineage to Benjamin Franklin, but I’m more excited about the potential achievements of the generations yet to be born.

For companies and governments, a major impediment to long- term thinking is the idea of discounting the future. When investing money, this is a reasonable approach. A dollar in a decade’s time is less valuable than a dollar today for the simple reason that a dollar today could be invested and earn a real return. Share markets have good and bad years, but based on returns from the past 120 years, someone who put $1,000 into the US stock market for an average year could expect it to be worth $1,065 after twelve months (accounting for dividends and inflation).2 Approximating these returns, when governments contemplate making investments, they often apply a discount rate of around 5 percent, while companies use rates that are higher still.2

When it comes to growing your greenbacks, this makes perfect sense. If Kanesha offered you $ 1,000 today, and Jane offered you $ 1,000 in a year’s time, most of us would think that Kanesha was making the more generous offer. Kanesha’s cash can be put to productive use and would be worth more than Jane’s when the year is out.

But what if we’re talking about Kanesha and Jane themselves? Suppose Kanesha is alive today, and Jane is yet to be born. When discounting is applied to lives, it suggests that Kanesha’s life to- day is worth twice as much as Jane’s life in fifteen years’ time. It implies that Kanesha today is worth 132 times as much as Jane in a century’s time. So if we’re spending money to keep them safe, a 5 percent discount rate indicates that we should spend more than a hundred times as much to protect Kanesha today than to pro- tect Jane in a century’s time.

The further we stretch the time period, the more ridiculous the results become. Discounting at a rate of 5 percent implies that Christopher Columbus is worth more than all eight billion people on the planet today.— Naturally, it also implies that your life is worth more than eight billion lives in five hundred years’ time. Even if you value the hug of a loved one over the unseen successes of next century’s generations, is it fair to ruthlessly dis- miss the distant future? Discounting is the enemy of the long term.

As philosopher Will MacAskill points out, there is something morally repugnant about concluding that the happiness of those who will be alive in the 2100s is inconsequential simply because they live in the future. MacAskill coined the term “presentism” to refer to prejudice against people who are yet unborn.” Just like racism, sexism, or other forms of bigotry, he argues that mis- treating those who live a long way in the future is unfair. To dis- criminate in favor of Kanesha against unborn Jane is a form of presentism. If you traveled back in time to the 1500s and met someone who claimed that they were worth more than everyone alive in the 2000s, you’d rightly regard them as an egomaniac. Isn’t it equally narcissistic to ignore the happiness of people in the 2500s?

Some have contended that we should favor the living over the unborn for the same reason that philanthropy favors the down- trodden over the wealthy. If incomes rise over time, the argument goes, then asking today’s citizens to help those in the future is like taking from the poor to give to the rich.— But this reasoning ignores the fact that we are talking about the survival of future generations. Theoretical riches won’t do them any good if they are practically dead—or if planetary apocalypse snuffs out their chance to be born. Similarly, it misses the possibility that future pandemics, wars, or climate disasters could make coming genera- tions significantly poorer.—

Insights from behavioral science help explain why humans aren’t good at understanding extinction risk.— Our thinking about dangers is skewed by an “availability bias”: a tendency to focus on familiar risks. Like the traders who failed to forecast the collapse of the securitized housing debt market, we are lousy at judging the probability of rare but catastrophic events. Most important, our instincts fail us as the magnitudes grow larger. In research titled "The More Who Die, the Less We Care,” psychologists Paul Slovic and Daniel Vastfjall argue that we become numb to suffering as the body count grows.— Humans’ compassionate instincts are aroused by stories, not statistics. Indeed, one study found that people were more likely to donate to help a single victim than they were to assist eight victims. This may help explain why the international community has been so slow to respond to genocide, including recent incidents in Rwanda, Darfur, and Myanmar. As artificial intelligence researcher Eliezer Yudkowsky notes, human neurotransmitters are unable to feel sorrow that is thousands of times stronger than a single funeral.— The problem is starker still when it comes to extinction risk. Our emotional brains cannot multiply by billions.

Add to this a media cycle that has become a media cyclone, in which stories explode in a matter of minutes, and “outrage porn” seems to drive the news choices of many outlets. In the 2016 US election, researchers found that for every piece of professional news shared on Twitter, there was one piece of “junk news.’’— Conflict fueled by social media keeps us in a primal state of rage and retaliation. And this isn’t the only force that makes politics myopic. Campaign contributions tend to come from donors who have an immediate interest in a “today” issue rather than from people aiming to solve long-term problems. This kind of “instant noodle” politics prioritizes quick results and sidelines fundamental challenges.

In this environment, a special style of politics has thrived: populism. The term “populist" gets thrown around a lot—typically as an insult—so it’s worth taking a moment to define it precisely.— Populists see politics as a conflict between crooked elites and the pure mass of people. Many candidates trying to defeat an incumbent will criticize “insiders,” but populists make a stronger attack on elites, claiming that they are dishonest or corrupt. Populists then claim that they—and only they—represent the “real people.” Populists combine a fierce critique of elites and personal appeal to the “silent majority.”

The political strategy of populists involves critiquing intellectuals, institutions, and internationalism. The political style of populists tends to be fierce. They do not strive for unity and calm consensus. Populists share with revolutionaries a desire for sudden and dramatic change. They have little respect for experts and the systems of government. Populists’ priorities tend to be immediate issues such as crime, migration, jobs, and taxes. Consequently, the electoral success of populists has served to sideline work on long-term dangers such as climate change and nuclear war.

Donald Trump may have lost his presidential reelection bid, but he has transformed the Republican Party, which has jettisoned its longstanding commitment to free trade, immigration, and global alliances. Many moderate Republicans, who might have served comfortably under Ronald Reagan or George H. W. Bush, have quit the party or been defeated by Trump-supporting populists. The Republican Party, which holds nearly half the seats in Congress and controls a majority of state legislatures, has embraced populism to a degree that was unimaginable when it was led by George W. Bush, John McCain, or Mitt Romney. After four years under President Trump, the Republican Party is now more cynical and isolationist, focused on immediate grievances rather than long-term challenges.

Yet while the strength of populism threatened to sideline issues of catastrophic risk, coronavirus did the opposite. The worst pandemic in a century led to the most severe economic crisis since the Great Depression. Churches and concert halls fell silent. International travel collapsed. The Summer Olympics were postponed. Stocks plunged, and for a brief moment, the price of a barrel of oil went negative. Globally, millions lost their jobs, and millions more faced famine.

COVID-19 never threatened to extinguish humanity, but it highlighted our vulnerability to infectious diseases. More than at any time in living memory, people focused on the dangers of pandemics. The popularity of Geraldine Brooks’s Year of Wonders, Stephen King’s The Stand, Emily St. John Mandel’s Station Eleven, and Albert Camus’s The Plague vividly illustrates the way in which fear of pandemics has become more acute.

We know that disasters can remake society. The black death helped usher in the Renaissance.— The Great Depression made a generation of investors more risk averse.— World War II spawned the United Nations and formed the modern welfare state. In autocracies, droughts and floods can topple dictators.—

Coronavirus is reshaping the world in numerous ways.— Handwashing is in. Cheek kissing is out. The rise of big cities is slowing as people consider the downsides of density. Firms that automated their production systems to deal with physical dis- tancing requirements and stay-at-home orders are discovering that they can get by permanently with fewer staff. More tele- working and less business travel is leading to a drop in demand for receptionists, bus drivers, office cleaners, and security guards. When it comes to our use of technology, coronavirus suddenly accelerated the world to 2030. When it comes to globalization, the pandemic took us back to 2010.

But it’s still an open question as to how COVID-19 will affect humanity’s ability to think about the long term. Most of the examples I’ve listed are instances in which crises affected societies organically: the shock came, and it changed our behavior. But accentuating the long term requires taking risk more seriously and placing greater emphasis on saving our species. Linebackers are swift to respond when an offensive player suddenly takes a step to the right. But it takes longer to recognize that a team’s offensive plays are skewed to the right and modify the defensive formation accordingly.

Like a football team that adapts its tactics, this book argues that we should lengthen our thinking. At minimal cost, society can massively reduce the odds of catastrophe. By ensuring that the big threats get the attention and resources they need, we can safeguard the future of our species. As insurance policies go, this one is a bargain.

In the chapters that follow, I’ll outline the biggest risks facing humanity. I’ll begin in chapter 2 with pandemics, such as the possibility that the next virus might combine the infectiousness of COVID-19 with the deadliness of Ebola. What can we do to shut down exotic animal markets, speed up vaccine develop- ment, and create surge capacity in hospitals? I’ll then delve into bioterrorism, and the danger of extremists developing their own versions of smallpox or the bubonic plague. How difficult is it for them to create these devilish diseases, and what can we do to prevent it?

In chapter 3, I’ll then explore climate change—perhaps the in- tergenerational issue that has received the most public attention in recent years. While much of the modeling looks at how global warming could be bad, my focus is on the chances that it’s catastrophic. This isn’t about climate change shortening the ski season; it’s about the possibility of temperatures rising by 18°F (10°C), rendering large sections of the planet uninhabitable. What does the risk of cataclysmic climate change mean for energy policy?

Next, I’ll turn to nukes. As a child in the 1980s, I vividly re- member watching The Day After. My classmates and I agreed that a nuclear war was inevitable. When the Cold War ended, the world seemed safer, but in the three decades since, the threat from new nuclear powers has made the problem less predictable. As I discuss in chapter 4, what we used to call an arms race now looks more like a bar fight, with hazards coming from unexpected directions, including terrorist groups. Yet just as there are practical ways to avoid pub brawls (don’t drink past midnight, avoid the stairs, look out for the glass), so too are there sensible strategies that can reduce the odds of nuclear catastrophe (adopt a “no first use" policy, reduce the stockpiles, control loose nukes).

A superintelligence has been dubbed the “last invention” we’ll ever make. An artificial intelligence machine whose abilities exceed our own could turbocharge productivity and living stan- dards. But it could also spell disaster. If we program our artificial intelligence to maximize human happiness, it could fulfill our wishes literally by immobilizing everyone and attaching electrodes to the pleasure centers of our brains. As chapter 5 notes, what makes artificial intelligence different from every other risky technology is its runaway potential. Once a superintelligence can improve itself, it is unstoppable. So we need to build the guardrails before the highway.

What are the odds? In chapter 6,1 complete the discussion of catastrophic danger by examining less risky risks, including asteroids and supervolcanoes. I also consider the prospect of “unknown unknowns.” For example, prior to the first atomic bomb test, some scientists thought there was a chance it could set the atmosphere on fire, destroying the planet. When the Large Hadron Collider was being built, critics warned that the particle collisions inside it could create micro black holes. Although neither situation eventuated, they raise the question of what other doomsday scenarios could be lurking around the corner. How should the prospect of these unexpected risks change our approach to cutting-edge science? Drawing together these dangers with the major hazards, I report the likely probability of each, benchmarking existential risks such as nuclear war and pandemics against individual risks such as being struck by lightning or dying on the battlefield.

Ultimately, tackling existential risks is a political problem. Private citizens can achieve many things, but preventing nuclear war, averting bioterrorism, and curbing greenhouse emissions are fundamentally problems of government. Governments control the military, levy taxes, and provide public goods. So the values of those who run the country will determine how much of a priority the nation places on averting catastrophe.

That’s why the rise of populists is crucial to humanity’s long- term survival. In chapter 7,1 discuss the factors that have led to the electoral success of populists during recent decades, and why populists tend to be uninterested in dealing with long-term threats. Populists’ focus on the short term means that—like a driver distracted by a back seat squabble—we’re in danger of missing the threats that could kill us. I’ll explore why populists around the world struggled to respond to COVID-19, and what this says about the dangers that populism poses to our species. Most critics of populism have concentrated on the present day. They’re missing the bigger picture. Populists are primarily endangering the unborn.

Bad politics doesn’t just exacerbate other dangers; it represents a risk factor in itself through the possibility of a totalitarian turn —in which democracy is replaced by an enduring autocracy. The road to democracy is not a one-way street. Over the centuries, dozens of countries have backslid from democracy into autocracy —abandoning the institutions of fair elections, protection for minorities, and free expression. Such an outcome could be deadly for dissenters and miserable for the multitudes. Chapter 8 explores why democracy dies and identifies the signs that institutions are being undermined. Chapter 9 suggests how we might strengthen democracies to allow citizens to have a greater say, and lower the chances of the few taking over from the many. Chapter 10 concludes the book.

When COVID-19 hit, many rushed out to buy life insurance.— In our personal lives, we know that spending a small amount on insurance can guard against financial ruin. Societies can take a similar approach: implementing modest measures today to safe- guard the immense future of our species. For each of the existential risks we face, there are sensible approaches that could curtail the dangers. For all the risks we face, a better politics will lead to a safer world.

Because of its focus on the urgent over the important, populist politics should perhaps bear the label, “Warning: populism can harm your children." But what is the alternative? In the conclusion, I argue that the answer lies in the ancient philosophy of stoicism. A stoic approach to politics isn’t about favoring one side of the ideological fence over another. Instead, it’s about the temperament of good political leadership. Stoicism emphasizes that character matters and holds that virtue is the only good. Decisions are based on empirical evidence, not emotion. Anger has no place in effective leadership. Strength comes from civility, courage, and endurance. Stoics make a sharp distinction between the things they can change and those they cannot.

**2**

**Prohibitions must forbid --- Governing standards are distinct**

**Chanell 90** --- William Chanell, Associate Justice, California Court of Appeals, “CITY OF REDWOOD CITY v. DALTON CONSTRUCTION COMPANY”, Dec 1990, https://caselaw.findlaw.com/ca-court-of-appeal/1769184.html

We agree with the trial court's conclusion. By its plain language, section 35704 **exempts certain contractors from the application of an ordinance** [221 Cal. App. 3d 1573] adopted pursuant to section 35701. Section 35701 permits cities to **prohibit** the use of city streets by heavy trucks. (See § 35701, subd. (a).) **However**, the portion of the city's hauling ordinance at issue in this case **does not prohibit street use**; it **regulates users** by requiring them to obtain a permit and pay a fee in order to lawfully drive their heavy trucks over city streets. (See Redwood City Code, §§ 20.62-20.74.) To determine the legislative intent behind a statute, courts look first to the words of the statute themselves. In so doing, we must give effect to the statute according to the usual, ordinary import of its language. (Moyer v. Workmen's Comp. Appeals Bd. (1973) 10 Cal. 3d 222, 230 [110 Cal. Rptr. 144, 514 P.2d 1224].)

To construe section 35704, which specifically creates an exemption from prohibition of use, to exempt the regulation of that use would violate these cardinal rules of statutory construction. [2] The distinction between a **regulation** and a **prohibition** is **well understood** in municipal law. (See San Diego T. Assn. v. East San Diego (1921) 186 Cal. 252, 254 [200 P. 393, 17 A.L.R. 513].) The term "prohibit" means "[t]o **forbid by law**; to prevent;-**not synonymous with 'regulate**.' " (Black's Law Dict. (5th ed. 1979) p. 1091, col. 1.) The term "regulate" means "**to adjust by rule, method, or established mode**; **to direct by rule** or restriction; **to subject something to governing principles of law**. It does not include a power to suppress or prohibit [citation]." (In re McCoy (1909) 10 Cal. App. 116, 137 [101 P. 419].) [1b] Therefore, we are satisfied that section 35704 was not intended to apply to ordinances regulating street use, but only to those prohibiting such use.

**Only per se rules bans a PRACTICE --- rule of reason regulate anticompetitive effects for individual acts**

**Stucke 09** --- Maurice E. Stucke, Associate Professor, University of Tennessee College of Law, “Does the Rule of Reason Violate the Rule of Law?”, University of California, Davis [Vol. 42:1375 2009], https://lawreview.law.ucdavis.edu/issues/42/5/articles/42-5\_Stucke.pdf

But who has created this predicament? The Supreme Court. Over the past ninety years, the Court has supplied the Sherman Antitrust Act’s legal standards. In determining the legality of restraints of trade, the Supreme Court generally employs either a per se or rule-of-reason standard.10 Under the Court’s per se illegal rule, certain restraints of trade are deemed illegal without consideration of any defenses. These restraints are so likely to harm competition and to lack significant procompetitive benefits that, in the Court’s estimation, “they do not warrant the time and expense required for particularized inquiry into their effects.”11 Under the per se rule, once a plaintiff proves an agreement among competitors to engage in the prohibited conduct, the plaintiff wins.12 But the Court evaluates all other restraints under the rule of reason. This standard involves a **flexible** factual **inquiry** into a restraint’s overall competitive effect and “the facts **peculiar to the business**, the history of the restraint, and the reasons why it was imposed.”13 The rule of reason also “**varies in focus and detail** depending on the nature of the agreement and market circumstances.”14 “Under this rule the fact finder weighs all of the circumstances of a case in deciding whether a restrictive practice should be prohibited as imposing an unreasonable restraint on competition.”15 Despite its label, the rule of reason is not a **directive defined ex ante (such as a speeding limit).**16 Instead, the term embraces antitrust’s most **vague and open-ended principles**, making prospective compliance with its requirements exceedingly difficult.

**Vote neg for GROUND and LIMITS --- Other standards dodge topic uniqueness and links --- Standard prolif makes the topic unmanageable**

**3**

#### <<The United States federal government should substantially increase non-antitrust prohibitions on private sector conduct that is more restrictive of competition than reasonably necessary to enable creation of information technology standards>>

**Non-antitrust solves and avoids our turns**

**Delrahim 17** --- Makan Delrahim, Assistant Attorney General, Remarks at the USC Gould School of Law's Center for Transnational Law and Business Conference, Friday, November 10, 2017, https://weblaw.usc.edu/resources/downloads/faculty/centers/ctlb/reforming-patent-form-conference.pdf?121120153141

Against this backdrop, I respectfully submit that enforcers and courts should be mindful of the proper application of antitrust law to standard setting. There is a growing trend supporting what I would view as a mis**use of antitrust** or competition law, purportedly motivated by the fear of so-called patent hold-up, to police private commitments that IP holders make in order to be considered for inclusion in a standard. This trend is troublesome. If a patent holder violates its commitments to an SSO, the **first** and **best** line of defense, I submit, **is the SSO** itself and its participants.

These commitments are typically **contract**ual in nature. More specifically, SSOs often impose obligations on IP holders seeking to have their technology evaluated and, if selected, incorporated into a standard to engage in fair, reasonable, and nondiscriminatory licensing of their technology— what we call “FRAND" or ‘RAND" commitments. Disputes inevitably arise regarding what licensing fees or practices are "reasonable," and "nondiscriminatory," as you would expect with free-market negotiations. We should be most concerned, however, when this dispute involves concerted action, on either side—the implementers or the innovators.

If a patent holder is alleged to have violated a commitment to a standard setting organization, that action may have some impact on competition. **But**, I respectfully submit, that does not mean the **heavy hand of antitrust** necessarily is the appropriate remedy for the would-be licensee—or the enforcement agency. There are **perfectly adequate** and **more appropriate** common law and statutory' remedies available to the SSO or its members.

Patent rights are conferred by statute and guaranteed by the U.S. Constitution. The enforcement of valid patent rights should not be a violation of antitrust law. A patent holder cannot violate the antitrust laws by properly exercising the rights patents confer, such as seeking an injunction or refusing to license such a patent. Set aside whether taking these actions might violate the common law. Under the antitrust laws, I humbly submit that a unilateral refusal to license a valid patent **should be per se legal**. Indeed, just this Monday, Chief Judge Diane Wood, a former Deputy-Assistant Attorney' General at the Antitrust Division, stated that "[e]ven monopolists are almost never required to assist their competitors."

Under the existing statutory scheme, it is not the **duty** or the **proper role** of antitrust law to referee what unilateral behavior is **reasonable** for patent holders in this context. Patent holders make decisions every day about how to exploit their property rights, knowing that the consequence of those actions may be to subject themselves to contractual or other common law' liability'. The blunt application of antitrust law to such unilateral conduct throw's those decisions into **disarray**, threatening to punish IP holders with **onerous penalties** that can **deter other innovators** from taking the necessary **R&D investment** risk to develop the next great technological leap forward.

More importantly, refraining from imposing **antitrust penalties** gives **teeth** to more appropriate common law remedies and allows SSOs to live up to their promise. In a breach of contract action, a party can litigate the facts regarding what constitutes a "reasonable" or "nondiscriminatory" rate or commitment. If there is a violation of a reasonableness standard, the factfinder can decide it, like they do in other instances of contract violations. Antitrust enforcers should exercise greater humility and enforce the antitrust laws in a manner that best promotes dynamic competition for the benefit of consumers.

In case anyone is inclined to misunderstand my comments, let me clearly state that there is an important role for antitrust scrutiny in the standard setting context. With respect to innovators, I agree with the D.C. Circuit’s en banc statement in United States v. Microsoft that ~[i]ntellectual property rights do not confer a privilege to violate the antitrust laws." Nor does membership in a standard setting organization confer immunity from serious antitrust scrutiny. Given the incentives participants in SSOs face to bend licensing negotiations to their benefit, there is a risk that members of standard setting bodies could engage in collusive, anticompetitive behavior.

Courts and antitrust law enforcers have long understood that SSOs "can be rife with opportunities for anticompetitive activity." When competitors come together, there is always a risk that they will engage in naked cartel-like behavior, such as fixing downstream prices or boycotting a new entrant. In cases like Radiant Burners, Allied Tube, and Hydrolevel, the Supreme Court has condemned efforts to use SSOs as a means of excluding particular competitors or products, emphasizing that such conduct can cause harm to competition. For that reason, enforcers should carefully examine and recognize the risk that SSO participants might engage in a form of buyer’s cartel, what economists call a monopsony effect.

When implementers act together within a standard-setting organization as the gatekeeper to sales of products including a new technology, they have both the motive and means to impose anticompetitive licensing terms. At the extreme, they can shut down a potential new technolog}' in favor of the status quo, all to the detriment of consumers. The risk of failing to implement a new technology does not fall equally on innovators and implementers. The prospect of hold-out offers implementers a crucial bargaining chip. Unlike the unilateral hold-up problem, implementers can impose this leverage before they make significant investments in new technolog}'.

The Antitrust Division will therefore be skeptical of rules that SSOs impose that appear designed specifically to shift bargaining leverage from IP creators to implementers, or vice versa. SSO rules purporting to clarify the meaning of "reasonable and non-discriminatory" that skew the bargain in the direction of implementers warrant a close look to determine whether they are the product of collusive behavior within the SSO.

If an SSO pegs its definition of "reasonable" royalties to a single Georgia-Pacific factor that heavily favors either implementers or innovators, then the process that led to such a rule deserves close antitrust scrutiny. While the so-called "smallest salable component" rule may be a useful tool among many in determining patent infringement damages for multi-component products, its use as a requirement by a concerted agreement of implementers as the exclusive determinant of patent royalties may very w-ell warrant antitrust scrutiny.

It is just as important to recognize that a violation by a patent holder of an SSO rule that restricts a patent-holder’s right to seek injunctive relief should be appropriately the subject of a contract or fraud action, and rarely if ever should be an antitrust violation. Patents are a form of property, and the right to exclude is one of the most fundamental bargaining rights a property owner possesses. Rules that deprive a patent holder from exercising this right—whether imposed by an SSO or by a court—undermine the incentive to innovate and worsen the problem of hold-out. After all, without the threat of an injunction, the implementer can proceed to infringe without a license, knowing that it is only on the hook only for reasonable royalties.

In this regard. I believe Judge Posner was badly mistaken in the Apple v. Motorola case, in which he held that IP owners who make FRAND commitments somehow sacrifice their right even to seek an injunction. Though the Federal Circuit corrected that ill-conceived decision, its ruling did not improve matters much. The court of appeals held that making a FRAND commitment and entering into other licenses “strongly suggest" that damages for infringement should be adequate relief, meaning that injunctive relief should be denied except in rare cases. In my view, that is a distinction without much of a difference. We should not transform commitments to license on FRAND terms into a compulsory licensing scheme. Indeed, we have had strong policies against compulsory licensing, which effectively devalues intellectual property rights, including in most of our trade agreements, such as the TRIPS agreement of the WTO. If an SSO requires innovators to submit to such a scheme as a condition for inclusion in a standard, we should view the SSO s rule and the process leading to it with suspicion, and certainly not condemn the use of such injunctive relief as an antitrust violation where a contract remedy is perfectly adequate.

The Antitrust Division will carefully scrutinize what appears to be cartel-like anticompetitive behavior among SSO participants, either on the innovator or implementer side. The old notion that “openness" alone is sufficient to guard against cartel-like behavior in SSOs may be outdated, given the evolution of SSOs beyond strictly objective technical endeavors. I therefore urge antitrust enforcers to take a more humble approach to the application of antitrust to unilateral violations of SSO commitments and to take a fresh look at concerted actions within SSOs that cause competitive harm to the dynamic innovation process. I likewise urge SSOs to be proactive in evaluating their own rules, both at the inception of the organization, and routinely thereafter. In fact, SSOs would be well advised to implement and maintain internal antitrust compliance programs and regularly assess whether their rules, or the application of those rules, are or may become anticompetitive.

My remarks here should not surprise anyone here who has followed my statements in the past. The views expressed here are consistent with the views I have held since my service in the mid-1990s at the U.S. Trade Representative's Office, during my time working for the Senate Judiciary Committee with exclusive jurisdiction over the federal intellectual property and antitrust laws, and in my last tour of duty in the Antitrust Division in the early 2000s.

Fresh thinking about the implications of SSOs and the proper role of antitrust law is long overdue. Bargaining over new and innovative technologies is a high stakes game, and each side has an incentive to use every means necessary’ to improve its end of the bargain. In this game, the competitive market process should win. SSOs should not be a tool for IP licensors or licensees to obtain more favorable terms than they would otherwise achieve in an unconstrained market.

We don't have the tools to know what the competitive royalty rate is—we're not price regulators, after all—and if we inject antitrust law where it does not belong, it can actually **subvert the competitive process** and do **serious harm to American consumers** and to innovation itself. But we should guard against traditional forms of anticompetitive behavior to ensure that competitive rates prevail. That is why concerns over possible innovator hold-up should not override the dangerous prospect of implementer hold-out. It's time to correct this asymmetry to ensure that there are maximum incentives to innovate, and equally proper incentives to implement.

**4**

**Topical affs must create new duties under the core antitrust law**

**KOVACIC 03** --- WILLIAM E. KOVACIC General Counsel Federal Trade Commission, et al, “In the Supreme Court of the United States VERIZON COMMUNICATIONS INC., PETITIONER v. LAW OFFICES OF CURTIS V. TRINKO, LLP”, MAY 2003 https://www.justice.gov/atr/case-document/brief-united-states-and-federal-trade-commission-amici-curiae-supporting-0

I. Telecommunications firms must comply with both the 1996 Telecommunications Act and the Sherman Act. As the antitrust savings clause in the 1996 Act makes clear, that Act neither restricts the scope of the antitrust laws by conferring implied immunity, **nor expands antitrust** liability **by creating new antitrust duties that did not exist before the** 1996 **Act's passage.**

**Violation --- Plan doesn’t specify antitrust enforcement --- plan text in a vacuum could expand contract or patent law**

**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)

Contract and patent law **certainly** play major roles in rendering FRAND commitments effective. Contract law principles can be employed to determine the FRAND rate and ensure royalties are collected. Contract law also can operate to enforce the “nondiscrimination” prong of a FRAND commitment and thereby prevent SEP owners from discriminating against certain implementers.36 Patent law operates, following eBay, by limiting the use of injunctions for SEP owners that have made FRAND commitments. Patent law also operates by setting reasonable royalties, in principle, at the level to which the SEP owner and the implementer would have agreed in a hypothetical negotiation prior to the establishment of the standard,37 based on the smallest saleable patent-practicing component of the infringing device.38

**5**

**SCOTUS will avoid sweeping ruling in West Virginia v. EPA – a broad ruling wrecks climate response and turns the case**

**Farah 11-1** [Niina H. Farah, E&E News legal reporter, 11-1-2021 https://www.eenews.net/articles/what-the-supreme-courts-move-means-for-epa-climate-rules/]

The Supreme Court may be poised to put new guardrails on the Biden administration’s climate agenda after justices agreed last week to consider the extent of EPA’s authority to regulate carbon emissions.

The court sent **shock waves** through the legal world when it agreed Friday to consider a consolidated challenge from Republican-led states and coal companies. The challenge stemmed from a federal court ruling that struck down a Trump-era regulation gutting EPA’s climate rule for power plants (E&E News PM, Oct. 29).

When the justices issue their ruling in the EPA case, which is expected by next summer, the decision could provide the first indication of how the court’s new 6-3 conservative majority will approach questions of the federal government’s role in curbing global climate change.

“This is likely to result in **one of the most significant environmental rulings** the court has **ever** reached,” said Robert Percival, director of the Environmental Law Program at the University of Maryland’s law school.

The court’s decision could place new limits on how expansively EPA can interpret its authority to use the **C**lean **A**ir **A**ct to address **climate change**.

Friday’s order coincided with the beginning of global climate negotiations at the 26th Conference of the Parties, or COP, in Glasgow, Scotland. It also comes as Congress is negotiating a Democratic spending package that would pump more than $500 billion into addressing climate change. The Biden administration’s goal is to cut U.S. greenhouse gas emissions in half by 2030 and put the electricity sector on a path to zeroing out carbon emissions by 2035.

West Virginia Attorney General Patrick Morrisey (R) praised the justices’ decision to review the ruling earlier this year by the U.S. Court of Appeals for the District of Columbia Circuit, which scrapped the Trump administration’s Affordable Clean Energy rule and handed the Biden team a clean slate to draft a new regulation for coal-fired power plant emissions (Greenwire, Jan. 19).

“This is a tremendous victory for West Virginia and our nation. We are extremely grateful for the Supreme Court’s willingness to hear our case," Morrisey said in a statement Friday.

"This shows the Court realizes the seriousness of this case and shares our concern that the D.C. Circuit granted EPA too much authority," he continued. "Given the insurmountable costs of President Biden’s proposals, our team is eager to present West Virginia’s case as to why the Supreme Court should define the reach of EPA’s authority once and for all."

White House national climate adviser Gina McCarthy said yesterday that the administration believes the high court will uphold EPA’s ability to regulate carbon emissions across the electricity sector.

"The courts have repeatedly upheld the EPA’s authority to regulate dangerous power plant pollution," she told reporters on a call. She noted that the appeals court had struck down the Trump-era rule that would have weakened power plant regulations.

McCarthy said the White House is confident that the Supreme Court will rule in a way that affirms that “EPA has not just the right but the authority and responsibility to keep our families and communities safe from pollution."

Critics of the Supreme Court decision to hear the case said that in most instances, federal courts wait for an agency to enact a rule before they weigh in on a legal controversy around the agency’s power to regulate.

"In that sense, this seems like a power grab. But we don’t know yet," said Bethany Davis Noll, executive director of the State Energy & Environmental Impact Center at New York University School of Law.

Instead of reinstating the Obama-era Clean Power Plan — which interpreted the "best system of emission reduction" to include emissions trading or shifting generation to renewable energy — EPA under Biden opted to start from scratch. The power sector has already surpassed the 2015 Clean Power Plan’s emissions reductions target a decade early.

The agency under Biden has yet to publish a draft proposal, and observers says it may now choose to wait for the Supreme Court’s decision before writing a new carbon rule.

EPA did not respond to a request for comment on the Supreme Court’s order but agency Administrator Michael Regan defended the agency’s authority Friday on Twitter.

"Power plant carbon pollution hurts families and communities, and threatens businesses and workers," he tweeted. "The Courts have repeatedly upheld EPA’s authority to regulate dangerous power plant carbon pollution."

**Agency powers**

Several observers said the Supreme Court’s eventual ruling in the case could be limited to power plants, while others predicted a bigger blow to emissions regulation for other sectors.

"The issue just gets dumped back in Congress’ lap," said Jeff Holmstead, a partner at the law and lobbying firm Bracewell LLP, of the possible consequences of the court’s limiting EPA’s power.

"Any kind of meaningful regulatory program could be well off the table," he said.

**A more concerning** — **but less likely** — **possibility** would be if the high court used the case to more **broadly undermine** the regulatory authority of federal agencies.

"It’s possible that what the court is seeking to review here is Section 111(d) itself," said Michael Burger, executive director of Columbia Law School’s Sabin Center for Climate Change Law.

He referred to the part of the Clean Air Act that EPA used to regulate carbon emissions from existing power plants under former presidents Obama and Trump.

"If that’s the case, **the broadest threat** here **is not just** about climate change, or about **EPA’s authority**, but it’s about the power of the court to review congressional authorizations of agency action," he said.

In a **worst-case scenario**, the high court could give itself authority to tell Congress "in almost any instance" that it has to be more specific about delegating authority to agencies, Burger added.

In their petitions to the Supreme Court, the coal companies and states targeting EPA’s power to regulate raised concerns about whether Congress had clearly given the agency the authority to address utility emissions on a broad, systemwide basis.

The challengers also asked the justices to weigh in on whether Congress could lawfully allow EPA to act on emissions under Section 111(d) of the Clean Air Act under the **non-delegation doctrine**, which says that lawmakers cannot hand off their legislative authority to executive agencies. The Supreme Court’s conservative wing **has expressed interest** in reviving the long-dormant legal doctrine.

That argument could threaten not only Biden’s rule proposals, but also **existing regulations**.

**The plan causes institutional balancing – SCOTUS couple’s the plan’s expansion of agency enforcement with an equal and opposite ruling in West Virginia constraining agencies**

**HLR 11 –** Harvard Law Review, “ADVISORY OPINIONS AND THE INFLUENCE OF THE SUPREME COURT OVER AMERICAN POLICYMAKING”, June, 124 Harv. L. Rev. 2064, Lexis

In assessing the Court's power relative to the elected branches, it is first necessary to be clear about what motivates the Supreme Court. When exercising judicial review, the Court seeks to vindicate its constitutional vision by striking down legislation repugnant to that vision. This is true whether one believes that the Court seeks in good faith to divine the true meaning of the Constitution and impose it on the elected branches, attempts to interpret the Constitution faithfully but subconsciously imports its own policy views, or disingenuously strives to implement its policy preferences in the guise of neutral interpretation. For the purposes of the present argument it is irrelevant which view or combination of views is most accurate, and the phrase "constitutional vision" will stand for any and all of these. Yet as suggested above, the Court is not unconstrained when it seeks to effect its constitutional vision through judicial review: if it strays too far from the political mainstream, n55 it will face consequences that undermine its constitutional [\*2076] vision even more than would the upholding of a disfavored statute. n56 The upshot is that the Court **operates under conditions of scarcity** and must **economize on its political capital** to go as far in implementing its constitutional vision as political realities allow, which sometimes means **upholding (or declining to review) government actions** that contravene that vision. n57 And, as a distinct matter, most [\*2077] Justices have **displayed a desire** to **conserve** the Court's **p**olitical **c**apital and maintain its institutional prestige as much as possible even where the Court was not immediately threatened with any hard political constraints. n58 This conservatism is especially understandable given that the Justices are generally not political experts and lack the sophisticated public relations apparatuses of the elected branches, and that the elected branches have substantial capacity to shift public opinion about the Court if they so choose; these factors make it rational for the Court to be parsimonious with its political capital in order to avoid blind overreaching.

[FOOTNOTE]

n57. Thus, the Court's decisionmaking process in a judicial review case incorporates its internal preferences and its **view of external constraints** as follows: R = B / C, where B equals the benefits to the Court's constitutional vision of invalidating a given piece of legislation, C stands for the cost the Justices expect to incur in terms of political capital, and R gives the **trade-off rate** between costs and benefits in any given case, such that the Court will expend its political capital in those cases where R is highest, so long as R > 1.

A reasonable objection to the model elaborated in this Part is that although the Court is politically constrained, this **"bank account" model** in which the Court has **finite political capital to "spend"** by striking down popular government actions is unrealistic: the Court can also increase its prestige - its institutional capital - by exercising judicial review, which has been the effect of Marbury and Brown, two decisions without which the Court would be much weaker now. Nonetheless, most countermajoritarian decisions **do** seem to **cost** the Court rather than **increase** its capital (Marbury was a refusal to make the countermajoritarian decision, see Friedman, supra note 53, at 60-62, and Brown **jeopardized rather than solidified** the Court's power over the years **immediately following** the decision, see Klarman, supra note 53, at 312-43). This is **especially true in the short run**, while the decision remains countermajoritarian, and **it is the short run that counts for the current Justices**: the fact that Brown is today sacrosanct did not help the Court when Southern resistance threatened that decision's efficacy in the years immediately after its announcement. Cf. Daryl J. Levinson, Parchment and Politics: The Positive Puzzle of Constitutional Commitment, 124 Harv. L. Rev. 657, 743 (2011) ("Evidently, the Court can build up a savings account of approval that it can then spend down by issuing unpopular decisions without losing public support."). The necessary implication of Levinson's statement is that **the "savings account" - and thus the Court's countermajoritarian capacity - is finite**. At any rate, the Court's position is **no different** from that of any other political actor: though the presidency as an institution, for instance, would certainly lose influence as a result of a string of weak, unassertive presidents, and might gain it through the acts of a strong leader, any given President at any given time is undoubtedly limited by political constraints.

**Biden delegation key to every impact** – especially key to end COVID, solve climate change, manage nuclear waste, and regulate Juul

**Mullen and Singh 20** ---- Hannah Mullen is a Graduate Fellow at the Appellate Courts Immersion Clinic (Georgetown Law) and a former clerk on the D.C. Circuit for the Honorable Merrick Garland with a JD (Harvard Law School), Sejal Singh is a Justice Catalyst Fellow at Public Citizen Litigation Group, former labor policy expert at the Congressional Progressive Caucus Center, and former Teaching Fellow in Constitutional law (Harvard Law School) with a JD (Harvard Law School), “The Supreme Court Wants to Revive a Doctrine That Would Paralyze Biden’s Administration,” *Slate*, 12/1, <https://slate.com/news-and-politics/2020/12/supreme-court-gundy-doctrine-administrative-state.html>

Joe Biden promised us an FDR-sized presidency—starting with **bold action to halt the spread of COVID-19**, **end the worst economic downturn in decades**, and **stop the climate crisis**. Biden could use **regulation** and **executive action** to move quickly to **decarbonize the economy**, **cancel student loan debt,** and **raise wages**. But a Biden administration has an even bigger problem than two long-shot special elections in Georgia: the new 6–3 conservative majority on the Supreme Court **may soon burn down the federal government’s regulatory powers.**

At least five conservative justices have signaled that they are **eager to revive** the “non-delegation doctrine,” the constitutional principle that Congress can’t give (“delegate”) too much lawmaking power to the executive branch. On paper, the rule requires Congress, when delegating power to an agency, to articulate an “intelligible principle” (like air pollution regulation needed “to protect public health”) to guide the agency’s exercise of that power. But in practice, the nondelegation doctrine is effectively dead. The court has only struck down two statutes on nondelegation grounds—and none since 1935.

Today, **most** of the government’s work is done through the “administrative state,” the administrative agencies and offices, like the **E**nvironmental **P**rotection **A**gency, the Department of Labor, and the Department of Education, which issue regulations and enforce laws. Congress **doesn’t have the capacity** to pass laws that nimbly address **complex, technical, and ever-changing** problems like **air pollution**, **COVID-19 exposure** in workplaces, drug testing, and the disposal of **nuclear waste**. So Congress tasks agencies staffed with scientists and other specialists to craft regulations that directly address those problems. This division of responsibility—Congress legislates policy goals and agencies implement them effectively—is the **foundation of functional government**.

Take, for example, the **C**lean **A**ir **A**ct. In 1963, Congress ordered the EPA to regulate air quality standards “at a level that is requisite to protect public health.” Based on that authority, the EPA routinely issues **lifesaving** regulations limiting lead in the air, air pollutants coming from chemical plants, and, **critically**, greenhouse gasses. Biden can use the CAA **to start tackling the climate crisis on Day One.** The dormant nondelegation doctrine is the **foundation** of **thousands of regulations** across **dozens of agencies**, allowing agencies to make technical decisions about, say, hospital reimbursement rates to administer Medicare or wage and hour rules that protect workers from exploitation.

But last year, in a case called Gundy v. United States, four conservative justices announced that they wanted to bring the nondelegation doctrine back to life. Gundy arose out of a national sex offender registry law that explicitly applied to everyone convicted after the law took effect but delegated authority to the Department of Justice to determine when and how it applied to people convicted before the law took effect. Herman Gundy, who was convicted before the registry law took effect, argued that the law violated the nondelegation doctrine. The court upheld the law. But in a dissent joined by Chief Justice John Roberts and Justice Clarence Thomas, Justice Neil Gorsuch wrote that the court should revive the dormant nondelegation doctrine.\* Gorsuch’s dissent argued that Congress may only delegate policymaking power to agencies under three narrow circumstances: to “fill up the details” of a legislative scheme; for executive fact-finding to determine the application of a rule; and to assign nonlegislative responsibilities to the executive and judicial branches. Justice Samuel Alito wrote separately to say he’d like to “reconsider” the nondelegation doctrine—just not in a case about sex offenders’ rights.

Justice Brett Kavanaugh wasn’t on the court in time to hear Gundy. But last fall, in a separate opinion, he signaled his support for Gorsuch’s new, revived nondelegation doctrine. That makes five votes for resurrecting the nondelegation doctrine and **taking a hatchet to landmark labor, environmental, and consumer protection law**—even without Justice Amy Coney Barrett, who, administrative law experts warn, shares the conservative justices’ hostility to the administrative state.

As Justice Elena Kagan pointed out in Gundy if the conservative justices bring back the nondelegation doctrine, **“most of Government** is **unconstitutional**.” Exactly how much government would be unconstitutional, though, isn’t clear. What does Gorsuch mean when he writes that Congress may give agencies the power to “fill up the details” of a legislative scheme? What does Kavanaugh’s test—that Congress may not delegate “major policy questions” to agencies—actually forbid in practice? Would Biden’s EPA be permitted to issue regulations about greenhouse gasses or new, **dangerous** chemicals leaking into our public waters? Congress relies on OSHA experts to set workplace safety standards that are “reasonably necessary or appropriate to provide safe or healthful employment.” Does that “delegate” too much power to OSHA to act fast to issue **COVID-19 safety standards** for transportation, grocery stores, and meatpacking workers, as Joe Biden has promised to do? What about the EEOC’s power to interpret anti-discrimination to address workplace dress codes that discriminate against Black women’s natural hair? What about the FDA’s authority under the Family Smoking Prevention and Tobacco Control Act to subject “any” tobacco products to federal regulations—is “tobacco products” narrow enough under Gorsuch and Kavanaugh’s tests? Or would an FDA decision to regulate Juul just like cigarettes be a “major policy question” outside agencies’ powers?

The **uncertainty alone** could give special interests like fossil fuel companies and Juul grounds to sue to stop, or at least hold up, **lifesaving regulations** issued by the Biden administration. They’re already trying—just last year, e-cigarette company “Big Time Vapes” argued that the FDA’s power to regulate “any” tobacco product violated the nondelegation doctrine. The U.S. Court of Appeals for the 5th Circuit rejected that challenge. But in its opinion, the 5th Circuit hinted that similar challenges could soon be successful, as the Supreme Court “might well decide—perhaps soon—to reexamine or revive the nondelegation doctrine.” And if that happens, all bets are off.

Such a decision **would not only threaten existing regulations**. It endangers **every piece of future progressive legislation,** too. Big, transformative legislative packages, like **a Green New Deal** or **“Medicare for All,”** would require a million and one technical decisions that Congress is poorly positioned to make. Biden and Congress **can pass legislation phasing the United States toward 100 percent clean energy by 2030**—but someone will have to actually sweat the details about which engines can be included in which cars.

Government **doesn’t work without the administrative state.** But that’s sort of the point. The conservative justices have long been hostile to regulation and executive action. And now they may finally have the votes to bring virtually any regulation to a halt. At least five justices are **ready to drop a 1,000-pound anvil on any Biden administration rule that displeases them**.

**6**

#### The United States federal government should

**- establish a national green bank conditional on IoT harmonization and use incentives and mandates to expediate investment**

#### - initiate multilateral diplomatic engagement with at least the Russian Federation and People’s Republic of China to develop rules of the road and ban the implementation of malware in NC3 systems.

#### - **reduce physical vulnerabilities by hardening and hiding substations and control facilities**

#### **- increase surveillance and security at critical sites and substations**

**- train and hire ICS cyber experts   
- develop and implement microgrids   
- secretly modify the Nuclear Posture Review to not respond militarily to a cyber attack**

#### Plank 1 solves – investment is the only argument

#### 1ac Klare and Wintich literally advocate the second and third plank – solves cyber

**7**

**Section 5:**

The FTC should issue clear enforcement guidance that the presently-existent phrase “unfair methods of competition in or affecting commerce” in Section 5 of the FTCA includes private sector conduct that is more restrictive of competition than reasonably necessary to enable creation of information technology standards. The FTC should release a policy statement and data sets that reflect and, accordingly, enforce this.

**CP solves --- lets the FTC buildup case law in lower courts**

**BULUSU 21** --- SIRI BULUSU, “FTC to Come Back Stronger After Dropping Qualcomm Litigation”, Bloomberg Law, April 2, 2021, https://news.bloomberglaw.com/antitrust/ftc-to-come-back-stronger-after-dropping-qualcomm-litigation

The Federal Trade Commission’s decision to drop its antitrust case against Qualcomm Inc. **is part of a broader strategy** to **regroup** and **build more favorable case law** rather than a retreat from this type of litigation, attorneys say.

Appealing the case to the U.S. Supreme Court now could end the FTC’s ability to target companies with similar business models if the justices rule against the agency.

But leaving in place last summer’s ruling from the U.S. Court of Appeals for the Ninth Circuit means the commission is **free to pursue cases** similar to Qualcomm in other areas of the country.

“From a legal standpoint, the decision in Ninth Circuit will be binding on the FTC with regards to what goes on out West, but that won’t be binding when it comes to, say, the Fifth Circuit which covers Texas and some other places,” said David Long, a patent attorney and managing partner at Essential Patent LLC.

“So there’s a chance they thought, well let’s see if we can get some more **victories** in some other circuits,” he said.

And an upcoming shift in the independent agency’s political makeup likely means increased scrutiny of companies using similar patent licensing models.

The FTC currently has two Democrat and two Republican members following former Chairman Joseph Simons’ departure at the end of January. President Joe Biden March 24 nominated Lina Khan to replace Simons, which would fill out the commission’s five-member panel if she’s confirmed by the Senate.

Democrats in general like to target large corporations’ abuse of power, while Republicans favor a more conservative approach to avoid chilling otherwise legitimate competitive behavior, said Lucy Clippinger, an antitrust attorney at Baker & Miller PLLC.

“I would anticipate that once there are three Democrats and two Republicans on the Commission, they will be much more likely to vote in favor of pursuing additional cases” similar to Qualcomm, she said.

Overstepped Authority

Last summer, the Ninth Circuit ruled that Qualcomm hadn’t engaged in anticompetitive practices by threatening to cut off the licenses to its “essential” semiconductor components unless electronics makers like Apple and Samsung paid “unreasonably high” royalties.

The company gets most of its revenue from selling chips, but the majority of its profit comes from licensing the thousands of patents it owns on technology that underpins how modern phone systems work.

“The Ninth Circuit acknowledged our historic contributions to the industry and reminded us all that hypercompetitive behavior should be encouraged,” Don Rosenberg, Qualcomm’s executive vice president and general counsel, said in a statement to Bloomberg Law. “Now, more than ever, we must preserve the fundamental incentives to innovate and compete,” he said.

Announcing that the FTC is dropping the case, acting Chairwoman Rebecca Kelly Slaughter recently said the commission faces “significant headwinds” if goes before the Supreme Court.

Those “headwinds” could relate to the appeals court’s view that the FTC overstepped its antitrust authority to accuse Qualcomm of abusing its ownership of an essential patent to engage in illegal monopolization, Long said.

At the heart of the Qualcomm case is a standards-setting rule under patent law that requires an essential patent, or standard-essential patent, to be available on fair, reasonable, and non-discriminatory terms. The Ninth Circuit held that the FTC’s reliance on the FRAND rule was outside the agency’s purview.

“So the FTC knew they were on the fringe of antitrust law and that was a tough place to begin with,” Long said.

A representative for the FTC declined to comment on the Qualcomm case beyond the agency’s March 29 statement.

Political Shift

Khan’s nomination to lead the FTC signals the White House’s intent to take a more aggressive antitrust enforcement stance.

The Columbia Law School professor and tech industry critic is likely to favor broad applications of antitrust law and tip the commission toward bringing more cases like Qualcomm.

The FTC’s decision to abandon Qualcomm is “indicative of what would happen” if the commission continued to have two members of each political party, said Kevin Post, a patent attorney with Ropes & Gray LLP. “I suspect there will be another nomination, so you wouldn’t get a split vote,” he said.

Biden is likely to replace Commissioner Rohit Chopra, a Democrat who’s been nominated to head the Consumer Financial Protection Bureau.

“The Qualcomm decision really highlights the very thin and not well defined line between hyper-competitive activity and anti-competitive activity—and that line often falls along political lines,” Clippinger said.

“The FTC’s decision to abandon the Qualcomm case should not be read as a policy statement that it will no longer be pursuing similar cases,” she said.

Spotlight on Semiconductors

Texas’ semiconductor industry is likely to be the FTC’s next target, Post said. Like Qualcomm’s dominance in cellular chips, a few large companies there produce the technology that’s essential to manufacturing electronic devices.

Semiconductors are “such an important technology across a variety of end products, and there are only a few companies that have power” in this area, Post said.

Manufacturers with connections to Texas should be mindful of antitrust concerns, he said.

Long said the chance for an appeals court ruling that contradicts the Ninth Circuit **will be years in the making.**

In the meantime, startups could see the decision as a green light to develop new, patented innovations that they license in the same manner as Qualcomm.

Yet companies should pay close attention to the details in Qualcomm and use it as a roadmap when developing licenses, Post said.

“I would advise companies considering adopting licensing practices similar to those used by Qualcomm **to consult with their antitrust counsel** and consider the risk that the FTC may bring **additional actions** targeting this type of conduct,” Clippinger said.

**innovation**

### 1NC --- Compliance High

**FRAND compliance high**

**SPULBER 20** --- DANIEL F. SPULBER, Elinor Hobbs Distinguished Professor of International Business, and Professor of Strategy, Strategy Department, Kellogg School of Management, Northwestern University, and Professor of Law (Courtesy), Pritzker School of Law, Northwestern University, “LICENSING STANDARD ESSENTIAL PATENTS WITH FRAND COMMITMENTS: PREPARING FOR 5G MOBILE TELECOMMUNICATIONS”, COLO. TECH. L.J. Vol. 18.1, April 2020, http://ctlj.colorado.edu/wp-content/uploads/2021/02/18.1\_4-Spulber-4.2.20.pdf

Patent license agreements are the best indicators of FRAND commitments in both generic and specific ways. First, SEP license agreements are **routine** and **commonplace** and such contracts have existed for more than **half a century**.185 The population of patent license contracts provides a picture of common practice across many types of contracts over time. The **many SEP license agreements** illustrate contractual norms and standard contractual provisions including royalties. Such standard practice satisfies the generic legal definition of what is “reasonable”. Black’s Law Dictionary defines “reasonable” as “fair, proper, or moderate under the circumstances.”186 Common practice in contracting also recalls the legal standard in tort of a “reasonable person” as “a person who exercises the degree of attention, knowledge, intelligence, and judgment that society requires of its members for the protection of their own and of others’ interests.”187

Second, standard practice in SEP license agreements characterizes the meaning of FRAND in a specific sense because licensors have made FRAND commitments before entering into those contracts. Indeed, the parties are fully informed about the content of IP policies of the relevant SSOs and the implementor is well informed about the patent holder’s SEP declarations and FRAND commitments. By forming SEP contracts in light of the FRAND commitments, the provisions of those contracts including royalties implicitly define what is meant by “fair”, “reasonable”, and “nondiscriminatory”.

SEP license agreements in the market reflect the judgments, experience, capabilities, knowledge, and business relationships of a large number of SEP holders and implementors. These agreements are “fair” and “reasonable” because they take place in a competitive market environment: the SEP holder and the implementer have jointly chosen the provisions of the agreement. The parties also voluntarily choose what bargaining procedures they will use to arrive at the provisions of the patent license agreement. Royalties and other provisions of a patent license agreement provide the best indicators of what is “fair” and “reasonable”.

SEP license agreements define negotiated FRAND commitments because they are made by willing SEP holders and willing implementers. Patent license agreements in general, whether or not they are FRAND, reflect a meeting of the minds of the licensor and the licensee. In contrast to patent disputes involving infringement, there is no need for a court to imagine a hypothetical negotiation or to construct a contract. There is no need for third parties to infer the expectations of the parties, their business plans, or their costs and benefits.

Negotiation of patent license agreements accurately reflects the information that the parties have at the time. Negotiation of SEP licenses depends on the subjective perspectives of the parties making agreement. The parties may also negotiate contingent contracts that adjust to events that occur after the contract is negotiated, subject to the transaction costs of contingent contracting.188 SSOs do not provide details or specific guidance for FRAND commitments because SEP holders and implementers are best informed about their commercial interests and the potential benefits of their patent license agreements.

SEP license agreements characterize FRAND commitments because the parties are fully informed about the relevant technology standards. These technology standards are extensive, detailed, and publicly available. The parties may have participated in the technical committees and decision making of the SSO. The parties also are fully informed about the patents because SSOs require public declaration of SEPs and detailed Letters of Assurance (LOAs) that specify the asserted patent claims. Technology standards often reference SEPs, which provides additional information to potential licensees. The parties involved in SEP license negotiations will tend to be informed because they are likely to be companies that are knowledgeable in the industry. Patent license agreements typically involve specialized patent attorneys. Companies involved in SEP license negotiations are likely to be well informed because they may have recurring business transactions and longterm business relationships.

Patent license agreements, including SEP license agreements, are intrinsically “fair” and “reasonable” because they are contracts. As with other types of contract, patent license agreements involve offer, acceptance, and consideration. Patent license agreements protect the reasonable expectations of the parties, although there are varying interpretations of what are reasonable expectations.189 These agreements generally are formal written contracts and the terms tend to be tailored for the specific licensor and licensee rather than containing highly standardized provisions. Patent license agreements have all other properties of contractual agreements and benefit from the framework and protections of contract law.

In a patent license negotiation, as in any other contract negotiation, self-interest implies that the parties seek to maximize their joint benefits. This means that, apart from negotiation over how to divide the gains from trade, both parties have incentives to maximize the total gains from trade. Economic analysis consistently predicts that parties to a negotiation seek agreements that are Pareto Optimal, that is, there is no agreement that would improve the benefits of one party without reducing the benefits of the other party.190 Ronald Coase emphasizes the efficiency of bilateral bargaining when transaction costs are low.191 This suggests that the provisions of patent license agreements, including royalties, will be those that maximize the joint benefits of the parties.

A patent license agreement is a form of what I termed an “Intellectual Contract”.192 Patent license agreements take into account the special characteristics of intangible assets,193 and because a patent license agreement is a contract, negotiations take place within the context of contract law. This means that all of the protections and mechanisms of contract law are in the background, including defenses against mistake and misrepresentation. Patent license agreements are commercial contracts with formal written provisions, and typically, the provisions are not standardized but vary with the type of technology and the characteristics of the parties involved.194

The combination of SSO IP policies, market negotiation of patent licenses, and legal enforcement of IP rights has been generally **successful**. An important indication of this success is that patent disputes **are relatively rare.**195 Ron Katznelson finds that patent lawsuits were less than **one third of one percent** of U.S. patents in force during the period 1923-2013.190 The litigation rate for SEPs is also **very low**: patent lawsuits were about **one half of one percent** of U.S. SEPs at ETSI. which has the highest concentration of SEPs.197 This suggests that the litigation rate would be considerably lower when comparing the number of patent lawsuits to the number of patent license agreements.

The large number of SEPs declared to SSOs provides an important indication of the importance of negotiated FRAND commitments. Pohlmann and Blind find about 200,000 declared SEPs.198 Stitzing et al. examine a subsample of the 79,257 declared SEPs for ETSI standards.1" Pohlmann considers declared granted and active SEPs for cellular telecommunications standards: 25,064 for Long Term Evolution (LTE), 19,069 for Universal Mobile Telecommunications Service (UMTS), and 6,293 for Global System for Mobile Communications (GSM)-200 Pohlmann also finds declared granted and active SEPs for related standards: 2,780 for video coding technologies such as Advanced Video Coding (AVC), 1,704 for broadcasting standards such as Digital Video Broadcasting (DVB), and 1,537 for wireless technology standards such as WiFi.201 Bek-kers et al. consider a dozen SSOs and find about 4,910 SEP disclosures.202

Declaration of SEPs may exceed the number of patents that are necessary to implement the standard.203 This occurs because companies may have incentives to over-declare SEPs.204 SSOs require declaration of SEPs for patents to be included in standards. Even with over-declaration, however, SEP holders **remain bound by FRAND commitments** so that SEP licenses reflect FRAND commitments.

The implementation of technology standards provides additional evidence of the success of SSO FRAND commitments, private license negotiation, and legal enforcement of IP rights. For example, Biddle et al. point to 251 standards in a laptop computer and find that about three quarters of the 197 standards they evaluated were covered by FRAND.205 The many products that conform to standards established by SSOs, such as smartphones and other electronic devices, further indicates that there are **many underlying SEP license agreements.** There is **widespread conformity** to technology standards by suppliers of parts, components, and software, suggesting the existence of many SEP licensing agreements. For example, it is projected that in several years, there will be almost 5 billion devices with one or more USB-C ports.206 AT&T licenses SEPs for MPEG-4 standards subject to FRAND commitments. These SEPs are licensed to 25 companies that offer “mobile handsets, game consoles, digital cameras, set-top boxes, broadcast equipment, video teleconferencing equipment and software.”207

There are a number of indications that the number of SEP license agreements is significant.208 The 200,000 declared SEPs suggest that there are many license agreements. Companies have been licensing SEPs for over half a century, as noted previously. The many companies that are members of SSOs further suggest that there are a **significant number of potential licensees.**

Comparison of negotiated licenses with licensing by patent pools provides a useful indication of the extent of SEP license agreements. This is because the number of negotiated SEP licenses is many times greater than license agreements offered by patent pools. It is estimated that there are nine times as many SEPs licensed through negotiation as those licensed through patent pools.209 Patent pools have entered into many SEP license agreements with implementers. For example, MPEG LA’s MPEG-2 Patent Portfolio License “has helped produce the most widely employed standard in consumer electronics history.”210 The MPEG-2 license lists 891 licensees and affiliates although not all may produce licensed products.211

### 1NC --- No Holdup

#### No holdup

**SPULBER 20** --- DANIEL F. SPULBER, Elinor Hobbs Distinguished Professor of International Business, and Professor of Strategy, Strategy Department, Kellogg School of Management, Northwestern University, and Professor of Law (Courtesy), Pritzker School of Law, Northwestern University, “LICENSING STANDARD ESSENTIAL PATENTS WITH FRAND COMMITMENTS: PREPARING FOR 5G MOBILE TELECOMMUNICATIONS”, COLO. TECH. L.J. Vol. 18.1, April 2020, http://ctlj.colorado.edu/wp-content/uploads/2021/02/18.1\_4-Spulber-4.2.20.pdf

Overall, there is no need for SSO FRAND commitments to address “patent holdup” or SEP holdup. SSOs require disclosure of SEPs so there is little chance an implementer will be “surprised” by SEPs.265 SSOs identify SEPs so that prospective implementers adopting the standard are informed about the relevant patents, and SSOs require SEP holders to make FRAND commitments that also provide information to prospective implementers. SEP holders thus cannot take advantage of companies that unknowingly started using the patented technology. SEP holders also have economic incentives to make patent license offers to prospective implementers to obtain license revenues and reasonable royalty damages in the event of infringement.

The **rarity** of patent disputes compared to the number of active patents implies that “**patent holdup” is unlikely.** There is **no evidence** that patent disputes lead to excessive royalties for infringement. In fact, **it is the opposite**, reasonable royalty damages are based on harm to the patent holder from infringement. Reasonable royalty damages in patent disputes are not intended to capture the implementers benefit from infringement and are not increased by the implementers switching costs. Reasonable royalty damages are only increased when the infringement is found to be willful infringement, which is **relatively rare.**

SSOs do not intend for their FRAND policies to address patent holdup in practice. SSO IP policies do not mention patent holdup or SEP holdup nor do these policies provide any description of the phenomenon. Widespread patent licensing provides considerable evidence that negotiation works, thus contradicting the predictions of patent holdup and SEP holdup.266 The adoption of technology standards by implementers and the growth of industries supplying products conforming to technology standards provide considerable evidence that the market for patent license contracts functions efficiently.

I have explained at length elsewhere why “patent holdup” is a “**fallacy**.”267 Advocates of patent holdup do not provide **any evidence** that “patent holdup” or SEP holdup has **ever occurred in negotiation** of SEP license agreements.268 There is **little evidence** that switching costs complicate patent license negotiation in general, and this alleged cause of “patent holdup” has very little to do with technology standards and is not specific to SEPs. There is also **no evidence** that technology standards imply that industries are necessarily “collectively locked in” to particular inventions resulting in a SEP holdup. There is no evidence that inclusion of patents in a standard creates undue market power for SEP holders or generates excessive patent license royalties, and finally, there is no evidence that SEP holders somehow take advantage of implementers or capture all the benefits of standardization.

The SEP holdup concept is fundamentally flawed because a technology standard is **not the same as a barrier to entry** into the marketplace. Technology standards established by SSOs are not proprietary but instead are available without costs. **Any company can choose to conform to a standard**. Thus, a number 2 pencil is a technology standard, yet many companies can produce number 2 pencils. The number 2 pencil standard does not create a barrier to entry and does not generate monopoly rents. To the contrary, the number 2 pencil facilitates competition among pencil manufacturers in the particular category.

The SEP holdup problem is based on a literal reading of “essentiality.” This can be misleading because declared essential patents may not be necessary for companies to conform to the standard. The technology standard offers technical specifications for product performance and interoperability across products. Indeed, a technology standard established by an SSO typically **is a class** of technologies rather than a **particular** technology.269 In principle, performance and interoperability can be achieved with **alternative technologies** that do not require particular patents. There is also evidence of over-disclosure of SEPs.270 This suggests that many SEPs are **unnecessary** and there may be SEPs that offer **substitutable technologies.**

A technology standard often differs from the underlying technologies, because the standard often is a **goal** for which technologies do not exist. After the standard is established companies can develop technologies to achieve the goal, and further improvements in the technology will lead to revision and replacement of the standard. These in turn generate further opportunities for the entry of new technologies.

There are a **number of safeguards** that limit SEP royalties. SSOs are consensus organizations and need not choose standards that are tied to costly propriety technologies. Even if SEP holders were to extract monopoly rents, for purposes of argument, the total costs of adopting technology can be lowered even without competing technologies. Technology adopting costs include not only royalties but the costs of implementing the technology. Kenneth Arrow pointed out that “drastic innovations” can lower the total of royalties and operating costs below those of alternatives even if an inventor obtains monopoly royalties.271 Competition from alternatives is not needed for “drastic” inventions. This is not the case for inventions that are not “drastic ,” for which competitive alternatives are needed to control monopoly rents. In the case of incremental inventions, however, SSOs may not need such inventions in the standard, or they can include incremental inventions when competitive alternatives are available that are consistent with the standard.

FRAND commitments do not need to address SEP holdup because technology standards **increase competition.** New technology standards promote the industry and increase market demand for new products that offer enhanced performance. Quality and performance standards reduce Gresham’s Law effects whereby low-quality products drive out high-quality products. New technology standards also increase demand for components that interoperate effectively. These increases in demand provide incentives for expansion of existing firms and entry of new firms. By increasing competition in these ways, standardization tends to **mitigate monopoly rents.**

The sharing of benefits of standardization is achieved by the combination of consensus standardization within SSOs and SEP license negotiation in the marketplace. The notion that patent holders extract monopoly rents from implementers **is misleading**. Both inventors and implementers contribute to economic value and both obtain gains from trade in patent license agreements. The **extensive participation** of industry members **in standardization** suggests that the benefits of participation are **widespread** among industry participants. For example, SEP holders’ benefits are reflected in their extensive participation in SSOs and their contribution of technologies to the standard. At the same time, implementers also benefit by participating in SSOs, by implementing the standards, and by licensing SEPs. Implementers would not approve the design of standards and inclusion of various SEPs in the standard if the result would be opportunism by SEP holders.

Industry members **often cooperate** repeatedly to achieve the many benefits of quality and interoperability. Repeated cooperation **limits opportunism** by either SEP holders or implementers, and requires that SSO members share in the benefits of standardization. The sharing of benefits of standardization among SEP holders and implementers is evidenced by the revision of standards and the introduction of new technology standards. Technological change and the evolving standards demonstrate that inventors have incentives to create and develop new technologies and innovators have incentives to develop new products, production processes and transaction methods.

#### And no injunctions

**SIDAK 16** --- J. GREGORY SIDAK, Chairman, Criterion Economics, L.L.C., Washington, D.C, expert economic witness in disputes over FRAND royalties for standard-essential patents, “The Antitrust Division's Devaluation of Standard-Essential Patents”, 2015-16, https://www.law.georgetown.edu/georgetown-law-journal/glj-online/104-online/the-antitrust-divisions-devaluation-of-standard-essential-patents/

Ms. Hesse herself concedes the implausibility of patent holdup when she analyzes the IEEE's provision to restrict an SEP holder's right to seek an injunction. Ms. Hesse begins by depicting the threat of an injunction as a "powerful weapon" that enables an SEP holder "to engage in patent hold up,"74 but she then defends the IEEE's new provision on the grounds that such a ban "will not be significantly more restrictive than current U.S. case law."' 7 Confirming the latter proposition, Kirti Gupta and Mark Snyder of Qualcomm have found that, from 2003 to 2013, courts denied **every request** for an injunction in SEP infringement litigation.76 Judge Douglas Ginsburg (a former Assistant Attorney General of the Antitrust Division) and coauthors Taylor Owings and FTC Commissioner Joshua Wright similarly report that, "despite all the handwringing over the prospect of SEP holders using injunctions and exclusion orders[,] ... **we have not found even one** injunction or exclusion order that actually kept a product off the shelf because it infringed an SEP."77 Thus, it is misleading and contrary to fact for Ms. Hesse in 2015 to characterize the SEP holder's threat of an injunction as a "powerful weapon." Once powerful perhaps, but certainly powerful no longer. If injunctions are **rarely, if ever, available** to SEP holders, then there is no serious risk that a SEP holder could use an injunction-much less the mere threat of an injunction-to hold up an implementer of the standard.

### 1NC --- Link Turn

**Turn --- Plan wrecks innovation:**

#### a) False Positives

**Delrahim 18** --- Makan Delrahim, Assistant Attorney General, “Antitrust Law and Patent Licensing in the New Wild West”, September 18, 2018, https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-iam-s-patent-licensing

To be sure, having one’s technology incorporated into a standard, in some circumstances, may increase a patent-holder’s market power. The same could be said, of course, about a monopolist’s refusal to deal with a rival who might gain market share if it had access to the monopolist’s inputs. Even if this occurs as a result of a patent holder’s so-called “deception” about its licensing obligations, this is not the sort of market-power-enhancing conduct that Section 2 should reach because a cause of action for treble damages would impede the policies underlying the Sherman Act. Even worse, such a cause of action would “require[] the court to assume the day-to-day controls characteristic of a regulatory agency.”

More fundamentally, recognizing a Section 2 cause of action for violations of a FRAND commitment would create an unacceptable risk of “false positive” condemnations of pro-competitive conduct by licensees. The prospect of antitrust liability and treble damages for breaching a potentially **vague FRAND term**—or allegedly “misrepresenting” one’s intentions to offer some FRAND rate—**threatens to chill incentives for innovators to develop new technologies** that fuel dynamic competition.

Where contract law remedies exist to remedy and deter breaches of a FRAND commitment, the additional deterrence that Sherman Act remedies offer **could deter lawful, pro-competitive conduct**—that is, research and development by innovators who make careful cost-benefit calculations as to how much to invest in technologies that may not pay off. Demanding a high price for one’s patented technology is permissible, and expected, conduct in a free market negotiation. A Section 2 cause of action would **skew the patent licensing bargain away** from the bargaining outcome that a free market dictates.

In particular, where the parties have a subjective disagreement over the meaning of an incomplete contract term, a Section 2 remedy threatens the patent holder with the risk of **enormously costly litigation** and a possible **treble damages award.** Bargaining in the shadow of litigation, a patent holder would be wary that a **high license demand** could be penalized by a **significant damages award**, whereas a prospective licensee’s **low-ball offer** would do no such thing. Such a remedy would bestow any putative licensee with **disproportionate negotiating power**. In turn, the cost-benefit calculation for innovators **would change** and the prospect of additional dynamic competition likely would **decline**.

The same is true with respect to assertions that a patent holder “deceived” other members of an SSO by making a FRAND commitment. As a string of recent cases demonstrates, plaintiffs are often creative in trying to convert a garden-variety FRAND contract claim into a “deception” claim when a licensee merely asserts, sometimes in conclusory terms, that a patent-holder made a misrepresentation about its intention to license on FRAND terms. Whatever merit such a claim might have under state law, it is a mistake to recognize a cause of action under the Sherman Act for a purported misrepresentation regarding a necessarily vague and incomplete contract term.

Consider how indefinite a promise to license on FRAND terms is. Parties regularly dispute: (1) how high royalties can be consistent with FRAND; (2) whether FRAND-encumbered patent holders must license component manufacturers or just end-device manufacturers; and (3) to what extent prices may differ for different licensees consistent with the “non-discriminatory” aspect of FRAND.

For purposes of Section 2, “FRAND” is not sufficiently clear to allow courts to distinguish between lawful, pro-competitive bargaining conduct that patent rights allow and unlawful, anticompetitive licensing conduct that harms consumers without offering pro-competitive benefits. Application of the Sherman Act to such claims **would create an unacceptable risk of false positives, threatening innovation and dynamic competition itself.**

#### b) Expanding licensing requirements decimates R&D financing

**Blanchard 19** --- Olivier Blanchard, C. Fred Bergsten Senior Fellow at the Peterson Institute for International Economics and the Robert M. Solow Professor of Economics emeritus at the Massachusetts Institute of Technology (MIT), “Opinion: It only took a few days of testimony for the FTC’s case against Qualcomm to fall apart – Part 3”, Jan 28th 2019, https://futurumresearch.com/opinion-it-only-took-a-few-days-of-testimony-for-the-ftcs-case-against-qualcomm-to-fall-apart-part-3/

How a win for the FTC **would decimate critical 5G** R&D investments in the US.

And here is where things get dangerous: Should Qualcomm lose this case, and the FTC prevail, remedies sought by the FTC would take a **wrecking ball** to Qualcomm’s licensing model, which funds its investments in technology research and development. The short of it is this: If Judge Koh were to mistakenly buy into the argument that Qualcomm engages in anticompetitive behaviors that have caused harm, and that the San Diego chipmaker (and consequently other IP holders in the future) should be **required to license** different IP to many vendors in the value chain, the most direct consequences would be a dramatic loss of profits to re-invest in further R&D. If that weren’t enough, taking Qualcomm’s simple licensing model (just one small fee for access to its entire portfolio or its SEPs) and turning it into a piecemeal patent-by-patent licensing model, would effectively make patent licensing for large US patent holders **unmanageable**.

While this may serve the financial interests of companies like Apple (in the short term) and Huawei (in the near and long term), it would cut US patent holders at the knees and **decimate** technology R&D investment in the US **for decades.** This wouldn’t just create a logistical nightmare for Qualcomm, harm its investors, and effectively **shatter** the Android space’s (with the notable exception of Huawei and Samsung) ability to compete against Apple (the FTC’s biggest ally in this case). It would also create a **domino effect of devastation for the entire US tech sector and for US national security.**

How decimating critical 5G R&D investments in the US would hand China control over the future of 5G, weaken the US technology sector’s ability to compete globally, and undermine US national security.

If US patent holders like Qualcomm are suddenly forced to license their IP for pennies on the dollar, they will no longer be able to make large R&D investments profitable. And if they can no longer make large R&D investments profitable, they will no longer be able to fund them.

Why this matters: Unlike China, where the government heavily subsidizes technology R&D (which benefits companies like Huawei and ZTE) the US government does not prop up its leading critical engines of technology R&D. This means that a ruling against Qualcomm in this case will essentially **kill its ability to continue to fund critical investments** in 5G (and equally vital technologies). This, at the exact moment when Huawei, its ONLY global competitor, is aggressively pushing to establish dominion over 5G technologies and cripple the United States’ ability to lead in 5G. (Note Huawei’s relentless push to insert itself into the digital fabric of the entire world despite warnings that it may be using its market position in 5G infrastructure as a technological Trojan Horse.)

There are only two companies leading the development of 5G in the world today: Qualcomm and Huawei. That’s it. The third, fourth, and fifth closest contributors are nowhere close. Should Qualcomm be taken out of the 5G race by this ruling, Huawei, a strategic instrument of the Chinese government, would become the sole leading technology company in the world to drive the development of 5G technologies. In a matter of years, China would own 5G. Period. There is no Plan B for the US. Not only would the precedent set by this case prevent any of Qualcomm’s US-based competitors from hypothetically taking over, no US-based company, not even Intel, is anywhere close to being able to take over for Qualcomm today. (To believe otherwise is to misunderstand the difference between the ability to develop 5G-enabled products and the ability to drive research into 5G or be a leader in the 5G standards space.)

Another point to note is that the Chinese government, through its application of anti-monopoly laws to force Qualcomm to lower its rates in China, already took a chunk out of Qualcomm’s licensing revenue, reducing it to give Huawei (and ZTE) an advantage in 5G R&D spend, while also reducing Huawei’s device licensing costs.

The short of it is that while this case appears to be a simple antitrust suit filed by the FTC (seemingly on the behest of Apple, whose global campaign of litigation against Qualcomm may be itself motivated by an effort to pay as little as possible for access to Qualcomm’s IP portfolio), taking a step back reveals that it is far more complex than that. This case may indeed represent an inflection point – one that will decide the future of technology leadership around the world: If Qualcomm loses, the US loses. Huawei, and consequently China, will become the dominant force in 5G. And if the US loses its ability to compete against China in 5G, it will never get it back.

“But it’s just 5G. Who cares? How can 5G be that important?”

If 5G doesn’t seem like a big deal now, in Q1 of 2019, it is because 5G deployments have barely begun. Wireless operators haven’t even rolled out 5G services yet. 5G phones are still months away from being available. 5G is mostly an abstraction, somewhere between “faster than 4G” and having something to do with the IoT and smart cities, and maybe self-driving cars. What people fail to realize though, and what I fear Judge Koh may not yet be entirely aware of, is that 5G will, over the course of the next decade, grow to become the fundamental fabric of our technology, financial, and infrastructure ecosystems.

Banking, manufacturing, education, agriculture, energy production, transportation, healthcare, law enforcement, scientific research, environmental management, and national defense will all depend on 5G technologies to function, and to fight against cyber- and terrorist attacks. Following Release 16, 5G will transition from merely being “another G” to being the connective tissue that makes every critical part of our digital infrastructure work properly. That is why the world cannot afford for the US to abandon its leadership role in 5G, and allow China to become the world’s only 5G superpower. And if you don’t care about the world, you should at least care about the future of the US.

Why no one should expect a magic bullet to save us this time.

A year ago, then-Singapore-based Broadcom almost managed to acquire Qualcomm after an aggressive hostile takeover bid campaign. Whether Broadcom would have ultimately succeeded and gotten the go-ahead from regulators is a matter of debate, but it got close enough to force the US government’s hand: on the advice of CFIUS (the Committee on Foreign Investment in the United States) and “consideration” of the Defense Production Act of 1950, the White House put an end to the bid with an Executive Order. The EO stated that there was “credible evidence” that Broadcom, “along with its partners, subsidiaries, and affiliates”, “through exercising control of Qualcomm Incorporated (Qualcomm)”, “might take action that threatens to impair the national security of the United States.” Reading between the lines, one wouldn’t be wrong to interpret the US government’s concern to be mostly about 5G, and to suspect that Broadcom’s possible ties to the Chinese government might have been a factor in this extraordinary action to protect Qualcomm, and by default, US national security.

No one should expect another magic bullet here. CFIUS cannot intervene in the FTCs case. The Trump administration cannot – and for good reason – exert executive power over an independent judiciary. The fate of the US’ ability to keep China from becoming the dominant global force in 5G rests entirely on Judge Koh’s shoulders.

And so, the future of US national security and critical technology investments now rests squarely on the shoulders of Judge Koh.

I have questions: At the top of my list is if Judge Koh is aware that the case before her is so significant and has ramification that extend far beyond the narrow focus of this antitrust dispute. Note that as with all cases of this type, the presiding judge has a duty to consider broader implications, including those that affect the public interest, before deciding upon a remedy. (The FTC has a similar duty when prosecuting an antitrust case.)

I also wonder if Judge Koh noticed that one of the expert witnesses that the FTC inexplicably selected to testify against Qualcomm (Michael Lasinski) and his firm (284 Partners) had done extensive work for Huawei, including commercial patent negotiations with Qualcomm, and had served in an expert witness capacity for Huawei before. If that detail somehow escaped the scrutiny of the court, the fact that Huawei itself was also a witness for the FTC, should not.

And that opens up a whole slew of questions for me about the FTC’s overall judgment with regard to this case. First: why would the FTC, whose independence and objectivity are paramount to its mission, allow itself to become an instrument of litigation for Apple? (That particular puzzle has been bothering me since the case was filed.) But now, having followed the trial itself, my second question is this: Given how many experts there are in this field, why would the FTC somehow come to rely so much on Huawei to undermine not only a US technology company already deemed vital to US national security, but the one US technology company that Huawei has every reason to weaken and push out of the way?

People who should be getting national security and conflict of interest briefings at the FTC with regard to Huawei and China clearly haven’t been getting them lately, and that needs to change immediately.

In one of the trial’s final days of testimony, Lorenzo Casaccia, Qualcomm’s VP of technical standards and 5G 3GPP lead was asked who would best be poised to “step in and fill Qualcomm’s shoes” should its leadership in the 5G standards-setting space were to be eroded. His reply: “The main one would be Huawei.” He wasn’t wrong. That is exactly what would happen. Correction: It is exactly what will happen if Judge Koh gets this wrong.

Make no mistake: The fight here is not between the FTC and Qualcomm, as it would seem, but between China and the United States. The danger of not being aware of the bigger game at play is that, to the unaware, Mr. Casaccia’s response could seem insignificant, a simple matter of one company competing against another, as they do. The truth of it, however, is that his answer was perhaps one of the most significant moments in the trial, when the stakes were clearly laid out: He might as well have answered “China.”

Not everyone is aware of China’s multilayered, proxy-driven global campaign to cripple the United States’ ability to lead in 5G, nor is everyone aware that this very campaign cannot be divorced from the cascade of antitrust attacks aimed at Qualcomm around the world, whose principal beneficiary is ultimately always China. Every day that the FTC chooses to continue prosecuting this case without sitting down with Qualcomm to discuss settlement options is another day the FTC allows itself to serve as a hapless tool in China’s 5G ambitions. It is my hope that Judge Koh will not allow herself to fall into the same trap.

In a perfect world, Judge Koh would already be wise to all of this. But as we do not live in a perfect world, and it would be unreasonable to expect a distinguished US District Court Judge to also be an up-to-date expert in geostrategy and China’s complex and impossibly opaque global machinations, I cannot assume that she has already connected those dots, or that she will before rendering her verdict. And that worries me. It should worry us all. Judges are not infallible, after all, nor are they omniscient. Not even the best ones. But if Judge Koh gets this one wrong, the consequences **for us all could be dire**. The wrong verdict in this case **could irreversibly damage the future of critical US technology investments, US 5G** leadership, and US National Security all **in one fell swoop.**

#### c) Hold-outs

**Delrahim 17** --- Makan Delrahim, Assistant Attorney General, Remarks at the USC Gould School of Law's Center for Transnational Law and Business Conference, Friday, November 10, 2017, https://weblaw.usc.edu/resources/downloads/faculty/centers/ctlb/reforming-patent-form-conference.pdf?121120153141

Too often lost in the debate over the hold-up problem is recognition of **a more serious risk**: the hold-out problem. Standard setting typically occurs against the backdrop of negotiations between innovators, who develop technologies through private investment and own IP rights, and implementers, who hope to market and use the technology through a license and pay the IP holder a royalty. The hold-out problem arises when implementers threaten to under-invest in the implementation of a standard, or threaten not to take a license at all, until their royalty demands are met.

I view the collective hold-out problem as **a more serious impediment to innovation**. Here is why: most importantly, the hold-up and hold-out problems are not symmetric. What do I mean by that? It is important to recognize that innovators make an investment before they know whether that investment will ever pay off. If the implementers hold out, the innovator has **no recourse,** even if the innovation is successful. In contrast, the implementer has some buffer against the risk of hold-up because at least some of its investments occur after royalty rates for new technology could have been determined. Because this asymmetry exists, under-investment by the innovator should be **of greater concern** than under-investment by the implementer.

More to the point, many of the proposed “solutions” to the hold-up problem are often **anathema** to the policies underlying the intellectual property system envisioned by our forefathers. These patent policies are constitutionally enshrined in Article 1, Section 8, which gives Congress the power “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive right to their respective Writings and Discoveries.” These “exclusive rights” **importantly** and **necessarily** include the power to exclude. The misapplication of the antitrust laws to punish the legitimate exercise of these rights seems to undermine these policies when they require a patent holder to sacrifice these rights.

### 1NC --- A2: Authors Biased

#### Author bias args are too sweeping

**Knight 20** --- Will Knight is a senior writer for WIRED, covering artificial intelligence, “Many Top AI Researchers Get Financial Backing From Big Tech”, Oct 4th 2020, https://www.wired.com/story/top-ai-researchers-financial-backing-big-tech/

Meredith Whittaker, a research scientist at NYU, previously worked for Google on a project that connected the company with academic research. She also led protests inside the company in 2018 against its policies on sexual misconduct and surveillance.

“People know who pays them,” she says. But she says it’s unfair to assume that someone funded by a company cannot be critical of Big Tech. She says several researchers who work at tech companies are critical of their employer’s technology. And she says pushback within companies can help check their power. “Worker organizing and worker dissent are only increasing as the status of this technology becomes more and more apparent,” she says.

A spokesperson for Google says the company’s policies prohibit staff from seeking to influence academic work. “Google’s collaborations with academic and research institutions are **not driven by policy influence in any way**,” the spokesperson says. “We are a huge supporter of academic research because it allows us to work with academics who are looking to solve the same problems that we are.”

Ben Recht, a professor at UC Berkeley, has previously criticized the idea of researchers simultaneously working for a university and a company. But he doesn’t think corporate funding for AI should be seen as inherently bad. “You can make a capitalist argument that it is good for companies to pursue ethical technology,” he says. “I think that this is something that many of them strive to do.”

Recht also points out that even without industry funding, academics can produce ethically questionable work, like the algorithms that underpin face recognition or those that help turn social media platforms into echo chambers and sources of misinformation. And Recht also notes that the money that flows from government agencies, including the military, can also influence the direction of research.

### 1NC --- climate

#### --- No ev that SMART cities reduce emissions

#### --- Double-bind --- either can’t solve warming because smart city tech scale up takes forever OR the tech already exists which disproves patent hold-ups --- that’s 1AC Husein evidence

\*\*Don’t read but for reference\*\*

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

#### No climate impact

Zycher 21 --- Benjamin Zycher is a resident scholar at the American Enterprise Institute, doctorate in economics from UCLA, a Master in Public Policy from the University of California, Berkeley, and a Bachelor of Arts in political science from UCLA, “The Case for Climate-Change Realism”, National Affairs, Summer 2021, https://www.nationalaffairs.com/publications/detail/the-case-for-climate-change-realism

Beyond exhibiting extreme overconfidence in a cherry-picked analysis of climate-change causes, politicians and activists frequently ground their alarmism in frightening predictions about consequences that are likewise far from certain. This is not only true within the very new (and still quite unreliable) field of predictive climate science; it is true even in the context of ongoing climate phenomena. Indeed, politicians and journalists frequently characterize dramatic or unusual climate phenomena as the product of anthropogenic climate change, yet there is little evidence to support those claims

For one thing, there is no observable upward trend in the number of "hot" days between 1895 and 2017; 11 of the 12 years with the highest number of such days occurred before 1960. Since 2005, NOAA has maintained the U.S. Climate Reference Network, comprising 114 meticulously maintained temperature stations spaced more or less uniformly across the lower 48 states, along with 21 stations in Alaska and two stations in Hawaii. They are placed to avoid heat-island effects and other such distortions as much as possible. The reported data show no increase in average temperatures over the available 2005-2020 period. In addition, a recent reconstruction of global temperatures over the past 1 million years — created using data from ice-sheet formations — shows that there is nothing unusual about the current warm period.

Rising sea levels are another frequently cited example of impending climate crisis. And yet sea levels have been rising since at least the mid-19th century. This rise is tied closely with the end of the Little Ice Age that occurred not long before, which led to a rise in global temperatures, some melting of sea ice, and a thermal expansion of sea water. There is some evidence showing an acceleration in sea-level rise beginning in the early 1990s: Satellite measurements of sea levels began in 1992 and show a sea-level rise of about 3.2 millimeters per year between 1993 and 2010. Before 1992, when sea levels were measured with tidal gauges, the data showed an increase of about 1.7 millimeters per year on average from 1901 to 1990.

But because the datasets are from two different sources — satellite measurements versus tidal gauges — they are not directly comparable, and therefore they cannot be interpreted as showing an acceleration in sea-level rises. Moreover, the period beginning in 1993 is short in terms of global climate phenomena. Since sea levels have risen at a constant rate, remained constant, or even fallen during similar relatively short periods, inferences drawn from them are problematic. It is of course possible there has been an acceleration in sea-level rise, but even still, it would not be clear whether such a development stemmed primarily from anthropogenic or natural causes; clearly, both processes are relevant.

A study of changes in Arctic and Antarctic sea ice yields very different inferences. Since 1979, Arctic sea ice has declined relative to the 30-year average (again, the degree to which this is the result of anthropogenic factors is not known). Meanwhile, Antarctic sea ice has been growing relative to the 30-year average, and the global sea-ice total has remained roughly constant since 1979.

Extreme weather occurrences are likewise used as evidence of an ongoing climate crisis, but again, a study of the available data undercuts that assessment. U.S. tornado activity shows either no increase or a downward trend since 1954. Data on tropical storms, hurricanes, and accumulated cyclone energy (a wind-speed index measuring the overall strength of a given hurricane season) reveal little change since satellite measurements of the phenomena began in the early 1970s. The number of wildfires in the United States shows no upward trend since 1985, and global acreage burned has declined over past decades. The Palmer Drought Severity Index shows no trend since 1895. And the IPCC's Fifth Assessment Report, published in 2014, displays substantial divergence between its discussion of the historical evidence on droughts and the projections on future droughts yielded by its climate models. Simply put, the available data do not support the ubiquitous assertions about the causal link between greenhouse-gas accumulation, temperature change, and extreme weather events and conditions.

Unable to demonstrate that observed climate trends are due to anthropogenic climate change — or even that these events are particularly unusual or concerning — climate catastrophists will often turn to dire predictions about prospective climate phenomena. The problem with such predictions is that they are almost always generated by climate models driven by highly complex sets of assumptions about which there is significant dispute. Worse, these models are notorious for failing to accurately predict already documented changes in climate. As climatologist Patrick Michaels of the Competitive Enterprise Institute notes:

## cyber

**1NC --- 5G Competition High**

**5G competition high**

**GreyB 20** --- GreyB is an intellectual property service specializing in Patent Research, Technology Trends, Competitive Insights, Patent Infringement, “5G Chip Makers: 12 companies Leading the Research” 2020, https://www.greyb.com/5g-chip-makers/

There are **many companies** participating in 5G chipset manufacturing, however, there are only four companies that are doing exceptionally well in the current times. However, considering that the 5G chipset market is yet to mature, there is **a lot of space to grow for other companies**. Over time, it is possible that we could observe drastic changes in the position of some of the semiconductor companies in the 5G chipset market.

Currently, we are witnessing some really big acquisitions in the industry by companies to gain or strengthen their position in the 5G chipset market. AMD’s acquisition of Xilinx for $35 billion is one such example.

There is a lot going on in the chipset industry and companies are trying everything to gain an upper hand in the domain. After all, it’s forecasted to be a $300 billion industry by 2025.

What are the top companies doing? – You ask.

I had the exact question. I did some exploring and have answers to this and more questions.

Join me as we have a look at the research and other activities of the 5G chip makers and find what 12 top companies are doing differently.

But before we set on our path, let me tell you, my research revealed a lot more. On my quest to get a handle on the research activity and other variables by the players, I decided to explore every aspect and conduct detailed research on the 5G chipset domain, which resulted in a report.

Just like the future of this market, our insight-rich report ended up being pretty long(30,000+ words). To make it easy to consume, we converted it into a PDF copy for later reading. This PDF covers the state of the domain and a lot of aspects in detail, and if you’re working in or are interesting in getting into the 5G Chipset domain, trust me, you will need this report. Want to get your hands on it?

What are the Top 5G Chip Makers up to?

There are **12 companies** researching on 5G chipsets but only four 5G chip makers are currently leading the 5G chipset market, i.e. Qualcomm, Samsung, Huawei, and MediaTek.

Let’s have a look at the activity of these 4 players and try to understand a bit more about them.

**Qualcomm**

Qualcomm Technologies and a group of the world’s leading mobile network operators including AT&T, Verizon, China Mobile, Deutsche Telekom, NTT DoCoMo, SK Telecom made a declaration in February 2019 of how far along they are in realizing the vision for 5G.

As the companies planned to begin the first trials of standards-compliant mobile 5G NR networks, at the heart of the mobile test devices, they will use the Qualcomm Snapdragon X50 5G modem to ascertain the performance of these emerging networks. After 3GPP set 5G standards in 2016, Qualcomm started working on the next wave of 5G NR technologies that would pave the way to the subsequent 5G NR standard releases. At MWC 2018, Qualcomm demonstrated three of these 5G NR expansion areas.

Qualcomm Research started design work on the new 5G wireless air interface well before 3GPP standard efforts kicked off. In a live demonstration to industry analysts, Qualcomm Research demonstrated a key 5G technology enabler to these extreme mobile broadband experiences — millimeter wave (mmWave).

Qualcomm is also working to design and standardize the new 5G NR unified air interface.

Qualcomm was created on July 1, 1985, by seven former Linkabit employees led by Irwin Jacobs. It started as a contract research and development center largely for government and defense projects. Later, Qualcomm merged with Omninet in 1988 and raised $3.5 million in funding to produce the Omnitracs satellite communications system for trucking companies.

Mergers & Acquisitions

Qualcomm has acquired 32 companies since its launch, 3 of them in the last 5 years alone. One of these acquisitions came from private equity firms. It has also divested 5 assets. Qualcomm’s largest acquisition to date was in 2011 when it acquired Atheros Communications for $3.1B. It’s largest disclosed sale occurred in 2013 when it sold Omnitracs to Vista Equity Partners for $800M. Qualcomm has acquired companies in 8 different US states and 9 countries. The company’s most targeted sectors include software (38%) and semiconductors (22%).

2015-2020: Qualcomm announced its intent to acquire NXP Semiconductors for $47 billion in October 2016. The deal was approved by U.S. antitrust regulators in April 2017 with some standard-essential patents excluded to get the deal approved by antitrust regulators. As the NXP acquisition was ongoing, Broadcom made a $103 billion offer to acquire Qualcomm, and Qualcomm rejected the offer. Broadcom attempted a hostile takeover, and raised its offer, eventually to $121 billion. The potential Broadcom acquisition was investigated by the U.S. Committee on Foreign Investment and blocked by an executive order from U.S. President Donald Trump, citing national security concerns.

Qualcomm’s NXP acquisition then became a part of the 2018 China–United States trade war. U.S. President Donald Trump blocked China-based ZTE Corporation from buying American-made components, such as those from Qualcomm. The ZTE restriction was lifted after the two countries reached an agreement, but then Trump raised tariffs against Chinese goods. Qualcomm extended a tender offer to NXP at least 29 times pending Chinese approval, before abandoning the deal in July 2018.

Investments

On October 24, 2019, Qualcomm announced it created a $200 million venture capital fund to invest in startup companies looking to use 5G technology in devices other than smartphones. Qualcomm Ventures is the investment arm of Qualcomm Incorporated. Founded in 2000, Qualcomm Ventures is a corporate venture capital fund with 140+ active portfolio companies. Investing in startups targeting the wireless ecosystem, the group focuses on investments in the sectors of automotive, data center and enterprise, digital health, Internet of Things (IoT), and mobile.

**Samsung**

Samsung is actively engaged in the key of global 5G research initiatives, such as membership of the Steering Board of European 5G PPP projects of Horizon 2020, as well as coordination and leadership of the very large industry-led 5G PPP mmMAGIC consortium, 5G Innovation Centre (5GIC) in the UK, NYU Wireless Center in the US, Giga KOREA project and Chinese 836 project.

Global 5G R&D Activities

Samsung is leading various collaborations with industrial partners and academics over the world. In particular, Samsung has played an important role as the full-time member of the 5G PPP Infrastructure Association, the executive board member of 5G Forum in Korea, and the chair of the vision sub-working group for Future IMT (5G) in ITU-R WP5D.

In order to keep a consistent perspective on 5G with those of other academic institutes, we are vigorously developing 5G core technologies with several outstanding universities around the world.

Mergers & Acquisitions

Samsung Electronics has acquired 29 companies, including 15 in the last 5 years. A total of 4 acquisitions came from private equity firms. It has also divested 7 assets. Samsung Electronics’ largest acquisition to date was in 2016 when it acquired Harman International Industries for $8B. It’s largest disclosed sale occurred in 2016 when it sold Samsung Electronics – Printer Business to HP for $1.1B. Samsung Electronics has acquired companies in 7 different US states and 9 countries. The company’s most targeted sectors include internet software and services (29%) and software (18%).

In 2018, Samsung Electronics Co., Ltd. announced its acquisition of Zhilabs, known for its Artificial Intelligence (AI)-based network and service analytics, to further enhance its 5G capabilities. The acquisition lays the foundation for Samsung to strengthen its 5G solutions with automation functions to finely tune customer experiences in the 5G era and in 2020 announced the completion of an agreement to acquire TeleWorld Solutions (TWS), a network services provider headquartered in Chantilly, VA. TWS provides network design, testing, and optimization services to mobile service and cable operators, equipment OEMs, and other companies across the U.S. With network builds associated with 5G and 4G LTE enhancements advancing in the U.S, the acquisition will address the need for end-to-end support in delivering network solutions.

Investments

In 2018 Samsung Group announced that it will invest about $22 billion over the next three years in growth areas such as artificial intelligence and 5G technology. That would be part of Samsung’s overall $161 billion investment plans that include capital expenditure and research and development. Samsung said a large portion of that total would be spent in South Korea.

South Korea’s largest conglomerate Samsung Group is planning to invest about 25 trillion Korean won ($22 billion) over the next three years into new growth areas, led primarily by Samsung Electronics.

Those investments would be made in four key areas: artificial intelligence (AI), fifth-generation mobile network technology, electronic components for future cars, and biopharmaceuticals.

To expand its AI capability, Samsung will be increasing the number of researchers to 1,000 across its global AI centers in the UK, Canada, Russia, the US, and South Korea.

Samsung Electronics is currently the world’s largest smartphone-maker but also boasts a very strong semiconductor business that supplies chips to companies such as Apple.

Overall, the conglomerate said it planned to invest a total of 180 trillion won ($161 billion) over the next three years, which will include capital expenditures as well as research and development in its semiconductors and displays businesses. Most of that investment — about 130 trillion won (US$114.4 billion) of the total — will be spent in South Korea, the company said without giving further breakdowns.

In April 2020, Samsung announced that there is a possibility it might delay or cut its investment in 5G technology in the wake of the COVID-19 crisis.

**Huawei**

Huawei has approximately 96,000 employees in R&D, representing 49% of its workforce. By 2019, Huawei had achieved 85,000 patents in its portfolio. It’s not surprising for a company that last year invested 15.3% of its revenue, i.e., about $17 billion USD, into R&D. As of early 2017, 10% of 1450 patents essential for 5G networks were in Chinese hands in which the majority belongs to Huawei and ZTE.

The company wants to involve AI in 5G which according to them is a much more integral element of Huawei’s 5G strategy. The company also plans to launch a full range of Huawei commercial equipment including wireless access networks, core networks, and devices.

The breadth of Huawei’s 2019 Annual Report is staggering and reveals a company undaunted by myriad obstacles. Through its leadership in enterprise 5G, cloud, and AI distinguishes Huawei in the technology space, one cannot help but recognize its continued success in smartphone design and market share.

Mergers & Acquisitions

Huawei Technologies has acquired 7 companies to date. Huawei’s largest acquisition was in 2014 when it acquired Neul for $25M. The company’s most targeted sectors include information technology (29%) and technology hardware (29%).

Investments

Huawei has continuously invested over 10% of its revenue into R&D. Huawei’s chief executive and founder, Ren Zhengfei, announced that the company “plans to boost its research and development budget this year by $5.8 billion to more than $20 billion.” Between 2009 and 2013, Huawei invested more than US$600 million into 5G technology research. Following this, in 2017 and 2018 Huawei invested almost US$1.4 billion into 5G product development.

**MediaTek**

MediaTek has been conducting research and development in 5G for about 6 years. In addition to the headquarters’ research and development center, they also have a research and development center in Finland (the homeland of Nokia). This research and development center participates in 5G and other latest wireless technologies.

It also develops communication technology and collaborates with European telecommunication customers to carry out testing. Its collaboration extends to the research and development institute of Finland, academic institutions, and Nokia. MediaTek has dedicated 6G R&D staff in Finland, MediaTek’s staff in Finland is anticipated to grow to be a key to consider its future terminal chip growth.

The company also continuously invests in R&D. Its annual R&D expense reached NT$63 billion in 2019, ranking it at the top among the listed companies in Taiwan. The company’s long-term hard work in technology has also received global recognition repeatedly. In 2008, a total of 11 papers were published in the ISSCC (International Solid-State Circuits Symposium) by them and the number of papers ranked among the top three in the world.

MediaTek also won the “Outstanding Asia-Pacific Semiconductor Company” award from Global Semiconductor Alliance seven times. Moreover, MediaTek was selected by the Ministry of Economic Affairs for its branding development program and won the “Top 10 Best Taiwanese Global Brands” award for five consecutive years as the only semiconductor company to be included, demonstrating our efforts in technology and R&D to further enhance brand image.

Patents are a specific indicator of a company’s efforts in innovation and R&D. MediaTek’s patent strategy for 2018 continues to consider both quantity and quality as Mediatek maintains over 9,000 patents. Mediatek was ranked the third-largest patent filer at the Taiwan Intellectual Property Office (TIPO) and the 25th largest global patent filer in the Digital Communication field of the European Patent Office (EPO).

In 2018, Mediatek was granted 1,731 new patents, 574 of which were US patents. The number of US patents received for 2018 increased compared to the number of US patents received in 2017 (398; ranking among the top 100 of global patent filers).

Mergers & Acquisitions

In 2005, MediaTek acquired Inprocomm, a wireless semiconductor design company producing 802.11a, b, and a/g chips.

On September 10, 2007, MediaTek announced its intention to buy Analog Devices cellular radio and baseband chipset divisions for US$350 million. The acquisition was finalized by January 11, 2008.

On May 5, 2011, MediaTek acquired Ralink Technology Corporation, gaining products and expertise for Wi-Fi technology for mobile and non-mobile applications, as well as for wired DSL and Ethernet connectivity.

On April 11, 2012, MediaTek acquired Coresonic, a global producer of digital signal processing products based in Linköping, Sweden. Coresonic became a wholly-owned subsidiary of MediaTek in Europe.

Investments

In 2015, Mediatek opened up a US$300 million venture fund for investing in startups across the globe. MediaTek Ventures is a strategic investment arm of MediaTek that invests in startups in Greater China, Europe, Japan, and North America.

The firm seeks to invest in early-stage companies operating in the semiconductor, system and device, internet infrastructure, and information technology sectors.

Which other companies are working on 5G Chipsets?

**Unisoc**

Tsinghua Unigroup bought Spreadtrum and RDA, two of the top three-chip design companies in China, and became one of the most influential performers in the domestic market. In 2016, Tsinghua Unigroup integrated the acquired Spreadtrum and RDA into UNISOC, committed to the integration of mobile chip technology and the improvement of the firm’s independent R&D capacity.

Unisoc, then still known as Spreadtrum, was formerly a public company listed on NASDAQ but agreed to an acquisition by Tsinghua Unigroup in July 2013 for about $1.78 billion. In 2014, Intel invested $1.5 billion in Spreadtrum & RDA for a 20 percent stake, and at MWC 2018 Intel and Spreadtrum expanded their relationship to cover 5G modem development. But, in February 2019, Intel announced that it will no longer pursue this partnership in light of the US-China trade war and the market outlook.

Unisoc’s primary 3G customer Samsung shifted 4G sourcing to Qualcomm and in-house primarily. This affected Spreadtrum’s 4G market position. The company has had some success in 4G feature phones, but in 4G smartphones, the company’s performance hasn’t been impressive.

Unisoc’s partnership with Intel didn’t yield good results either. Unisoc used Intel’s x86 cores in a couple of chips and used Intel’s fabs to manufacture those chips. Intel’s dream of expanding x86 technology in smartphones with the help of Unisoc’s strong presence in emerging markets however didn’t realize. This can be attributed to Intel’s slow progress in advancing its x86-based smartphone CPU roadmap.

In 2016, Intel itself had to retrench from the smartphone apps processor market as the company abandoned its internal integrated chip effort. Intel originally thought Unisoc partnership would help it to proliferate its 5G modem technology in smartphones. But the latest development suggests Intel and Unisoc will compete on their own in 5G smartphones. Unisoc is hoping to get a piece of the 5G pie in China in 2020.

Unisoc has the financial backing of Tsinghua Unigroup. The company is prioritizing AI, 5G, and IoT as future growth areas. Tsinghua claims to have big ambitions in wireless.

The chipmaker has lately been active on a global scale, signing contracts with upstream and downstream partners, as well as various players in adjacent fields. In January 2019, it made a strategic deal with American test equipment giant Keysight. A few months later, it partnered with British Intellectual Property (IP) licensing firm Imagination on brand-new neural network accelerator IMG Series3NX.

As China is taking steps toward semiconductor self-reliance, investing lavishly in budding local chipmakers, the state regulators are striving to create new channels to public capital for high-tech-driven enterprises. One of the recent projects – the Shanghai bourse-based Star Market – helped a handful of companies in the space to boost their financial resources.

UNISOC raised CNY 2.25 billion (around USD 320 million) from the China National Integrated Circuit Industry Investment Fund, known as the ‘Big Fund,’ in its Series B on March 17, 2020.

UNISOC is reportedly preparing a public offering in the new marketplace too. It has started an equity optimization project in conjunction with an organizational structure upgrade. The new generation of wireless technology (5G) infrastructure will present new opportunities for the company, which, as mentioned above, has already jumped on the bandwagon.

The funding round follows the rollout of UNISOC T7520, the company’s debut mobile application System-on-a-Chip (SoC) processor with an integrated 5G modem. Remarkably, the chipmaker has been mainly involved in the production of low-end chipsets for affordable smartphones. For one, it inked a partnership with South African phone maker Mobicel in 2018. The two agreed to launch a new handset that will be manufactured and marketed locally.

Founded in 2001, the company has grown into a 4500+ people-large chipset developer, with over 90% of employees directly involved in the research and development process. It claims to have 15 R&D centers and seven customer support centers around the world.

Recent Developments

In February 2018, as a core subsidiary of Tsinghua Unigroup, Unigroup Spreadtrum & RDA and Intel Corporation officially announced a long-term strategic collaboration on 5G. The companies plan to develop a 5G smartphone platform for the China market that will feature an Intel 5G modem and will be targeted to coincide with 5G network deployments in 2019.

In February 2018, Keysight Technologies, Inc. announced the signing of a Memorandum of Understanding (MoU) with Unigroup Spreadtrum & RDA, at Mobile World Congress in Barcelona. The MoU is an extension of the existing collaboration the two companies initiated more than ten years ago. It aims to accelerate the development of 5G technology by coordinating 5G chipset and device-related design, verification, test, and measurement.

In March 2018, in an MoU signed at Mobile World Congress in Barcelona, Rohde & Schwarz and Unigroup Spreadtrum & RDA agreed to collaborate on five important fields: 5G communications, network operator tests, automotive electronics products, broadcasting products, and IoT applications.

In November 2018, Unisoc (formerly Spreadtrum Communications) showcased its wide range of future-ready 5G and IoT offerings at the India Mobile Congress 2018. The three-day event was organized by the Department of Telecommunications (DoT) along with the Cellular Operators Association of India (COAI) on October 25-27, 2018 at Aerocity Grounds, New Delhi.

In November 2018, Unisoc released the Proposal for Building 5G Industrial Ecology along with over 10 domestic and overseas industrial chain partners at the 2018 China IC Summit. Initiated by domestic chip designer Unisoc, this proposal won extensive supports and responses across the industrial chain.

In February 2019, Unisoc launched the 5G technology platform MAKALU and its first 5G Modem IVY510, at MWC 2019 in Barcelona. The release of MAKALU and IVY510 is expected to accelerate the commercialization of 5G technology and provide consumers with a brand new mobile broadband experience.

In February 2019, UNISOC announced its IVY brand which supports IoT products to build a connected society. As a brand new 5G technology platform, MAKALU will help power a huge rise in the Internet of Things. Unisoc plans to launch a series of IVY products based on the MAKALU platform in the near future.

Unisoc IVY510 is the first 5G Modem of UNISOC based on the MAKALU technology platform, produced with TSMC’s 12nm process. As the first 2G/3G/4G/5G multimode platform of Unisoc, IVY510 complies with the latest 3GPP R15 standard, supports Sub-6GHz 5G spectrum with a channel bandwidth of 100MHz, which is a highly integrated, high performance, low power 5G platform, and supports both standalone (SA) and non-standalone (NSA) network configurations to meet communication and networking requirements during different stages of 5G deployment.

In February 2020, Unisoc announced that its 5G Modem V510 is powering China Unicom’s 5G CPE VN007 (Customer Premise Equipment). Selling for CNY 999, this 5G CPE provides a high-speed connection, allowing users to access a more intelligent and connected world.

In February 2020, Unisoc kicked off the 2020 Spring Press Conference themed at “Capture the future value of 5G” in the form of a live webcast, showcasing the latest technological breakthroughs and achievements of the company. Along with a number of blockbuster technologies and products, Hisense unveiled its first 5G smartphone F50 powered by Unisoc T7510 at the conference. This is a major landmark during their long-term partnership of the decade, and a milestone of great significance for promoting the commercialization of 5G mobile phones.

In March 2020, a press conference & developer summit was held by Unisoc at Shenzhen for new AIoT products, where the company officially announced IVY V5663 – a high-performance secure AIoT solution. With five outstanding features, including industry-leading technologies, powerful computing capability, security and reliability, rich sets of features, and ease of application development, IVY V5663 can be used extensively in diversified scenarios, such as smart home, healthcare, childhood education, aesthetic health care, warehousing, and logistics. In order to enable the AIoT value chain, Unisoc has built an open and innovative development platform AILIGO to help developers better align technologies with scenarios, as well as improving the time-to-market for smart endpoints.

In March 2020, Unisoc announced the completion of critical technology and service data testing for its 5G mmWave terminal prototype based on AiP (Antennas in Package), the core module of the 5G mmWave terminal. The success of the test marks a major step forward for Unisoc in driving the maturity of the mmWave industry. As an important part of 5G technology, mmWave can be applied to many scenarios including outdoor and indoor hotspots, FWA(Fixed Wireless Access), and backhaul, providing higher experienced data rates and lower latency.

In April 2020, Unisoc announced the official unveiling of Unisoc T7510-powered Hisense F50 5G.

In May 2020, Unisoc announced that it has upgraded its tablet portfolios to accelerate digital transformation. With them, Unisoc is delivering chipsets to premium, mainstream, and entry-level tablets. The portfolio is available at various price points allowing partners to design various tablets for a wide array of usage scenarios. Apart from a wealth of high-speed peripheral interfaces, the 7 series supports both 5G and 2.4G Wi-Fi connections, for faster transmission and higher security.

**Nokia** Networks

Nokia has also joined the race of 5G as the company is developing, researching, and partnering with other entities to render 5G communication as fast as possible.

The company uses an 8000-hectare site to carry out key 5G tests collaborating with Deutsche Telekom and Hamburg Port Authority for their project 5G MoNArch. The project’s main goal is to gain knowledge and experience from 5G networks in the real-world environment. Its industrial uses could be traffic light management, data processing from mobile sensors, and VR applications.

Nokia also implemented Future X network architecture for 5G to deliver robust network coverage and reduce costs. Future X includes high-capacity 5G New Radio, core, and SDN controlled ‘Anyhaul’ transport to provide a complete set of network capabilities for commercial 5G networks.

Nokia also unveiled its ReefShark chipsets for outlining the scope of its Future X architecture for 5G, the basis for its new reference silicon design, the foundation of its 5G technology, and services portfolio.

Their portfolio comprises a full, end-to-end network that delivers up to three times more data capacity per cell site and 30% lower total cost of operation through artificial intelligence-based automation.

Nokia also unveiled a bunch of services designed to help operators with the major undertaking of moving to 5G at 5G World 2018. The main offering was Nokia 5G Digital Design, which uses AI to simulate 5G use cases to help with real-world design and stress test the business cases for them.

Nokia also completed the 5G New Radio data call based on 4G/5G connectivity during a demonstration in China.

Recent Developments

In October 2019, Nokia hired 350 employees for research and development in Finland to fix a 5G chip problem that could be problematic to its mobile business. Nokia also said that it had been recruiting mainly for system-on-a-chip development but declined to provide staff numbers for its overall R&D function.

In March 2020, Nokia announced the declaration of 3000 5G patents to the European Telecommunications Standards Institute (ETSI). The move launched into an emerging battle for 5G patent bragging rights among the world’s big-three vendors and also pumped approximately €4.4 billion into broader technology R&D in 2019 alone.

In March 2020, Nokia said that it sought the help of Marvell to resolve 5G product problems that have wiped billions off their market value and threatened its progress in the 5G market. Marvell has been hired to work on Nokia’s new range of system-on-a-chip and infrastructure processors under the ReefShark brand. It will specifically contribute customized chips based on processor designs by ARM, a UK-based company whose licensees compete against Intel in semiconductor markets.

In May 2020, Nokia revealed its WaveFabric Elements portfolio of photonic chips, devices, and subsystems, including Photonic Service Engine V (PSE-V). The surging demand in video and mobile bandwidth over the past 10 years has been met through the continual advancement of optical and silicon technology. But as the technology approaches its limit, network operators will need to find new ways to scale their networks to meet the surging demands of 5G and cloud networking, while containing cost. The key to this transition is 400 Gigabit Ethernet (400G) technology.

In June 2020, Nokia expanded the 5G ReefShark chipset portfolio with Broadcom collaboration. Nokia and Broadcom announced that they are collaborating on the development of advanced semiconductor technologies, including new custom system-on-chip (SoC) processors, which will be integrated into Nokia’s “5G Powered by ReefShark” portfolio.

**Intel**

As the promise of 5G takes hold, customers are demanding increased performance and flexibility they need to rapidly deliver services with lower latency where they are needed most.

In this light, Intel announced the following:

Launch of the Intel Atom P5900 platform, the first Intel architecture-based 10nm SoC for wireless base stations. With the launch of the Intel Atom P5900, the company is extending Intel architecture from the core to access and all the way to the farthest edge of the network. Intel expects to be the leading silicon provider in base stations by 2021.

As a highly integrated 10nm SoC, the Intel Atom P5900 is designed to meet critical 5G network needs, including high bandwidth and low latency to deliver what’s required for 5G base stations today and in the future. The product augments Intel’s rich silicon portfolio for network environments and introduces Intel silicon as the foundation for the wireless base stations market, with 6 million 5G base stations forecasted through 2024. Intel is working with leading providers to deliver this product as part of their future-differentiated solutions in the market.

New 2nd Gen Intel® Xeon® Scalable processors: As the foundation for data platform infrastructure with over 30 million units sold, Intel Xeon Scalable processors have led the transformation of the network. This year, 50% of core network deployments are transforming to virtualized networks, with the expectation to grow beyond 80% by 2024, fueled by 5G.

Intel introduced “Diamond Mesa,” Intel’s first next-generation structured ASIC for 5G network acceleration. “Diamond Mesa” (code name) is designed to complement Intel’s unmatched portfolio of processors and FPGAs delivering the high performance and low latency required for 5G networks. Structured ASICs like Diamond Mesa provides a minimum-risk optimization path for workloads that do not require the full programmability of FPGAs, targeting double the performance efficiency versus the prior generation, and uniquely position Intel as the only provider delivering a full silicon platform foundation for network infrastructure. Diamond Mesa is open to early access customers.

Intel introduced the Intel® Ethernet 700 Series Network Adapter with hardware-enhanced Precision Time Protocol, the first 5G network-optimized Ethernet NIC. The Ethernet 700 series (code-named “Edgewater Channel”) is Intel’s first 5G-optimized network adapter, offering GPS-based cross-network service synchronization with hardware-enhanced Precision Time Protocol (PTP).

Latency requirements across 5G network implementations have challenged existing Ethernet technology, especially in edge servers. Maintaining accurate time synchronization across the network at a cost-effective price point, however, is one avenue to help address application latency. The Ethernet 700 series adapter increases the timing precision required for 5G networks through a combination of hardware and software enhancements. Edgewater Channel is sampling now and was expected to enter production in 2020’s second quarter.

New Software Investments: Intel expands its industry-leading edge computing software toolkits to accelerate time-to-market innovation for its customers and partners with new capabilities integrated into the Open Network Edge Services Software (OpenNESS) toolkit. OpenNESS now supports standalone 5GNR and Enhanced Platform Awareness (EPA) deployments, giving customers the flexibility to easily deploy their choice of cloud-native edge microservices. Intel is delivering customized OpenNESS experience kits to accelerate custom 5G deployments. OpenNESS complements Intel’s OpenVINO™ and Open Visual Cloud for edge computing development needs.

Unrivaled Ecosystem Collaborations: Technology innovation requires deep collaboration across industry innovators that build on each other’s contributions. Given its rich heritage in leading technology transitions, Intel is in a unique position to accelerate collaboration across its customers and partners. Intel has announced strategic collaborations with industry leaders, including Altiostar, Dell, Deutsche Telecom, HPE, Lenovo, QCT, Rakuten, VMware, and ZTE to advance network infrastructure capability and speed edge solutions in the market.

Intel has been at the forefront of technology innovation for 51 years. By delivering the broadest silicon portfolio for 5G network infrastructure, the company continues to open a world of opportunity for its customers and partners.

Recent Developments

In February 2016, Intel Corporation announced new industry partnerships and products that lay the groundwork for faster, smarter, and more efficient 5G wireless networks designed to deliver amazing new experiences throughout daily life.

In February 2017, Intel and Ericsson launched 5G Innovators Initiative with Honeywell, GE, and the University of California Berkeley. Ericsson and Intel Corporation are launching the 5G Innovators Initiative (5GI2), an open industry initiative designed to create transformative experiences that change lives, businesses, and society.

In June 2017, IOC and Intel announced Worldwide TOP Partnership through 2024. Intel’s 5G platforms will be used at the Olympic Games to demonstrate how 5G will transform communications over the next decade.

In September 2017, Telia said that it is deploying the first public 5G live network use cases in Europe in collaboration with Ericsson and Intel. This includes a high-speed 5G connection to a commercial passenger cruise ship delivering internet connectivity to the ship and its passengers while in port, and an industrial use case featuring a construction excavator remotely controlled with a live 5G network.

In August 2018, Intel and Ericsson achieved a milestone with First 3GPP NR-Compliant End-to-End Data Call over 39 GHz SpectrumL Intel and Ericsson delivered a first 3GPP New Radio (NR) 5G-compliant live data call operating over the 39 GHz band using Intel’s RF mm-Wave chip with Ericsson Radio System commercial equipment including the 5G NR radio AIR 5331, baseband and Intel® 5G Mobile Trial Platform.

In September 2018, Intel announced details on the expansion of its portfolio of 100G silicon photonics transceivers beyond the data center and into the network edge. At the European Conference on Optical Communication (ECOC) in Rome, Intel unveiled specifics on new silicon photonics products that are optimized to accelerate the movement of massive amounts of data being generated by new 5G use cases and Internet of Things (IoT) applications. The latest 100G silicon photonics transceivers are optimized to meet the bandwidth requirements of next-generation communications infrastructure while withstanding harsh environmental conditions.

In November 2018, Intel announced the Intel® XMM™ 8160 5G modem, a multimode modem optimized to provide 5G connectivity to devices like phones, PCs, and broadband access gateways. Intel has accelerated the timing of this modem by pulling in the launch by more than a half-year. The XMM 8160 5G will support peak speeds up to 6 gigabits per second, making it three to six times faster than the latest LTE modems available.

In January 2019, Intel, T-Mobile, and Ericsson completed World’s First 5G Call on 600 MHz (T-Mobile).

In February 2019, Intel announced it will provide technology to Rakuten for a new cloud-native network. It will be fully virtualized from the radio access network (RAN) to core and will adopt an innovative 5G systems architecture from its launch. The network is significant as it will offer end-to-end automation for both network and services. It is being built to serve millions of subscribers in Japan.

At Mobile World Congress (MWC) 2019, Intel announced the Intel® FPGA Programmable Acceleration Card N3000 (Intel® FPGA PAC N3000), designed for service providers to enable 5G next-generation core and virtualized radio access network solutions. The Intel FPGA PAC N3000 accelerates many virtualized workloads, ranging from 5G radio access networks to core network applications.

In April 2019, Intel announced the general availability of the 2nd-Generation Intel® Xeon® Scalable processor optimized for customers’ most demanding processing requirements from the intelligent edge to the cloud, and across artificial intelligence (AI) and 5G.

In July 2019, Apple acquired the majority of Intel’s smartphone modem business.

In November 2019, Intel and MediaTek became partners to Deliver 5G on the PC. Intel partnered with MediaTek on the development, certification, and support of 5G modem solutions for the next generation of PC experiences. As part of the partnership, Intel will define a 5G solution specification, including a 5G modem to be developed and delivered by MediaTek. Intel will also provide optimization and validation across the platform and lend system integration and co-engineering support to further enable its OEM partners.

In December 2019, Intel completed the sale of smartphone modem business to Apple.

**Broadcom**

Broadcom is a prominent designer, developer, manufacturer, and global supplier of a wide range of semiconductors and infrastructure software products.

Broadcom hasn’t been much in this news since it wished to acquire Qualcomm for $130 billion in 2017. Considering Qualcomm’s position, it is highly likely that the deal is never going to happen. Broadcom despite not being able to get its hands on Qualcomm is still doing research in chipsets and has released some products as well. They have also undergone a few partnerships and signed collaborations to get a place in the chipset market.

Besides, Broadcom made some acquisitions involving huge money such as the acquisition of CA Technologies, a software company, in Nov 2018 for $18.9 billion.

Recent Developments

In April 2017, Broadcom introduced the BCM53570 Ethernet switch family that is the industry’s first to offer full compliance with all available IEEE Time Sensitive Networks (TSN) standards. BCM53570 family supports industry-leading time synchronization accuracy that powers next generation (5G & beyond) Ethernet-based radio access networks with coordinated features and massive MIMO (Multiple Input, Multiple Output).

In November 2017, Broadcom announced the industry’s first silicon-proven 7nm intellectual property (IP) for an ASIC platform targeting deep learning and networking applications. Broadcom’s broad 7nm IP portfolio enables SoC integration required to meet 5G needs for bandwidth, coverage, and equipment form factors.

In March 2018, Broadcom announced the immediate availability of Jericho2® and FE9600 – the next generation of the StrataDNX family of system-on-chip (SoC) Switch-Routers. Shipping within 24 months from its predecessor Jericho+, Jericho2 delivers 5X higher bandwidth at 70% lower power per gigabit.

In March 2018, Broadcom announced the availability of the Broadcom® Monterey Ethernet switch (BCM56670), the industry’s first, built specifically for cellular fronthaul networks. This high capacity device meets the stringent performance demands of new Ethernet-based 5G radios and supports existing CPRI-based radios, thus consolidating all radio traffic onto a standard, Ethernet-based infrastructure.

In November 2018, Broadcom announced the immediate availability of its 7nm 400G PAM-4 PHY device, the BCM87400, designed for data center and cloud infrastructure. Built on Broadcom’s state-of-art 7nm Centenario™ 112G PAM-4 DSP platform, the device provides best-in-class 400G 8:4 gearbox performance while delivering the lowest power, enabling broad market adoption of 400bE links in hyper-scale datacenter and cloud networks.

In February 2019, Broadcom announced the completion of its 5G switching portfolio, designed to enable the deployment of end-to-end networks that consolidate all radio and fixed-line traffic onto a standard, Ethernet-based infrastructure. The six devices that make up this portfolio – Monterey, Quartz, Qumran2a, Jericho2, Jericho2c, and Ramon – are designed for switches with capacities greater than 100 Tbps and offer the complete feature set needed to meet the stringent performance demands of new Ethernet-based 5G New Radios (NR) and base stations.

In February 2019, Broadcom announced the expansion of the Jericho2 Series to include the 5 Tbps Jericho2c, the 2.4Tbps Qumran2c, and the 800Gbps Qumran2a devices, delivering the industry’s only comprehensive merchant silicon portfolio of carrier-grade routing chipsets and enabling production network deployments in 2019. The new Jericho2c, Qumran2c, and Qumran2a products add 5G network slicing support, high-speed channelized interfaces up to 400GE, direct OTN framer support, and Flexible Ethernet (FlexE) ports.

In March 2019, Broadcom launched the BCM8956X, a family of automotive multilayer Ethernet switches, designed to address the growing need for bandwidth, flexibility, security, and time-sensitive networking (TSN) for autonomous and connected vehicles. In addition, Broadcom began shipping production quantities of its automotive 1000BASE-T1 PHY transceiver device, the BCM8988X, enabling automotive OEMs to immediately deploy Gigabit Ethernet on single-pair UTP cables for in-car networking applications.

In September 2019, Broadcom announced commercial availability of its BCM81343 device, a dual 400G MACSec PHY with AES-256, designed to address security requirements for high speed interconnects in modern network infrastructure including hyper-scale, cloud, service provider, and enterprise networks. Expanding upon the previous generation dual 100G MACSec PHY, the BCM81343 quadruples the switch bandwidth capability with dual 400G ports and supports the IEEE 1588 precision time protocol (PTP) providing accurate clock timing for time-sensitive transactions and mission-critical tasks.

In May 2020, Broadcom announced the availability of DX NetOps powered by Broadcom Silicon, the industry’s first AI-driven, high scale operations monitoring and analytics solution. Broadcom provides next-generation high-scale operations monitoring that simplifies 5G, IoT, Cloud, and SD-WAN deployments by applying AI and ML to the rich granular data captured at the chip level— enabling a unique automated AI-driven solution that remediates network congestion.

In June 2020, Nokia and Broadcom announced a collaboration for the development of advanced semiconductor technologies, including new custom system-on-chip (SoC) processors, which will be integrated into Nokia’s “5G Powered by ReefShark” portfolio. The collaboration further expands the range of Nokia ReefShark chipsets available for 5G solutions and will improve both the system performance and energy footprint of 5G networks. The two companies will work to develop new custom system-on-chip (SoC) solutions, which utilize Nokia’s wireless technology and Broadcom’s expertise in application-specific integrated circuit ASIC technologies.

**Analog Devices**

Analog is a prominent American chipset company and has been in business for more than half a century. The Massachusetts-based company designs and manufactures analog, mixed-signal, and digital signal processing integrated circuits.

Just like the company participated in 2G, 3G, and 4G communications, they intend to do the same with 5G.

The company first talked about its plan for 5G in mid-2018 when they published a whitepaper written by Dr. Thomas Cameron, Director of wireless technology at Analog Devices.

“ADI helps customers design complex radio architectures for 5G full-spectrum systems, integrating unprecedented high performance with low power, security, and smart algorithms.”, claims the company.

Analog since then participated in quite a number of research activities and partnerships to position itself as an innovator among 5G chip manufacturers.

Recent Developments

In March 2017, Analog Devices announced the completion of its acquisition of Linear Technology Corporation. The combination creates the premier analog technology company with the industry’s most comprehensive suite of high-performance analog offerings and integrated engineering, manufacturing, sales, and support operations that will accelerate innovation and revenue growth opportunities.

In April 2017, Analog Devices introduced the AD9208, engineered for gigahertz-bandwidth applications, an A/D converter that meets the increased spectral efficiency demands of 4G/5G multi-band wireless communications base stations. It also meets the reduced run-time targets of multi-standard production instrumentation and provides greater detection range and sensitivity for defense electronics. Based on 28-nanometer CMOS technology, the AD9208 delivers industry-leading bandwidth and dynamic range to cover the largest number of signal bands. It also features low-noise spectral density for diversity radio and I/Q demodulation systems, while consuming half of the power, when compared to alternative solutions.

In April 2017, Analog Devices introduced a 28-nanometer D/A converter as part of a new series of high-speed digital-to-analog converters (D/A converters). The AD9172 meets the demands of gigahertz bandwidth applications and delivers the increased spectral efficiency needed for 4G/5G multi-band wireless communications base stations and 2 GHz E-band microwave point-to-point backhaul platforms. Its design also benefits production instrumentation targeting multi-standard direct-to-RF signal synthesis.

In May 2017, Analog Devices announced the LTC5553, a double-balanced mixer providing best-in-class matched bandwidth capability from 3GHz to 20GHz. The mixer can be used either as an up- or downconverter.

In June 2017, Analog Devices announced the latest update to its award-winning RadioVerse™ technology and design ecosystem, which simplifies and accelerates radio development for wireless carriers and telecommunications equipment manufacturers as they transition their cellular base stations from 4G to 5G networks. ADI’s expanded RadioVerse portfolio features new radio transceiver hardware, software tools, and a robust design environment that enables the smaller, lower power radios necessary in next-generation networks. The new offering allows customers to quickly evaluate and develop radio designs for 4G small cell and Pre-5G massive MIMO systems, key building blocks in the transition to 5G, enabling faster data rates while improving connectivity and data throughput in densely populated, high-traffic areas such as office buildings, sports stadiums, and public transit systems.

In February 2018, Analog Devices announced LTC5594, a wideband, high linearity true zero-IF (ZIF) demodulator with 1GHz instantaneous I and Q 1dB bandwidth. The LTC5594 is ideally suited for 5G microwave wireless infrastructure platforms that require 1GHz or more bandwidth, and dynamic range performance to support the high order modulation and gigabit data rates required.

In April 2018, Analog Devices, Inc. (ADI) opened an R&D facility in Ottawa, Canada, to focus on the design, characterization, validation, and testing of highly integrated RF products across multiple industries including cellular infrastructure, instrumentation, and aerospace and defense. The LEED-certified facility is 50 percent larger than the previous facilities and houses engineering staff dedicated to advancing the company’s RF and wireless technology solutions.

In June 2018, Analog Devices announced the production release of its 44 GHz single-pole, double-throw (SPDT) switches, the ADRF5024, and ADRF5025 in advanced Silicon-on-Insulator (SOI) technology. The two new switches are broadband, with the ADRF5024 yielding flat frequency response from 100 MHz to 44 GHz, while the ADRF5025 from 9 kHz to 44 GHz, with repeatable characteristics better than 1.7 dB insertion loss and 35 dB channel to channel isolation. Both parts support 27 dBm power handling for both through and hot-switching conditions.

In June 2018, Analog Devices expanded its award-winning RadioVerse™ technology and design ecosystem with the industry’s widest bandwidth RF transceiver, which provides designers with a single radio platform to accelerate the deployment of 5G, sustain 2G/3G/4G coverage, and simplify phased array radar design. The ADRV9009 RF transceiver delivers twice the bandwidth (200 MHz) of previous-generation devices and replaces as many as 20 components, cutting power in half and package size by 60 percent. With its industry-leading performance and reduced size, weight, and power, the ADRV9009 transceiver meets the rigorous antenna density and expanded network capacity requirements of emerging 5G wireless infrastructure equipment and aerospace and defense systems.

In November 2018, Analog Devices, Inc. (ADI) was recognized with four 2018 World Electronics Achievement Awards (WEAA) from ASPENCORE for its management capabilities and innovative product line.

In February 2019, Analog Devices announced it is expanding its Raleigh, NC office, and moved to The Dillon in downtown Raleigh’s growing Warehouse District. The Raleigh office is an ADI Center of Excellence focused on researching and developing the software-defined radio (SDR) systems that underpin modern wireless communication systems and infrastructures, including 5G networks. The Raleigh office has doubled in size over the past five years and this move facilitates the office’s continued growth by accommodating more than 120 employees.

In February 2019, Analog Devices announced the ADMV1013 and ADMV1014, a paired highly integrated microwave upconverter and downconverter, respectively. These ICs operate over a very wide frequency range with 50 Ω-match from 24 GHz up to 44 GHz, facilitating ease of design and reducing the costs of building a single platform that can cover all 5G mm-Wave frequency bands including 28 GHz and 39 GHz. Additionally, the chipset is capable of flat 1 GHz RF instantaneous bandwidth supporting all broadband services as well as other ultra-wide bandwidth transceiver applications.

In May 2019, Analog Devices introduced a new solution for millimeter-wave (mmWave) 5G with the highest available level of integration to reduce design requirements and complexity in the next generation of cellular network infrastructure. The solution combines ADI’s advanced beamformer IC, up/down frequency conversion (UDC), and additional mixed-signal circuitry. This optimized “Beams to Bits” signal chain represents a unique set of capabilities only available from ADI.

In June 2019, Analog Devices introduced a mixed-signal front-end (MxFE™) RF data converter platform that combines high-performance analog and digital signal processing for a range of wireless equipment such as 4G LTE and 5G millimeter-wave (mmWave) radios. ADI’s new AD9081/2 MxFE platform allows manufacturers to install multiband radios in the same footprint as single-band radios, which as much as triples call capacity available in today’s 4G LTE base stations. With a 1.2 GHz channel bandwidth, the new MxFE platform also enables wireless carriers that are adding more antennas to their cell towers to meet the higher radiodensity and data-rate requirements of emerging mmWave 5G.

In February 2020, Marvell and Analog Devices, Inc. announced a technology collaboration leveraging Marvell’s industry-leading 5G digital platform and ADI’s world-class wideband RF transceiver technology to deliver fully optimized solutions for 5G base stations. As part of the collaboration, the companies will offer fully integrated 5G digital front-end (DFE) ASIC solutions with tightly coupled RF transceivers and will collaborate to develop next-generation Radio Unit (RU) solutions including baseband and RF technology optimized for a diverse set of functional splits and architectures.

In July 2020, Analog Devices agreed to buy rival Maxim Integrated Products for about $21 billion, aiming to boost its market share in automotive and 5G chipmaking.

In August 2020, Analog Devices announced its collaboration with Intel Corporation to create a flexible radio platform that addresses 5G network design challenges and will enable customers to scale their 5G networks more quickly and economically. The new radio platform combines the advanced technology of ADI’s radio frequency (RF) transceivers with the high performance and low power of Intel Arria 10 Field Programmable Gate Arrays (FPGAs) giving developers a new set of design tools for more easily creating optimized 5G solutions.

**Marvell Technology**

Marvell Technology, trying to further transform itself into one of the world’s largest vendors of network infrastructure chips, rolled out its latest line of Octeon networking chips to meet the throughput and latency demands of 5G telecom equipment. Marvell said it hammered out deals with telecom gear vendors, including Nokia and Samsung, to supply the Octeon chips for use in 5G base stations.

The company introduced the first chip in its latest generation of Octeon Fusion chips, the CNF95xx, which is targeted at the 5G infrastructure market. The chip incorporates a range of hardware accelerators for secure networking, baseband processors, and programmable DSP cores, ideal for 5G networks that offer far faster data transfers than 4G technology.

Marvell said it is currently the only merchant silicon on the market for 5G base stations. Marvell said the new Octeon Fusion chips pump out more performance per watt than its predecessors while also supporting the millimeter-wave bands used in 5G networks. The chip can be used in macro base stations with antennas and other hardware that beam out signals over long distances. The chip can also be used for massive MIMO, which is used to transfer data through targeted 5G beams, speeding up data rates, and lifting throughout.

The Santa Clara, California-based company is attempting to become a global powerhouse in chips used in 5G networking gear. Marvell is looking to gain ground with the world’s top players, including Nokia, which for about 22% of the market share in 2018, according to market researcher Omdia. Ericsson and Nokia have largely built chips in-house in recent years or partnered with Broadcom, Marvell, or other firms to build base station silicon.

Marvell is winning over other major customers for its Octeon Fusion processors. Nokia, one of the global leaders in the telecommunications gear market, said that it plans to roll out base stations with its Octeon Fusion family of chips, which can handle the global range of frequency bands used by 5G technology, including millimeter waves. In March, Marvell also agreed to help plot out future generations of Nokia’s 5G baseband ASICs.

Marvell also recently rolled out the latest generation of infrastructure processors, Octeon TX2, which can be used in 4G and 5G networking devices as well as switches, gateways, routers, and other gear drilled into data centers and cloud servers. The Octeon TX2 chips feature a range of programmable accelerators for moving massive amounts of data faster and more securely. The processors also use Marvell’s TX2 64-bit CPU microarchitecture.

The Octeon Fusion and Octeon TX2 chips are tailored for the latency and throughput demands of 5G networks. But they also deliver “a degree of programmability” so that they can be upgraded as 5G standards change. Marvell said its latest generation of Octeon processors slash the cost and the power consumption of other solutions based on FPGAs that telecom equipment vendors are using to build and test out 5G base stations.

The Silicon Valley company’s strategy is to start selling complete solutions for use in 5G networking infrastructure. The Octeon Fusion family of chips can be used as baseband processors, and the Octeon TX2 chips can handle transfer and control plane protocols. At the same time, Marvell’s Prestera Ethernet chips can be used for both fronthaul and backhaul, while its Thunder X2 CPUs can be added to data centers and core networks.

Marvell has also started to roll out ASICs for 5G networks through its $650 million deal for Avera Semiconductor in 2019. The company believes the networking chips it sells for 5G technology are worth four times more per 5G base station compared to 4G.

“Marvell has continued to innovate around the Octeon Fusion architecture,” said Caroline Gabriel, principal analyst at wireless market researcher Analysys Mason, in a statement. “The ability to address today’s 5G network rollout while offering future design flexibility makes lots of sense in an evolving market. There will be several different 5G networking configurations, and Marvell processors will be capable of addressing each one of them.”

Having covered in detail about its Octeon range of products, let’s now have a look at the recent developments by the company.

Recent Developments

In February 2019, Marvell announced a highly flexible end-to-end optimized 5G platform specifically tailored to exceed OEM design demands, accelerate the development of 5G New Radio (5G NR) systems and, ultimately, speed global carrier deployments.

In February 2019, Marvell announced with Samsung Electronics Co., Ltd., the expansion of a long-term partnership for enabling leading wireless infrastructure networks. Samsung and Marvell are collaborating on the development and launch of multiple generations of radio and control plane processors for both LTE and 5G NR, enabling carriers to deploy multi-radio access technology in order to meet the ever-increasing data usage of today’s users and emerging applications.

In February 2019, Marvell announced a highly flexible end-to-end optimized 5G platform specifically tailored to exceed OEM design demands, accelerate the development of 5G New Radio (5G NR) systems and, ultimately, speed global carrier deployments.

In March 2019, Marvell announced a breakthrough Ethernet switch solution portfolio, ranging from 2 to 12.8 Terabits per second (Tbps), designed for edge and private data centers utilizing composable infrastructure. The Marvell® Prestera® CX 8500 family is architected with a robust feature set to meet the distinctive data center requirements needed to support the approaching tsunami of connected intelligence, edge computing, and 5G applications.

In May 2019, Marvell Technology Group and Aquantia, Corp. announced a definitive agreement, approved by the boards of directors of both companies, under which Marvell will acquire all outstanding shares of Aquantia common stock in exchange for consideration of $13.25 per share in cash. The acquisition of Aquantia complements Marvell’s portfolio of copper and optical physical layer product offerings and extends its position in the Multi-Gig 2.5G/5G/10G Ethernet segments.

In August 2019, Marvell released the industry’s lowest power PCIe® Gen4 NVMe™ solid-state drive (SSD) controller portfolio. Marvell’s newest SSD controllers are designed to meet the need for lower power and higher performance in next-generation data centers and edge devices as artificial intelligence (AI) and 5G gain momentum. This breakthrough technology delivers unparalleled performance in an ultra-compact footprint, leveraging the company’s complex system-on-chip (SoC) design expertise and groundbreaking storage IP to help data center, notebook, tablet, gaming, and edge computing platform architects advance their solutions for the highly distributed data era.

In September 2019, Marvell announced that it has completed its acquisition of Aquantia, Corp. Aquantia pioneered Multi-Gig technology – now the basis for high-speed networking in a broad range of applications from enterprise campuses to autonomous cars. Marvell’s combined portfolio of industry-leading PHYs, switches, and processors creates an unparalleled networking platform and enables customers to develop systems that span megabits to terabits per second.

In November 2019, Marvell announced that it has completed its acquisition of Avera Semiconductor, the Application Specific Integrated Circuit (ASIC) business of GlobalFoundries for ~$600 million. By combining Marvell’s advanced technology platform and scale with Avera’s custom design capabilities, Marvell is now able to offer the complete spectrum of semiconductor solutions spanning 5G, data center, enterprise, and automotive applications.

In February 2020, Marvell announced its dual 400GbE (Gigabit Ethernet) MACsec PHY transceiver with 256-bit encryption and Class C compliant precision time protocol (PTP) timestamping, bringing advanced performance, security, and transfer speeds for next-generation networking infrastructure. Hardware-based point-to-point encryption encompassing Ethernet speeds up to 400G is being deployed in the cloud, carrier, and enterprise networks to address the market demand for enhanced data security. In addition, the stringent timing requirements of 5G radios are driving the timing accuracy that needs to be delivered by networks supporting these services.

In March 2020, Marvell announced OCTEON® TX2, the latest family of infrastructure processors targeting a wide variety of wired and wireless networking equipment including switches, routers, secure gateways, firewall, network monitoring, 5G base stations, and smart network interface controllers (NICs).

In March 2020, Marvell introduced a new generation family of OCTEON Fusion® processors built on the OCTEON® TX2 platform and optimized for cellular base station designs including baseband unit and smart radio unit applications. 5G wireless networks promise a dramatic improvement in bandwidth and latency, delivering an unprecedented level of service and unlocking new use cases for mobile operators. To make this promise a reality, 5G wireless infrastructure requires more processing power, and OCTEON Fusion is optimized to meet this surging demand for computing. Built on Marvell’s OCTEON TX2 platform, which provides a complex of Arm® v8 cores and a series of hardware accelerators for networking and security, OCTEON Fusion adds programmable DSP cores and baseband accelerators making it the optimal solution for base stations.

In March 2020, Marvell and Samsung Electronics Co announced that the companies are extending their collaboration to encompass infrastructure innovations across additional segments of the Radio Access Network (RAN). Marvell and Samsung have worked closely to deliver multiple generations of market-leading baseband and transport processing solutions for base stations based on Marvell’s OCTEON® and OCTEON Fusion® processors. In addition, the companies are collaborating on innovative radio unit architectures designed to meet the dramatic increase in computing power required for the complex beamforming algorithms inherent to massive MIMO deployments. Building on the OCTEON Fusion platform and integrating Samsung’s unique intellectual property provides a differentiated offering while speeding time-to-market with an optimized solution.

In March 2020, Nokia and Marvell announced that they are working together to develop leading 5G multi-RAT (Radio Access Technology) silicon innovations, including multiple generations of custom silicon and infrastructure processors to further expand the range of Nokia ReefShark chipsets available for 5G solutions.

In July 2020, Marvell announced a unique custom ASIC offering that addresses the stringent requirements of next-generation 5G carriers, cloud data centers, enterprise, and automotive applications. Marvell’s comprehensive custom ASIC solution enables a multitude of customization options and a differentiated approach with best-in-class standard product IP including Arm®-based processors, embedded memories, high-speed SerDes, networking, security, and a wide range of storage controller and accelerators in 5nm and beyond.

In August 2020, Marvell announced an extension of its long-term partnership with TSMC, the world’s largest dedicated semiconductor foundry, to deliver a comprehensive silicon portfolio for the data infrastructure market leveraging the industry’s most advanced 5 nanometers (nm) process technology.

In September 2020, Marvell announced that it has joined the Open RAN Policy Coalition. The coalition, composed of leading policymakers, operators, and equipment providers, promotes policies that advance the adoption of open and interoperable solutions in the RAN market. Marvell, a member of the O-RAN Alliance and contributor to the Open Networking Foundation CORD project, brings wireless technology expertise and radio access network (RAN) industry perspectives along with a commitment to open standards.

In September 2020, Marvell announced the shipment of the 1 Millionth OCTEON-powered LiquidIO® SmartNIC. Marvell’s OCTEON® family is the most widely deployed data processing unit (DPU) for SmartNIC cloud applications. Following on the heels of multiple generations of proven OCTEON solutions, the latest release, LiquidIO III SmartNIC, is now being deployed at scale.

In October 2020, Marvell announced with Samsung Electronics, the expansion of a long-term partnership for enabling leading wireless infrastructure networks. Samsung and Marvell are collaborating on the development and launch of multiple generations of radio and control plane processors for both LTE and 5G NR, enabling carriers to deploy multi-radio access technology in order to meet the ever-increasing data usage of today’s users and emerging applications.

**Xilinx Inc.**

Xilinx is a Silicon-Valley technology company that also works on programmable chips. Founded in 1984, the company has grown and entered the leagues of big semiconductor companies. And now, the company is hugely researching in 5G chipsets.

Its position in the chipset industry can be judged from the fact that AMD wants to buy it for over $35 billion.

What is it up to?

Let’s find it out for ourselves by exploring Xilinx’s research activity and collaborations w.r.t 5G chipsets.

Recent Developments

In February 2018, Barefoot Networks and Xilinx Inc demonstrated an end-to-end network performance monitoring solution that gives network operators per-packet visibility at nanosecond granularity. Barefoot Tofino ASIC-based P4 switches with INT, combined with Xilinx® FPGA-based P4 SmartNICs with INT, give 5G network operators the per-packet visibility and the ability to define innovative features in the network to augment compute resources and accelerate VNF performance.

In March 2018, Xilinx, Inc. announced it will be showcasing its technology leadership in optical networking at OFC 2018. The company will be giving attendees a glimpse into the future of networking with the FPGA industry’s first demonstration of breakthrough 112G PAM4 electrical signaling technology for optical networks, as well as announcing the addition of 58G PAM4 transceivers to its 16nm Virtex® UltraScale+™ portfolio.

In March 2018, the University of Bristol, Smart Internet Lab, leveraged Xilinx® silicon technology to deploy and demonstrated the world’s first end-to-end 5G urban network. This flexible and programmable 5G network testbed consisting of 5G NR radio heads connected to the 5G virtualized baseband pool using multiple protocols with dynamic low latency aggregation and elastic bandwidth allocation into the fiber backhaul utilizing an end to end SDN controlled environment. Use cases are demonstrated in a hyper-connected Smart City environment, Augmented Reality, Autonomous Transport, and Smart Tourism are being showcased with this 5G network testbed. The project is funded by the UK Government’s Department of Digital Culture Media and Sports (DCMS).

In March 2018, Xilinx, Inc. announced a new breakthrough product category called adaptive compute acceleration platform (ACAP) that goes far beyond the capabilities of an FPGA. An ACAP is a highly integrated multi-core heterogeneous compute platform that can be changed at the hardware level to adapt to the needs of a wide range of applications and workloads. An ACAP’s adaptability, which can be done dynamically during operation, delivers levels of performance and performance-per-watt that is unmatched by CPUs or GPUs.

In February 2019, the company announced two new generations of its Zynq UltraScale+ RF system on chip (RFSoC) portfolio. The device covers the entire sub-6 GHz spectrum, which is necessary for 5G, and the updates included: an extended millimeter wave interface, up to 20% power reduction in the RF data converter subsystem compared to the base portfolio, and support of 5G New Radio.

In February 2019, Xilinx introduced an HDMI 2.1 IP subsystem core, which enabled the company’s devices to transmit, receive, and process up to 8K (7680 x 4320 pixels) UHD video in media players, cameras, monitors, LED walls, projectors, and kernel-based virtual machines.

In Feb 2019, Xilinx and Samsung Electronics Co., Ltd., announced an expanded collaboration that has resulted in the world’s first 5G New Radio (NR) commercial deployment. This world-first deployment is in South Korea and would be followed by additional countries globally.

In April 2019, Xilinx announced it entered into a definitive agreement to acquire Solarflare Communications, Inc. Xilinx became a strategic investor in Solarflare in 2017. The companies have been collaborating since then on advanced networking technology, and in March 2019 demonstrated their first joint solution a single-chip FPGA-based 100G smart NICs. The acquisition enables Xilinx to combine its FPGA, MPSoC, and ACAP solutions with Solarflare’s NIC technology and Onload application acceleration software to enable new converged SmartNIC solutions.

In June 2019, Xilinx, Inc. announced that it has shipped Versal™ AI Core series and Versal Prime series devices to multiple tier-one customers through the company’s early access program. Versal is the industry’s first adaptive compute acceleration platform (ACAP), a revolutionary new category of heterogeneous computing devices with capabilities that far exceed those of conventional CPUs, GPUs, and FPGAs.

In June 2019, Xilinx announced that it was shipping its first Versal chips. Using ACAP, the chips’ hardware and software can be programmed to run almost any kind of AI software.

In August 2019, Xilinx announced that the company would be adding the world’s largest FPGA – the Virtex Ultrascale+ VU19P, to the 16 nm Virtex Ultrascale+ family. The VU19P contains 35 billion transistors.

On October 1, 2019, Xilinx announced the launch of Vitis, a unified software platform that helps developers take advantage of hardware adaptability.

In January 2020, Xilinx, Inc. announced that it has filed claims against Analog Devices, Inc., asserting infringement of eight United States patents in the United States District Court for the District of Delaware. The lawsuit details the unauthorized use by Analog Devices of certain Xilinx technologies involving serializers/deserializers (SerDes), high-speed analog-to-digital converters (ADCs), and digital-to-analog converters (DACs), as well as mixed-signal devices targeting 5G and other markets. In addition to seeking damages, Xilinx is requesting that Analog Devices be enjoined from selling, offering to sell, or importing into the United States, products that infringe Xilinx’s asserted patents.

In March 2020, Xilinx, Inc. announced Versal™ Premium, the third series in the Versal ACAP portfolio. The Versal Premium series features highly integrated, networked, and power-optimized cores and the industry’s highest bandwidth and compute density on an adaptable platform. Versal Premium is designed for the highest bandwidth networks operating in thermally and spatially constrained environments, as well as for cloud providers who need scalable, adaptable application acceleration.

In March 2020, Telefónica announced an agreement that it is driving a strategic ecosystem collaboration with Altiostar, Gigatera Communications, Intel, Supermicro, and Xilinx, Inc., to foster the development of Open RAN technologies in 4G and 5G. With this collaboration, Telefonica will launch 4G and 5G Open RAN trials in the UK, Germany, Spain, and Brazil this year.

In April 2020, Xilinx, Inc. announced that the Xilinx® Versal™ adaptive compute acceleration platform (ACAP) will be utilized by Samsung Electronics Co., Ltd., for worldwide 5G commercial deployments. Xilinx Versal ACAPs provides a universal, flexible, and scalable platform that can address multiple operator requirements across multiple geographies.

In July 2020, Xilinx, Inc. announced it has joined the Open RAN Policy Coalition to support the development and deployment of Open RAN 5G technologies. The Open RAN Policy Coalition membership promotes Open RAN as the solution of choice for greater interoperability and security among a multi-vendor ecosystem. Xilinx has been an active member of the O-RAN Alliance and a contributor to the 3GPP specifications for 5G mobile networks. Under the Open RAN Policy Coalition, Xilinx will continue to collaborate with members and key stakeholders to ensure 5G and future networks will be openly developed, interoperable, and adaptable.

In August 2020, Subaru announced the use of one of Xilinx’s chips as processing power for camera images in its driver-assistance system. In September 2020, Xilinx announced its new chipset, the T1 Telco Accelerator card, that can be used for units running on an open RAN 5G network.

In September 2020, Xilinx, Inc. announced the T1 Telco Accelerator Card for O-RAN distributed units (O-DUs) and virtual baseband units (vBBUs) in 5G networks. Built using the same field-proven Xilinx silicon and IP already being deployed in 5G networks, the T1 card is the only multi-function PCIe form factor card that performs both O-RAN fronthaul protocols and layer 1 offload. With its advanced offload capabilities, the T1 card provides a dramatic reduction in the number of CPU cores required in a system. The T1 card also enables the O-DU to deliver greater 5G performance and services while reducing overall system power consumption and cost compared to competitive offerings.

In September 2020, Ribbon Communications Inc. announced that it developed a 5G hybrid slicing solution for next-generation networks in collaboration with Xilinx Inc.

**U-Blox**

U-Blox is a swiss company that works on chipset modules for consumer, automotive, and industrial markets. The company does not have a good market share as compared to other companies we mentioned but it has been providing 5G chipsets modules mostly for the IoT market.

Recent Developments

In November 2018, U-Blox announced the ZED-F9T high accuracy timing module. This module meets even the most stringent timing synchronization requirements in 5G mobile networks on a global scale. Although the previous generation of cellular networks has already been using GNSS time as the primary source of synchronization, better synchronization throughout the network will be a key enabler for 5G. The 5G cellular network will require tighter coordination to offer much greater bandwidth and a broader range of services to the user than 4G, supporting sophisticated features such as beam-forming, carrier aggregation, and massive MIMO.

In November 2018, U-Blox announced a globally configurable NB-IoT module ready for 3GPP Rel 14 and 5G. The SARA-N3 is a multi-band NB-IoT module that supports a preliminary set of 3GPP Release 14 features (LTE Cat NB2) and is available in two variants: one dedicated to China and another that can operate across multiple bands on any NB-IoT network globally.

In June 2019, U-Blox redefined IoT security with a 5G-ready cellular module and chipset for low power wide area IoT applications. The module offers unprecedented wireless technology integration with the end-to-end device and data security, making it ideal for mission-critical or long life cycle IoT applications.

In July 2019, U-Blox and Arvento Mobile Systems announced the imminent launch of the brand new imt.x1 vehicle tracking system. As for previous Arvento products, collaboration with U Blox was a key factor in the imt.x1 product development process and the system’s high position sensitivity and accuracy are based on the integration of U-Blox’s 2G, 4G, and 5G-ready cellular modules as well as GNSS (Global Navigation Satellite Systems) modules.

In February 2020, U-Blox said that it will strengthen the security of IoT ecosystems built upon its dedicated LTE-M and NB-IoT chipset by implementing a key set of security features endorsed by the GSMA. Support for the IoT SAFE (IoT SIM applet for secure end-to-end communication) implementation guide will be included in a software maintenance release for u blox devices based on the UBX-R5 chipset, such as the new SARA-R5 series in 2020.

In March 2020, U-Blox announced certification by the Global Certification Forum (GCF) of the UBX-R5, U-Blox’s proprietary multi-band LTE-M/NB-IoT chipset featuring end-to-end device security, data security, and access control management. The U-Blox UBX-R5 is a 5G-ready cellular chipset for low power wide area (LPWA) mission-critical or long life-cycle IoT applications such as smart metering, telematics, tracking, security systems, building automation, as well as smart lighting solutions, and connected health.

In October 2020, U-Blox announced that its SARA-R5 LTE-M and NB-IoT cellular series is in production and LTE-M certified with several North American Tier 1 operators. The SARA-R5 series is the first product family based on the UBX-R5, U-Blox’s own low power wide area (LPWA) chipset, to achieve North American operator certification.

Concluding Notes

This gets us to the end of our list today, but that’s not it.

There is a lot happening in the 5G chipset domain, which is expected to reach USD 277 Billion by 2025 and we have covered it all in our exhaustive 5G Chipset report. You can download the report by filling the form below and if you have any other questions on 5G chipsets or if you are looking to do M&As in the domain and want to know who would be the right choice to partner with or invest in, send us an email here and we will get in touch.

**1NC --- Alt Causes To Monoculture**

**Single vendor inevitable --- too many alt causes**

**Shah 20** --- Rajiv Shah, PhD in quantum physics, has worked in the cyber, intelligence and security business for over 20 years, “Ensuring a trusted 5G ecosystem of vendors and technology”, Sept 2020, https://www.aspi.org.au/report/ensuring-trusted-5g-ecosystem-vendors-and-technology

The RAN equipment market presents particular challenges—it traditionally requires specialist hardware for antennas, radio signal generation and reception, and signal processing. Significant investment and time are needed to develop new hardware for the new frequencies, higher speeds and more devices that 5G will need to support. However, the 5G architecture does mean that, even for radio processing that’s traditionally done using specialised hardware at the antenna site, signals can be digitised and processed in software at remote sites.

In other network equipment classes, there will still be barriers to entry. The **established players** can be expected to compete strongly to maintain market dominance. They’ll also use the immaturity of standards to persuade service providers that it’s lower risk to use a **single end-to-end provider**. From discussions with providers for this report, **this could resonate**, especially given consumers’ focus on service quality. Telecoms companies nowadays **prefer to buy managed services** from vendors rather than build and integrate systems themselves. This means that when there are service outages they have a ‘single throat to choke’ (their vendor’s), rather than having to referee finger-pointing between vendors. A shortage of **systems engineering skills** has also been identified as a major barrier to enabling telecoms companies to consider developing multivendor environments, along with the challenge of needing to develop expensive interoperability testing facilities.

**1NC --- Polyculture Doesn’t Solve**

**Polycultures in cybersecurity solve nothing**

**Grimes 09** --- Roger A. Grimes is a contributing editor. Roger holds more than 40 computer certifications and has authored ten books on computer security. He has been fighting malware and malicious hackers since 1987, “Don't fall for the monoculture myth”, CSO, April 24th 2009, https://www.csoonline.com/article/2632142/don-t-fall-for-the-monoculture-myth.html

What is a more secure product? Do you measure that with known bug counts, severity of bugs, time to patch, or how often it is publicly exploited? And is the product you are moving to actually more secure or just attacked less often because it is not as popular? This leads to the other argument: When it comes to software, there's safety in fewer numbers of users. The idea is that when everyone is using the same application or operating system (OS), a computer monoculture is created that leads to more exploits.

On the face of it, it's a compelling argument, one that's hard to reason against. If we all use the same software, then attackers can write one piece of code to exploit us all simultaneously. It seems to make sense that moving away from a monoculture (an argument first popularized in a paper by Dan Greer and others in 2003) would reduce overall security risk.

And for sure, there are compelling factual arguments on a case-by-case basis. If you didn't run (unpatched) versions of Microsoft SQL Server in 2003, the SQL Slammer worm couldn't get you. Besides Windows, I also run OpenBSD, Ubuntu, and Mac OS X at home, and the last operating systems are attacked less frequently, with the exception of my Apache-based Web servers, which are attacked six to eight times more often than my IIS servers. However, the truth is that I don't get exploited on any of these systems unless I intentionally allow them to get exploited. (I run eight honeypots to monitor malware and hacker behavior.)

Celebrate diversity?

The key question is whether a more diverse software landscape -- i.e., the opposite of a computer monoculture -- would be safer over the long run.

Although some may accuse me of using this column to defend my full-time employer, the truth is that **no one has presented compelling evidence** that moving to a computer multiculture would provide more security protection to more users over the long run. Lots of people have speculated, but if the Windows world just up and splintered into a dozen different OSes and applications, no one has proven that it would provide more security value. Conventional wisdom says it might, but could it really?

I think the potential challenges to this way of thinking **are many.** First, often the alternatives people choose **are as insecure as the market leaders** they abandon; people may get get a temporary decrease in security risk until the software they use becomes more popular.

The monoculture argument about safety in fewer numbers holds water only if the move to the less popular software **stays under the radar**. If the masses follow, **nothing is gained**. Ten years ago, Microsoft Office document formats were the only game. But then Adobe's PDF arrived, and now PDFs are as common on the Internet as Office files. And not surprisingly, PDF is receiving more than its fair share of hackers and exploits. Some protection vendors are claiming that PDF exploits account for nearly half of all exploits in the wild today, surpassing Office's issues.

Adobe Acrobat Reader critics usually recommend moving to Fox-It, except that Fox-It has already had exploits. Internet Explorer critics recommend moving to Firefox, Safari, Opera, or Chrome, but all of these alternatives are commonly exploited too. Microsoft Office critics often recommend moving to OpenOffice.org, except that it, too, has already been exploited dozens of times, and some expert code analyzers think it is rife with exploits and insecure code. It's so frustrating it makes you want to move to simple text editors and text-only browsers, except those have already been exploited, too, and in any case, they fall well short of the features most of us need. When the world moves to the new product, you're right back where you started.

Life on the run

This isn't the answer, unless you plan on hopscotching around the software world from one program to the next, trying to keep one step ahead of the malicious hackers. While this works on a **personal level,** it's not so easy to manage **in the enterprise**. Plus, forcing the original vendor to become a more secure coder might make better use of overall effort. Who wants to be the person who forces their users to move to another product just to watch the original product become more secure than the new alternative?

Case in point: After the Microsoft SQL Slammer worm happened, there have been fewer than a handful of exploits against SQL Server, none popularly exploited. In the same time frame, there have been dozens to hundreds of exploits against SQL Server's most popular competitors -- same with IIS versus Apache after the Code Red worm debacle. Vendors that get a brutal lesson often fix their mistakes faster than the competition.

Note: Outside of the current security discussion, I highly recommend trying alternative products to see what feature sets and benefits they offer, and to be able to accurately point out the strengths and weaknesses when comparing against the products your company is using. Sometimes you can find a gem where you least expect it.

I believe the monoculture argument is **losing more steam every day**. The second rebuttal point is that the most popular applications are **cross-platform** already and exploits that work against one version **usually work against the others** -- not always, but more often than not. For example, a Safari browser exploit can be a problem no matter which OS you use. The same rule generally applies to Adobe Acrobat, iTunes, and Flash exploits. Not all work on all platforms, but they will attack most platforms with varying degrees of success.

Third, the **file formats** are becoming the **new popular attack vector.** If everyone up and moved to different applications, it probably **wouldn't change a thing**. Let's say the world ended up using 100 different word processors evenly distributed in use. People still need to communicate, and whatever document or protocol format becomes the de facto data exchange standard would become the de facto attack point. For example, most of the exploits against SQL databases don't pinpoint a particular platform or version of SQL, but rely upon SQL injection attacks. What make of SQL database you are using is far less important than the security of the code it is running.

Fourth, as computing moves into the cloud and as apps, documents, and protocols become more browser based, the differences between the various vendor products will lessen, and again, hackers will focus their attacks on the **common links**. Will the future attacks be against OSes, applications, data formats, and protocols, or will they leverage the inherent vulnerabilities in the cloud fabric itself?

I'm sure many readers are still discounting all my previous arguments. Suppose the world does move toward a more diverse computing environment. Is it really that hard for an attacker to attack 20 apps or OSes than one? Yes, of course, but maybe **it's not the high hurdle most people think it is.**

Crimeware pays

My fifth rebuttal point is that today's attackers are professional criminals. Make a point defense and they **will get around it**. Coding for 20 OSes or applications doesn't take **that much more effort** in real life than coding for one exploit. Look at all of the malware programs today that already use **multiple attack vectors**. Ten years ago, most malware programs attacked one exploit. Today, it's common for a single malware program to make use of 5, 10, or even 20 or more attack vectors. Conficker, anyone?

If we all ended up with 20 different apps and 20 different OSes, the attackers would simply begin exploiting more of them at once. All of the most popular apps and OSes are exploited pretty regularly. Attackers would learn to separate their entry exploit vectors and post-exploitation code into two separate but coordinated routines. The Metasploit project has been making this easy for more than half a decade. Are we to assume that rich, professional malware attackers will just give up and go home?

The idea of multiple attack vectors married with multiple post-exploit mechanisms in a malware program isn't even a new idea. **Plenty of worms are already doing this**, but it isn't mainstream because the attackers don't need the additional code and sophistication -- yet. If they use it sooner than they need it, it results in wasted computing cycles, slower malicious code, and easier detection. They'll also broadcast their new offensive techniques to the enemy (i.e., the anti-malware industry and the global community of good).

Lastly, and this is the biggest argument, we can't ignore the fact that most malware programs today (99.99 percent) don't rely upon software security vulnerabilities **at all.** They just **trick the end-user into running malicious code.** This attack vector will work for **any OS** and any application. **This point alone** should put the **monoculture argument to bed**. You can change the application, but until we change the **end-user** thought process, the **biggest problem remains**.

### 1NC – Grid Secure

#### New grid tech solves resilience vs cyber

TULLY 21 --- SHAWN TULLY , “A new technology being used in Chicago could protect cities from blackouts and cyberattacks”, Fortune, Aug 31st 2021, https://fortune.com/2021/08/31/chicago-reg-resilient-electric-grid-system-preventing-blackouts-cyberattacks/

A new partnership between a pioneer in superconductor technology and the Chicago utility has hatched a new solution for keeping the heat pumping and factories chugging if anything were to knock out parts of the city’s grid. American Superconductor (AMSC), a Nasdaq-listed innovator in energy technology, is deploying its Resilient Electric Grid (REG) system at two substations operated by ComEd, the utility serving over 4 million homes and businesses in Chicago and northern Illinois. If this first installation performs as the city expects, Chicago could expand the technology to link many more of the nodes that distribute electricity directly to homes and businesses. “We’re planning this stage with the next stage of connecting multiple substations in mind,” says Terence Donnelly, president and COO of ComEd. Put simply, REG is a backup system that for the first time connects substations so that if a downtown facility is damaged by severe weather or a massive hack, a nearby station it’s linked to sends power to the offices and apartment buildings that would otherwise suffer a blackout.

The REG technology offers a second big advantage. It could create a fully integrated network where when one substation needs extra power, others that harbor additional capacity can fill the gap. Hence, utilities would no longer need to build each individual station so that it holds tons of excess capacity for times when AC units or heaters are running at full tilt, or when part of its equipment fails. “REG changes the whole geography of the grid,” says Daniel McGahn, AMSC’s chief executive. “The more you network the grid, the less excess capacity you need. The utilities no longer have to keep building new substations to meet higher usage, they can tap the ‘trapped’ capacity from the substations already there.”

The way the grid operates now, its nodes can’t back each other up in times of trouble

To grasp the potential impact of the REG system, it’s important to understand why the design of today’s grids prevents them from sharing electricity. The grid resembles the hub and spokes of a bicycle wheel. Huge power plants that run on natural gas, nuclear, wind, and solar—mostly located far from the cities they serve—send electricity via “long-haul” transmission lines to substations in urban neighborhoods. ComEd has several hundred substations in the city of Chicago alone. Some get their power from a single plant, others from a blend of, say, renewables and natural gas from multiple facilities.

The substations are equipped with transformers that collect all that high-voltage electricity, and step down the voltages to a level that’s safe for homes and stores. The stations’ circuit breakers cut off the power flowing from the big plants if too much voltage is arriving. By the way, you seldom see or recognize a substation while walking around a city. They’re often installed in a brownstone that just looks like a residence, or sheltered in the basements of apartment buildings. That’s a sketch of the transmission and distribution system as it stands today.

The spokes are the lines that run directly from the substations to the homes, apartment buildings, and businesses in their service areas. But the hubs or nodes in the system, the substations, aren’t connected to each other. Their function is strictly distribution, sending the electricity from power plants to their customers. They don’t form a network at all. They can’t back each other up by having substation A that has excess capacity channel electricity to substation B when B is short on power or has shut down during a heat wave, a cyber hack, or an equipment failure.

Because today’s substations operate as islands or silos, each one needs to be designed with far more capacity than it uses most of the time. The reason is twofold. First, the stations must contain transformers and other gear big enough to meet times of peak demand, such as 100-degree days when everyone’s running the AC to keep cool. Second, some of the equipment at a substation will occasionally malfunction. So they need even more backup so that the gear that remains working can compensate for the parts most likely to break down. “All told, most substations have built-in redundancy of 100%,” says McGahn, meaning they’re designed and constructed to generate twice as much juice as their customers consume on a typical day.

Obviously, connecting substations would be a great solution. Today, in case of a cyberattack on one substation, the other stations loaded with excess capacity can’t send their power to light and heat the homes suffering the blackout. Nor can a substation in the suburbs that has extra capacity on a hot day dispatch it to a maxed-out station in a city center.

But the stations couldn’t link up for two reasons. First, the traditional copper cables used to move power were too bulky to fit into the rights-of-way for the much smaller conduits running from the stations to homes and buildings. Second, if and when a substation sends power to another substation, that power starts in a big surge. That surge is powerful enough to knock out the transformers in the station receiving the electricity. Worse, if several substations are connected, the rush can cause a domino effect that disables a whole series of stations. The supposed solution would turn into a disaster on the scale of a cyber hack. That cascading effect is how many blackouts in the past have occurred.

How the new REG technology would harden and expand the grid

AMSC’s superconductor technology miniaturizes power transmission. Its Amperium wire is made from a copper oxide compound that, for the same weight, enables it to carry 200 times the voltage of the regular copper wire that’s the traditional foundation for transmission. When electricity travels one mile over copper cable, as much as one-third of the power is lost during that trip. By contrast, electricity can cover any distance over superconductor wire and suffer no electrical loss.

The U.S. Navy deploys the AMSC's Amperium superconductors to protect its ships from mines. The technology is calibrated to mask the magnetic field spread by the vessels so they don’t trigger the underwater explosives. But utilities were still reluctant to deploy superconductors for joining substations. They acknowledged that superconductors solved the space problem: They can fit inside six-inch–diameter conduits and pipes that run well within the rights-of-way going from the substations to customers. The rights-of-way for each substation overlap with those of other stations, making it possible to extend the wires from one substation to another in the next neighborhood, or even 50 miles away.

The obstacle: The superconductor technology hadn’t solved the “overcurrent” problem that could cause rolling blackouts. But AMSC’s Amperium was the breakthrough. It combined the ability to carry huge amounts of power over a small wire with an outer layer called a “super-resistor” that tames the surges, and also protects against lightning strikes that could cause cascading outages.

What the Chicago project could mean for cybersecurity and more

As McGahn puts it, the REG technology provides an extension cord between the now-vulnerable nodes in the nation’s urban power grids. If substations are linked, power from those still functioning would automatically flow to the customers of the station that’s attacked or hit by extreme weather. In addition, utilities will be getting far more of their power from renewable sources in the future, and that power shuts off when the wind’s not blowing or even when the sun goes behind a cloud. Grids will need a lot more backup capacity to compensate for that intermittent energy. Linking substations would provide that support without needing to continue the current strategy of building still more substations to ensure sufficient backup.

The Chicago project links just two substations. For McGahn and ComEd the ideal solution is joining many or even all the nodes in one giant network that operates in a kind of buddy system. McGahn wants to create a “super-grid” that allows for more renewables without adding lots of backup capacity, and hence at a much lower cost than would be required under the current system. His vision would make our grids much safer, and enable the grid to channel electricity where it’s needed, when it’s needed, in exactly the amounts it’s needed, with far less need for excess capacity.

It’s a big vision for an old, and some would say stodgy, industry. But it would unite aging infrastructure with new technology to make America’s most vulnerable pressure points, where terrorists and hackers are now taking aim, far more secure.

**1NC --- No Cyber Escalation --- Restraint**

**Cyber restraint inevitable --- assumes escalatory attacks**

**Kreps & Schneider 19** --- Sarah Kreps, John L. Wetherill Professor in the Department of Government, Adjunct Professor of Law, and the Director of the Cornell Tech Policy Lab, Jacquelyn Schneider, Hoover Fellow at the Hoover Institution. Her research focuses on the intersection of technology, national security, and political psychology with a special interest in cybersecurity, unmanned technologies, and Northeast Asia, “Escalation firebreaks in the cyber, conventional, and nuclear domains: moving beyond effects-based logics”, Journal of Cybersecurity, Volume 5, Issue 1, 2019, https://academic.oup.com/cybersecurity/article/5/1/tyz007/5575971

Scholars within this line of reasoning devote significant attention to understanding the difficulty cyberspace operations have achieving access, the resources required for creating complex effects, and the highly-reversible nature of most cyberspace operations. Glaser and Farrell provide an effects-based typology and point to five characteristics of effects that may decrease escalation of cyberattacks: physical versus nonphysical damage (first- or second-order physical effects), no visible damage, military versus civilian, attacks that kill versus those that do not, and attacks in war versus peace [13]. According to this understanding of cyberspace and escalation, responses to a cyberattack should not be qualitatively different from any other attack as long as cyberattacks can advance to the level of nuclear or large-scale conventional capabilities [57, 59]. Until cyberspace attacks can provide the decisive edge toward **taking territory** or **create the lethal effects comparable to** large-scale or **nuclear war**, they will n**ot be treated the same as attacks** in other domains. The perspective is largely consistent with Valeriano and Maness’s quantitative analysis of cyberspace operations, who find cyber operations to be **largely low intensity** and find **no evidence** of **higher intensity retaliation** to cyber attacks [69].

In contrast to those who believe that cyberspace escalation is effects-based, a second set of arguments focuses on the qualitative importance of the means of cyberspace attacks, arguing that the way in which cyberspace operations deliver effects (often covert, virtually, and usually with second or third-order effects) makes the means of attack **less likely to trigger escalation** than attacks conducted from the conventional or nuclear domains. Glaser and Farrell allude to this possibility for escalation and cyberspace attacks, concluding that “It could result from the belief that cyber attacks and kinetic attacks are **fundamentally different in kind**, such that one is considered **fundamentally acceptable**, and the other is considered non-acceptable. If this were generally accepted, then the effects-based doctrine that we outlined initially would be **more or less useless**, since it would be undermined by an understanding that there is a **crucial qualitative difference** between cyber and kinetic weapons” [70].

Evidence suggests that Glaser and Farrell’s concern about an effects-based logics is **warranted**. In a study of crisis war games, Schneider finds that across **six years** of games US decision-makers **chose not to retaliate to cyberattacks**. Discussion about decisions during the game suggests that players did not view the cyberattacks within the same **psychological frame** as conventional or nuclear attacks. In one of the games, Schneider recounts an interaction between the cyber player and the team lead:

Cyber briefs that adversary has conducted **‘very escalatory’ destruction** of the blue homeland C2 nodes. BLUE LEAD says “we need to have discussion about how we treat cyber attacks vice kinetic attacks.” CYBER feels this is nearly kinetic … like bombing our C2 tower. BLUE LEAD says it is different psychologically [71].

If cyber represents **a firebreak** analogous to the difference between nuclear and conventional, then we would expect that actors would **hesitate** before escalating from the cyber domain **to anything kinetic**, whether conventional or nuclear irrespective of the nature of the hostile act.

# 2NC

**\*\*Delraim CP\*\***

**View non-antitrust checks through the lens of sufficiency --- EVEN IF antitrust is theoretically better at deterrence --- BEHAVIORAL RESTRAINTS solve**

**SIDAK 16** --- J. GREGORY SIDAK, Chairman, Criterion Economics, L.L.C., Washington, D.C, expert economic witness in disputes over FRAND royalties for standard-essential patents, “The Antitrust Division's Devaluation of Standard-Essential Patents”, 2015-16, https://www.law.georgetown.edu/georgetown-law-journal/glj-online/104-online/the-antitrust-divisions-devaluation-of-standard-essential-patents/

Ms. Hesse assumes, **incorrectly**, that the theoretical and empirical underpinnings of the patent-holdup and royalty-stacking conjectures are robust, and her letter's analysis relies on an outdated account of those conjectures. Referencing an article from 2007 by lawyer Mark Lemley of Stanford and economist Carl Shapiro of Berkeley that introduced the patent-holdup and royalty-stacking conjectures, Ms. Hesse states that "[t]he economic bargaining model underlying claims of hold up has been studied extensively and applied to the standard-setting context." 45 Ms. Hesse neglects to say that the Lemley-Shapiro article was funded by companies that were the major proponents of the IEEE's 2015 bylaw amendments Apple, Cisco, Intel, and Microsoft46 -and she ignores the many articles, which first started to appear in 2007, that have refuted the Lemley-Shapiro model on both theoretical and empirical grounds. 47 For the same reason, the 2007 report of the Department of Justice and the Federal Trade Commission that Ms. Hesse cites is also unreliable evidence in 2015 of the plausibility of the patent-holdup conjecture. 48 By early 2015, more than two dozen economists and lawyers had **disproved or disputed** the numerous assumptions and predictions of the patent-holdup and royalty-stacking conjectures. 4 9 Ms. Hesse's letter **ignores all of that scholarship**. 50 Her letter even ignores **concessions** made by the leading proponents of the patent-holdup and royalty- stacking conjectures concerning the **unavailability of injunctions** to SEP holders and the **infrequency** with which licensor opportunism **actually occurs**. In 2014, Carl Shapiro and Fiona Scott-Morton, who previously served as chief economists at the Antitrust Division, said that "the risk of injunctions appears to be **quite low**" and that "[m]any holders of SEPs **do license at FRAND rates**, perhaps due to concerns about **reputation** or **retaliatory conduct by others**." 51 Some scholars are skeptical of whether patent holdup and royalty stacking **have ever occurred** in the implementation of a standard. In 2013, Commissioner Joshua Wright of the Federal Trade Commission (FTC) emphasized that, "[d]espite the amount of attention patent hold-up has drawn from policymakers and academics, there have been **relatively few instances** of litigated patent hold-up among the **thousands of standards adopted**. 52 In 2014, Alexander Galetovic, Stephen Haber, and Ross Levin found that, "over long periods[,] **SEP industries** tend to show **better performance than most other industries**," and that innovation appears to **grow fastest in SEP industries**. 53 In 2015, Galetovic, Haber, and Levin also empirically refuted the classic hypothesis of the patent-holdup conjecture-that "hold-up will harm downstream consumers in the form of slower price declines and slower improvements in product quality and variety"-by showing that the quality-adjusted prices for products in SEP industries **decline faster** than quality-adjusted prices for products in non-SEP industries. 54 All of these empirical and theoretical challenges to the patent-holdup and royalty-stacking conjectures are conspicuously absent from Ms. Hesse's letter. Instead, she warns parties not to say that patent holdup and royalty stacking are nonexistent problems. 55

**It’s OFFENSE for us --- antitrust over-deters**

**Koppell 19** --- Arielle Koppell is a 3L at New York University of Law, “Deciphering Non-Discriminatory Licensing Terms Under a FRAND Commitment”, April 8, 2019, https://proceedings.nyumootcourt.org/2019/04/deciphering-non-discriminatory-licensing-terms-under-a-frand-commitment/

In fact, every U.S. court that has addressed a claim for injunctive relief on a FRAND-committed SEP has done so under **contract law** rather than **antitrust law** principles. Antitrust sanctions in fact may be harmful by over-deterring procompetitive participation in SSOs as liability would turn upon whether a patent infringer was a truly willing licensee – **an unclear factual determination** that would make SEP firms **more reluctant** to incorporate their patent into a standard, knowing they could not recoup their losses against patent infringers who use their technology without a valid license. The prospect of antitrust liability would also enable an infringing user to negotiate with the SEP firm in **bad faith**, understanding that its exposure is capped at the FRAND royalty rate and encourage those users to engage in **reverse-holdout** to defer payment of FRAND royalty rates.19

**Innovation ADV**

**Extension 1 --- Compliance High --- Top Level**

**FRAND and standardization are strong**

**Arvonen 21** --- Erika Arvonen, Department of Accounting and Commercial Law Hanken School of Economics Helsinki, “To FRAND, or Not to FRAND, That Is the Question: Analyzing FRAND Terms and Proposed Alternatives”, July 2021, https://helda.helsinki.fi/dhanken/bitstream/handle/10227/440758/Arvonen\_Erika.pdf?sequence=1&isAllowed=y

The challenging and complicated nature of SEP licensing is irrefutable and has therefore led scholars to propose different alternatives to either fix or replace the current system of FRAND commitment. As seen above, some of the proposed alternatives attempt to repair the existing deficiencies of FRAND whereas some are intended to replace the commitment in its entirety with a new system that allegedly does not have the same shortcomings as FRAND commitment. Although all the covered alternatives have some clear strengths and benefits, both a theoretical legal and economic analysis as well as opposing arguments by other academics revealed some major flaws in each proposal. It seems that currently there is no straightforward solution that would magically solve all the issues surrounding SEP licensing. Another attestation of such finding is that a shift to these allegedly better and more workable options has not taken place in the standardization industry. Hence, one could argue that the proposed alternatives do not provide a pivotal answer or solution to the issues currently surrounding SEP licensing and, in fact, the **current system** of FRAND commitment seems to be **the best option available** at the moment despite of its drawbacks. The outcome of the current system, that is, the rapidly developing and growing interconnected world of networks and connective devices due to successful and prospective collaborations between the industry actors, also support this claim – I would actually argue that the standardized industry is **not doing a bad job at all,** even if there are some bumps in the road.

This position has been supported by other scholars as well. Larouche et al. claim that the process for resolving FRAND licensing disputes is **not broken** and that there have been **thousands of successful license negotiations** involving FRAND-committed SEPs, explaining that “the current system of voluntary, consensus-based standardization **works**, and strives to keep two competing interests in **balance**: the need to allow implementers to profitably incorporate the standard into their products and thereby promote standardization and the need to adequately compensate SEP owners for their investment and success at innovation”.267 Similarly Geradin and Rato note that the “SSOs’ preference for a flexible system of fair, reasonable and non-discriminatory licensing of [patents] essential to a standard appears to be justified” and, consequently, the current IPR policies of SSOs **have largely been successful**, allowing SEP owners and implementers to reach **mutually satisfactory license agreements** and **enabling standardization** activities in different technology fields. Nevertheless, Geradin and Rato well point out that this does not mean that the model of FRAND commitment is or will be completely trouble-free: “Friction and even outright hostility can be expected to arise where companies must remunerate IPR owners for their use of those rights. There is a sort of love and hate relationship between innovators (licensors) and implementers (licensees).”268

**Prefer our evidence --- it has an actual research methodology focused on FRAND success --- Their authors are too normative**

**Arvonen 21** --- Erika Arvonen, Department of Accounting and Commercial Law Hanken School of Economics Helsinki, “To FRAND, or Not to FRAND, That Is the Question: Analyzing FRAND Terms and Proposed Alternatives”, July 2021, https://helda.helsinki.fi/dhanken/bitstream/handle/10227/440758/Arvonen\_Erika.pdf?sequence=1&isAllowed=y

The second research question of **this thesis** is covered in chapter 4; does the existing case law provide any actual evidence of whether FRAND terms work in practice or not. The chapter assesses **multiple decisions of courts** and **competition authorities** interpreting and applying FRAND, particularly landmark SEP cases in the European Union and **the United States**. For instance, the famous US judgement of Microsoft v. Motorola1 and Court of Justice of the European Union (CJEU) decision of Huawei v. ZTE2 are referred, just to name a few. Thus, an overview of the most well-known and relevant cases is provided in order to grasp the disputed concept of FRAND better. The chapter indicates both clear trends and challenges in SEP licensing litigations, which provide some clarity on how the judiciary has interpreted FRAND, but does not necessarily simplify or comprehensively solve the issues. In fact, chapter 4 only further affirms that a one-size-fit all solution does not exist and precise case-by-case analysis is **always** required in SEP licensing disputes.

Chapter 5 covers the most common arguments against the current SEP licensing model as well as criticism towards the case law interpreting FRAND commitment in order to reveal the main reasons why scholars have begun to question the system in the first place. Once these specific challenges identified with SEP licensing are well-established, the chapter introduces six different alternative models proposed to correct the shortcomings of FRAND terms: binding arbitration and the baseball-style arbitration commitment by Lemley and Shapiro3 ; interim payment by Nikolic4 as an alternative remedy for injunctions; royalty-free commitment; nonassertion commitment and the NAAST policy by Rysman and Simcoe5 ; ex ante licensing terms; and the ex ante pseudo-pool approach by Contreras6 . Thus, the third research question of this thesis is whether SEP licensing model based on FRAND is “broken” and can the suggested alternatives “fix” the system. The strengths and weaknesses of each proposal are uncovered from legal and economic theoretical perspectives, eventually all of them proving to be more or less unfit to repair or replace the existing practices of SEP licensing on FRAND. For these reasons, this thesis argues that FRAND terms are still a **better and more workable option** compared to the suggested alternatives and, in fact, FRAND is **not in the need of comprehensive repairing**. In the last decades, the industry of standardized technology has developed and grown rapidly due to **successful and prospective collaborations** between the industry participants, which **supports the idea that FRAND terms can work, despite of their downsides.**

Finally, the conclusion summarizes the findings of this thesis and argues further how the current SEP licensing system based on a commitment to FRAND terms could be improved and what direction should the industry take.

**2 RESEARCH METHODOLOGY**

The peculiar nature of SEP licensing on FRAND terms as an emerging de facto regulatory instrument sets certain conditions to my research. On the one hand, FRAND commitment is not a legal rule per se since it is not regulated in any legislation or law but it is a principle of contractual nature set out in IPR policies of private sector organizations. On the other hand, disputes and litigation between the SEP holder and the implementer have brought FRAND terms to the center of attention of courts and competition authorities, transforming to an important doctrine of licensing with multiple functions from the point of view of contract law, competition and antitrust law, and patent law. Nevertheless, such principle draws on commercial and economic values and is fundamentally outside the limits of positive law. As traditional legal research and the method of legal doctrine describe the lex lata – what the existing law is – and prescribe the lex ferenda – what the law should be – but does not go outside the law, it is clear that this thesis analyzing FRAND and the proposed alternatives is of an interdisciplinary nature and requires going beyond the traditional borders of the discipline of law. Furthermore, I strongly believe that the legal system should not be studied in isolation of the surrounding world but should be looked at from a broad external perspective that brings also other values into play.

For these reasons, I approach the complex notions of SEP licensing and FRAND commitment by the means of theoretical research from the legal and economic aspects, seeking to explain the nature of FRAND terms in the context of legal system but also to describe the economic thinking behind such contractual commitment. Theories give reasons for a phenomenon and, in many cases, challenge existing knowledge. Hence, such theoretical research fosters the conceptual understanding of SEP licensing as a challenging occurrence in the standardization industry and also allows further analysis of the alternatives that have been proposed to either fix or replace the current FRAND licensing model. A descriptive and explanatory method is used to address the topic, focusing on the underlining legal and economic approaches and concepts behind FRAND commitment. Understanding why SEP licensing on FRAND terms can be perceived to represent a gap in the existing system requires not only understanding the legal framework but also the behavior of the negotiating parties that is fundamentally steered by economic factors and backgrounds – thus, pursuing only normative questions, as typical legal research usually does, **is insufficient.** That being said, my study has certainly **a doctrinal component.** The existing laws applying to patent licensing practices are described but, in particular, the evolving case law concerning SEP licensing disagreements **is covered in depth** to reveal the legal conceptual basis of FRAND justified by judicial authorities.

SEP licensing, in particular the somewhat uncertain and ambiguous notion of FRAND commitment, is a topic that has attracted much attention among academics in the fields of law and economics. As a consequence, there is a vast number of studies and literature to choose from and, hence, the task of collecting and selecting data for my research was rather straightforward. The main body of research of this thesis constitutes of **academic and journalistic sources,** such as legal and economic literature and journals, as well as **relevant guidelines, policies, legislation and case law**. Furthermore, some distinguished online sources are included to provide aspects of recent developments and to showcase different opinions and comments that have surfaced in blogs or other similar sites. A deductive method is used to examine and analyze the research work of accomplished scholars as well as the judgements and decisions of courts and competition authorities at both international and national levels, mainly concentrating on the European Union and the United States. Nonetheless, it is worth noting that the large extent of available data and sources makes it impossible to cover all published works that deal with the topic and, unfortunately, something is inevitably left out from the scope of this thesis.

**Extension 1 --- Compliance High --- Macro Uniqueness (Products Using SEPs Are Getting More Innovative & Cheaper)**

**Macro-uniqueness is NEG --- EVEN IF holdups and stacking are happening, SEP innovation is high and prices are low --- means there’s only a risk of a turn**

**Mossoff 18** --- Adam Mossoff et al, Professor of Law Antonin Scalia Law School, George Mason University, “Will Overzealous Regulators Make Your Smartphone Stupid?”, Regulatory Transparency Project, December 10, 2018, https://regproject.org/paper/will-overzealous-regulators-make-smartphone-stupid/

In recent years, antitrust regulators have been taking a closer look at SDOs and innovative companies that participate in SDOs based on one-sided, unbalanced theories that these companies are engaging in “bad” behavior, made possible by the standardization of technology. The most common of these theories that regulators have relied on are called “patent hold up” and “royalty stacking.” Although regulators use these theories to justify intervention in the free market, **there is scant evidence that either patent hold up or royalty stacking are systemic problems**, and **no evidence** that, even if these practices do exist, **they present real and substantial harm to innovation or to consumers**.

Patent hold up is the idea that the owner of a patent covering technology incorporated in a standard could “hold up” anyone seeking to implement the standard by demanding inordinately high royalty rates (what economists would call “supra-competitive rates”). In other words, the incorporation of the patented technology into the standard would enable the owner of the “standard-essential patent” (SEP) to use the standard itself as leverage in demanding an unreasonable licensing fee from the manufacturers (and consumers) who must use the standard if they wish to sell and buy products incorporating it, such as the 4G communication standard in smartphones. For some odd reason, although the theory is borrowed from the classic “hold up” theory from the economic analysis of contracts, for a long time there was no mention of how this could be a two-sided problem; that is, implementers of technological standards could refuse to pay the reasonable compensation after using the patented technology by simply making smartphones or other products given the knowledge of the technology that is available to all via the patent and the SDO’s publications of the standard—a problem that is referred to as “hold out.”14

The first problem with the “patent hold up” theory is that it fails to consider the property rights that are secured by a patent. Just as a real property owner could conceivably stop anyone from using his property by telling a trespasser to “get off of my land,” a patent owner has the same right to tell an infringer to stop using the technology secured by its patent. The inclusion of a patented technology into a standard does alter these circumstances; for the success of the standard and to reap the benefits of network effects, **it is important to ensure that every company** that wishes to use the standard **has access to the standard.** SDOs require participating companies to agree to license any SEPs on a FRAND basis, ensuring equal treatment of all users of the standard in paying a reasonable fee to use the patented technology. At the same time, SDOs recognize that the patent owner is entitled to receive adequate compensation in the form of licensing fees for recovering their risky R&D costs. **Maintaining a balance between the incentives of implementers and innovators is critical for SDOs,** as their success depends upon being able to attract both types of companies as voluntary members for developing common standards.

Royalty stacking is a related theory that suggests that to license all of the necessary patents to practice a standard (or otherwise manufacture a product having multiple components covered by multiple patents from many patent owners), the patent owners will demand license fees that cumulatively will greatly diminish or even outpace the profit the manufacturer can obtain from sale of the product. Essentially, the required royalty fees stack up, causing the manufacturer to either raise the price of the product to cover the fees, or stop making the product altogether. Oftentimes, the royalty stacking theory is also laced with notions that it is the patent owners, engaging in “patent hold up”, to charge excessive fees, that cause royalty stacking; however, even without portraying the patent owners as villains, the theory still has a certain logic to it. In reality, though, the royalty stacking theory simply **doesn’t hold true.** If royalty stacking were an actual problem, we would not be enjoying any sort of high-tech goods today—because many of these products include multiple patented technologies from multiple patent owners. And yet, we have cars, computers, smart appliances, and smartphones, all of which are products in industries that are based on thousands of products and services secured by patents; and ours is, arguably**, the most vibrant and dynamic high-tech industry in the world**.15

Based on these two **purely theoretical concerns**, the FTC has pushed heavily for regulatory restrictions on patent licensing rights in the SDO context. For example, some regulators have demanded that patent owners relinquish their rights to seek injunctions against infringers of their patents, and they have actively inserted themselves into the details of licensing negotiations. Both of these aspects of a functioning free market and growing innovation economy—the legal right to stop someone who is found liable for violating one’s property rights and private-party contract negotiations between sophisticated commercial companies—are activities that have functioned well for many decades under the Patent Act and with courts as enforcers, without any additional meddling from the government. Not only is the FTC stepping in to “fix” something that is not broken, it is doing so without any evidence of consumer harm or impediments to innovation. **In fact, the exact opposite has been observed**—the patent-intensive smart phone industry has experienced the **largest quality-adjusted price drops**, new products and services, and market expansion compared to other non-patent-intensive industries.16 **Competition and innovation are both flourishing in this industry without the government’s regulatory “assistance.”**

**antitrust cases for FRAND violations have NOT ONCE been successful --- but our macro uniqueness holds up because DISPUTE MECHANISMS WORK**

**Werden 21** --- Gregory J. Werden, The author retired in 2019 from his position as Senior Economic Counsel, Antitrust Division, U.S. Department of Justice, “THE NEW MADISON APPROACH: KEEPING ANTITRUST IN ITS LANE”, CPI ANTITRUST CHRONICLE JULY 2021, https://www.competitionpolicyinternational.com/wp-content/uploads/2021/07/5-The-New-Madison-Approach-Keeping-Antitrust-in-Its-Lane-By-Gregory-J.-Werden.pdf

**Hovenkamp** laments what he clearly views as a wrongheaded decision by the Ninth Circuit.37 **Like Shapiro** & Lemley, he pillories the court for ignoring obvious consumer harm,38 but he does not explain how the consumer harm was associated with harm to competition. Hovenkamp asserts that the “no license, no chips” policy was “classical tying,”39 but the FTC did not pursue a tying theory. He asserts that the Ninth Circuit misread Aspen Skiing, 40 but the FTC disclaimed reliance on it. Unlike Shapiro & Lemley, Hovenkamp does not defend the legal theory the FTC actually relied upon. Hovenkamp concludes, in part:

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. . . . 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.

The Qualcomm decision does indicate that there is a problem, **but it has nothing to do with competition or antitrust.** No antitrust plaintiff has **ever** sustained an FRAND theory both on the law and on the facts. What threatens to undermine innovation and SSO collaboration is the failure to address the core question: What is the SEP owners’ fair and reasonable share of the bounty from devices that standards-based technologies enable? Patent hold-up and patent hold-out problems would be trivial if SSOs, or society at large, would just make the call so licensors and licensees could anticipate the outcome of FRAND litigation. Antitrust litigation over FRAND royalty disputes **is failed attempt** to avoid getting at the root of the problem.

**Second ---** **no model --- Qualcomm is unique and the 9th circuit ruling was limited**

**Clippinger 21** --- Lucy S. Clippinger, associate at Baker & Miller PLLC. Her practice is focused on litigating complex cases in federal courts in the areas of antitrust, “CONCEDING THE BATTLE, BUT STILL WAGING THE WAR: FTC WILL CONTINUE TO TARGET PATENT LICENSING PRACTICES”, Baker & Miller LLC, April 22nd 2021, https://bakerandmiller.com/conceding-the-battle-but-still-waging-the-war-ftc-will-continue-to-target-patent-licensing-practices/

In addition to holding a valuable patent portfolio, Qualcomm has possessed monopoly power in two modem chip markets (code-division multiple access (CDMA) and long-term evolution (LTE)) during portions of the past decade and has charged monopoly prices during those times (a practice which is not generally illegal under US law). Rather than licensing its patent portfolios to competitor chip makers, Qualcomm licenses **exclusively** to original equipment manufacturers (OEMs), avoiding the risk of patent exhaustion (i.e., Qualcomm’s patent rights in the technology being extinguished at the time the chip containing the technology is sold by the chip seller to the OEM). Qualcomm then collects a royalty rate set as a percentage of the OEM’s end product sales price and does so regardless of whether the chip used in the product was purchased from Qualcomm, as the product necessarily uses Qualcomm’s patented technology to comply with the relevant standards. Qualcomm itself **does not manufacture end products**, so it **does not compete directly** with the OEMs that it licenses and to which it sells chips.

While Qualcomm licenses OEMs, it refuses to license competing chip manufacturers and instead has a policy of **not enforcing its patent rights** against chip manufacturers. Qualcomm enters into agreements with manufacturers in which it permits manufacturers to sell chips only to OEMs that hold licenses from Qualcomm for the patented technology. To enforce this practice, Qualcomm has a ‘no chips, no license’ policy, under which Qualcomm will not sell its own chips to OEMs unless those OEMs have licenses for Qualcomm’s patented technology. This is another tactic to avoid patent exhaustion, as the OEM’s agreements to the license mean that they cannot assert that Qualcomm’s patent rights were exhausted when Qualcomm sold the chip to the OEM, depriving Qualcomm of its royalty rate on the end product.

Rival chip manufacturers and OEMs alike have complained that these practices are anti-competitive. Chip manufacturers assert that Qualcomm’s refusal to license them:

has limited their ability to attract OEM customers;

has limited entry and growth of competitors; and

fails to comply with Qualcomm’s commitment to license on FRAND terms.

OEMs such as Apple have complained that these practices amount to anti-competitive conduct designed to cement Qualcomm’s monopolies in the CDMA and LTE chip market and that they make it impossible for OEMs to source less expensive chips from other sources. In addition, consumers have filed an indirect purchaser antitrust class action against Qualcomm claiming that the same licensing practices have injured cell phone purchasers; an appeal of the decision granting class certification in that case is currently pending before the Ninth Circuit Court of Appeals.

FTC’s suit challenging Qualcomm’s licensing practices

In 2017 the FTC filed suit against Qualcomm, claiming that Qualcomm’s practices harmed competition in violation of the Sherman Act and the FTC Act. Following a bench trial, a California district court judge held that the licensing practices constituted unlawful restraints of trade and unlawful exclusionary conduct. The judge entered an order enjoining Qualcomm from engaging in these business practices. Qualcomm appealed the judge’s ruling to the Ninth Circuit Court of Appeals.

In August 2020 a three-judge panel of Ninth Circuit judges reversed the district court’s ruling and vacated the injunction. The panel concluded that the district court had focused on injury to OEMs, which were outside the **relevant market** of CDMA and LTE chip sales because they were buyers of such chips – not sellers. According to the panel, the district court should have focused on injury to Qualcomm’s rival chip manufacturers (**i.e., the direct competitors** in the markets for sales of CDMA and LTE chips). The panel suggested that by focusing on injury to chip buyers instead of chip sellers, the district court’s decision mischaracterized hypercompetitive conduct intended to extract lucrative profits from OEMs as anti-competitive conduct. This **specific conclusion** has created some confusion among antitrust commentators and may serve as a method of **distinguishing the Qualcomm decision going forward**, as harm to customers in the relevant market – in this case OEMs – is generally considered to be a **classic example of antitrust injury.**

When analyzing the licensing practices’ impact on rival chip manufacturers, the panel emphasized that Qualcomm’s situation did not fall within **the narrow circumstances** that create an antitrust duty to deal with a particular rival because:

**Third ---** **This is our link turn--- Qualcomm’s licensing strategy is PRO-COMPETITIVE and KEY to innovation**

**Blanchard 19** --- Olivier Blanchard, C. Fred Bergsten Senior Fellow at the Peterson Institute for International Economics and the Robert M. Solow Professor of Economics emeritus at the Massachusetts Institute of Technology (MIT), “Opinion: It only took a few days of testimony for the FTC’s case against Qualcomm to fall apart – Part 1”, January 17, 2019, https://futurumresearch.com/opinion-it-only-took-a-few-days-of-testimony-for-the-ftcs-case-against-qualcomm-to-fall-apart-part-1/

There is therefore **nothing** anticompetitive, illegal, unethical, or otherwise shady about Qualcomm’s “no-license, no-chip” policy. **It makes sense.** Without the licensing element, purchasers of Qualcomm chips would not be able to actually use the chips other than for decoration without exposing themselves to patent infringement challenges. Licensing gives them legal access to the chips’ functionality as per the licensing agreement, gives them the right to actually use the IP built into the chips, and also gives them access to IP they will need to activate a plethora of adjacent mobile functionality without which their phone will be mostly useless.

The FTC has zero cause to attack this model, and I cannot fathom why they would. The only explanation I can come up with is that somewhere along the way, the FTC somehow managed to confuse “no-license, no chip” with its exact opposite: “no-chip, no license,” which would be an example of anticompetitive behavior. (“No-chip, no-license” would be a scheme by which a company forces handset makers to purchase its chips in order to have access to its portfolio of standard essential patents / SEPs. It doesn’t take a legal expert to glimpse how that kind of practice would run afoul of antitrust and FRAND frameworks. No argument there.) The problem though, at least for the FTC, is that Qualcomm does no engage in a “no-chip, no-license” model. Qualcomm’s business model is the precise opposite. Is the FTC confused on this point? Your guess is as good as mine. Nothing about its line of thinking on this point makes any sense. And we’re just getting started.

Stay tuned for more, and definitely be on the lookout for Part 3, where I will share some insights into how this case, should the FTC prevail, could, by weakening IP protections and disincentivizing R&D investments, ultimately undermine both **national security** and the **future of US innovation.**

**Its also a NEW LINK --- Aff concedes they impede the Qualcomm model which is key to their profitability**

**Moorhead 20** --- Patrick Moorhead, president and principal analyst, Moor Insights and Strategy, “Qualcomm Found Guilty Of Aggressively Innovating By Ninth Circuit Court Of Appeals”, Sept 15th 2020, https://moorinsightsstrategy.com/qualcomm-found-guilty-of-aggressively-innovating-by-ninth-circuit-court-of-appeals/

Qualcomm is fundamentally a technology R&D company. It started as a research and tech transfer company 35 years ago and was licensing CDMA wireless tech before it was selling chips. Qualcomm’s **licensing model** has been at the **center** of the mobility industry, with over 140,000 patents and patent applications worldwide. The quality of those wireless patents is high, as I researched here.

Only a handful of companies in the world do the in-depth and years-ahead R&D required for these technologies. On 5G, Qualcomm’s early foundational inventions **drove the standards**, with 5G R&D efforts starting more than ten years ago, and that adds up to Qualcomm having invested over $61 billion in R&D, 20+% of revenue every year.

I think it is critical for the sake of this conversation to split “R” and “D.” “R” as in “research” is highly risky and can start a decade in advance of any tangible product coming out of it. “D” as in “development” are the expenditures that productize IP for sale in the form of a chip. **Companies like Qualcomm spend a much higher percentage on “R”** than, let’s say, Broadcom who trumpets “R&D.”

Qualcomm also serves as an “**orchestrator**” across the industry, a role that mostly goes unnoticed. Cellular and mobile technologies are complex, and each generation grows more complex. Qualcomm’s overall goal is to drive the technology out into the world and build optimized mobile devices and optimized networks that deliver the performance that everybody expects. **This requires implementation innovation and engineering/tech support** to many members of the ecosystem/value chain to ensure that the end-to-end system is optimized to provide power efficiency, performance, and Quality of Service. Qualcomm builds prototypes, tests them, conducts simulations to prove the technology before the standards process finalizes designs. It then optimizes the technology when it makes its way out into the market to ensure peak performance with real carriers on real networks and devices. I wrote a bit on the company’s orchestrator role here and here.

**Extension 2 --- No Holdup --- Top Level**

**Extend 1NC 2 --- Holdup theory wrong --- Our Subler evidence makes several warrants:**

**1] VERTICAL COMPETITION – It misunderstands what “essential” means in an SEP --- SSOs DO NOT declare a SINGLE PRODUCT to be essential --- but set a standard based on a CLASS of technology --- this means for any standard there are SUBSITUTABLE TECHNOLOGIES ---**

**Best empirical evidence goes neg**

**Biddle 15** --- Brad Biddle Visiting Scholar, Lewis and Clark Law School, “Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn’t Work (And What To Do Instead)”, DRAFT / WORK-IN-PROGRESS – MAY 1, 2015, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2669893

A principal goal of disclosure policies is to give stakeholders—primarily standards developers deciding what technologies to include in a standard, and standards implementers attempting to navigate a complex licensing environment—an accurate picture of the patent landscape associated with a particular standard. However, **multiple studies** have demonstrated that the number of patents disclosed or declared to be **essential** in connection with particular standards **dramatically exceeds the number that are actually essential**. For example:

• Fairfield Research [7] evaluated 1,889 patent families that were declared essential in connection with WCDMA, and judged 529 **(28%)** to be actually essential.

• Fairfield [8] separately evaluated 561 patent families declared essential for GSM, and judged 158 **(27%)** to be actually essential.

• PA Consulting Group [9] found that of patents studied that were declared essential to 3GPP-FTD standards, **only 36% were actually essential**.

• PA Consulting Group [10] found that of patents studied that were declared essential to LTE, **only 40% were actually essential.**

• Cyber Creative Institute Co. Ltd [11] also examined patent declared essential for LTE, and determined that **56% were essential**.

• RPX [12] identified 573 declared SEPs that were asserted in litigation and found that 70 (**12%**) resulted in a successful summary judgment order and only 17 (3%) resulted in a final verdict of infringement.

• Jurata and Smith [13] examined a set of 58 declared SEPs that went to judgment in litigation since 2009 and found that only 7 (12%) had been found valid and infringed, with the remainder found invalid (18), not infringed (17), withdrawn by the SEP holder (14), or otherwise dismissed (2)).

• The FOSS Patents blog [14] examined two highprofile multi-jurisdiction patent battles involving declared SEPs and noted: “Google (Motorola Mobility) had a hit rate of only 1 out of 10 with its SEP assertions against Apple, and Samsung only 3 (2 of them in its own country, 1 in the Netherlands) out of 24.”

The RPX and Jurata & Smith studies are perhaps the most **striking**, as they carefully examine SEPs that have been through the **crucible of** actual **litigation**. One notable factor is that presumably plaintiffs assert only those SEP claims that they believe have a reasonable chance of success in litigation – so the pool of 573 SEPs in the RPX study, for example, reflect not all declared SEPs but rather a subset of SEPs that the plaintiffs believed were strong. The fact that only 15% of these SEPs resulted in success for the plaintiffs (either via a summary judgment order or a final infringement verdict) is thus **particularly notable**: one could infer that the accuracy rate (i.e. the percentage of declared SEPs that are in fact essential) for all declared SEPs may be much lower than 15%. The same analysis could be applied to the Jurata & Smith data (with its 12% accuracy rate), plus the data cited by FOSS Patents supports this conclusion as well. Declared SEPs fare slightly better in the other studies, but it seems reasonable to conclude that, as a general matter, the fact that a patent is declared as essential to a particular standard has only a **very loose correlation to the question of whether that patent is in fact essential to implement the standard**. Many—**very likely most**— of the patents declared as essential are **not in fact essential to implement the standard.**

This tendency towards over-disclosure is unsurprising. Lim [15] notes three factors that incentivize over-disclosure:

• SEP owners worry (based on cases such as the FTC actions in the Rambus, Dell, and Unocal) about the risk of antitrust liability if they attempt to sue on patents not disclosed before the standard was set.

• SEP owners may believe that they will obtain better leverage during negotiations for cross-licensing if they demonstrate that they have a large number of patents that must be licensed.

• More generally, SEP owners may also want to display a large patent portfolio as a posture of dominance to its rivals and shareholders.

A variation on Lim’s first point is that SEP owners may also be concerned that an adversary in patent infringement litigation will argue that a particular patent claim is **unenforceable** if it was not properly disclosed as a SEP, perhaps under contract theories or equitable doctrines, distinct from antitrust law. This scenario may be of particular concern to parties that use their patent portfolios primarily for defensive purposes—that is, parties who assert infringement counterclaims when sued for patent infringement but who otherwise rarely initiate patent litigation. These parties are less likely to provoke the kinds of antitrust concerns raised in the cases citied by Lim, but they nonetheless may err on the side of disclosure in order to avoid the potential costs associated with not disclosing.

**These theories crush both advantages and means there’s only a risk of a link turn --- holdup requires market dominance which DOES NOT exist**

**Geradin & Rato 06** --- Damien Geradin, Professor of Competition Law and Economics and member of the Tilburg Law and Economics Center (TILEC) at Tilburg University and Professor at the College of Europe in Bruges, & Miguel Rato, Associate at Howrey LLP and a former référendaire at the Court of First Instance of the European Communities, “Can Standard-Setting lead to Exploitative Abuse? A Dissonant View on Patent Hold-Up, Royalty Stacking and the Meaning of FRAND”, 24 Nov 2006, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=946792

It has been argued that holders of IPR essential to practice a standard automatically enjoy significant market power conferred by the process of standardization.131 The claim is that once a given technology becomes part of a standard, competition between technologies for the essential parts of that standard ends. No longer constrained by such competition, each owner of IPR essential to the standard would ipso facto enjoy market power akin to dominance in the market(s) for the licensing of those IPR. It is claimed that this effect would be compounded by the “hold-up” of potential licensees locked into the standardised technology by virtue of the substantial investments made for its implementation. As will be seen below, these positions ignore a **variety** of horizontal, vertical and dynamic **competitive constraints** which **preclude** an automatic finding of dominance on the part of an owner of IPR essential to a standard and can **therefore not be sustained**.

**1. Vertical Constraints** Stemming from Competition between Rival Standards and Non-Standardised Substitute Products

The adoption of a standard by a SSO may end effective competition between rival technologies for inclusion in that specific iteration of the standard. **However**, it will not affect competition between **rival standards**, either in the guise of downstream competition between **substitutable end-products compliant with different** technology **standards** or as **competition between standards** at the upstream licensing level. As seen above, competitive constraints arising at either the upstream or downstream level will prevent an owner of essential IPR from holding a dominant position in the technology licensing market(s). If licensees of the standardised technology can **switch** to alternative technologies, covered by IPR or otherwise, the IPR owner will not be able to exercise monopoly power as it will lose sales if it tries to increase price. Similarly, if endcustomers can easily switch to substitute products that do not use the licensed technology, such competition between end-products will represent a **significant competitive constraint** on the owner of IPR essential to a standard. This will hold true whether the substitute products comply with any given standard or not.

These vertical competitive constraints will not affect every IPR owner in the same manner and will vary in accordance with firms’ pricing incentives. They will have a weaker effect on vertically-integrated IPR owners than on pure licensors. The reasons behind this finding are intuitive. Whereas vertical integration eliminates the so-called vertical double marginalization problem,132 which should lead to lower prices, there is an additional effect stemming from vertical integration that tends to increase price. A vertically-integrated IPR owner may have an incentive to raise the royalty it charges at the upstream level, which does not affect its own production costs, to raise the costs of its rivals on the downstream product market. By raising the costs of its downstream rivals the vertically-integrated firm increases its downstream market share and its profits. In many cases, non-vertically integrated IPR owners have incentives to charge lower royalties for their essential IPR than their vertically integrated counterparts would optimally charge.133

**2. Horizontal Constraints** Stemming from the Complementary Nature of IPR Incorporated in a Standard

As seen above, standards usually comprise complementary essential IPR owned by **numerous firms**. In order to practice the standard, implementers must obtain licences from all such owners of complementary IPR. If other complementary IPR owners charge high royalty rates, a given firm will not be able unilaterally to set a high royalty rate for its IPR. This will be the case even if the company in question holds a monopoly over a given technology. When individually setting their prices, owners of essential IPR will inherently take into account prices set by other owners of complementary IPR, as the market – i.e. the prospective licensees – will only bear a certain overall price level. Owners of IPR essential to standard are thus **horizontally price-constrained** and this absence of pricing independence **will preclude a finding of dominance** under Article 82 EC.

**3. Dynamic Constraints**

The ability of owners of IPR essential to a standard to price independently will also be affected by dynamic constraints stemming from the dynamic nature of standardsetting. As noted above, competition between members of SSOs usually takes place not only before those SSOs adopt a standard but also **after** such **adoption**, i.e. for the inclusion of **new releases and next gen**eration **tech**nologies. If a firm’s technology is included in a standard, that firm will face constraints in pricing any associated IPR because it will continue to depend on the SSO for its position **as the standard evolves.** The dynamic and evolving nature of standards gives participants in SSOs a number of opportunities to “**punish**” companies that have previously set what are considered to be excessive royalties. **First**, SSO members may be able to choose not to include a company’s contributions in evolutions of the standard.134 **Second**, SSO members may be able to choose not to include a company’s contributions in future generations of the standard (or in other unrelated standards). **Third**, if companies gain a reputation for taking advantage of situations where their patents are implicated by a standard, SSOs may begin to insist that the firm commit itself ex ante to the precise terms on which it will make its patents available, before including new patents in an upgrade or new generation. This **disciplining effect** may come as a decision not to include IPR holders’ technology in future generations of the standard or even in unrelated standards.

**4. The Role of Dynamic Competition**

The final element which must be addressed when assessing dominance in the standard-setting context is not specific but appears **inextricably linked** to it insofar as technology standards and licensing occupy a preponderant place in dynamically competitively markets such as the ICT sector. These industries are characterised by **dynamic competition** for the market whereby drastic innovation makes market leadership **highly contestable**. By contrast, in other industries, competition takes place primarily through standard price competition and, perhaps, also via incremental innovations.135

Dynamic competition consists of a **series of races** for market dominance. Firms do not compete by slightly undercutting each other but engage instead in what economist Joseph A. Schumpeter described as a “perennial gale of creative destruction” that “strikes not at the margins of the profits of the existing firms but at their foundations and their very lives.”136 In these industries, competition takes place **for the market rather than in the market**. Firms take part in a race for innovation, striving to introduce new and superior products that will win the market and achieve massive transfers of market shares. In other words, competition comes not from readily available substitutes but from new, innovative products **not yet present in the marketplace**. Once a market is won, the ensuing dominance will afford substantial benefits but will **be fragile and temporary**. It can only be maintained if the dominant firm **continues to innovate**, as the initial race is succeeded by a new wave of investment by rival firms to displace the leading technology with something superior.

The implications of such dynamic competition for the assessment of dominance **must be carefully considered**. The competitive constraints faced by any incumbent stem not only from existing competitors but also from significant forces outside the market. The underlying analysis should be adapted to reflect the special characteristics of these industries. Given their fleeting nature, market shares should not be ~~blindly~~ used as relevant indicators of market power in those industries and supply-side constraints should be carefully considered at the assessment stage. A firm which may prima facie appear to enjoy a dominant position could, **upon careful consideration**, be found not to possess any significant market power justifying the intervention of competition authorities.

**All our macro indicts apply to royalty stacking as well --- it’s a theory not borne out in evidence**

**Epstein & Noroozi 17** --- Richard A. Epstein, Laurence A. Tisch Professor of Law, New York University School of Law, Kayvan B. Noroozi, Principal at Noroozi PC and CEO of Koios Pharmaceuticals LLC, “Why Incentives for 'Patent Holdout' Threaten to Dismantle FRAND, and Why It Matters”, Berkeley Technology Law Journal, Feb 2017, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2913105

That is particularly true given that the theoretical boogeyman of “royalty stacking”—a principal justification for subverting injunctive relief—has been **empirically debunked**. In industries subject to innovation–driven standardization, such as mobile handsets, the consistent evidence points to a combination of **sharp price decreases** and **massive technological progress**, as well as **low aggregate patent royalty payments** and **increasing market penetration**.74 The notion that implementers in such innovation–driven industries are being suffocated by an insurmountable patent royalty stack has turned out to be **nothing more than horror fiction**. This reality is perhaps best demonstrated by the fact that Google has chosen to enter the mobile handset business,75 and Nokia has also elected to reenter that business after several years of seeking to monetize its innovations exclusively through FRAND licensing agreements.76 If the FRAND licensing business were as lucrative as stacking theory predicts, Nokia would have remained a patent licensing company, rather than reentering the product space. And, if royalty stacking were true, an entity as sophisticated (and opportunity–rich) as Google would not have waded into making and selling mobile handsets. 77

**Checks already in place vs non-disclosure --- over-disclosure is more likely**

**Osenga 18** --- Kristen Osenga, Austin E. Owen Research Scholar and Professor of Law at the University of Richmond School of Law, “Ignorance Over Innovation: Why Misunderstanding Standard Setting Organizations Will Hinder Technological Progress”, 2018, https://scholarship.richmond.edu/law-faculty-publications/1502/

It would seem that SSO participants would have an incentive to underdisclose. After all, if the point of these provisions is to permit SSOs to select technologies free from patent encumbrances, failure to disclose may increase an SSO participant's chances of having its technology selected, allowing for potential additional revenue streams associated with licensing. **However**, there are **significant penalties for non-designation of SEPs**.'6 2 For example, SSOs may require an SSO participant who failed to timely disclose **SEPs to grant royalty-free licenses** on the non-disclosed patents to all implementers.163 Courts may punish SSO participants for failure to disclose, for example, by holding non-disclosed SEPs to be unenforceable or declining to issue an injunction for infringement of these patents.'" Firms also have **significant incentives to maximize the number of SEPs they hold**.165 The penalties for non-disclosure and the incentives to disclose may actually result in **over-disclosure**. 166 Additionally, the policies of the SSOs themselves may contribute to over-disclosure in requiring participants to declare all patents that might potentially be considered an SEP.1 67

**Extension 3 --- Link Turn --- Top Level**

**First --- Plan text is purposefully vague to avoid links --- but “whatever’s reasonably necessary” creates leverage points for implementers --- that doesn’t shield against any of our links --- but MAGNIFIES IT**

**Delrahim 17** --- Makan Delrahim, Assistant Attorney General, Remarks at the USC Gould School of Law's Center for Transnational Law and Business Conference, Friday, November 10, 2017, https://weblaw.usc.edu/resources/downloads/faculty/centers/ctlb/reforming-patent-form-conference.pdf?121120153141

My priority as Assistant Attorney General is to help foster debate toward a more symmetric balance between the seemingly dueling policy concerns between intellectual property and antitrust law. Unfortunately, in recent years, competition policy has focused too heavily on the so-called unilateral hold-up problem, often **ignoring what fuels dynamic innovation** and efficiency. New inventions do not appear out of the ether, and excessive use of the antitrust laws rather than other remedies can overlook and undermine the magnitude of investment and risk inventors undertake for the chance at being included in a standard. **Every incremental shift in bargaining leverage toward implementers** of new technologies acting in concert can **undermine incentives to innovate.** I therefore view policy proposals with a **one-sided** focus on the hold-up issue with **great skepticism** because they can pose a **serious threat to the innovative process.**

**Second --- EVEN IF you buy plan text in a vacuum could shield --- injecting the Antitrust Courts into FRAND disputes guarantees every link is triggered**

**SPULBER 20** --- DANIEL F. SPULBER, Elinor Hobbs Distinguished Professor of International Business, and Professor of Strategy, Strategy Department, Kellogg School of Management, Northwestern University, and Professor of Law (Courtesy), Pritzker School of Law, Northwestern University, “LICENSING STANDARD ESSENTIAL PATENTS WITH FRAND COMMITMENTS: PREPARING FOR 5G MOBILE TELECOMMUNICATIONS”, COLO. TECH. L.J. Vol. 18.1, April 2020, http://ctlj.colorado.edu/wp-content/uploads/2021/02/18.1\_4-Spulber-4.2.20.pdf

Courts should **avoid regulatory approaches** to enforcing FRAND commitments. Based on FRAND commitments, for example, the court in FTC v. Qualcomm established a permanent injunction that involved judicial regulation.334 The court required Qualcomm to license SEPs to modem chip suppliers on FRAND terms and “to submit, as necessary, to arbitral or judicial dispute resolution to determine such terms.”335 This approach seeks to supplant **s**tandard**s** **o**rganizations and market negotiation of patent license agreements with regulatory control. Market participants have better information than regulators about technology and market conditions. Also, standards organizations and market participants are better than regulators at balancing the interests of patent holders and implementers.

By pursuing “regulatory decrees” in SEP disputes, the courts become regulators in the market for patent licenses. Posner defines a “regulatory decree” as a court decision that establishes “a **continuing supervisory relationship** between the court in which the decree was entered and the defendant; more realistically, perhaps, between the Judgments Section of the Antitrust Division and the defendant.”336 Posner gives the example of the 1912 Terminal Railroad Association decree, noting that the decree “ordered the defendant association to furnish its terminal services to all seekers on reasonable and nondiscriminatory terms.”337 According to Posner, Terminal Railroad Association “has been followed in a large number of decrees that require defendants to grant patent licenses on nondiscriminatory and reasonable-royalty terms.”336 The courts are not suited to be regulatory agencies in the market for IP. The courts should focus on resolving particular patent disputes, allowing standards organizations and market negotiation of licenses to determine the provisions of patent license agreements.

Also, courts should avoid regulatory approaches that would extend the application of their decisions to industry participants not involved in particular SEP disputes. Legal jurisdiction is an important issue in the courts’ interpretations of SSO FRAND policies. For example, the Unwired Planet v. Huawei decision found that “A UK portfolio licence is not FRAND. The FRAND licence between Unwired Planet and Huawei is a worldwide licence.”339 In Unwired Planet v. Huawei, the court stated:

Article 12 of the ETSI IPR Policy provides that it is governed by French law and the IPR declaration forms also refer to French law. They provide that the construction, validity and performance of the undertaking is [sic] governed by French law.340

Because SSOs are subject to the laws of particular countries or groups of countries, courts may feel compelled to take into account those laws. This extends the SEP dispute beyond the countries in which the dispute takes place.

D. Adjudicated FRAND Commitments and Aggregate Royalty Caps

A critical problem in determining FRAND royalties in SEP disputes is that complex innovations often depend on large numbers of patented technologies. In various SEP disputes, courts have applied aggregate royalty caps as a means of calculating FRAND royalties for particular patent licenses, see particularly In Re Innovatio, Unwired Planet v. Huawei, and TCL v. Ericsson. Calculating FRAND royalties on the basis of aggregate royalty caps is known as the “top-down method”.341 The “top-down method” calculates aggregate FRAND royalties for SEPs that apply to a given technology standard and then apportions the aggregate royalty cap among multiple patented technologies.342

Judge James Holderman in In re Innovatio applied the “top-down method” to obtain a FRAND royalty. The court used an estimate of 3,000 “potential” SEPs for a Wi-Fi chip343 and attributed the profit of the Wi-Fi chip to patented technologies.344 This made the aggregate royalty cap equal to the profit on the relevant component. Judge Holderman recognized the significant problems that arise in estimating total royalties for the very large numbers of patents that apply to a particular technology standard.345

Judge James Selna in TCL v. Ericsson applied the “top-down method” to find FRAND royalties.346 The court cautioned that the “top-down method” need not be FRAND and lacked the advantages of comparable licenses: “[a] top down method, however, cannot address discrimination as the Court interprets the term, and is not necessarily a substitute for a market-based approach that considers comparable licenses.”347 The Court noted that Ericsson shifted from advocating a top-down approach to favoring calculation of royalties based on comparable licenses.348

Justice Colin Birss in Unwired Planet v. Huawei also applied the “top-down method” to determine FRAND royalties.349 The decision used the “top-down method” as a cross-check for comparable licenses.350 Justice Birss observed that using public statements by companies that are patent holders to determine total royalties is highly problematic because such statements are likely to be “selfserving” and much less reliable than comparable licenses.351

There is no generally accepted method of calculating aggregate royalty rates for SEPs that apply to a technology standard nor is there a generally accepted method of apportioning royalties across SEPs.352 Courts have applied a variety of arbitrary allocation systems that are not founded on economic reasoning.353 For example, courts have used proportions of the total number of patents to allocate royalties across SEPs.354 The problem with simply counting patents is that technological contributions and economic value are likely to vary across SEPs.

Apportionment of total royalties can generate inaccurate estimates of the market for patent license agreements. Aggregate royalty caps would require courts to estimate contributions that SEPs make to the value of a product that implements the relevant standards. This adds substantial difficulty to the court’s problem, particularly when complex products involve hundreds or even thousands of patents. In contrast, the use of a few comparable patent license agreements provides a more accurate and efficient approach to estimating of the value of a patent license agreement. Fortunately, the use of comparable patent license agreements is widely accepted.355

Court-established aggregate royalty caps for SEPs introduce additional errors when they combine new technology standards with the revisions of technology standards. Keith Mallinson observes that in TCL v. Ericsson, “[t]he Court has misinterpreted statements by Ericsson and others, believing they were indications of multimode rates (i.e. among 2G to 4G) instead of single-mode rates (e.g. for 4G only).”356 The court imposed a royalty cap for SEPs relevant to the 4G standard in mobile telecommunications, even though handsets and other devices typically included 2G and 3G SEPs.357 The result was a royalty cap that was too low because it did not include the earlier generations of mobile technology.35\*\*

Royalty caps cause additional inefficiencies because courts must allocate total royalties among patent holders. Apportionment requires evaluation of the contribution of many patented technologies to complex innovations. This imposes burdens on the courts compared to the more direct route of evaluating the relevant SEPs themselves. The court in TCL v. Ericsson apportioned the aggregate royalty cap among patent holders based on the relative number of patents of the SEP holder in the patent dispute and those of other SEP holders.359

Counting and evaluating the full set of SEPs can be problematic because SEPs refer to patents declared to be essential. Many SEPs are not necessary for production of the standardized products, and determining the essentiality of SEPs is difficult for SSOs and beyond the courts’ capabilities. The court cannot rely on general rules to estimate the proportions of declared-essential patents that are necessary for the standard. Such rules may be useful for understanding declaration of SEPs but have limited value in determining the value of particular SEPs.

Another problem with aggregate royalty caps is that this approach can lead to control over royalty rates by courts acting as regulatory agencies. Bartlett and Contreras advocate for a regulatory approach in which district courts would determine and then allocate total royalties for SEPs.360 Such a regulatory approach would extend the courts’ mission far beyond resolution of specific patent disputes.

Evaluating aggregate royalties can be useful for understanding the technology marketplace, but courts should be careful not to use aggregate royalties as a mechanism for regulating the market for patent licenses. By using the “top-down method”, courts indirectly regulate the technology market because patent holders and implementers may interpret aggregate royalty caps as imposing arbitrary constraints on total SEP royalties. This will restrict negotiation of patent license agreements not involved in the patent dispute.

Court-imposed regulation of patent royalties is subject to the typical failures of price regulation. Price ceilings such as rent controls can lead to housing shortages by increasing the amount demanded and decreasing the amount supplied in comparison to an unrestricted market equilibrium. Price floors such as agricultural price supports or regulated utility rates can lead to oversupply by decreasing the amount demanded and increasing the amount supplied in comparison to an unrestricted market equilibrium. Regulatory price floors sometimes involve government intervention to purchase the product in oversupply.

Arbitrary royalty caps create economic inefficiencies similar to those generally created by price ceilings. Royalty caps function as a form of rent control; they impede price increases in the market for patent Ecenses. This would impede allocative efficiency in the market for patent licenses. When royalties are constrained systematically, rewards for inventors are diminished, which decreases incentives for invention. Aggregate royalty caps also will decrease incentives for R&D by technology adopters by artificiaEy decreasing the costs of licensing existing inventions. By decreasing the market returns for inventors, royalty caps for SEPs diminish incentives for inventors to participate in standards organizations.

Courts affect the efficiency of market negotiation when they impose arbitrary aggregate royalty caps. Such aggregate caps effectively transform a group of SEP holders into an involuntary patent pool by choosing a collective royalty rate for a large set of patents. The difference between aggregate royalty caps and a patent pool is that patent holders do not establish the aggregate royalty rates nor do they negotiate apportionment.361 Patent pools have far greater information and expertise than do courts.362 Also, involuntary patent pools formed by courts cannot replace bilateral exchange.363 Patent pools tend to pursue different objectives than parties involved in bilateral negotiation of patent license agreements.364

Telecommunication firms have experienced difficulties in negotiating such royalty caps.365 Patent pools in mobile telecommunications represent only a small fraction of negotiated license revenues.366 This suggests that bilateral exchange generally provides greater efficiencies than patent pools.

Royalty caps that are chosen arbitrarily by courts cause additional inefficiencies because they require arbitrary' allocation of total royalties among patent holders. Such allocations of royalties are necessarily arbitrary whether they depend on the number of patents or various measures of patent quality. Bilateral negotiations in the market for patent license agreements are likely to anticipate total royalties and the allocation of royalties. Such negotiations are decentralized and involve a large number of separate interactions between SEP holders and implementers. It is highly unlikely that courts have the dispersed information of SEP holders and implementers in the market, and therefore, cannot be expected to replicate the complex set of bilateral contract negotiations needed to allocate royalties across patent holders and implementers. Furthermore, courts cannot guess what all willing licensors and licensees would choose through negotiation, nor the interaction of many bilateral agreements. These difficulties are mitigated when courts use comparable licenses to evaluate SEPs.

E. Adjudicated FRAND Commitments and Incremental Value of Standardized Technology

Courts potentially engage in another form of regulation when they choose royalties based on arbitrary estimates of incremental technology contributions. Although the concept of incremental contributions of technology draws upon economic analysis, arbitrary estimates of incremental contributions by courts or regulatory agencies can be problematic. Estimates of incremental contributions that systematically constrain royalties will decrease incentives for invention and reduce incentives to participate in standards organizations.

The incremental royalty approach is the basis for the “bottom-up” method for choosing reasonable royalty damages.367 Judge Holderman’s decision in In re Innovatio applied the “bottom-up method”, taking into account the cost of implementing “reasonable alternatives” to the patented technologies.368 Judge Selna in TCL v. Ericsson cited Ericsson v. D-Linkz “the royalty award is based on the incremental value that the patented invention adds to the product, not any value added by the standardization of that technology ”369

SSO FRAND commitments, however, do not justify regulation of royalties based on the incremental value of patented technologies. As noted by the National Research Council, “absent further clarification of the meaning of FRAND, it is not clear whether members of SSOs intend that FRAND royalty commitments should reflect incremental values or some other notion of fair and reasonable pricing.”370 As Bartlett and Contreras observe: “[t]he bottom-up nature of reasonable royalty calculations in disputes involving stand-ards-essential patents subject to FRAND commitments has yielded inconsistent and incongruous results in which patent holders can be over-compensated or under-compensated.”371

Various commentators argue that FRAND commitments should place upper limits on royalties based on an estimate of the incremental contribution of SEPs to the technologies represented by standards.372 The Federal Trade Commission (FTC) recommended that FRAND should be defined as the incremental value of the technology before standardization.373 Layne-Farrar et al. propose that SSOs impose an adjusted incremental value rule on royalties.374 Carlton and Shampine suggest that an economic interpretation of FRAND based on “non-discrimination” implies that royalties should be bounded above by the incremental value of the technology.375 Some recommend that the courts should limit royalties to the incremental contribution of SEPs.376

The notion of incremental value arose in earlier discussions of reasonable royalty damages for infringement. The ninth Georgia-Pacific factor suggests taking into account the “utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.”377 Amy Landers argues that “apportionment requires an examination of the differences between the infringed claim and the prior art in a manner analogous to the identification of the differences between the claimed invention and the prior art in the nonobviousness analysis.”378 Daralyn Durie and Mark Lemley suggest that “[d]etermin-ing the incremental contribution of the patented technology requires a baseline for comparison. Buyers are not buying the technology in a vacuum; they are almost always choosing among alternatives.”379

The recommendation that patent license royalties should reflect incremental contributions of SEPs to a standard is a variant of the notion that patent license agreements should be negotiated ex ante, that is, before standardization. As explained previously, this mischaracterizes the interaction of invention, innovation, and standard setting. It is unlikely that such incremental contributions can be readily identified, because the total incremental contributions of individual patents are greater than the total contributions of the patents if the patents are “innovative complements”.380 Conversely, the total incremental contributions of individual patents are less than the total contributions of the patents if the patents are “innovative substitutes”. This problem in identifying contributions also occurs if the patents are part of patent portfolios. The patent portfolios themselves can be “innovative complements” or “innovative substitutes”. Regulatory determination of royalties based on the “bottom-up method” may not be based on evidence. The “bottom-up method” involves evaluating the incremental contribution of SEPs in comparison with alternatives that may not exist, and compares SEPs with technologies not included in the standard.381 It is difficult if not impossible to examine the features of alternative technologies that were not adopted in the standard. The technologies underlying alternative standards may not have been developed. This prevents any estimates of the incremental benefits of SEPs in comparison with alternative technologies. Also, there are likely to be no patent license royalties on those technologies so it is not feasible to calculate the net benefits to implementers from the alternative technologies.

Comparable licenses provide the best way to observe the effects of competition on the value of SEPs. The “bottom-up method” is unlikely to yield accurate estimates of market value.382 Comparisons with hypothetical substitute technologies, however, do not provide an indication of the value of SEPs. An analysis of technology standards that were not adopted also does not indicate the effects of competition among technologies. The “bottom-up method” seeks to remove the effects of standardization from the market value of SEPs. However, the result is more likely to remove the value that SEPs add to the standardized technology. This would upset the balance between the interests of SEP holders and implementers sought by SSO FRAND commitments.383

Conclusion

SSO FRAND commitments are meaningful and significant. The three-stage process consisting of coordination, negotiation, and adjudication defines FRAND commitments. The three-stage FRAND process provides sufficient clarity and structure to address most public policy concerns about standardization and license royalties. The FRAND process substantially diminishes or eliminates the need for additional public policy interventions such as regulation of either SSOs or patent licensing.

SSOs introduce a coordinated FRAND commitment. The SSO coordinated FRAND commitment is more than an exhortation; it is a deliberate statement of neutrality designed to defer to market negotiation. The SSO FRAND commitment encourages participation in the organization, fosters organizational consensus, and promotes adoption of technology standards. Through the SSO FRAND commitment, SEP holders have a contractual obligation toward technology implementers. The SSO FRAND commitment is meaningful because courts can interpret the third-party obligation under the common law.

Building on the SSO FRAND commitment, SEP holders and technology implementers create negotiated FRAND commitments. Patent license agreements between SEP holders and technology implementers implicitly define FRAND through standard practice. Market negotiations offer the flexibility required to adapt to technological change. The large number of SEPs and the vast number of standardized products indicate the success of negotiated FRAND commitments. The widespread adoption of technology standards and extensive technological innovation also show the success of these commitments.

Finally, courts establish adjudicated FRAND commitments based on SSO FRAND commitments and marketplace FRAND commitments. Because of the contractual nature of SSO FRAND commitments, both SEP holders and technology implementers can be plaintiffs. The courts interpret the third-party obligation created by SSO FRAND commitments. The courts can address reasonable royalties by recognizing patent license agreements as contracts. Standard practices in the market for patent license contracts provide the best guidelines for reasonable royalty damages. The courts have applied negotiated FRAND commitments by emphasizing royalties in comparable SEP licenses. Courts also can use the value of SEPs in market transfers to infer comparable royalties.

The FRAND process **has worked well** in supporting invention, innovation, and standardization. However, the implementation of the 5G mobile telecommunications standard faces a number of significant risks. Public policy makers should be careful about the unintended consequences of interfering in the FRAND process. Regulatory approaches to FRAND commitments **may decrease incentives** for invention, innovation, and standardization.

Those advocating greater regulation or antitrust scrutiny of SSO rules and SEP licensing cannot base their arguments on the “**vague**ness” of the FRAND terminology. SSO IP rules **already reflect industry consensus** decision making. SSO IP rules already require disclosure of SEPs. SSO FRAND commitments already generate third-party obligations for SEP holders. Regulations that control the royalty base to force SEP holders to license to all would result in the problem of “**patent run-around**”, which would **diminish incentives for standardization**. Bilateral patent license negotiations in light of FRAND commitments are **sufficient** to address policy concerns about “SEP **holdup**”, “royalty **stacking**”, “patent **thickets**”, and the “**Tragedy of the Anti-Commons”.**

Overall, courts adjudicating SEP disputes should **limit the scope** of their decisions **rather than extending** their authority far beyond the case at hand. Courts should avoid **regulation** of standardization and SEP licensing through arbitrary aggregate royalty caps on all SEPs bearing on a set of standards, and should not attempt to determine the extent of incremental contributions made by standardized technologies. Royalty constraints based on arbitrary estimates of incremental contributions **will diminish incentives for invention and innovation**. Consensus decision-making by SSOs and voluntary negotiations in the marketplace provide **the best indicators** of what is fair, reasonable, and non-discriminatory.

**Extension 3 --- Link Turn --- False Positives**

**1]FALSE POSITIVES – That’s 1NC Delrahim --- Antitrust in FRAND gives implementors disproportional negotiating power --- they can lowball license rates with ZERO consequence --- innovators are forced to agree to avoid the risk of treble damages --- this zeros R&D funding or causes them to disengage from the standardization process --- turns the case**

**Barnet 19** --- Jonathan M. Barnet, Torrey H. Webb Professor of Law, Gould School of Law, University of Southern California, “Antitrust Overreach: Undoing Cooperative Standardization in the Digital Economy”, Michigan Technology Law Review, Vol 25, Issue 2, 2019, https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1247&context=mttlr

This “patent-lite” regime rests on a straightforward argument. So long as monetary damages as determined in court provide upstream IP holders with a sufficient return on their R&D investment (net of litigation and related costs), this regime would appear to preserve R&D incentives while protecting downstream implementers against opportunistic hold-up. While plausible in theory, this argument has two critical failings. First, it heroically assumes that courts typically have adequate information to calculate the “efficient” patent royalty such that innovators are perfectly compensated for the costs and risks they have uniquely borne in R&D and related productdevelopment activities. As discussed above, at least some courts and agencies have pursued damages calculation methodologies that are likely to generate sums that **undercompensate innovators** for the costs and risks undertaken in connection with the relevant standard-setting process. Second, it does not address the fact that an injunction-free regime necessarily induces opportunistic “hold-out” by downstream users, especially in circumstances in which (i) litigation is costly, lengthy and uncertain, (ii) the downstream user has ample litigation resources at its disposal, (iii) the patented technology exhibits some positive rate of commercial or technological obsolescence, (iv) monetary damages tend to be undercompensatory (whether due to judicial methodology or collection difficulties), and (v) there is a sufficiently limited possibility that a court will find willful infringement and award supercompensatory damages.215 Without a credible injunction threat and limited assurance that a substantial damages award (net of legal fees) are a likely prospect, an upstream innovator may be **deterred** from pursuing an infringement action and will rationally **settle** for a reduced royalty payment from the implementer firm. While this outcome would reduce implementers’ technology input costs and, depending on competitive conditions, potentially result in static efficiency gains in the form of lower prices for end-users, the absence of a credible shutdown threat (compounded by reduced expected damages) may depress licensing fees below the dynamically efficient levels required to remunerate innovators for the costs and risks inherent to R&D activities. In response, those firms would respond by reducing the allocation of funds to R&D, vertically integrating forward into production and distribution, or seeking to monetize R&D **outside** the cooperative standard-setting process and the associated FRAND licensing framework. Even assuming R&D and follow-on standardization activities could still be successfully achieved at a comparable scale, cost and level of functionality, the result may be a mix of organizational structures that is less efficient in the aggregate relative to the mix of structures that would prevail under a more secure IP regime.

**Extension 3 --- Link Turn --- Profitability**

**2] PROFITABILITY – That’s 1NC Blanchard --- Enhancing the non-discriminatory part of FRAND induces courts to require licenses up and down the value chain --- this decks patent holder profits**

**they get royalties PER ITEM SOLD --- SEP holders like Qualcomm license EXCLUSIVELY to the END MANUFACTURE --- or OEMs --- Think Apple or Google for phones --- and then collect a royalty per phone sold --- but if they were FORCED to license to competitor chip producers, they can ONLY make the royalty per CHIP --- which is substantially less**

**The aff cant avoid this link --- that was the “selective licensing” policy at the center of the Qualcomm decision that they say needs to be reversed --- heres 1AC Moss evidence for reference (MSU = yellow)**

**1AC Moss 20**, \*Alex Moss is a Staff Attorney on EFF’s intellectual property team, before joining EFF, Alex practiced complex commercial litigation at Sullivan & Cromwell LLP in New York and Durie Tangri LLP in San Francisco; (August 26th, 2020, “Throwing Out the FTC's Suit Against Qualcomm Moves Antitrust Law in the Wrong Direction”, https://www.eff.org/deeplinks/2020/08/throwing-out-ftcs-suit-against-qualcomm-moves-antitrust-law-wrong-direction)

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](https://www.ftc.gov/news-events/press-releases/2017/01/ftc-charges-qualcomm-monopolizing-key-semiconductor-device-used) 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](https://www.eff.org/document/ftc-v-qualcomm-district-court-opinion). 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](https://www.eff.org/document/ninth-circuit-opinion-ftc-v-qualcomm) 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.

**And their Melamed & Shapiro evidence for reference (MSU = yellow)**

**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)

For these and other reasons, the SEP holder has ex post monopoly power that, if left unchecked, would enable it to obtain royalties **far in excess** of the royalties that it could earn in a competitive market.16 To address this common problem and limit ex post opportunism by SEP holders, SSOs typically require participants that own SEPs to make certain FRAND commitments. In particular, by requiring a commitment to license on “fair and reasonable” terms, the FRAND requirement aims to prevent, or at least reduce, the **extent of monopoly pricing** by SEP holders. And by requiring a commitment to license on “nondiscriminatory” terms, the FRAND requirement can prevent SEP holders from **extracting monopoly premiums** by **selective licensing** or, more important, migrating their monopoly power from the FRAND-regulated market to unregulated standard-implementing product markets by licensing to only one or a few implementers or licensing to selected implementers on discriminatorily favorable terms.

**Extension 4 --- A2: Neg Authors Biased --- Top Level**

**Second --- this is a dispute between Big Tech and Qualcomm --- if our evil authors are turning out manipulated evidence because big tech is lining their pockets then they’re doing a bad job**

**Moorhead 20** --- Patrick Moorhead, president and principal analyst, Moor Insights and Strategy, “Qualcomm Found Guilty Of Aggressively Innovating By Ninth Circuit Court Of Appeals”, Sept 15th 2020, https://moorinsightsstrategy.com/qualcomm-found-guilty-of-aggressively-innovating-by-ninth-circuit-court-of-appeals/

According to investigative reports, in 2014, “Apple allegedly ‘**plotted’ to hurt Qualcomm** years before it sued the company.” We also know that Apple and Samsung had a “common interest” agreement to **work closely with FTC**. This resulted in the FTC **charging Qualcomm** for anticompetitive practices, and Apple suing Qualcomm and withholding payments for Qualcomm intellectual property that same week. Qualcomm then sued Apple and its ODMs for non-payment. Qualcomm’s stock plummeted to $53 (today $121), which led to a hostile takeover attempt by Broadcom. To keep investors at bay, Qualcomm commit to $1B in cost reductions and had to lay off thousands of employees, disrupting family’s lives. Apple then settled with Qualcomm which included paying Qualcomm for the years it had withheld payment.

**Cyber**

**Adv 2 Recuttings**

**Tons of alt causes – their card (MSU = green)**

**Wintch 21**, \*Timothy M. Wintch, an active-duty Major in the United States Air Force. He is currently a graduate student at the Oettinger School of Science & Technology Intelligence, National Intelligence University, in Bethesda, Maryland. Mr. Wintch has over 11 years of experience in command-and-control operations as an Air Battle Manager. He holds a Bachelor of Arts in Politics from the University of California, Santa Cruz, and a Master of Arts in Military Studies from American Military University. (April 20th, 2021, “PERSPECTIVE: Cyber and Physical Threats to the U.S. Power Grid and Keeping the Lights on”, https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/)

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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn1) 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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn2) From 2002-2012, approximately 2,500 physical attacks occurred against transmission lines and towers worldwide and approximately 500 attacks against transformer substations.[[3]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn3) 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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn4) 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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn5) 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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn6) 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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn7) 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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn8) 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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn9) 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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_ftn10) Shortly after these events, President Trump issued Executive Order 13920, “[Securing the United States Bulk-Power System](https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-securing-united-states-bulk-power-system/),” essentially limiting the import of Chinese-built critical energy infrastructure components due to concerns about cybersecurity.[[11]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_ftn11) Interestingly, Jiangsu Huapeng “boasted that it supported 10 percent of New York City’s electricity load.”[[12]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_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]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_ftn14)

---their card ends ----

Power generation represents a key vulnerability of the U.S. energy infrastructure. Physical security measures vary by site and type of power plant; however, most are still limited in their security measures beyond chain-link fences, with the notable exception of nuclear power plants.[15] The very nature of power plants does provide some physical security, with plants often residing in rural areas over large areas with multiple buildings, which makes locating and accessing critical components more difficult. While an attack on a power plant would have a large effect, it would also result in increased security at other plants. Finally, the nature of the U.S. energy grid provides the capability to provide some level of self-healing, meaning that even if a power plant were to go offline other sites can mitigate that loss and prevent cascading effects.

System Control Centers represent another key vulnerability. These centers contain not only important technical control systems, but also the personnel who operate those systems and their unique intricacies. However, like power plants, the physical security of these sites varies, ranging from minimal security to extensive hardening.[16] Fortunately, these centers have redundant facilities that can mitigate losses to the rest of the system.[17]

Power lines may be viewed as a **key vulnerability** as the most visible aspect of the transmission infrastructure, but the number of lines, ability to redirect power, coupled with the relative ease of replacement, mean that an attack on power lines is likely to be limited in both scope and duration. Therefore, while still a required part of the power infrastructure, transmission lines are not a significant vulnerability especially when other critical infrastructure sectors often have their own temporary backup power such as batteries and motor-generator sets (e.g. an on-site diesel motor running an electrical generator at a hospital).

Perhaps the **most vulnerable** aspect of the U.S. power grid is the high-voltage transformers that allow efficient transmission from power plants to distribution substations. Bottom line is that power generation is of no consequence if it cannot be delivered to the end user, but “there is general agreement among security planners that key high-voltage substations are the most worrisome terrorist targets within the power transmission system.”[18] This fact is complicated in that the transformers are “difficult to protect” and “replacement parts are difficult to obtain, and damage to substations can separate customers from generation for long periods,” often taking over a year to replace under ideal conditions.[19] As previously stated, the power industry is heavily reliant on imports for these transformers, with many coming from China. Finally, these substations are often unprotected by more than a perimeter fence, making them vulnerable to standoff and penetration attacks.[20] The critical nature of these transformers, combined with the difficulty in manufacturing and replacing them, makes the transmission substations one of the most vulnerable aspects of the U.S. power grid.

A further vulnerability of energy infrastructure is the increased use of remote-control mechanisms to operate critical equipment and **manage energy loads** all the way from power generation to transmission. The more connected critical energy infrastructure is to a network, the more vulnerable it becomes to cyberattack. Kramer described the potential effects of a cyberattack in 2011, following the STUXNET attack on Iranian nuclear facilities, stating, “We have had even further confirmation of the problem of the [US power] grid’s vulnerability, as demonstrated by the STUXNET attacks. STUXNET – while not grid-directed, showed the vulnerability of control machines – which are the very type of machines upon which the grid depends for effective operation.”[21] This vulnerability is further described by the Mission Support Center, which stated, “Growth of networks and communication protocols used throughout ICS networks pose vulnerabilities that will continue to provide attack vectors that threat actors will seek to exploit for the foreseeable future. The interoperable technologies created for a shift toward a smart grid will continue to expand the cyberattack landscape.”[22]

As evident in the example of the seized Chinese transformer in Houston, software and networks are not the only mechanisms for cyberattacks. In fact, ICS and hardware, such as transformers, present a significant vector for cyber intrusion as well.[23] The added danger of this vector is that ICS controls can be affected without the people monitoring even knowing. This was the case with STUXNET, where Iranian engineers could see that something abnormal was occurring but could not pinpoint the cause in time to avert destruction of the centrifuges.[24] Thus, vectors exist for cyberattacks in the U.S. energy infrastructure from software, networks, and malware **installed in imported hardware** including components such as transformers.

# 1NR

**cp**

**solves**

**Plank 1 solves IoT**

**Rifkin 21** Jeremy Rifkin, TIR Consulting Group, President of an American economic and social theorist, writer, public speaker, political advisor, and activist. “AMERICA 3.0 THE RESILIENT SOCIETY.” July 2021. <https://www.foet.org/wp-content/uploads/2021/07/Jeremy-Rifkin-America-3.0-The-Resilient-Society-20210728.pdf> {DK}

To facilitate the reinvestment of pension funds, insurance funds, and other institutional funds in a massive build-out of a digital resilient society infrastructure, the federal government will need to establish a national green bank that can **provide funds to state, municipal, and county green banks**. These regional Green Banks, in turn, can leverage those funds and other funds in securing sufficient financing via the issuing of green bonds that can be purchased by pension funds and other institutional funds, the insurance industry, sovereign funds, et. al. to invest in scaled green Third Industrial Revolution infrastructure build-outs. Already, Green Banks have been established by California, New York, Connecticut, Hawaii, Rhode Island, and Montgomery County, Maryland.43 The federal government will also need to provide a wide range of generous incentives (“carrots”) and mandates (“sticks”) to help states, municipalities and counties **expedite** the **financing** of the infrastructure transformation. Pension funds and other institutional investors, and insurance companies, banks, sovereign funds, credit unions, and endowments are quickly divesting from the stranded assets piling up across the fossil fuel complex and closely coupled industries (more than $11 trillion have either exited or are in the process of exiting the fossil fuel industry in just the past few years). They would like to reinvest in the green infrastructure opportunities that constitute a smart Third Industrial Revolution build out. Still, fund managers and the financial community complain that the real problem is a lack of camera-ready largescale America 3.0 infrastructure projects in which these freed up funds might invest. Unfortunately, cities, counties, and states are tinkering with thousands of small, unconnected pilot projects with little incentive to scale a massive infrastructure transformation. Missing is the Third Industrial Revolution narrative which describes the nervous system that would connect all of these isolated projects. Infrastructure, at the deepest level, is not just an incidental appendage to commerce and social life. It is always new infrastructure that is the indispensable framework that binds society together as a collective whole and provides the new economic opportunities and employment. To date, the missing link is sufficient political will at the federal, state, municipal, and county governing levels to embrace a bold new social contract – The Resilient Society – and begin to scale up and deploy a smart America 3.0 infrastructure.

**Your 1ac has a better idea (plank 2)**

**1ac 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)

Perhaps **the most promising approach** in this regard is the adoption of formal or informal agreements to eschew certain behaviors that would increase the risk of unintended or accidental nuclear escalation. This would involve meetings between U.S. and Russian officials, possibly under the auspices of the currently suspended **S**trategic **S**tability **D**ialogue; between U.S. and Chinese officials; or possibly **all three** together aimed at identifying certain rules of the road to which all sides would agree to adhere, such as a ban on the implantation of malware in the NC3 systems of their adversaries.

A **precedent** for such high-level accords is provided by U.S. President Barack Obama’s September 2015 agreement with Chinese President Xi Jinping to bar the use of cyberspace for the theft of intellectual property. Although there is widespread debate over the extent to which China has abided by the 2015 accord, there is general agreement that it did result for a time in a diminished level of Chinese cyberespionage in the United States.25

Such an approach was advanced by Stoutland and Pitts-Kieter in their 2018 study of cyberweapons and nuclear stability. “As a **priority first step**,” they said, “the United States should seek to initiate a bilateral dialogue with Russia” intended to “develop **mutual understanding** on how cyber threats can affect deterrence and strategic stability.” Such talks, they wrote, “should be held with a view toward developing a shared understanding of our mutual interest in minimizing that risk and identifying practical ways to address it **bilaterally** and **multilaterally**.”26

**Wintch agrees – planks 3-6 solve the grid**

**Wintch 21**, \*Timothy M. Wintch, an active-duty Major in the United States Air Force. He is currently a graduate student at the Oettinger School of Science & Technology Intelligence, National Intelligence University, in Bethesda, Maryland. Mr. Wintch has over 11 years of experience in command-and-control operations as an Air Battle Manager. He holds a Bachelor of Arts in Politics from the University of California, Santa Cruz, and a Master of Arts in Military Studies from American Military University. (April 20th, 2021, “PERSPECTIVE: Cyber and Physical Threats to the U.S. Power Grid and Keeping the Lights on”, https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/)

The National Research Council provides some potential ways to reduce physical vulnerability, including hardening substations and making them more difficult to locate, hardening control facilities, improved surveillance of critical sites and, most importantly, providing more robust physical security around transformer substations.[27] These safeguards are the most useful in deterring attacks against multiple points of the system, but would still provide the same utility against state-sponsored covert action. Regarding a state-level overt attack, some of these mitigation measures may be useful, but much more important is the DoD’s ability to both defend the homeland as well as provide credible deterrence to nation-state actors attacking the U.S. power grid.

Some experts argue that the cyberattack threat is overexaggerated, with attacks typically limited to only causing disruption counted in days rather than weeks.[28] Robert M. Lee, CEO of cybersecurity firm Dragos, Inc., explained that even if a cyber intruder gains access to an ICS system, they would not necessarily know what to do to cause damage.[29] This could limit the potential destructive nature of a cyberattack by many hackers. A successful cyberattack by a nation-state like China or Russia would need to leverage ICS experts to fully manipulate the U.S. energy controls effectively. Yet Russia and China are unlikely to be “motivated to execute a cyberattack resulting in widespread damage to the U.S. power grid due to the political consequences such a hostile act would likely guarantee.”[30] Lee addresses this fact as well, stating that, much like military cybersecurity, what is needed is active defense, which today is currently hobbled by fewer than 1,000 ICS cybersecurity experts worldwide.[31] By training and employing more of these personnel, attacks such as STUXNET become much easier to detect and defeat.[32] Only by expanding the defenses beyond passive measures can the U.S. energy infrastructure hope to continue to stave off future cyberattacks.

Kramer also provides potential solutions, highlighting the DoD’s use of active and passive cyber defense, in addition to offensive cyber operations, as a model that can be extended to the power sector. Kramer suggests that the DoD oversee grid security, stating, “It would seem appropriate for the DoD with the right legislative authority and under presidential guidance to help protect electric grid networks.” [33] Kramer supports this solution by paraphrasing an unnamed electric power company office: “I can understand why my company should be able to protect itself against cyber criminals, but why should I be expected to succeed against a major nation state cyberattack? Isn’t that what the government is supposed to do?”[34]

The very structure of critical infrastructure in the U.S., even with much of it privatized, still provides a public necessity that must be defended. Due to the widespread public dependence on such infrastructure for not only commerce and communication, but also survival, the federal government does ultimately have the responsibility for protecting that infrastructure. However, Kramer’s argument that this is the responsibility of the DoD requires a logical leap. While the DoD oversees the defense of the nation and its people, it is not required to defend private property. Ultimately, Kramer makes an effective argument that there needs to be a top-down focus on protecting the power grid, led by the federal government. However, a more suitable mechanism for achieving this goal would be through legislation and standards throughout the electric industry that harden the power grid against cyber threats.

Another potential solution is the utilization of “microgrids,” described as a “grid architecture that could manage electricity generation and demand locally in sub-sections of the grid that could be automatically isolated from the larger grid to provide critical services **even when the grid at large fails**,” ideally preventing a cascading failure.[35] These power grids would be useful in the U.S. due to both their resiliency as well as their reliability in supporting other critical infrastructure such as water, healthcare, and emergency response infrastructure.[36] There are several disadvantages of such a power grid, including cost, increased cyber vulnerability, wider power variance, and a limited ability for self-healing. However, by incorporating microgrids as a redundancy of the main grid, mass power outages can be mitigated.[37] While microgrids are not the perfect solution, they do provide a possible path to ensuring that **catastrophic failure** of the U.S. power grid does not occur.

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**T/C – Climate + Emerging Tech**

**Turns and solves climate and emerging tech – populism collapses all global governance**

Neil **Narang 20**, associate professor in the Department of Political Science at UC Santa Barbara, interviewed by Lindsay Morgan, 9/29/20, “Anxious America—Neil Narang on Populist Nationalism, the “End” of Arms Control, and Security Priorities for the Next U.S. Administration,” https://igcc.ucsd.edu/news-events/news/anxious-america.html

You co-wrote What is Populist Nationalism and Why Does it Matter?, which was published in the Journal of Politics last year. What is populist nationalism, why does it matter, and is the Trump administration different from preceding administrations in this regard?

Populist nationalism is a squishy term—it means different things to different people. But generally, all definitions of populism share a fundamental suspicion and hostility towards elites, mainstream politics, and established institutions. In one manifestation of this, Trump wrote in a Wall Street Journal piece in April 2016, that: “The only antidote to decades of ruinous rule by a small handful of elites is bold infusion of popular will. On every major issue affecting this country, the people are right and the governing elite are wrong.” Populism sees itself as speaking for the forgotten, ordinary person and often imagines itself as the voice of genuine patriotism.

Historically populism has come in both left- and right-wing variances, but interestingly, right-wing populist parties are experiencing a new and striking rise today in countries across Europe and in the U.S.

Why does it matter? These attitudes tend to lead to the abandonment of mainstream parties in support of emerging parties, often at fringes, and to policies that often depart from the mainstream. On this point, Fareed Zakaria recounts in a recent Foreign Affairs article that political scientist Justin Guest adapted the basic platform of the far-right British National Party and asked Americans whether they supported a party dedicated to “stopping mass immigration, providing American jobs to only American workers, preserving American Christian heritage, and stopping the threat of Islam, etc.” Sixty-five percent of those polled said they would support this platform. In this way, President Trump and Trumpism are the **consequences, and not the cause**, of changing political attitudes that may long-outlast a single administration.

Is there anything about the Trump administration that has surprised you that doesn’t follow what you would anticipate?

I am not surprised about the direction of most of the Trump administration’s policies. However, I am often surprised by the magnitude of the consequences that followed from some of the policies. For example, I am not surprised by the Trump Administration’s attempt to weaken trust in many social and political institutions, but I am surprised at how effective it has been in some cases. In particular, the loss of trust in the free press as an institution was far more pronounced than I anticipated, and I don’t know how long it will take to repair. The absoluteness with which it has occurred I find shocking.

A few months ago, Vox published a piece titled The End of Arms Control As We Know It, and Jessica Matthews published The New Nuclear Threat, in which she writes that we are in greater danger today from nuclear threats than ever before. Is it the end of arms control as we know it, and are we entering a dangerous new phase?

It’s a really important question. I don’t think we’re at the end of arms control. I’m more optimistic than most people on this. I think we are entering an important new phase of arms control, and because the decisions we make moving forward will be highly consequential, there's the latent danger of making mistakes. But I wouldn’t say that the future of arms control will necessarily leave us in a more dangerous place.

The common narrative of arms control during the Cold War was: because nuclear weapons are so destructive, states—even hostile states—cooperated to reduce the number of arms because there was no way to win a nuclear war. Arms control stopped the arms race between the U.S. and Soviet Union, and thus, in some ways, it stopped the Cold War.

There are a lot of important correctives to this narrative. Arms control was seen as a competitive space as much as a cooperative one. For example, the U.S. sought to reach an arms control agreement that kept the total number of nuclear weapons constant with the Soviet Union, but we did this quite deceptively, because we made really significant qualitative improvements to the yield of our weapons such that we believed it would give us an advantage. Arms control thus served as this way to entrap the Soviet Union by forcing them to compete on the U.S. playing field.

Competitive arms control has **huge implications for emerging technology** like cyber, **a**rtificial **i**ntelligence, drones, which will all present new challenges to strategic stability. Today, we’re only at the beginning of the difficult process to determine how we might govern the use of new and emerging technologies to everyone’s benefit. However, I take some reassurance in knowing that arms control has always been challenging, and as long as there is a mutually beneficial cooperative agreement that can be reached—even if only incremental—skilled negotiators may find it. There are probably lots of **deals to govern the use of new and emerging technologies** (whether they be related to nuclear weapons or not) that will leave all parties better off, at the same time that I expect actors to bargain very extra hard to secure the exact deal that most benefits them.

What’s the most important thing the next administration can do to enhance global security?

If the question is about the most important thing to enhance U.S. national security, some common answers among experts today include not losing the technological edge to rising powers like China, to limit vulnerabilities to information war and cyber-attack, and to limit the proliferation of nuclear weapons. These would certainly be good places to start, but I might add another: doing the hard work of solving the important domestic problems that deeply divide the country.

If the question is more about **global security**, some common answers among experts today include **solving global climate change**, solving control problems related to **a**rtificial **i**ntelligence, and mitigating risks from **new biotechnology and global pandemics**. As an international relations scholar, I would add another: **reversing the rising sentiment of anti-globalism world-wide**. The big global problems of the future will require international **coop**eration to produce big global solutions, but **globalism** and globalization **appear to be under attack and backsliding**. Reversing this trend will not be easy, since globalization always creates winners and losers at both the international and domestic level, so simply adopting new policies that increase globalization may not be a sustainable solution over time. The next administration will need to articulate a compelling case for globalization in principle, and, practically, it will need to construct a new grand bargain to allocate the gains from globalization in a way that makes it sustainable.

**Independently goes nuclear**

**Aziz 21**—(MPhil Scholar at NUML Islamabad). Abdul Aziz. April 15, 2021. “Amid nuclear treaties, is Biden a win for arms control and global security?”. Global Village Space. <https://www.globalvillagespace.com/amid-nuclear-treaties-is-biden-a-win-for-arms-control-and-global-security/>. Accessed 6/11/21.

President Joe Biden, after taking over as 46th president of the U.S. is confronted with a major challenge of **rescuing the arms control regime**, besides other foreign policy issues.

Currently, tensions are rising between the nuclear states, the **risk of nuclear use is growing**, billions are being spent on nuclear modernization and weapons sophistication; while in this scenario the **key arms control agreements** have kept a check on most destabilizing weapons, are in **serious jeopardy**.

These complications have emerged in the aftermath of President Donald Trump’s aggressive foreign policy approach. During his tenure in the president’s office, Trump resorted to a haphazard decision-making process without considering the sensitivity of the issues and their implications in the longer run.

Besides this, the presence of hawkish elements in the Trump administration and the role of the U.S. Military Industrial Complex has further deteriorated the situation, especially in the arms control domain.

President Joe Biden has a **distinguished background** of realizing the sensitivity of nuclear weapons, arms control, and issues pertaining to global security.

Contrasting with his predecessor, President Biden has a **firm commitment** to establish an effective nuclear **arms control** mechanism and **nonprolif**eration regime which has been manifested in his maiden address during his oath-taking ceremony on January 20, 2021.

Biden’s commitment to arms control and disarmament dates back to his tenure as vice president in the Obama administration and his early days in the U.S. Senate. President Joe Biden, during his election campaign and after his win, has been continuously advocating for an effective arms control mechanism with Russia and other nuclear-armed states.

Nuclear challenges facing Biden

Nuclear experts are of the view that currently, the Biden administration is facing the five most important challenges related to the nuclear weapons policy which need immediate attention to address the prevalent strategic issues.

The five challenges include the revision and advancement of the nuclear arms control negotiations including the **extension of the New START**, developing a consensus to **reduce nuclear weapons at the global level** (especially that of the **U.S. and Russia**), and reinstate the Joint Comprehensive Plan of Action (**JCPOA**).

Besides this, the issue of **North Korea’s nuclear program** is also due for settlement. Finally, President Biden has to **restore the role of the U.S. as a leader** of multilateral nonproliferation and disarmament.

Recently, there are **two important developments** in the arms control domain. Firstly, President Biden has agreed to **extend the New START** for another five years till 2026, without any preconditions or amendments to the treaty.

Secondly, the Treaty on the Prohibition of Nuclear Weapons (TPNW) has entered into force on January 22, 2021. Moreover, the Biden administration has also declared to reconsider the U.S. commitment under **JCPOA**.

These are the **positive initiatives** by the new administration in Washington that would **significantly improve the global strategic security** and make the world **safer from nuc**lear weapon**s**’ threat.

These initial steps would also put the administration in a better position to pursue **long-lasting and far-reaching nuclear risk reduction** and **elimination initiatives** over the next four years.

**Meat is your #1 climate concern**

**Smith 21** (Georgie Smith, agriculture and food systems journalist, 4th generation farmer, “What the pandemic revealed about the meat supply chain,” Fortune, 6-24-2021, https://fortune.com/2021/06/24/what-the-pandemic-revealed-about-the-meat-supply-chain/)

Yet a shift toward a **more sustainable** or **less centralized** industry is unlikely to happen overnight, as big meat companies, regional producers, impact investors, and consumers took away different lessons from the experience.

Tackling the food industry’s **environmental toll** and **sustainability** record is a **massive undertaking**. Food makes up 10% to 30% of a household’s carbon footprint, with **meat**—primarily beef, pork, and chicken— contributing **56.6%** of the greenhouse gases emitted in an average American’s diet. In 2019 agriculture contributed 9.6% of the U.S. total emissions, a significant portion of which came from methane emissions from livestock production, putting the **industrialized meat supply chain** in the crosshairs of the **climate change** debate.

Big Meat shrugs off the pandemic

Despite weeks of meatpacking plant shutdowns during the pandemic— leading to beef- and pork-packing facilities operating at 60% of capacity in April and May—record-high retail meat prices and a high appetite for meat domestically and internationally contributed to historic profits for many large U.S. meat-supply companies.

The “Big Four” meat companies—Tyson Foods, JBS SA, Cargill, and National Beef, currently controlling 80% of the U.S. meat supply chain—largely shrugged off the supply challenges.

The **COVID**-19 meatpacking plant shutdowns of 2020 are **unlikely to inspire** a significant, immediate **shift** in favor of a more **decentralized** industry that favors **local producers**, industry critics say.

And they have **few incentives** to make meaningful changes in favor of diversity or **sustainability** anytime soon, analysts say.

“When it comes to meat, the sad fact is that the pandemic didn’t last long enough,” says Alan Lewis, VP of government affairs and policy advocate for Natural Grocers, a 150-plus natural foods grocery chain based in Colorado, when asked if the pandemic created any significant moves toward sustainability within the U.S. meat supply chain.

The pandemic was good for the largest producers’ bottom line.

In March, JBS announced its profits for 2020 were up 65% over the previous year. Cargill, a privately held company, disclosed to bond investors it made almost $4.3 billion in net income during the first nine months of its 2020 fiscal year, more than any full year before, Bloomberg reported.

Tyson, which also reported solid sales in 2020 and early 2021 growth surpassing projected earnings, updated its own sustainability commitment in recent weeks, the latest in a recent flurry of net-zero pledges from large meat-supply companies.

An analysis published in March 2021 by New York University researchers criticized the vast majority of the world’s large meat and dairy companies as slow to make net-zero commitments.

Consumers have been signaling since before the pandemic they will use their purchasing power to support brands committed to sustainability. A January 2020 survey of nearly 19,000 consumers in 28 countries found that nearly six in 10 respondents were willing to change their shopping habits to reduce environmental impact. Brands that embraced sustainability goals saw share prices increase whereas brands that ignored sustainability increased reputational and business risk, a Deutsche Bank report found.

Most recently, Tyson pledged in June to achieve net-zero greenhouse gas emissions across its global operations and supply chain by 2050. The company vowed to continue work started in 2018 encouraging corn farmers to use less fertilizer and implement practices that reduce soil loss. The target was to expand those practices to 2 million acres, representing 100% of feed purchased by Tyson by 2030.

“Our net-zero ambition is another important step in our work toward realizing our aspiration to become the most transparent and sustainable food company in the world,” said Donnie King, Tyson Foods president and CEO, in a statement.

But longtime Big Meat critics like Lewis argue that **meatpackers’ sustainability pledges aren’t nearly enough** to combat climate change when they are still part of a **consolidated meat production supply chain** largely dependent upon **monoculture** agriculture practices. Since 1961, conversion of **land** to commercial agricultural and forestry production has contributed to increasing greenhouse gas **emissions**, loss of natural ecosystems, and declining **biod**iversity, according to a 2019 special report by **I**ntergovernmental **P**anel on **C**limate **C**hange.

“At what point are they going to replace commodity corn and make the way they raise chickens sustainable?” Lewis asks, referring to Tyson’s net-zero pledge.

Other recent high-profile net-zero announcements in meat include Brazilian giant JBS pledging in March to reach net-zero emissions by 2040. The company joins Smithfield Foods, which vowed to become carbon negative by 2030, and Cargill, which committed to reducing emissions by 30% across its North American beef supply chain by 2030. National Beef has yet to make any sustainability commitments for its supply chain.

Not everyone is eager to usher in change.

Agricultural economist Michelle Klieger points out that despite pandemic hiccups, the industrialized meat supply chain has historically “served the customer really well.”

Consolidation over the past 50 years took away price volatility and increased accessibility, Klieger says.

“Tyson especially has been really good about running a tight ship; when prices sank they were solvent and bought up the competition,” Klieger says. “So, by the 1980s was the first time Americans could eat chicken as many meals as they wanted because it was consistent pricing and it was available.”

For impact investors, the pandemic illustrated a robust demand for regional meatpacking production, with many seeing potential in more sustainable farming and ranching practices.

“Sustainability was already top of the mind for consumers; that’s only more so the case now,” says Jason Jones, the former founding president of Vital Farms who is now building out a new insect-based protein alternative company.

Greater scrutiny

As the large meat producers benefited from the high retail prices, farmers and ranchers, especially beef producers, experienced low live-animal prices, a trend that has continued into 2021 according to the USDA.

The U.S. Department of Agriculture is working on new guidelines to address anticompetitive behavior and farmers' compensation, the Wall Street Journal reported on June 22. Earlier this month, the U.S. Secretary of Agriculture Tom Vilsack said he would back establishing a special investigator within the USDA dedicated to investing and preventing anticompetitive practices in meatpacking, Reuters reported.

In June 2020, the U.S. Department of Justice opened an **antitrust** probe into anticompetitive practices in the meat industry, looking at the wide margin between input and output prices during and after the pandemic.

Citing “lessons learned from the COVID-19 pandemic and recent supply-chain disruptions,” the **Biden** administration recently announced a $4 billion investment in strengthening regional food systems, including regional processing capacity, which may help small-scale meatpackers like Missouri rancher Kim Wells, who opened up a small, regional USDA-approved meatpacking facility during the height of the pandemic.

An October 2020 survey of 1,000 consumers found that post-pandemic shoppers had shifted toward supporting local farms and producers and were disappointed by the mostly food-giant options available in their local grocery stores.

Ninety-one percent of consumers said it was important to feed their family healthy, fresh food, and 96% said locally grown and produced food is the “freshest, healthiest, and most nutritious food available.”

The pandemic was an “educational moment” for consumers, Jones says, most of whom had never experienced a period of food shortages in their lifetime.

“COVID-19 put a spotlight on where our food comes from and that we can’t just assume it will be available at the store for us in a nice Styrofoam package,” Jones says.

**Uniqueness – T/L**

**Bedoya’s confirmation is likely now – BUT uncertain – opposition to the existing agenda has already pushed vote counts right to the brink of failure – there’s no margin left for error – that’s Moran**

**AND…**

**Hoffman 1-11**-22 (D. Bruce Hoffman, partner at Cleary Gottlieb, practice focuses on antitrust enforcement, former Director of FTC’s Bureau of Competition, JD University of Florida Levin College of Law; and Henry Mostyn, partner at Cleary Gottlieb, practice focuses on EU and UK competition law, BPP Law School – London; “U.S. & EU Antitrust: Developments and Outlook in 2022,” 1-11-2022, https://www.clearygottlieb.com//news-and-insights/publication-listing/us-eu-antitrust-developments-and-outlook-in-2022)

As a result, Commission action in the near future will either involve consensus – such as the study of supply-chain disruptions launched in December 2021, or the recently-filed challenge to the merger of NVIDIA and Arm – or areas in which the Chair and Bureau Directors can act without a vote, such as in issuing Second Requests triggering in-depth reviews of mergers (but actual challenges to mergers or consent decrees will require Commission votes, and thus at least some Republican support).

The President has nominated Alvaro **Bedoya**, a Georgetown law professor and privacy expert, to the Commission; however, his nomination (though supported by all four current FTC commissioners) drew **significant opposition in the Senate** and failed to advance in 2021. The President has just renominated Bedoya, re-starting the confirmation process. While we think it is still **more likely than not** that he **will be confirmed**, it may take several months for the process to play out.

**Currently, pressure on swing Senators tilts in favor of confirmation – BUT it’s only a question of the scope of opposition lobbying**

**Kelly 1-10**-22 (Makena Kelly, policy reporter for The Verge covering net neutrality, data privacy, and antitrust, “The FCC’s still in a stalemate a year into Biden’s presidency,” The Verge, 1-10-2022, https://www.theverge.com/22876628/fcc-biden-ftc-gigi-sohn-alvaro-bedoya-rosenworcel-net-neutrality)

After nearly a year into Joe Biden’s presidency, **new pressure is mounting** on the Senate to **expeditiously confirm** nominations for positions at two of the federal government’s top agencies with control over broadband and data privacy.

In new statements issued on Monday, public interest groups Free Press Action and Fight for the Future called on the Senate Commerce Committee to fill the final seats at the Federal Communications Commission and the **F**ederal **T**rade **C**ommission. Both Gigi Sohn and Alvaro **Bedoya**, for the FCC and **FTC**, respectively, have finished their confirmation hearing processes, but neither nomination has received a final committee vote to set them up for floor confirmation.

“Americans are in desperate need of these consumer protection agencies as their dependence on affordable access to the open Internet has grown during the pandemic,” Fight for the Future said in a statement on Monday. “**Industry insiders** have openly admitted that they are **pushing for** these **delays** **because** it benefits their bottom line, at the expense of the public.”

With open seats at these agencies, the FCC and **FTC** are **unable to press forward** on **any** partisan measures or Democratic **policy priorities**, like net neutrality. Late last year, Jessica Rosenworcel was confirmed as FCC chair, but no votes have been lined up for Sohn, Biden’s pick as the last remaining Democratic commissioner. Democratic FTC Commissioner Rohit Chopra stepped down from the agency after he was confirmed to lead the Consumer Finance Protection Bureau in October, leaving the FTC at a **2-2 deadlock**.

**Biden** renominated Sohn and **Bedoya** on January 4th, setting the nominations up for further consideration by the Senate Commerce Committee. According to Politico on Monday, the committee plans to vote on nominees on January 24th, and the markup may include Sohn and Bedoya, but the final agenda has not been released as of publication.

“There’s no time to waste and so much to get done at the FCC: ensuring the billions being invested in broadband actually reach those who need it most, restoring Net Neutrality and Title II, reckoning with media regulators’ history on race and repairing the damage of the Trump years,” Craig Aaron, Free Press Action co-CEO, said in a Monday statement.

As FCC and FTC nominations saw some movement in the Senate last year, **Rep**ublicans like Sen. Lindsey Graham and The Wall Street Journal editorial board argued that Sohn was a telecom policy extremist.

“Gigi Sohn is a complete political ideologue who has disdain for conservatives. She would be a complete nightmare for the country when it comes to regulating the public airwaves,” Graham said in a tweet thread last November. “I will do everything in my power to **convince colleagues on both sides of the aisle to reject** this extreme nominee.”

So long as every Senate Democrat, including Sen. Joe Manchin (D-WV), votes in favor of both Sohn and **Bedoya**, no Republican support would be necessary to confirm them.

**AT: No Solve Meat Consolidation**

**Group the first three – double-turn soup**

**A fully staffed FTC is necessary and sufficient to solve Big Meat**

**Kelloway 21** (Claire Kelloway, senior reporter and researcher with the Open Markets Institute, primary writer of FoodAndPower.net, former sustainability fellow with Bon Appetit Management Company, BA political science, concentration in political economy and sustainable development, Carleton College, “How Biden can rein in the Big Meat monopoly,” Vox, 2-24-2021, https://www.vox.com/future-perfect/22298043/meat-antitrust-biden-vilsack)

So what can the government actually do to rein in Big Meat?

Well, the good news is there are **already laws on the books** to address **Big Meat**’s manipulation and merger mania. The bad news is we **just haven’t been enforcing them**. A good first step would be to **appoint** bold, creative, and **progressive enforcers** to lead critical antitrust agencies at the DOJ, the **FTC**, and, of course, the Department of Agriculture.

**Their ev assumes just the funding part, which he already did – it’s enforcement that’s key – that’s Moran – AND…**

**Genoways 20** (Ted Genoways, journalist and author, contributing writer at Mother Jones and The New Republic, editor-at-large at Pacific Standard, books include The Chain: Farm, Factory, and the Fate of Our Food, awards include fellowships from the National Endowment for the Arts and the Guggenheim Foundation, MFA University of Virginia, MA English, Texas Tech University, “Beyond Big Meat,” The New Republic, 8-4-2020, https://newrepublic.com/article/158679/beyond-big-meat-coronavirus-pandemic-meatpacking-monopoly)

“The food system we have is not the result of the free market,” Michael Pollan wrote recently in The New York Review of Books. “No, our food system is the product of agricultural and antitrust policies—political choices—that, as has suddenly become plain, stand in urgent need of reform.” Eric Schlosser, writing for The Atlantic, made an even more specific call for “strict antitrust enforcement that will rid the food system of monopoly and monopsony power, ensure competition, and encourage the innovation that free-market forces produce.” By June, that growing chorus of concern grew so loud that the Department of Justice, in a wholly uncharacteristic move, came forward to announce a series of ongoing investigations.

First, Justice officials revealed that the chief executive officer and a former senior vice president at Pilgrim’s Pride, a poultry producer owned by JBS, along with two top executives at Claxton Poultry, had been indicted for an antitrust conspiracy to fix prices. Tyson had agreed to cooperate with that investigation as part of a leniency application. Next, the department issued civil subpoenas to the four biggest beef processors—JBS, Tyson, Cargill, and National Beef—seeking information about possible collusion in that market, as well. According to The Wall Street Journal, JBS and Tyson were also asked to produce documents related to their pork-processing operations, again to investigate possible antitrust violations. With at least four of the Big Six packers currently under federal scrutiny and indictments already coming down, there seems a greater chance now of establishing market equity in the top-heavy meatpacking economy than at any other time in the last century. **Fully enforcing antitrust laws** to **break up** the twenty-first–century **meat trust** would go a long way toward restoring the **resiliency** of **distributed production** and returning to the fair and transparent marketplace that existed for half a century before the era of consolidation.

But the need for reform of the food supply chain is far more broad-ranging than questions of targeted regulatory enforcement. The age of Covid-19 has revealed profound rifts in our culture concerning food production and distribution—rifts that must be bridged by more than purely economic fixes. Policymakers and consumers alike must reflect on how we have come to collectively accept a food system that is largely based on racial and ethnic discrimination. In a country with a legacy of plantation slavery, perhaps this should come as no surprise. But it’s incompatible with the free society that we claim to embrace. During this pandemic, the White House has declared all food system employees—from farm fields to factory floors to grocery aisles to restaurant kitchens—to be essential workers. But if food workers are indeed essential to our national survival, then we owe them a living wage, paid sick leave, and a safe work environment. We can no longer shrug off the meat industry’s high rates of injury, amputation, and illness as the necessary trade-off for cheap hamburgers and chicken nuggets. The Occupational Safety and Health Administration should be allowed full access to packinghouse workers, and the meat inspectors of the USDA, as well as the packinghouse workers themselves, should be granted a louder voice in determining safe line speeds.

Other cultural changes will have to go deeper than policy. Since the beginning of the great consolidation in the 1980s, meatpacking plants across middle America turned to refugees and immigrants to fill these dangerous and low-paid jobs. First, it was refugees from Vietnam, Laos, and Cambodia. Then the industry saw an influx of Mexican immigrants, when NAFTA led to a rapid devaluation of the peso that hit hardest in rural communities across the border. The creation of Immigration and Customs Enforcement (ICE) and a series of high-profile raids in the mid-2000s changed hiring yet again in ways that further diversified—and fractured—the meatpacking workforce. Today, meatpacking workers may be K’iche’-speaking Mayas from the central highlands of Guatemala; Salvadorans fleeing urban gangs; Karen people from Myanmar, many of whom grew up in refugee camps along the Thai border; Somalis, most of whom come from war-torn Mogadishu by way of the Dadaab refugee complex in eastern Kenya; and Yazidi from Iraq and Syria, who served as interpreters for the U.S. military.

Consumers will have to understand that the routine endangerment and abuse of these workers can no longer be the hidden cost of cheap meat. Indeed, if we can escape the stranglehold of the Big Six’s ruthless profit motive, then we can ensure fair treatment for these workers and sustainable profits for a larger group of small packers without increases in the price of food. Farmers, ranchers, and residents of rural communities must recognize that such a change will also bring them fairer livestock contracts and higher prices. They must resist the politics of division and recognize that they have common cause with meatpacking workers, even though they may look different, pray different, or speak a different language. An emergency such as the Covid-19 pandemic should make it clearer than ever that our interests and our fates are interwoven. In a just world, that would mean immediate citizenship for any undocumented immigrants who have put their lives at risk as essential workers during this pandemic. President Trump is fond of saying that this crisis is a war—that he is a wartime president and that frontline workers are warriors. Since the founding of the country, we have granted citizenship to any foreign national willing to fight on our side. If you worked at a meatpacking plant or in a farm field, on a grocery loading dock or in a restaurant kitchen, during this once-in-a-century crisis, seeing that our nation was fed, then you should be assured a share of our national future.

And, finally, as we build a new food system adapted to the demands of the future, we must seek out production methods that are not only equitable but sustainable. **Climate change** not only accelerates under conditions of monopoly food cultivation and processing but also inserts new communities of migrant workers into the food economy. Our current obstacles will only grow more unmanageable if we don’t address them now. It’s time for us to invest seriously in new ways of farming and eating that can allow us to share precious resources and live better together. It’s an admittedly formidable challenge—but it’s possible, if we open our food system to innovation and forward-thinking models of production and distribution. It’s possible if we **break up** the stunting monopolies of **big meat**.

**AT: USDA Solves**

**USDA fails – capture ensures circumvention**

**OCM 20**, Organization for Competitive Markets, 08/24/20, Captured: How Agribusiness Controls Regulatory Agencies and Harms Producers and Consumers, https://competitivemarkets.com/wp-content/uploads/2020/08/Regulatory-Capture-Paper\_Final.pdf

Introduction

When Georgia Governor Sonny Perdue was nominated to be U.S. secretary of agriculture, American family farmers who had believed in President Trump’s promises to “drain the swamp” and protect domestic agriculture felt a surge of disappointment. Secretary Perdue had spent his career in government advocating for and benefiting from the interests of Big Ag. With Perdue at the helm of the U.S. Department of Agriculture (USDA), what checks and balances would exist in the federal government to counteract the consolidation, collusion, and corruption that have become customary in the U.S. agriculture economy?

Thomas Jefferson had foreseen America as a democratic republic of small farmers. Sadly, “we the farmers” now have little or no say in a government that was constituted to represent us. The America that existed as an agrarian utopia of regulated fair-market capitalism in the mind of Jefferson has become a very different America: one where the federal government is neither limited nor limiting, but instead **allows corporations to influence policy**, aided and abetted by **despotic regulators** and **enforcers motivated by self-interest**.

How did the federal government come to support international conglomerates instead of hardworking American farmers? In Congress, the clearest way government supports the interests of the powerful is with the money spent by lobbyists and given to politicians through campaign contributions. In the executive branch, where policy makers are appointed rather than elected, the interests of Big Ag predominate when governmental appointees are “captured” by the industry. Executive branch regulatory capture is the topic of this report.

Secretary Perdue is just one example of regulatory capture, whereby **government officials** tasked with enforcing laws for **all choose to support** the **private interests** of a few. From top to bottom, **USDA** is rife with petty and personal corruption. An April 2019 investigation described a conversation with a USDA official about the Food Safety and Inspection Service (FSIS). The official noted rather straightforwardly that “large meat producers like Cargill, Tyson, Smithfield, Swift (JBS) and Sanderson Farms are often given a ‘pass’ thanks to their high-paid lobbyists.”1 The anonymous whistleblower further characterized USDA as an **old boys club** with a revolving door “between the USDA and FSIS, and the captains of the meat industry.” Through repeated gifts of pro-corporate policy making, **nonenforcement**, and deregulation, the refrain is indisputable: **the USDA advocates for special interests** and ignores ordinary people for financial reasons.

Free-market capitalism relies on government to create a level playing field that encourages entrepreneurship. However, free-market capitalism and what President Reagan called “the magic of the market” cannot function as intended when government enforcers are captured and special interests tilt the playing field away from working people.

The Organization for Competitive Markets (OCM) advocates for the rights of family farmers, and we support fighters like Connie and Jonathan Buttram who want to make a living free from government and industry coercion. Their stories and those of people like them compel action and inspire hope.

The people at the top of the federal government are not an anonymous mass of bureaucrats; they are individuals like Sonny Perdue, who make decisions that have pernicious consequences for people like Connie and Jonathan Buttram. When OCM, and thousands of other groups and individuals, reach out to our representatives so family farmers like the Buttrams can have a fighting chance, we are merely ignored, time and again.

This report describes how the executive branch of the federal government supports policies contrary to the interests of American family farmers by installing “captured” bureaucrats in positions of power.

Section I – Passing Through the Revolving Door

Brink Lindsey and Steven Teles define regulatory capture as “private industries co-opt[ing] governmental power for their own competitive benefit.”2 A quintessential example is “**the revolving door**,” wherein decision makers cycle from government positions to the industries they regulate and back again. Along the way, these individuals adopt attitudes and beliefs that benefit their position in that particular private business, which, of course, they will soon rejoin upon completion of their putatively “public” service. This cycle is all the more insidious for the omnipresent promise of higher pay in the private sector. Hence, there is continuing economic pressure through which personal self-interest morphs through a wink and a nod into the self-interest of the private company. In the wake of such lucrative paydays, family farmers cannot compete for the attention of public officials who favor personal wealth over public service.

**The USDA is more prone to regulatory capture** than many other agencies because “the USDA provides grading, certification and verification services intended to improve agricultural companies’ marketing of a variety of farm products.”3 This makes the agency, and especially certain oversight mechanisms within it, **dependent on the industry** they work with through user fees and a broader mission to promote the agricultural industry. 4 Similarly, there are a limited number of people with the requisite technical skills necessary to hold high-level regulatory jobs, and one way to get such experience is through private industry. The intertwining of USDA with private industry is to some degree inevitable; nevertheless, this does not excuse the brazen self-dealing we explore in the following sections.

**Prefer empirics**

**Brown 21** (Krista Brown, Senior Policy Analyst at the American Economic Liberties Project, former research associate at Open Markets Institute, helped draft amicus briefs in support of FTC’s suit against Qualcomm, BA economics, concentration in mathematics, Colby College; Pat Garofalo, Director of State and Local Policy at AELP; Lucas Kunce, Director of National Security Policy at AELP; Sarah Miller, Executive Director at AELP; Matt Stoller, Director of Research at AELP; Matt Buck, Kalen Pruss, Reed Showalter, and Olivia Webb, Fellows at AELP; “The Courage To Learn: A Retrospective on Antitrust and Competition Policy During the Obama Administration and Framework for a New, Structuralist Approach,” American Economic Liberties Project, January 2021, https://www.economicliberties.us/wp-content/uploads/2021/01/Courage-to-Learn\_12.12.pdf)

However, the USDA caved to industry and congressional pressure at critical moments, stalling and diminishing a promising slate of reforms. At the DOJ, despite powerful rhetoric from its leaders, the final report from its Antitrust Division disavowed much of a role for antitrust enforcement in addressing meatpackers’ and other agribusinesses’ enormous power. The administration eventually passed watered-down PSA rules in 2016 just before leaving office. All the while, DOJ failed to bring any significant cases against agribusiness after collecting ample evidence of illegal and unfair conduct from farmers, quietly closed an investigation into the seed and agrichemical industry, and even filed a legal brief in court supporting Monsanto’s ability to control farmers’ seed use.

**AT: N/L – T/L**

**Plan flips confirmation votes:**

**3 – epistemology – prefer consilience of Kovacic’s expertise as former FTC Chair, principal-agent theory, AND empirical studies**

**Miller 5** (Gary J. Miller, Emeritus Professor of Political Science, Washington University in St. Louis, PhD University of Texas at Austin, “The Political Evolution of Principal-Agent Models,” Annual Review of Political Science, vol.8, 2005, pp.203-225, DOI: 10.1146/annurev.polisci.8.082103.104840)

For **principal-agency theorists**, bureaucratic independence and congressional “dominance” are observationally equivalent as far as monitoring and sanctions are concerned. We should see little of either if bureaucrats are independent; but we should also see little if bureaucratic behavior is shaped by congressionally imposed incentives. Therefore, it is necessary to look beyond monitoring and sanctions to bureaucratic outputs, to determine if they can be shown to vary with congressional preferences. In the case of the Securities and Exchange Commission, Weingast argues that its imposition of deregulation was in response to congressional representation of the interests of large institutional investors. With respect to the Federal Trade Commission (**FTC**), Weingast & Moran (1983) show more **convincingly** that the **ideological preferences** of the **Senate** and the subcommittee chairman (as measured by Americans for Democratic Action scores) were **significantly associated** with the **FTC**’s emphasis over time on consumer-oriented credit (p. 789). In other words, a more conservative Senate led to a less consumer-oriented FTC.

Although neither of these empirical forays could be regarded as the final word on the subject, Weingast’s articles constitute an **enormous contribution** to the **study** of congressional oversight and public bureaucracy by exemplifying **quantitative research** directed at precise questions (e.g., what are the **political** and other **determinants** of bureaucratic outputs?) derived from **rigorous theory**. Almost singlehandedly, these articles **raised the bar for academic research** in the area of bureaucracy. Weingast (1984) offers the “**congressional dominance**” hypothesis: “The mechanisms evolved by Congress over the past one hundred years comprise an ingenious system for control of agencies that involves little direct congressional monitoring of decisions but which nonetheless results in policies desired by Congress” (p. 148).

**AT: Thumper – T/L**

**NO thumpers – deadlock forces restraint – which necessarily prices in ANY and ALL prospective controversies from the existing agenda, because NONE OF IT has actually been enforced yet, which is the whole point**

**Hoffman 1-11**-22 (D. Bruce Hoffman, partner at Cleary Gottlieb, practice focuses on antitrust enforcement, former Director of FTC’s Bureau of Competition, JD University of Florida Levin College of Law; and Henry Mostyn, partner at Cleary Gottlieb, practice focuses on EU and UK competition law, BPP Law School – London; “U.S. & EU Antitrust: Developments and Outlook in 2022,” 1-11-2022, https://www.clearygottlieb.com//news-and-insights/publication-listing/us-eu-antitrust-developments-and-outlook-in-2022)

The **FTC** in **2021** was characterized by staff and leadership turmoil, controversy and at least the **appearance of** a significant **shift in agency priorities** and practices. Initially, under Acting Chair Slaughter, the FTC largely continued its longstanding consensus-driven approach to antitrust, albeit with some aggressive statements on various issues from the Acting Chair and fellow Democratic Commissioner Rohit Chopra. That approach changed substantially with Lina Khan’s ascension to the position of FTC Chair.

Khan, a headliner antitrust progressive most famous for her criticism of Amazon and of the view that antitrust should focus on protecting consumers from higher prices or reduced output, was originally nominated by the President to be a Commissioner; no mention was made of her being Chair. Yet, to the surprise of observers and (as we understand it) much of the Senate, immediately after she was confirmed as a Commissioner the President designated her as Chair – an important distinction, because the FTC Chair controls the day-to-day administration of the FTC. Khan, with a three-Commissioner majority, moved swiftly to alter FTC practices in several areas:

Streamlining the process of adopting trade regulation rules and initiating discussion of several possible rules, notably including unprecedented rules on competition (such as on exclusive contracts, discounts and other widespread contractual practices)

Streamlining procedures for issuing compulsory process and eliminating the normal requirement of Commission votes for process in a wide range of cases

Rescinding longstanding bipartisan FTC guidance on antitrust enforcement to reflect a more regulatory, aggressive philosophy

Withdrawing from the recently adopted Vertical Merger Guidelines, leaving the FTC differently situated from the DOJ and with no clear guidance on vertical mergers.

Interestingly, though, these and other aggressive steps were **not** accompanied by an uptick in **case filings** (either initially under Acting Chair Slaughter or subsequently under Chair Khan); in fact, FTC case filings **declined** from the levels set under the Trump administration.

In any event, following this initial spate of activity, the progressive agenda has been **slowed** by the departure of Commissioner Chopra to serve as Director of the Consumer Financial Protection Bureau. While Commissioner Chopra cast a number of so-called “zombie votes” enabling the Commission to move forward on a limited number of issues after his departure, the Commission now has only four Commissioners, and so **any controversial steps will have to wait** until another Democratic Commissioner is confirmed, since the two Republicans can block new Commission actions they don’t support.

As a result, Commission action in the near future will either involve **consensus** – such as the study of supply-chain disruptions launched in December 2021, or the recently-filed challenge to the merger of NVIDIA and Arm – or areas in which the Chair and Bureau Directors can act without a vote, such as in issuing Second Requests triggering in-depth reviews of mergers (but actual challenges to mergers or consent decrees will require Commission votes, and thus at least some Republican support).

The President has nominated Alvaro Bedoya, a Georgetown law professor and privacy expert, to the Commission; however, his nomination (though supported by all four current FTC commissioners) drew significant opposition in the Senate and failed to advance in 2021. The President has just renominated Bedoya, re-starting the confirmation process. While we think it is still more likely than not that he will be confirmed, it may take several months for the process to play out.

So what will we see from the FTC in **2022**? Initially, enforcement action in the form of consent decrees and litigated cases will likely be **limited to consensus cases, given the 2-2 Commission split**. Chair Khan has used the tools at her disposal to delay the review of some mergers, to launch full Second Request investigations of mergers that on their face don’t appear to raise competition issues and to issue threatening-sounding though legally insubstantial letters to merging firms reminding them that HSR clearance doesn’t mean that the merged firm is immune from antitrust scrutiny. We expect those trends to continue, even if **they don’t result in enforcement action** in the near term. While FTC staff has been subjected to a gag order and barred from public speaking since Chair Khan’s arrival, limiting insight into the FTC’s position and practices, we expect the limited public statements from the FTC to continue pushing for a progressive agenda. This will likely include criticizing large firms, touting the virtues of deconcentrating markets and expressing a general skepticism of mergers.

**If it’s controversial enough with Senate centrists to trigger our link, then it won’t happen, and everyone knows it due to public Commissioner dissents – if it IS going to happen, then it won’t be controversial OR will have been sufficiently watered down through the process of making it past deadlock to ensure it does NOT link – only plan changes that dynamic by fiating through Republican Commissioners’ objections**

**Conley et al 1-19**-22 (Stephen Conley, Associate at Wiley Rein LLP, former Law Clerk at the FCC, JD George Washington University Law School; Duane Pozza, Partner at Wiley Rein LLP, former FTC Assistant Director of the Bureau of Consumer Protection, JD Stanford Law School; Kathleen Scott, Partner at Wiley Rein LLP, JD American University Washington College of Law; “’An Avalanche of Rulemakings’ – The FTC Gears Up for an Active 2022,” Privacy In Focus, JD Supra, 1-19-2022, https://www.jdsupra.com/legalnews/an-avalanche-of-rulemakings-the-ftc-1324181/)

FTC Commissioner Christine Wilson dissented from the Annual Regulatory Plan, arguing that it “extends far beyond” the agency’s routine review of existing rules and that many of the existing rules “should be abolished in any event.”[6] She further characterized the Annual Regulatory Plan as ushering in “an avalanche of rulemakings” and rejected Chair Khan’s depiction of the economy as being “hyper-concentrated.”[7] Indeed, in a subsequent statement made at the agency’s December 16 Open Meeting, Commissioner Wilson referred to the FTC’s 2022 agenda as a “Rule-a-Palooza.”[8] Commissioner Wilson’s dissent **signals** likely **uniform Republican Commissioner opposition** to most of the agency’s **planned rulemakings**, leaving the body in a **2-2** Democrat-Republican **split** on many of the proposals. That said, proposals like the Safeguards Rule SNPRM have drawn some **bipartisan support** and may point to some additional rulemaking even without a fifth Commissioner.

Much of the **FTC’s Expansive Rulemaking Agenda** Likely **Hinges on Confirmation** of a Fifth Commissioner

President Biden originally nominated Alvaro **Bedoya** on September 13, 2021 to fill the FTC Commissioner seat vacated by former Commissioner Rohit Chopra upon his confirmation as Director of the Consumer Financial Protection Bureau on September 30. **Bedoya** is the founding director of the Center on Privacy & Technology at Georgetown Law and previously served as the first Chief Counsel to the U.S. Senate Judiciary Subcommittee on Privacy, Technology and the Law. He faced opposition from Republican senators on the U.S. Senate Committee on Commerce, Science, & Transportation (Committee) during his November 17, 2021 confirmation hearing, but President Biden renominated him to the FTC Commissioner spot on January 4, 2022. He appears likely to be the **swing vote** on many of these **proposed rulemaking** initiatives – **not just whether** they will go forward, **but also** their **scope and ambition** if they do so.

**AT: Thumper – Khan / Overreach Inevitable**

**Perception’s that Khan’s all bark BUT no bite YET – only plan changes perceptions**

**Gold 12-20**-21 (Ashley Gold, tech and policy reporter at Axios, “Six months with Lina Khan's FTC,” Axios, 12-20-2021, https://www.axios.com/lina-khan-ftc-six-months-4a5c4ba6-cef1-4a1f-b1dc-a528b2b41471.html)

Why it matters: As Biden's first year ends, many are **watching Khan's FTC to see whether it really can fundamentally change how the U.S. regulates** big companies and how tech should treat consumers.

Entering the role, the 32-year-old, known for her scholarship in antitrust and competition policy, targeted what she sees as monopolistic behavior in Big Tech and beyond. Under her, the agency re-filed its case accusing Facebook of buying up competitors to maintain dominance.

It sued to block a $40 billion semiconductor chip merger between Nvidia and Arm, arguing it would stifle competing next-generation technologies.

It launched an investigative study into supply change disruptions, targeting retailers like Walmart and Amazon.

It reached a settlement agreement with an ad platform that allegedly violated the Children's Online Privacy Act.

The big picture: Khan's tenure **so far** has **seen more table-setting for future actions** than major high-profile **antitrust cases**.

Those who want to see Big Tech taken to task hope to see Khan bring major cases that would spin off prior acquisitions and block proposed mergers. And the clock is ticking.

"We are really feeling a sense of urgency and are hopeful [Khan] will be doing as much as possible as quickly as possible because of the potential threat of a hostile Republican Congress," Alex Harman, competition policy advocate at Public Citizen, told Axios.

**Khan’s aware of the political risks that our ev identifies and is tactically moderating to preserve PC – that’s Salvino – AND…**

**Brody 10-5** (Ben Brody, senior reporter at Protocol, focusing on tech policy and lobbying, antitrust and privacy, former reporter at Bloomberg News, CNNMoney and AdAge, “The FTC's next privacy move is a dangerous game years in the making,” Protocol, 10-5-2021, https://www.protocol.com/policy/ftc-privacy-rules)

Litigation could tie up any new rules up for years, but **from the commission's perspective** it may be the **lesser evil** as compared to **drawing ire from Congress**. Critics of FTC inaction trace the agency's timidity to the 1980s. At the time, many saw the FTC's attempts to regulate children's advertising as the height of nanny-state **overreach**, in part thanks to a campaign by advertisers. In response to "kidvid," Congress reined in the agency's regulatory powers — and in the process taught generations of **FTC staff** to **tiptoe around lawmakers**.

It's a **cycle** that's **recurred throughout FTC's existence**, and **Khan**, who loves the agency's history, has made clear she's **well aware** of it.

**AND, Bedoya confirmation functionally counterplans uniqueness – he’ll be a moderating influence, solving future overreach**

**Abbott 12-15**-21 (Alden Abbott, Senior Research Fellow at the Mercatus Center at George Mason University, former FTC General Counsel, former adjunct professor at Mason’s Antonin Scalia Law School, JD Harvard Law School, MA economics, Georgetown University, “FTC Statement of Regulatory Priorities: Storm Clouds Are Looming,” Truth on the Market, 12-15-2021, <https://truthonthemarket.com/2021/12/15/ftc-statement-of-regulatory-priorities-storm-clouds-are-looming/>)

I have only scratched the surface of the problems raised by the SRP’s novel rule proposals. Fortunately, **none of the troublesome rulemakings are yet under way**. One may hope that the eventual **confirmation of a fifth commissioner** will lay the groundwork for a **reconsideration** of the wisdom of new and **overly expansive rulemaking** proceedings.