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### 1AC – Dynamism

#### Advantage one is dynamism.

#### Dominant digital platforms gatekeep access to markets by both operating a platform and marketing their own goods on it – only structural prohibitions prevent barriers to entries posed by companies’ structure, not just the scale of their market power.

Khan ’19 [Lina; Chairperson @ Federal Trade Commission, JD @ Yale Law School; “The Separations of Platforms and Commerce,” *Columbia Law Review* 119(4), p. 973-1098; AS]

A handful of digital platforms exert increasing control over key arteries of American commerce and communications. Structuring access to markets, these firms function as gatekeepers for billions of dollars in economic activity. By virtue of setting marketplace rules for the millions of merchants, producers, and developers dependent on their infrastructure, dominant platforms today “function as regulators.”3

As these platforms further concentrate market power, there are rising concerns about their size—usually in reference to the large share that each firm captures of its primary markets.4 Yet an equally important question concerns not the scale of these companies but their structure. One feature dominant digital platforms share is that they have integrated cross business lines such that they both operate a platform and market their own goods and services on it. This structure places dominant platforms in direct competition with some of the businesses that depend on them, creating a conflict of interest that platforms can exploit to further entrench their dominance, thwart competition, and stifle innovation.5 Consider Spotify’s effort to reach users through Apple’s iPhone while Apple sought to promote Apple Music. In 2016, Spotify revealed that Apple had blocked the streaming application from the App Store, “continu[ing] a troubling pattern of behavior by Apple to exclude and diminish the competitiveness of Spotify on iOS and as a rival to Apple Music.”6 Or take the challenge faced by Yelp, Foundem, and scores of online services to reach internet users while Google sought to build out its own competitor offerings.7

In Europe and India, competition authorities have found that Google ranks its own services higher than those offered by rivals, a “search bias” that means anyone competing with Google properties may effectively disappear from Google search results.8 Merchants that rely on Amazon to reach consumers are in a similar bind: Not only must they jostle for placement against Amazon’s own goods, but they also face the constant risk that Amazon will spot their bestselling items and produce them itself.9 Facebook, equipped with technology that lets it detect which rival apps are succeeding, would often give companies a choice: Be acquired by Facebook, or watch it roll out a direct replica.10 Competing with one of these giants on the giant’s own turf is rife with hazards.

Venture capitalists now factor this risk into their investment decisions.11 Indeed, the power of these gatekeeper platforms to steer the fate of countless other firms is described by entrepreneurs and investors as “having a profound impact on innovation in Silicon Valley”12 and “choking off the start-up world.”13 Venture capitalists now discuss a “kill-zone” around digital giants—“areas not worth operating or investing in, since defeat is guaranteed.”14 Discussing how tech platform giants today use their integrated structure to undermine rivals, a product manager who worked for Microsoft leading up to its antitrust suit observed, “It’s what we did at Microsoft.”15

Indeed, the way in which dominant online platforms threaten to undermine competition and distort markets today is not entirely new. At its core, the problem traces to a basic challenge posed by firms that capture control over a critical network or channel of distribution. Regulators and competition authorities have traditionally harnessed a set of tools to ensure that bottleneck facilities do not distort competition. These tools include common carriage, which requires firms to offer customers equal access on equal terms,16 as well as interoperability, which requires networks to maintain an open interface, enabling users to switch between platforms with ease.17 These policies respond, respectively, to problems of discrimination and lock-in.

In digital markets, however, third parties that depend on a platform risk not just discrimination and lock-in but also appropriation. Because dominant platforms monitor with unrivaled precision the business activity of third parties while also competing with them, a platform can harvest insights gleaned from a producer at the producer’s expense. This Article argues that these combined problems of discrimination and information appropriation invite recovering common carriage’s forgotten cousin: structural separations. Structural separations place clear limits on the lines of business in which a firm can engage. Rather than prohibit particular business practices, separations proscribe certain organizational structures. In antitrust, structural remedies are contrasted with behavioral ones: Whereas behavioral remedies seek to prevent firms from engaging in specific types of conduct, structural remedies seek to eliminate the incentives that would make that conduct possible or likely in the first place.18

Structural prohibitions have been a traditional element of American economic regulation. They have been applied as a standard regulatory tool and key antitrust remedy in network industries, often to prohibit a dominant intermediary from competing with the businesses that depend on it to get to market. While common carriage regimes prevent a firm from discriminating—requiring equal service on equal terms—structural prohibitions eliminate one source of the incentive to discriminate. In this way, common carriage and structural separations often functioned as complements in the service of nondiscrimination.

Today, structural separations have largely been abandoned.19 At the same time that lawmakers have significantly weakened or outright eliminated sector-specific regulatory regimes, judicial interpretation of antitrust law has drastically narrowed the forms of vertical conduct and structures that register as anticompetitive. And when antitrust enforcers have targeted these forms of conduct and structures in recent years, they’ve applied remedies that generally (1) fail to target the underlying source of the problem and (2) overwhelm the institutional capacities of the government actors assigned to oversee them.20 Neglecting structural separations results in both substantive harms and institutional misalignments—effects that are especially pronounced in digital markets.

#### Case-by-case adjudication creates slow, ambiguous enforcement and deprives legal participation – regulatory uncertainty substantially disadvantages entrants.

Chopra & Khan ’20 [Rohit; Commissioner @ Federal Trade Commission; and Lina; Chairperson @ Federal Trade Commission, JD @ Yale Law School; “The Case for “Unfair Methods of Competition” Rulemaking,” *The University of Chicago Law Review* *87*(2), p. 357-380; AS]

Antitrust law today is developed exclusively through adjudication. In theory, this case-by-case approach facilitates nuanced and fact-specific analysis of liability and well-tailored remedies. But in practice, the reliance on case-by-case adjudication yields a system of enforcement that generates ambiguity, unduly drains resources from enforcers, and deprives individuals and firms of any real opportunity to democratically participate in the process.

One reason that antitrust adjudication suffers from these shortcomings is that courts analyze most forms of conduct under the “rule of reason” standard. The “rule of reason” involves a broad and open-ended inquiry into the overall competitive effects of particular conduct and asks judges to weigh the circumstances to decide whether the practice at issue violates the antitrust laws. Balancing short-term losses against future predicted gains calls for “speculative, possibly labyrinthine, and unnecessary” analysis and appears to exceed the abilities of even the most capable institutional actors.1 Generalist judges struggle to identify anticompetitive behavior2 and to apply complex economic criteria in consistent ways.3 Indeed, judges themselves have criticized antitrust standards for being highly difficult to administer.4 And if a standard isn’t administrable, it won’t yield predictable results. The dearth of clear standards and rules in antitrust means that market actors face uncertainty and cannot internalize legal norms into their business decisions.5 Moreover, ambiguity deprives market participants and the public of notice about what the law is, thereby undermining due process—a fundamental principle in our legal system.6

Decades ago, former Commissioner Philip Elman observed that case-by-case adjudication “may simply be too slow and cumbersome to produce specific and clear standards adequate to the needs of business~~men~~[people], the private bar, and the government agencies.”7 Relying solely on case-by-case adjudication means that businesses and the public must attempt to extract legal rules from a patchwork of individual court opinions. Because antitrust plaintiffs bring cases in dozens of different courts with hundreds of different generalist judges and juries, simply understanding what the law is can involve piecing together disparate rulings founded on unique sets of facts. All too often, the resulting picture is unclear. This ambiguity is compounded when the Supreme Court assigns to lower courts the task of fleshing out how to structure and apply a standard, potentially delaying clarity and certainty for years or even decades.8

The current approach to antitrust also makes enforcement highly costly and protracted. In 2012, the American Bar Association (ABA) published the report of a task force that sought to “study ways to control the costs of antitrust litigation and enforcement.”9 The task force, the authors explained, was “a response to concerns” about both “the costs imposed on businesses by the American system of antitrust enforcement” and “the length of time required to resolve antitrust issues both in litigation and in enforcement proceedings.”10 Out-of-control costs undermine effective antitrust enforcement by agencies and private litigants, but may advantage actors who profit from anticompetitive practices and can treat litigation as a routine cost of business.

Professor Michael Baye and Former Commissioner Joshua Wright have noted that generalist judges may be ill-equipped to independently analyze and assess evidence presented by economic experts.11 Because determining the legality of most conduct now involves complex economic analysis, courts have effectively “delegate[d] both factfinding and rulemaking to courtroom economists,” making courtroom economics “not just inevitable but often dispositive.”12 In fact, paid expert testimony now is often “the ‘whole game’ in an antitrust dispute.”13

Paid experts are a major expense. Some experts charge over $1,300 an hour, earning more than senior partners at major law firms.14 Over the last decade, expenditures on expert costs by public enforcers have ballooned.15 In a system that incentivizes firms to spend top dollar on economists who can use ever-increasing complexity to spin a favorable tale, the eye-popping costs for economic experts can put the government and new market entrants at a significant disadvantage.16

Another component of the burden is that antitrust trials are extremely slow and prolonged.17 The Supreme Court has criticized antitrust cases for involving “interminable litigation”18 and the “inevitably costly and protracted discovery phase,”19 yielding an antitrust system that is “hopelessly beyond effective judicial supervision.”20 That it can easily take a decade to bring an antitrust case to full judgment means that by the time a judge orders a remedy, market circumstances are likely to have outpaced it.21 The same 2012 ABA report suggested that lengthy, costly litigation may be contributing to reduced government-enforcement efforts over time relative to the expansion of the US economy.22

Lastly, the current approach deprives both the public and market participants of any real opportunity to participate in the creation of substantive antitrust rules.23 The exclusive reliance on case-by-case adjudication leaves broad swaths of market participants watching from the sidelines, lacking an opportunity to contribute their perspective, their analysis, or their expertise, except through one-off amicus briefs.24 Nascent firms and startups are especially likely to be left out—despite the vital role they play in the competition ecosystem—given that they do not comprise a significant portion of the parties represented in litigated matters, and they usually lack the resources to engage in amicus activity. Furthermore future entrants, whose interests should be carefully considered in all aspects of competition law and policy, have no voice.

Firms, entrepreneurs, workers, and consumers across our economy vary wildly in their experiences and perspectives on market conduct. Enforcement and regulation of business conduct can more successfully promote competition when it incorporates more voices and evidence from across the marketplace.

The ambiguity of the laws, the administrative and resource burdens of enforcing them, and the exclusivity of the current process tend to advantage incumbents and suppress market entry. For example, when courts disagree with one another on the legality of particular conduct, new entrants are likely to eschew the practice, since the threat of litigation could prove fatal at an early stage. Incumbents, by contrast, will be more likely to conduct a cost-benefit analysis of engaging in a potentially unlawful practice, since they are likely to have higher tolerance for protracted litigation and deeper pockets to fund it. Continued ambiguity and complexity also create business opportunities for lawyers, economists, and lobbyists, who effectively profit from the lack of clarity

#### FTC rulemaking improves the speed, clarity and certainty of enforcement to level the playing field for market entrants.

Chopra & Khan ’20 [Rohit; Commissioner @ Federal Trade Commission; and Lina; Chairperson @ Federal Trade Commission, JD @ Yale Law School; “The Case for “Unfair Methods of Competition” Rulemaking,” *The University of Chicago Law Review* *87*(2), p. 357-380; AS]

II. THE CASE FOR RULEMAKING UNDER “UNFAIR METHODS OF COMPETITION”

Legislative history is clear that Congress sought to advance competition law outside the courts as well as through them.25 Two decades into enforcement of the federal antitrust laws, Congress was frustrated with the exclusively common law approach to antitrust. In particular, lawmakers worried that the case-by-case approach to enforcement was yielding a body of law that was inconsistent, unpredictable, and unmoored from congressional intent.26 The solution, lawmakers decided, was the creation of a new expert administrative agency: the Federal Trade Commission.

Congress established the FTC to supplement the authority of the Attorney General.27 While both institutions were tasked with enforcing the antitrust laws, lawmakers designed the FTC with two distinct features: (1) delegated authority to interpret and prohibit “unfair methods of competition,” as established by § 5 of the Federal Trade Commission Act28 (FTC Act) and (2) extensive authority to collect confidential business information and conduct industry studies, as established by § 6(b) of the FTC Act.29

By designing the Commission this way, Congress sought to create a regime where the law developed not just through the judiciary but also through an expert agency. Congress envisioned that the Commission’s data collection from market participants would ensure that the agency stayed abreast of evolving business practices and market trends, and that it would use this expertise to establish market-wide standards clarifying what practices constituted an “unfair method of competition,” even as the market evolved. This unique role would complement adjudication pursued by the Attorney General, state attorneys general, and private parties.30 Indeed, Congress expected that federal judges and other policymakers would defer to the Commission on competition matters because it would “serve as an indispensable instrument of information and publicity, as a clearinghouse for the facts by which both the public mind and the managers of great business undertakings should be guided.”31 It would, in other words, be “unusually expert.”32

The Commission, at times, has drawn on its expansive information collection authorities to follow market trends and establish expertise on industry practices. For example, in the 1970s the FTC ordered over 450 of the country’s largest firms to report certain financial information. The Commission used this data to identify uncompetitive areas of the economy and to guide industrywide investigations into potential antitrust violations.33 More recently, the FTC has used this § 6(b) authority to study the business practices of patent assertion entities and data brokers, as well as the efficacy of the FTC’s merger remedies.34

As a whole, however, the Commission has fulfilled its mandate to promote competition by functioning less as an expert agency and more as a generalist enforcer and adjudicator.35 This is not to say the agency lacks expertise; indeed, the Commission’s work with particular markets has provided indispensable insights into the marketplace. But, on competition matters, the agency has rarely used this expertise to affirmatively identify what conduct or practices constitute an “unfair method of competition.” Instead, the Commission has sought to define “unfair methods of competition” on a case-by-case basis.

Former Commissioner Wright and Jan Rybnicek have observed that relying exclusively upon adjudication has “thus far proved incapable of generating any meaningful guidance as to what constitutes an unfair method of competition,” resulting in a “boundless standard.”36 They have described this “failure to identify what precisely comprises an unfair method of competition” as “an unfortunate and persistent black mark on the Commission’s record.”37

We agree that relying solely on adjudication to define the substance of § 5 has generated persistent ambiguity. However, relying on courtroom battles to create precedents that set expectations for the marketplace is not the only vehicle through which the Commission can establish what conduct constitutes an “unfair method of competition.” The Commission has in its arsenal a far more effective tool that would provide greater notice to the marketplace and that is developed through a more transparent and participatory process: rulemaking. Through engaging in rulemaking, the Commission could define “unfair methods of competition” through processes established by the Administrative Procedure Act38 (APA).3

There is an enormous body of literature on the choice between adjudication and rulemaking, and this Essay does not seek to fully address the various trade-offs.40 Instead, our goal is to reflect on the current state of antitrust enforcement and consider ways to address the ambiguity, burdens, and democratic deficiency that we discuss above.

“Rulemaking” often evokes the idea of government imposing some inflexible prescription upon the marketplace. This is not what we are suggesting. As former Commissioner Elman rightly noted, rulemaking can also be related to “standards, guidelines, pointers, criteria, or presumptions.”41 Rules come from courts, legislative bodies, and agencies. While they were not promulgated as agency rules, certain elements of the merger guidelines eventually came to serve as rules once courts adopted them.42 The merger guidelines stipulate the analytical framework that the agencies rely on to enforce the merger law. Agency rulemaking could do the same for “unfair methods of competition.”

We see three major benefits to the FTC engaging in rulemaking under “unfair methods of competition,” even if the conduct could be condemned under other aspects of antitrust laws. As we describe above, the current approach generates ambiguity, is unduly burdensome, and suffers from a democratic participation deficit. Rulemaking can benefit the marketplace and the public on all of these fronts.

First, rulemaking would enable the Commission to issue clear rules to give market participants sufficient notice about what the law is, helping ensure that enforcement is predictable.43 The APA requires agencies engaging in rulemaking to provide the public with adequate notice of a proposed rule. The notice must include the substance of the rule, the legal authority under which the agency has proposed the rule, and the date the rule will come into effect.44 An agency must publish the final rule in the Federal Register at least thirty days before the rule becomes effective.45

These procedural requirements promote clear rules and provide clear notice. As the Supreme Court has stated, a “fundamental principle in our legal system is that laws which regulate persons or entities must give fair notice of conduct that is forbidden or required.”46 Clear rules also help deliver consistent enforcement and predictable results. Reducing ambiguity about what the law is will enable market participants to channel their resources and behavior more productively and will allow market entrants and entrepreneurs to compete on more of a level playing field.

Second, establishing rules could help relieve antitrust enforcement of steep costs and prolonged trials. Identifying ex ante what types of conduct constitute “unfair method[s] of competition” would obviate the need to establish the same exclusively through ex post, case-by-case adjudication. Targeting conduct through rulemaking, rather than adjudication, would likely lessen the burden of expert fees or protracted litigation, potentially saving significant resources on a present-value basis.47

Moreover, establishing a rule through APA rulemaking can be faster than litigating multiple cases on a similar subject matter. For taxpayers and market participants, the present value of net benefits through the promulgation of a clear rule that reduces the need for litigation is higher than pursuing multiple, protracted matters through litigation. At the same time, rulemaking is not so fast that it surprises market participants. Establishing a rule through participatory rulemaking can often be far more efficient. This is particularly important in the context of declining government enforcement relative to economic activity, as documented by the ABA.48

And third, rulemaking would enable the Commission to establish rules through a transparent and participatory process, ensuring that everyone who may be affected by a new rule has the opportunity to weigh in on it, granting the rule greater legitimacy.49 APA procedures require that an agency provide the public with meaningful opportunity to comment on the rule’s content through the submission of written “data, views, or arguments.”50 The agency must then consider and address all submitted comments before issuing the final rule. If an agency adopts a rule without observing these procedures, a court may strike down the rule.51

This process is far more participatory than adjudication. Unlike judges, who are confined to the trial record when developing precedent-setting rules and standards, the Commission can put forth rules after considering a comprehensive set of information and analysis.52 Notably, this would also allow the FTC to draw on its own informational advantage—namely, its ability to collect and aggregate information and to study market trends and industry practices over the long term and outside the context of litigation.53 Drawing on this expertise to develop rules will help antitrust enforcement and policymaking better reflect empirical realities and better keep pace with evolving business practices.

#### There are no neatly bounded ways to capture all dimensions platform power – expanding rulemaking authority for an expert agency allows separations regimes to match market realities.

Khan ’19 [Lina; Chairperson @ Federal Trade Commission, JD @ Yale Law School; “The Separations of Platforms and Commerce,” *Columbia Law Review* 119(4), p. 973-1098; AS]

D. Application: Challenges and Unresolved Questions

Implementing a separations regime presents some first-order questions and challenges. First, how do we define platforms and to which platforms should a separation apply? Second, how does one identify the parameters of the platform, especially when integration provides heightened functionality? Third, what should be the scope of the prohibited activity and how should the prohibition be structured? And fourth, what is the proper institutional mechanism for implementing the separation? This section offers some initial suggestions for how to approach these questions. Arriving at a complete analytical framework for structuring separations in digital markets will require deeper engagement with these issues.

1. Defining Platform. — Offering a clearly bounded definition of “platform” is challenging. Most definitions look to the role that the entity plays in intermediating activity by others. One definition, for example, is “a firm that controls a network, facility, or essential input that those providing a complementary good or service” must “rely on.”635 Another set of definitions focuses on the infrastructure-like role that these firms play, by structuring access to markets or facilitating transactions.636 And some discussions use the terms “network,” “infrastructure,” and “platform” interchangeably.637

Recent studies by policymakers have also settled on the idea that dominant platforms play a unique role that regulators should recognize. In March, the Digital Competition Expert Panel—a panel convened by the U.K. government to study digital markets—issued a report proposing, among other ideas, that dominant platforms that enjoy a “powerful negotiating position” be designated as having a “strategic market status” and be required to abide by a special code of conduct.638 A report commissioned by the European Commission, meanwhile, noted that, by designing marketplace rules that govern millions of users, dominant platforms “function as regulators” that should face a special responsibility to “ensure a level playing field” on their marketplace and “not use [their] rule-setting power to determine the outcome of competition.”639 Given the challenge of offering a bounded definition of “dominant platform,” any definition will likely be under- or over-inclusive. But any definition should seek to capture the degree of market power that the platform enjoys over users.640 How essential is the platform’s infrastructure? To what degree do other businesses depend on the platform to reach users, and what is the cost to businesses of avoiding this platform and using alternative channels? Relevant factors could include: (1) the extent to which the entity serves as a central exchange or marketplace for the transaction of goods and services, including the level of market power that it enjoys in its platform market; (2) the extent to which the entity is essential for downstream productive uses, and whether downstream users have access to viable substitutes for the entity’s services; (3) the extent to which the entity derives value from network effects, and the type of network effects at play; (4) the extent to which the entity serves as infrastructure for customizable applications by independent parties; and (5) the size, scope, scale, and interconnection of the company.

There are no neatly bounded ways to capture these dimensions of platform power. When implementing “maximum separation,” the FCC initially used operating revenue as the criterion for determining which carriers must comply.641 In the context of digital platforms, market share may prove a better proxy than operating revenues, given that it is the platform’s role as a gatekeeper or bottleneck—for which there are no real adequate substitutes—that gives rise to the relevant harms.

The prohibition should be centered on the activities that the platform facilitates as a bottleneck. Since a key goal of the separations regime is to eliminate the conflict of interest that arises when a dominant platform directly competes with the firms using the platform,642 only activity that would place platforms in direct competition in this way would be subject to the prohibition. This would not prevent platforms from integrating into lines of business that do not rely on the platform market. Nor would such a separations regime target conglomeration or vertical integration categorically; it would instead focus on platform entry into markets that creates the ability and incentive to discriminate, to leverage dominance, and to use information collected on firms as customers against them as competitors.

2. Distinguishing Between Platform and Commerce. — Applying separations to digital platforms would likely raise the challenge of identifying what constitute distinct products or services. In Microsoft, for example, the court had to determine whether the operating system and the browser—the two products the government claimed Microsoft had “tied”—should be considered a single integrated system.643 Microsoft argued that bundling new functionality into old products was a basic component of technological evolution.644 A similar issue may arise with digital platforms: Android, for example, could claim that certain apps must be integrated with its operating system in order to provide basic functionality or for technical necessity.

The traditional metric for assessing whether a set of bundled products constitute separate products is consumer demand. In Microsoft, the D.C. Circuit relied on Jefferson Parish’s consumer-demand test to determine whether consumers preferred a choice in browsers.645 Applying a similar inquiry in the platform context could similarly help identify whether integration of distinct functionalities should be viewed as an integrated system or as a platform. Regulators would also have the capacity to determine, over time, whether certain apps or features were necessary for basic functionality and whether the benefits of integration were sufficiently high to offset any potential harms to innovation. There may also be specific apps or functionalities where innovation is less likely to be transformative, and therefore where integration may prove fewer risks. As with earlier regimes, periodic reassessment and revisions would prove necessary to ensure the separation continued to accord with and reflect evolving market realities.

3. Institutional Mechanism and Timing. — A separations regime separating platforms and commerce could be implemented through statute or rulemaking or as antitrust remedies (under existing or new antitrust law). A statute from Congress could also establish the principle of separating platforms from commerce—as was the case with banking— with the specific authority to design and implement separations delegated to an agency. This approach would benefit from having an expert agency design and revisit the separation. Absent new legislation, the FTC could use its Section 5 authority to implement a separations principle through rulemaking.646 Designing separations only through rulemaking would require the agency to create rules of general applicability and— absent a specific congressional mandate—could limit the agency’s ability to structure highly tailored separations. Antitrust remedies would be costlier and take significantly longer, requiring the government or a private party to successfully show anticompetitive conduct and effects stemming from a digital platform’s involvement in multiple markets.

Given the enfeebling of antitrust doctrines that police single-firm anticompetitive conduct—and the judicial requirement that remedies be carefully tailored to competitive harm—this path is likely to be significantly more challenging.647 Previous instances of structural separations offer a few models for structuring these prohibitions. An operational or functional separation requires the firm to create separate divisions within the firm, requiring that a platform wishing to engage in commerce may do so only through a separate and independent affiliate, which the platform may not favor in any manner. A full structural separation, by contrast, requires that the platform activity and commercial activity be undertaken through separate corporations with distinct ownership and management. For example, the functional approach would permit Alphabet to operate Google search and vertical services that produce content so long as the two complementary services are structured as separate affiliates. The second option would prohibit Alphabet from running both the platform service and the complementary service, requiring that one be spun off and run by an independent owner.

It’s not clear that anything short of a full structural separation would be sufficient, especially given the risks of information misappropriation. While running complementary services as affiliates could be accompanied by information firewalls, the efficacy of firewalls requires close monitoring.648 Evidence shows that the antitrust agencies have neglected to fully monitor and enforce conduct remedies in the past.649 Moreover, firewalls may prove especially difficult to monitor in the context of digital platforms, given the heightened information asymmetries between private platform firms and public enforcers. It is possible that the risk of information misappropriation may vary by platform—but dominant platforms should carry the burden of establishing why operating complementary services as affiliates would not be anticompetitive.

Finally, a basic challenge facing regulators and enforcers when dealing with high-tech industries is the role of timing. Because these markets can evolve quickly, market changes can render regulatory interventions obsolete.650 Similarly, the failure to intervene can leave exclusionary conduct unchecked, resulting in path-dependent reductions in innovation. Any subsequent attempt to impose separations should include a built-in review process every two to three years, to ensure that the remedy still matches the market conditions.65

#### Start-up innovation creates the conditions for post-pandemic growth – competition generates a virtuous cycle of innovation and investment that locks in productivity gains.

Manyika ’21 [James; Chair and Director @ McKinsey Global Institute; and Michael Spence; Philip H. Knight Professor and Dean Emeritus @ Stanford University's Graduate School of Business; “A Better Boom: How to Capture the Pandemic's Productivity Potential,” *Foreign Affairs* 100(4), p. 107-117; AS]

Surprising as it may seem, out of the deepest economic crisis since World War II could come a new era of productivity gains and prosperity. Whether that happens will depend largely on the decisions that governments and businesses make as they prepare to exit the pandemic in the coming months. In the short and medium term, the prospects for increased productivity-and prosperity-are encourag2 ing, as the United States and other countries spend heavily on economic recovery and businesses reap the benefits of digitization. But the outlook is less optimistic over the long term, since governments cannot spend indefinitely and consumer and investment spending may not fill the gap.

Governments and businesses must therefore seek to create the conditions for sustained productivity growth and prosperity, in particular by facilitating the diffusion of technological and organizational innovations and bolstering consumer demand. Out of a major global crisis could come a major jolt of productivity growth-but only if policymakers and business leaders make the most of this moment.

THE PRODUCTIVITY PARADOX

The history of productivity growth can be understood as a succession of technological revolutions, from the steam engine to the computer. Each offered the promise of accelerated productivity and economic growth, and each eventually delivered. But there has often been a delay between innovation and adoption, and another between adoption and economic impact. The economist Robert Solow summed up these apparent discrepancies in a 1987 article in The New York Times Book Review, writing, "You can see the computer age everywhere but in the productivity statistics." His formulation became known as "the Solow paradox."

But then came the revolution in information and communication technologies between 1995 and 2005, a decade in which the Solow paradox was temporarily resolved. Widespread adoption of these technologies was accompanied by a simultaneous acceleration in productivity, which grew at an annualized rate of 2.5 percent in the United States, a full percentage point faster than the rate between 1970 and 1995. Companies invested heavily in information and communication technologies and reorganized their operations and managerial practices around them. They did so out of the desire to gain a competitive edge, but also because of relatively robust consumer demand for their products.

Productivity growth accelerated in several sectors as a result, driving growth in the U.S. economy as a whole. This period was characterized by an unusual combination of large spurts in productivity growth in a few big sectors employing many workers, such as retail and wholesale, and even larger productivity growth in smaller sectors, such as those that produced computers and electronic products. In both bi and small sectors, there was a virtuous cycle of employment growth to meet demand and even faster growth in the value of the output from these sectors. The value of outputs across all sectors of the economy grew by 3.4 percent per year between 1995 and 2005, whereas the total number of hours worked grew by only 0.9 percent per year.

But the boom did not last. Between 2005 and 2019, annual productivity growth in the United States fell by more than half, to 1.0 percent. In the aftermath of the 2008 global financial crisis, from 2010 to 2019, it was even lower, at 0.6 percent. Unlike the United States, z European countries had not experienced rapid productivity gains in the 1995-2005 period, but they did experience the postcrisis decline. r Between 2010 and 2019, annual productivity growth fell below one percent in France, Germany, and the United Kingdom.

The Solow paradox was back. After a decade of rapid productivity gains, the information technology revolution had reached a point of diminishing returns. But the next wave of technology-the digitization of processes, big data and analytics, cloud computing, the Internet of Things-was not yet ready to fill the gap. Despite early breakthroughs in image recognition and natural language processing, few firms had begun to make use of artificial intelligence technologies, and digitization was proceeding slowly. We estimated, based on a sector-by sector assessment, that in 2015, the United States had reached only 18 percent of its digital potential and Europe had reached only 12 percent. Moreover, a gap had opened up between the firms that were digital leaders and those that were digital laggards-a gap that other researchers found was correlated with a gap in labor productivity.

This gap in technology adoption was widening at a time of weak consumer demand for goods and services, in large part due to the aftereffects of the financial crisis. Firms scaled back their investments, and fewer new businesses were created. Making matters worse, the share of income that flowed to top earners and the owners of capital increased, while the share that went to labor decreased, further weakening demand.

Across the United States and Europe, the vast majority of sectors experienced declines in productivity growth. Only four percent of all sectors recorded productivity jumps in 2014, compared with an average of 18 percent of sectors that achieved substantial increases in productivity in the previous two decades. Growth in gross value added-a measure of a firm's or a sector's contribution to GDP-declined from 3.4 percent annually between 1995 and 2005 to 1.8 percent between 2005 and 2019. Growth in hours worked remained roughly unchanged, at 0.7 percent, throughout both periods.

These two very different periods of economic activity in the United States reveal much about the underpinnings of productivity growth. It stems first and foremost from the widespread adoption of technological innovations, especially general-purpose technologies such as electricity and the Internet. But it also stems from the managerial innovation and reorganization of functions and tasks that occur when firms adopt new technologies. Both of these processes must spur leaps in productivity growth in many sectors, or at least in a few large ones, so that productivity jumps in the economy as a whole. Finally, adoption and reorganization within and across sectors must be driven by competition, which incentivizes firms to innovate and helps spur technological diffusion.

Not all productivity growth is created equal, however. Productivity growth can be achieved through gains in the volume or value of outputs for a given number of hours worked, or it can come about as a result of a reduction in hours worked for a given output. Often both happen at the same time. But it is when the former exceeds the latter that a virtuous cycle is created in which innovation and investment generate growth in employment and wages, which in turn generates demand for increased (or more valuable) output. This is what happened during the period from 1995 to 2005. When the latter source of productivity growth exceeds the former, however, a vicious cycle results in which firms reduce labor costs faster than they grow the volume or value of their outputs, which in turn puts pressure on employment and incomes.

POST-PANDEMIC POTENTIAL

The pandemic has primed advanced economies for another period of rapid productivity growth. It is too early to say for sure whether such growth will be the product of a virtuous or a vicious cycle, but signs point to the former. Despite uncertainty, stress, and plummeting economic activity in the early days of the covID-19 crisis, many firms boldly deployed and used new general-purpose technology-especially digital technology-in ways that have driven virtuous productivity gains in the past. In October 2020, we surveyed 900 C-suite executives in various sectors and countries and found that many had digitized their business activities 20 to 25 times as fast as they had previously thought possible. Often, this meant shifting their businesses to online channels, since roughly 60 percent of the firms we surveyed experienced a significant increase in customer demand for online goods and services as a result of the pandemic.

Before the pandemic, e-commerce was forecast to account for less than a quarter of all U.S. retail sales by 2024. But during the first two months of the covID-19 crisis, e-commerce's share of retail sales more than doubled, from 16 percent to 33 percent. And that growth did not just reflect brick-and-mortar firms setting up shop online for the first time. Firms that were already highly digitized before the pandemic significantly expanded their online capabilities to meet the surge in demand. They also reorganized their operations, including their logistics, to complement what they were doing digitally-for example, by expanding their direct-to-home delivery capabilities.

Businesses also strove to become more efficient and agile. In Europe and North America, nearly half of the respondents to our survey said that they had reduced their operating expenditure as a share of revenue between December 2019 and December 2020. Two-thirds of senior executives said they had increased investment in automation and artificial intelligence, whether to help warehouse and logistics operations cope with higher e-commerce volumes or to enable manufacturing plants to meet surging demand. Many companies used technology to reduce the physical density of their workplaces or to enable contactless service-for instance, by expanding self-checkout in grocery stores and pharmacies and employing online ordering apps for restaurants and hotels. Other businesses, such as meatpacking and poultry plants, accelerated the deployment of robotics to reduce their need for labor. If there was one lesson from the pandemic, it was that digital capability and resilience go hand in hand.

But even as the arrival of vaccines has made it possible to imagine a return to relative normalcy in parts of the developed world, continued digitization and the adoption of other technological innovations promise to deliver still more productivity gains. The largest of these gains-roughly an additional two percentage points per year-could come in the health-care, construction, information technology, retail, pharmaceutical, and banking sectors. In health care, for instance, accelerating the use of telemedicine beyond the pandemic could drive incremental productivity growth for years. According to one recent U.S. poll, 76 percent of patients expressed interest in using telemedicine in the future, and industry experts project that the services for 20 percent of health-care spending could be delivered virtually-up from 11 percent before the pandemic. Other sectors, including automotive, travel, and logistics, show less-but still substantial-potential for productivity growth as a result of more flexible task scheduling, leaner operations, and smarter procurement.

Overall, these innovations and organizational changes could accelerate productivity growth by around one percentage point per year between now and 2024 in the United States and the six large European economies that we analyzed (France, Germany, Italy, Spain Sweden, and the United Kingdom). This gain would result in a productivity growth rate twice as high as the rate after the 2008 global financial crisis, and in the United States, it would expand per capita GDP by roughly $3,500 by 2024. That would be a stunning outcome, but it will hinge on continued technology adoption by firms and the maintenance of robust demand.

Even more productivity gains could be on the horizon thanks to other advancements. The accelerating revolution in biology, for instance, could transform sectors from health care and agriculture to consumer goods, energy, and materials. Biological innovation has already enabled the rapid development of new vaccines for covID-19. Equally impressive revolutions in energy could make possible the widespread adoption of solar and wind power, especially in light of recent progress toward better (and cheaper) batteries. Artificial intelligence is also advancing rapidly, but is still a long way from being deployed widely across companies and sectors. When and if that happens, the productivity gains could be enormous.

FOLLOW THE DIGITAL LEADER

Future gains in productivity, even those that boost overall growth, are likely to be uneven. We analyzed metrics that have the potential to unleash future productivity growth-such as research-and-development spending, revenue, capital expenditures (including digital expenses), and mergers and acquisitions-and found that especially in the United States, a small number of large superstar firms accounted for a disproportionately large share of the activity in all these categories. From the third quarter of 2019 to the third quarter of 2020, U.S. superstars (defined as the top ten percent of firms by profit) saw much shallower declines in capital expenditures and revenue than did other companies. During the same period, U.S. superstars spent $2.6 billion more on R & D than they did the previous year, while all other firms spent just $1.4 billion more.

If this investment, innovation, and technology adoption gap between superstars and the rest of the large firms and smaller, less profitable firms persists, any post-pandemic acceleration in productivity growth could fall short of its potential. Small and mediumsized enterprises have been hit disproportionately hard by the covID-19 crisis. As a result, many of them are unable to make big investments in future productivity and are therefore liable to fall even further behind the superstars. This is what happened in the aftermath of the 2008 global financial crisis, when only a minority of companies achieved productivity growth.

But there is room for cautious optimism about the ability of nonsuperstars to close some of the gap. Before the pandemic, the superstars tended to be highly digitized and innovative in their managerial approaches, as well as more profitable and resilient. They were therefore better placed to weather and even take advantage of the shock. But as the hardest-hit firms and sectors recover, and as early digital adaptors demonstrate the enormous potential of these technologies, many of the digital laggards could begin to catch up. Indeed, in another survey of executives we conducted in December 2020, about 75 percent of respondents in North America and Europe said they expected investment in new technologies to accelerate substantially between 2020 and 2024, up from 55 percent between 2014 and 2019. This expected uptick was similar across firm sizes.

Another reason for optimism is that in 2020, a year that saw the darkest economic days of the pandemic, 24 percent more new businesses were created in the United States than in 2019. Europe lagged behind the United States on this metric, with new business creation staying roughly flat in 2020 in France, Germany, and the United Kingdom and declining by more than 15 percent in Italy and Spain. If the American increase in business dynamism persists, however, it should contribute to more productivity growth.

Investment, innovation, and technology adoption are only one-half of the virtuous cycle of productivity growth, however. The other half is demand for the expanded output that results-in other words, income growth from increased productivity has to flow to people who will spend that additional money. In the short term, the outlook for demand is good, especially for countries that have made progress toward vaccinating their populations and could be among the first to open up their economies. Pent-up demand and savings from the pandemic could be unleashed all at once, resulting in a strong initial bounce in demand led by consumers. In the United States, President Joe Biden's $1.9 trillion economic support bill should push demand even higher.

In the medium term, the outlook for demand is also relatively solid, although it will depend on the size, deployment, and longevity of government spending. In the United States, Biden now has set his sights on a large infrastructure package. As his administration shifts its focus from economic relief to investment in productive areas, it could also increase productivity growth by raising demand to match potential supply, creating a high-pressure economy, that is, one with low unemployment and high growth. The outlook in continental Europe, where large-scale government economic support is harder to coordinate, is less certain. Nonetheless, the EU has put in place an unprecedented plan totaling some $900 billion to boost investment in the digital and green energy transitions.

But government spending on this scale will likely be time-limited, making the long-term outlook for demand less rosy. Moreover, long neglected problems, including the falling share of firms' income going to workers, rising inequality, and the long-term decline in private investment, could drag down demand. Roughly 60 percent of the postpandemic productivity gains that we estimate could come from innovations and organizational restructuring-the one percentage point of acceleration per year between now and 2024-would stem from firm-level measures, such as automation, designed to cut labor and other business costs. Unless firms do more to boost the volume or value of their output and help workers transition by acquiring new skills, the drive for efficiency will risk generating productivity gains through a vicious, rather than a virtuous, cycle, undermining wages and jobs and weakening consumption-driven demand and investment.

A NEW AGE OF DYNAMISM?

What can businesses and governments do to capitalize on the positive short- and medium-term outlook for productivity and to improve the long-term outlook? First, they should work to speed up technology adoption and managerial innovation, helping these changes spread within and across sectors. As the recovery begins, firms that have until recently been focused on crisis management and survival should follow the lead of superstar firms by investing in technology and reorganization. The superstars can assist in this process by supporting their broader ecosystems, in particular by doing business with smaller firms that offer complementary products and services. Governments can support the process, as well, by investing in research and development.

Policymakers should also seek to strengthen competition and business dynamism. In a healthy economy, the firms that add the most value prosper and grow, while the firms that add the least value shrink or disappear: so-called creative destruction. Policymakers can revive and reinforce this natural sorting process by revising competition rules, bankruptcy procedures, and product and labor-market regulations.

#### Incremental innovation by incumbents make markets less dynamic and means ROI will soon equate the cost of capital – the plan ignites a gale of creative destruction to induce drastic innovation.

Rizzo ’21 [Andrea Minuto; Head of International Affairs @ Italian Competition Authority; “Digital Mergers: Evidence from the Venture Capital Industry Suggests That Antitrust Intervention Might Be Needed,” *Journal of European Competition Law & Practice* 12(1); AS]

In recent years, a debate about the possible existence of a kill zone around technology incumbents has gone beyond venture capital circles to involve a broader audience.33 In the kill zone, incumbents allegedly have both the ability and the incentive to foreclose promising potential competitors. Their position allows them to collect large amounts of data and to identify emerging trends early and to react to them, whether by adopting aggressive exclusionary practices to protect their core market or by pre-emptive acquisitions of innovative start-ups at generous multiples.34 Exclusionary conduct and acquisitions may actually be complementary strategies, rather than substitutive ones, as the former may allow the incumbent to reduce the acquisition price.35

Despite the growing concern that the possible existence of a kill zone might negatively impact innovation, the venture capital industry itself has diverse views about the need to increase antitrust scrutiny against large digital incumbents changing the current approach to M&As. In particular, among the venture capitalists that have actively engaged with US antitrust enforcers36, even those that acknowledge the existence of a problem at the same time express their fears for the possible unintended consequences of changes introduced with the best of intentions.

Tackling incentives to innovate in the digital sector represents a multifaceted phenomenon, where the opposing sides are nevertheless part of the same coin. On one hand, venture capital has so far greatly contributed to the transformation of high-risk start-ups into fully fledged independent companies, participating in the creation of the most valuable public companies globally. Moreover, start-ups benefit in many ways from the ecosystems created by large technology incumbents, among others, by using their platforms as effective distribution channels.

Furthermore, the incumbents might simply offer a better product or service. On the other hand, however, there seems to be evidence, on the investment side, highlighting a possible reduction of venture-backed start-ups operating in the same space where digital incumbents are active. As stated during these debates ‘funds have a limited size and they have to allocate capital and they would much rather pursue a market that has tailwinds behind it as opposed to a market that has matured and that has deep entrenched incumbents’.37 In markets dominated by incumbents, ‘(... ) start-ups building superior products (... ) may also find it difficult to secure VC investment’.38

In addition, some venture capitalists have expressed their views that competition to digital incumbents might likely arise from adjacent markets. A ‘viral’ success in a separate vertical could, as it grows, spill into the core market of a dominant player. These adjacent markets might be an area where antitrust agencies could focus more.

Some of the evidence described in the previous section is consistent with the existence of reduced first-time venture-backed funding in markets dominated by digital incumbents. Despite the evidence still being limited, it nevertheless provides suggestive food for thought and should trigger more detailed research on this complex topic. First of all, the existence and the magnitude of this reduction have to be further verified, for example, through a precise identification of the companies actually competing in the same space of digital incumbents and their evolution. The second step should then verify the existence of a causal link between the alleged aggressive behaviour of the incumbents in the kill zone and the reduction of venture capital financings, especially in the early stages of start-ups.

This reduction might, indeed, not necessarily pertain to the antitrust domain as it could stem from changing requirements of start-ups themselves as their technological and commercial needs evolve. The widespread ‘blitzscaling’ 39 strategy—where start-ups enter a digital niche with a narrow focus then gradually expanding—has been made possible by developments—such as the advent of smartphones, social media and cloud computing40—that allow for global reach and scalability41 at almost no initial technological cost, while marketing and human capital budgets may be on the rise at successive stages of the start-ups’ development.42

Moreover, changes have taken place also in the investment industry landscape through an expansion of the types of capital provided. Among others, non-traditional newer investors and sovereign wealth funds have invested in later-stage companies.43 Lastly, as for the exits through a sale, generous acquisitions might, as well, reflect prospective efficiencies deriving from the synergies between the acquirer and the acquired start-up.

However, the evidence thus far collected does suggest that current digital incumbents face very little threat of entry. Competition for the market dynamics are not necessarily symptomatic of the presence of the exploitation of market power, provided that incumbents still face, actual or potential, competitive pressures and could be substituted by a more efficient rival.44 What is needed is not just incremental innovation, but the drastic innovation that makes market leadership highly contestable. This is especially true for technology markets, where, as stated by Google itself, ‘changes tend to be revolutionary, not evolutionary’.45

Some recent studies and antitrust agency reports suggest that digital markets are becoming progressively less dynamic. Among others, the UK’s Digital Competition Expert Panel (UK Report46) observes that competition for the market does not appear to be able to solve competition issues linked to winner-take-all outcomes, as the next technological revolution is likely to focus on data that existing firms control to a large extent and that successful new entrants are generally acquired by incumbents. Moreover, Organisation for Economic Co-operation and Development (OECD) research suggests that, in digital-intensive sectors, mark-ups are increasingly higher47 while the decline in business dynamism occurs faster than in other sectors of the economy.48

As highlighted by the Stigler report49, key players in the digital industry remained the same over the last two technology waves, staying dominant through the shift to mobile and the rise of artificial intelligence, without significant impact on market share or profit margins.

Lastly, worrying evidence emerges also from the application of profitability analysis to digital incumbents. High profits substantially and persistently above the cost of capital 50 could signal that the market is not functioning properly, as in the long term, return on investment should equal the cost of capital. In that regard, the UK’s Competition and Markets Authority (CMA) has found, in the context of the sector enquiry into online platforms and digital advertising51, that the return on capital employed (ROCE) of Google and Facebook has been well above any reasonable estimate of a competitive benchmark for many years. In 2018, the estimated cost of capital for both Google and Facebook was around 9%, compared to actual returns on capital of over 40% for Google and around 50% for Facebook. Even though these results have to be interpreted with caution52, they seem to indicate that digital platforms are not facing the threat of entry and this evidence is consistent with the actual exploitation of market power.

Schumpeter 53 highlighted the prospect of new competition and innovation as incessantly playing a key role in fostering dynamic competition and economic efficiency. The evidence so far described may indicate that this impulse for creative destruction is fading in digital market.

#### Slow growth causes extinction.

Oppenheimer ’21 [Michael; Clinical Professor in Center for Global Affairs @ New York University, Senior Consulting Fellow @ Scenario Planning at the International Institute for Strategic Studies, Former Executive Vice President @ The Futures Group, Member @ Council on Foreign Relations, Member in the Foreign Policy Roundtable @ Carnegie Council on Ethics and International Affairs, Member @ The American Council on Germany; “The Turbulent Future of International Relations,” in *The Future of Global Affairs: Managing Discontinuity, Disruption and Destruction*, p. 23-43]

Four structural forces will shape the future of International Relations: globalization (but without liberal rules, institutions, and leadership)1; multipolarity (the end of American hegemony and wider distribution of power among states and non-states2); the strengthening of distinctive, national and subnational identities, as persistent cultural differences are accentuated by the disruptive effects of Western style globalization (what Samuel Huntington called the “non-westernization of IR”3); and secular economic stagnation, a product of longer term global decline in birth rates combined with aging populations.4 These structural forces do not determine everything. Environmental events, global health challenges, internal political developments, policy mistakes, technology breakthroughs or failures, will intersect with structure to define our future. But these four structural forces will impact the way states behave, in the capacity of great powers to manage their differences, and to act collectively to settle, rather than exploit, the inevitable shocks of the next decade.

Some of these structural forces could be managed to promote prosperity and avoid war. Multipolarity (inherently more prone to conflict than other configurations of power, given coordination problems)5 plus globalization can work in a world of prosperity, convergent values, and effective conflict management. The Congress of Vienna system achieved relative peace in Europe over a hundred-year period through informal cooperation among multiple states sharing a fear of populist revolution. It ended decisively in 1914. Contemporary neoliberal institutionalists, such as John Ikenberry, accept multipolarity as our likely future, but are confident that globalization with liberal characteristics can be sustained without American hegemony, arguing that liberal values and practices have been fully accepted by states, global institutions, and private actors as imperative for growth and political legitimacy.6 Divergent values plus multipolarity can work, though at significantly lower levels of economic growth-in an autarchic world of isolated units, a world envisioned by the advocates of decoupling, including the current American president.7 Divergent values plus globalization can be managed by hegemonic power, exemplified by the decade of the 1990s, when the Washington Consensus, imposed by American leverage exerted through the IMF and other U.S. dominated institutions, overrode national differences, but with real costs to those states undergoing “structural adjustment programs,”8 and ultimately at the cost of global growth, as states—especially in Asia—increased their savings to self insure against future financial crises.9

But all four forces operating simultaneously will produce a future of increasing internal polarization and cross border conflict, diminished economic growth and poverty alleviation, weakened global institutions and norms of behavior, and reduced collective capacity to confront emerging challenges of global warming, accelerating technology change, nuclear weapons innovation and proliferation. As in any effective scenario, this future is clearly visible to any keen observer. We have only to abolish wishful thinking and believe our own eyes.10

Secular Stagnation

This unbrave new world has been emerging for some time, as US power has declined relative to other states, especially China, global liberalism has failed to deliver on its promises, and totalitarian capitalism has proven effective in leveraging globalization for economic growth and political legitimacy while exploiting technology and the state’s coercive powers to maintain internal political control. But this new era was jumpstarted by the world financial crisis of 2007, which revealed the bankruptcy of unregulated market capitalism, weakened faith in US leadership, exacerbated economic deprivation and inequality around the world, ignited growing populism, and undermined international liberal institutions. The skewed distribution of wealth experienced in most developed countries, politically tolerated in periods of growth, became intolerable as growth rates declined. A combination of aging populations, accelerating technology, and global populism/nationalism promises to make this growth decline very difficult to reverse. What Larry Summers and other international political economists have come to call “secular stagnation” increases the likelihood that illiberal globalization, multipolarity, and rising nationalism will define our future. Summers11 has argued that the world is entering a long period of diminishing economic growth. He suggests that secular stagnation “may be the defining macroeconomic challenge of our times.” Julius Probst, in his recent assessment of Summers’ ideas, explains:

…rich countries are ageing as birth rates decline and people live longer. This has pushed down real interest rates because investors think these trends will mean they will make lower returns from investing in future, making them more willing to accept a lower return on government debt as a result.

Other factors that make investors similarly pessimistic include rising global inequality and the slowdown in productivity growth…

This decline in real interest rates matters because economists believe that to overcome an economic downturn, a central bank must drive down the real interest rate to a certain level to encourage more spending and investment… Because real interest rates are so low, Summers and his supporters believe that the rate required to reach full employment is so far into negative territory that it is effectively impossible.

…in the long run, more immigration might be a vital part of curing secular stagnation. Summers also heavily prescribes increased government spending, arguing that it might actually be more prudent than cutting back – especially if the money is spent on infrastructure, education and research and development.

Of course, governments in Europe and the US are instead trying to shut their doors to migrants. And austerity policies have taken their toll on infrastructure and public research. This looks set to ensure that the next recession will be particularly nasty when it comes… Unless governments change course radically, we could be in for a sobering period ahead.12

The rise of nationalism/populism is both cause and effect of this economic outlook. Lower growth will make every aspect of the liberal order more difficult to resuscitate post-Trump. Domestic politics will become more polarized and dysfunctional, as competition for diminishing resources intensifies. International collaboration, ad hoc or through institutions, will become politically toxic. Protectionism, in its multiple forms, will make economic recovery from “secular stagnation” a heavy lift, and the liberal hegemonic leadership and strong institutions that limited the damage of previous downturns, will be unavailable. A clear demonstration of this negative feedback loop is the economic damage being inflicted on the world by Trump’s trade war with China, which— despite the so-called phase one agreement—has predictably escalated from negotiating tactic to imbedded reality, with no end in sight. In a world already suffering from inadequate investment, the uncertainties generated by this confrontation will further curb the investments essential for future growth. Another demonstration of the intersection of structural forces is how populist-motivated controls on immigration (always a weakness in the hyper-globalization narrative) deprives developed countries of Summers’ recommended policy response to secular stagnation, which in a more open world would be a win-win for rich and poor countries alike, increasing wage rates and remittance revenues for the developing countries, replenishing the labor supply for rich countries experiencing low birth rates.

Illiberal Globalization

Economic weakness and rising nationalism (along with multipolarity) will not end globalization, but will profoundly alter its character and greatly reduce its economic and political benefits. Liberal global institutions, under American hegemony, have served multiple purposes, enabling states to improve the quality of international relations and more fully satisfy the needs of their citizens, and provide companies with the legal and institutional stability necessary to manage the inherent risks of global investment. But under present and future conditions these institutions will become the battlegrounds—and the victims—of geopolitical competition. The Trump Administration’s frontal attack on multilateralism is but the final nail in the coffin of the Bretton Woods system in trade and finance, which has been in slow but accelerating decline since the end of the Cold War. Future American leadership may embrace renewed collaboration in global trade and finance, macroeconomic management, environmental sustainability and the like, but repairing the damage requires the heroic assumption that America’s own identity has not been fundamentally altered by the Trump era (four years or eight matters here), and by the internal and global forces that enabled his rise. The fact will remain that a sizeable portion of the American electorate, and a monolithically proTrump Republican Party, is committed to an illiberal future. And even if the effects are transitory, the causes of weakening global collaboration are structural, not subject to the efforts of some hypothetical future US liberal leadership. It is clear that the US has lost respect among its rivals, and trust among its allies. While its economic and military capacity is still greatly superior to all others, its political dysfunction has diminished its ability to convert this wealth into effective power.13 It will furthermore operate in a future system of diffusing material power, diverging economic and political governance approaches, and rising nationalism. Trump has promoted these forces, but did not invent them, and future US Administrations will struggle to cope with them.

What will illiberal globalization look like? Consider recent events. The instruments of globalization have been weaponized by strong states in pursuit of their geopolitical objectives. This has turned the liberal argument on behalf of globalization on its head. Instead of interdependence as an unstoppable force pushing states toward collaboration and convergence around market-friendly domestic policies, states are exploiting interdependence to inflict harm on their adversaries, and even on their allies. The increasing interaction across national boundaries that globalization entails, now produces not harmonization and cooperation, but friction and escalating trade and investment disputes.14 The Trump Administration is in the lead here, but it is not alone. Trade and investment friction with China is the most obvious and damaging example, precipitated by China’s long failure to conform to the World Trade Organization (WTO) principles, now escalated by President Trump into a trade and currency war disturbingly reminiscent of the 1930s that Bretton Woods was designed to prevent. Financial sanctions against Iran, in violation of US obligations in the Joint Comprehensive Plan Of Action (JCPOA), is another example of the rule of law succumbing to geopolitical competition. Though more mercantilist in intent than geopolitical, US tariffs on steel and aluminum, and their threatened use in automotives, aimed at the EU, Canada, and Japan,15 are equally destructive of the liberal system and of future economic growth, imposed as they are by the author of that system, and will spread to others. And indeed, Japan has used export controls in its escalating conflict with South Korea16 (as did China in imposing controls on rare earth,17 and as the US has done as part of its trade war with China). Inward foreign direct investment restrictions are spreading. The vitality of the WTO is being sapped by its inability to complete the Doha Round, by the proliferation of bilateral and regional agreements, and now by the Trump Administration’s hold on appointments to WTO judicial panels. It should not surprise anyone if, during a second term, Trump formally withdrew the US from the WTO. At a minimum it will become a “dead letter regime.”18

As such measures gain traction, it will become clear to states—and to companies—that a global trading system more responsive to raw power than to law entails escalating risk and diminishing benefits. This will be the end of economic globalization, and its many benefits, as we know it. It represents nothing less than the subordination of economic globalization, a system which many thought obeyed its own logic, to an international politics of zero-sum power competition among multiple actors with divergent interests and values. The costs will be significant: Bloomberg Economics estimates that the cost in lost US GDP in 2019- dollar terms from the trade war with China has reached $134 billion to date and will rise to a total of $316 billion by the end of 2020.19

Economically, the just-in-time, maximally efficient world of global supply chains, driving down costs, incentivizing innovation, spreading investment, integrating new countries and populations into the global system, is being Balkanized. Bilateral and regional deals are proliferating, while global, nondiscriminatory trade agreements are at an end. Economies of scale will shrink, incentivizing less investment, increasing costs and prices, compromising growth, marginalizing countries whose growth and poverty reduction depended on participation in global supply chains. A world already suffering from excess savings (in the corporate sector, among mostly Asian countries) will respond to heightened risk and uncertainty with further retrenchment. The problem is perfectly captured by Tim Boyle, CEO of Columbia Sportswear, whose supply chain runs through China, reacting to yet another ratcheting up of US tariffs on Chinese imports, most recently on consumer goods:

We move stuff around to take advantage of inexpensive labor. That’s why we’re in Bangladesh. That’s why we’re looking at Africa. We’re putting investment capital to work, to get a return for our shareholders. So, when we make a wager on investment, this is not Vegas. We have to have a reasonable expectation we can get a return. That’s predicated on the rule of law: where can we expect the laws to be enforced, and for the foreseeable future, the rules will be in place? That’s what America used to be.20

The international political effects will be equally damaging. The four structural forces act on each other to produce the more dangerous, less prosperous world projected here. Illiberal globalization represents geopolitical conflict by (at first) physically non-kinetic means. It arises from intensifying competition among powerful states with divergent interests and identities, but in its effects drives down growth and fuels increased nationalism/populism, which further contributes to conflict. Twenty-first-century protectionism represents bottom-up forces arising from economic disruption. But it is also a top-down phenomenon, representing a strategic effort by political leadership to reduce the constraints of interdependence on freedom of geopolitical action, in effect a precursor and enabler of war. This is the disturbing hypothesis of Daniel Drezner, argued in an important May 2019 piece in Reason, titled “Will Today’s Global Trade Wars Lead to World War Three,”21 which examines the preWorld War I period of heightened trade conflict, its contribution to the disaster that followed, and its parallels to the present:

Before the First World War started, powers great and small took a variety of steps to thwart the globalization of the 19th century. Each of these steps made it easier for the key combatants to conceive of a general war.

We are beginning to see a similar approach to the globalization of the 21st century. One by one, the economic constraints on military aggression are eroding. And too many have forgotten—or never knew—how this played out a century ago.

…In many ways, 19th century globalization was a victim of its own success. Reduced tariffs and transport costs flooded Europe with inexpensive grains from Russia and the United States. The incomes of landowners in these countries suffered a serious hit, and the Long Depression that ran from 1873 until 1896 generated pressure on European governments to protect against cheap imports.

…The primary lesson to draw from the years before 1914 is not that economic interdependence was a weak constraint on military conflict. It is that, even in a globalized economy, governments can take protectionist actions to reduce their interdependence in anticipation of future wars.

In retrospect, the 30 years of tariff hikes, trade wars, and currency conflicts that preceded 1914 were harbingers of the devastation to come. European governments did not necessarily want to ignite a war among the great powers. By reducing their interdependence, however, they made that option conceivable.

…the backlash to globalization that preceded the Great War seems to be reprised in the current moment. Indeed, there are ways in which the current moment is scarier than the pre-1914 era. Back then, the world’s hegemon, the United Kingdom, acted as a brake on economic closure. In 2019, the United States is the protectionist with its foot on the accelerator. The constraints of Sino-American interdependence—what economist Larry Summers once called “the financial balance of terror”—no longer look so binding. And there are far too many hot spots—the Korean peninsula, the South China Sea, Taiwan—where the kindling seems awfully dry.

Multipolarity

We can define multipolarity as a wide distribution of power among multiple independent states. Exact equivalence of material power is not implied. What is required is the possession by several states of the capacity to coerce others to act in ways they would otherwise not, through kinetic or other means (economic sanctions, political manipulation, denial of access to essential resources, etc.). Such a distribution of power presents inherently graver challenges to peace and stability than do unipolar or bipolar power configurations,22 though of course none are safe or permanent. In brief, the greater the number of consequential actors, the greater the challenge of coordinating actions to avoid, manage, or de-escalate conflicts. Multipolarity also entails a greater potential for sudden changes in the balance of power, as one state may defect to another coalition or opt out, and as a result, the greater the degree of uncertainty experienced by all states, and the greater the plausibility of downside assumptions about the intentions and capabilities of one’s adversaries. This psychology, always present in international politics but particularly powerful in multipolarity, heightens the potential for escalation of minor conflicts, and of states launching preventive or preemptive wars. In multipolarity, states are always on edge, entertaining worst-case scenarios about actual and potential enemies, and acting on these fears—expanding their armies, introducing new weapon systems, altering doctrine to relax constraints on the use of force—in ways that reinforce the worst fears of others.

The risks inherent in multipolarity are heightened by the attendant weakening of global institutions. Even in a state-centric system, such institutions can facilitate communication and transparency, helping states to manage conflicts by reducing the potential for misperception and escalation toward war. But, as Waheguru Pal Singh Sidhu argues in his chapter on the United Nations, the influence of multilateral institutions as agent and actor is clearly in decline, a result of bottom-up populist/nationalist pressures experienced in many countries, as well as the coordination problems that increase in a system of multiple great powers. As conflict resolution institutions atrophy, great powers will find themselves in “security dilemmas”23 in which verification of a rival’s intentions is unavailable, and worst-case assumptions fill the gap created by uncertainty. And the supply of conflicts will expand as a result of growing nationalism and populism, which are premised on hostility, paranoia, and isolation, with governments seeking political legitimacy through external conflict, producing a siege mentality that deliberately cuts off communication with other states.

Finally, the transition from unipolarity (roughly 1989–2007) to multipolarity is unregulated and hazardous, as the existing superpower fears and resists challenges to its primacy from a rising power or powers, while the rising power entertains new ambitions as entitlements now within its reach. Such a “power transition” and its dangers were identified by Thucydides in explaining the Peloponnesian Wars,24 by Organski (the “rear-end collision”)25 during the Cold War, and recently repopularized and brought up to date by Graham Allison in predicting conflict between the US and China.26

A useful, and consequential illustration of the inherent challenge of conflict management during a power transition toward multipolarity, is the weakening of the arms control regime negotiated by the US and the Soviet Union during the Cold War. Despite the existential, global conflict between two nuclear armed superpowers embracing diametrically opposed world views and operating in economic isolation from each other, the two managed to avoid worst-case outcomes. They accomplished this in part by institutionalizing verifiable limits on testing and deployment of both strategic and intermediate-range nuclear missiles. Yet as diplomatically and technically challenging as these achievements were, the introduction of a third great power, China, into this twocountry calculus has proven to be a deal breaker. Unconstrained by these bilateral agreements, China has been free to build up its capability, and has taken full advantage in ramping up production and deployment of intermediate-range ground-launched cruise missiles, thus challenging the US ability to credibly guarantee the security of its allies in Asia, and greatly increasing the costs of maintaining its Asian regional hegemony. As a result, the Intermediate Nuclear Force treaty is effectively dead, and the New Start Treaty, covering strategic missiles, is due to expire next year, with no indication of any US–Russian consensus to extend it. The US has with logic indicated its interest in making these agreements trilateral; but China, with its growing power and ambition, has also logically rejected these overtures. Thus, all three great powers are entering a period of nuclear weapons competition unconstrained by the major Cold War arms control regimes. In a period of rapid advances in technology and worsening great power relations, the nuclear competition will be a defining characteristic of the next decade and beyond. This dynamic will also complicate nuclear nonproliferation efforts, as both the demand for nuclear weapons (a consequence of rising regional and global insecurity), and supply of nuclear materials and technology (a result of the weakening of the nonproliferation regime and deteriorating great power relations) will increase.

Will deterrence prevent war in a world of several nuclear weapons states, (the current nuclear powers plus South Korea, Iran, Saudi Arabia, Japan, Turkey), as it helped to do during the bipolar Cold War? Some neorealist observers view nuclear weapons proliferation as stabilizing, extending the balance of terror, and the imperative of restraint, to new nuclear weapons states with much to fight over (Saudi Arabia and Iran, for example).27 Others,28 examining issues of command and control of nuclear weapons deployment and use by newly acquiring states, asymmetries in doctrines, force structures, and capabilities between rivals, the perils of variable rates in transition to weapons deployment, problems of communication between states with deep mutual grievances, the heightened risk of transfer of such weapons to non-state actors, have grave doubts about the safety of a multipolar, nuclear-armed world.29 We can at least conclude that prudence dictates heightened efforts to slow the pace of proliferation, while realism requires that we face a proliferated future with eyes wide open.

The current distribution of power is not perfectly multipolar. The US still commands the world’s largest economy, and its military power is unrivaled by any state or combination of states. Its population is still growing, despite a recent decline in birth rates. It enjoys extraordinary geographic advantages over its rivals, who are distant and live in far worse neighborhoods. Its economy is less dependent on foreign markets or resources. Its political system has proven—up to now—to be resilient and adaptable. Its global alliance system greatly extends its capacity to defend itself and shape the world to its liking and is still intact, despite growing doubts about America’s reliability as a security guarantor. Based on these mostly material and historical criteria, continued American primacy would seem to be a good bet, if it chooses to use its power in this way.30

So why multipolarity? The clearest and most frequently cited evidence for a widening distribution of global power away from American unipolarity is the narrowing gap in GDP between the US and China. The IMF’s World Economic Outlook forecasts a $0.9 trillion increase in US GDP for 2019–2020, and a $1.3 trillion increase for China in the same period.31 Many who support the American primacy case argue that GDP is an imperfect measure of power, that Chinese GDP data is inflated, that its growth rates are in decline while Chinese debt is rapidly increasing, and that China does poorly on other factors that contribute to power—its low per capita GDP, its political succession challenges, its environmental crisis, its absence of any external alliance system. Yet GDP is a good place to start, as the single most useful measure and long-term predictor of power. It is from the overall economy that states extract and apply material power to leverage desired behavior from other states. It is true that robust future Chinese growth is not guaranteed, nor is its capacity to convert its wealth to power, which is a function of how well its political system works over time. But this is equally the case for the US, and considering recent political developments is not a given for either country.

As an alternative to measuring inputs—economic size, political legitimacy, technological innovation, population growth—in assessing relative power and the nature of global power distribution, we should consider outputs: what are states doing with their power? The input measures are useful, possibly predictive, but are usually deployed in the course of making a foreign policy argument, sometimes on behalf of a reassertion of American primacy, sometimes on behalf of retrenchment. As such, their objectivity (despite their generous deployment of “data”) is open to question. What is undeniable, to any clear-eyed observer, is a real decline in American influence in the world, and a rise in the influence of other powers, which predates the Trump administration but has accelerated into America’s free fall over the last four years. This has produced a de facto multipolarity, whether explainable in the various measures of power—actual and latent—or not. This decline results in part from policy mistakes: a reckless squandering of material power and legitimacy in Iraq, an overabundance of caution in Syria, and now pure impulsivity. But more fundamentally, it is a product of relative decline in American capacity—political and economic—to which American leadership is adjusting haphazardly, but in the direction of retrenchment/restraint. It is highly revealing that the last two American presidents, polar opposites in intellect, temperament and values, agreed on one fundamental point: the US is overextended, and needs to retrench. The fact that neither Obama nor Trump (up to this point in his presidency) believed they had the power at their disposal to do anything else, tells us far more about the future of American power and policy—and about the emerging shape of international relations—than the power measures and comparisons made by foreign policy advocates.

Observation of recent trends in US versus Russian relative influence prompts another question: do we understand the emerging characteristics of power? Rigorously measuring and comparing the wrong parameters will get us nowhere at best and mislead us into misguided policies at worst. How often have we heard, with puzzlement, that Putin punches far above his weight? Could it be that we misunderstand what constitutes “weight” in the contemporary and emerging world? Putin may be on a high wire, and bound to come crashing down; but the fact is that Russian influence, leveraging sophisticated communications/social media/influence operations, a strong military, an agile (Putin-dominated) decision process, and taking advantage of the egregious mistakes by the West, has been advancing for over a decade, shows no sign of slowing down, and has created additional opportunities for itself in the Middle East, Europe, Asia, Latin America, the Arctic. It has done this with an economy roughly the size of Italy’s. There are few signs of a domestic political challenge to Putin. His external opponents are in disarray, and Russia’s main adversary is politically disabled from confronting the problem. He has established Russia as the Middle East power broker. He has reached into the internal politics of his Western adversaries and influenced their leadership choices. He has invaded and absorbed the territory of neighboring states. His actions have produced deep divisions within NATO. Again, simple observation suggests multipolarity in fact, and a full explanation for this power shift awaiting future historians able to look with more objectivity at twenty-first-century elements of power.

When that history is written, surely it will emphasize the extraordinary polarization in American politics. Was multipolarity a case of others finding leverage in new sources of power, or the US underutilizing its own? The material measures suggest sufficient capacity for sustained American primacy, but with this latent capacity unavailable (as perceived, I believe correctly, by political leadership) by virtue of weakening institutions: two major parties in separate universes; a winnertake-all political mentality; deep polarization between the parties’ popular bases of support; divided government, with the Presidency and the Congress often in separate and antagonistic hands; diminishing trust in the permanent government, and in the knowledge it brings to important decisions, and deepening distrust between the intelligence community and policymakers; and, in Trump’s case, a chaotic policy process that lacks any strategic reference points, mis-communicates the Administration’s intentions, and has proven incapable of sustained, coherent diplomacy on behalf of any explicit and consistent set of policy goals.

Rising Nationalism/Populism/Authoritarianism

The evidence for these trends is clear. Freedom House, the go-to authority on the state of global democracy, just published its annual assessment for 2020, and recorded the fourteenth consecutive year of global democratic decline and advancing authoritarianism. This dramatic deterioration includes both a weakening in democratic practice within states still deemed on balance democratic, and a shift from weak democracies to authoritarianism in others. Commitment to democratic norms and practices—freedom of speech and of the press, independent judiciaries, protection of minority rights—is in decline. The decline is evident across the global system and encompasses all major powers, from India and China, to Europe, to the US. Right-wing populist parties have assumed power, or constitute a politically significant minority, in a lengthening list of democratic states, including both new (Hungary, Poland) and established (India, the US, the UK) democracies. Nationalism, frequently dismissed by liberal globalization advocates as a weak force when confronted by market democracies’ presumed inherent superiority, has experienced a resurgence in Russia, China, the Middle East, and at home. Given the breadth and depth of right-wing populism, the raw power that promotes it—mainly Russian and American—and the disarray of its liberal opponents, this factor will weigh heavily on the future.

The major factors contributing to right-wing populism and its global spread is the subject of much discussion.32 The most straightforward explanation is rising inequality and diminished intergenerational mobility, particularly in developed countries whose labor-intensive manufacturing has been hit hardest by the globalization of capital combined with the immobility of labor. Jobs, wages, economic security, a reasonable hope that one’s offspring has a shot at a better life than one’s own, the erosion of social capital within economically marginalized communities, government failure to provide a decent safety net and job retraining for those battered by globalization: all have contributed to a sense of desperation and raw anger in the hollowed-out communities of formerly prosperous industrial areas. The declining life expectancy numbers33 tell a story of immiseration: drug addition, suicide, poor health care, and gun violence. The political expression of such conditions of life should not be surprising. Simple, extremist “solutions” become irresistible. Sectarian, racial, regional divides are strengthened, and exclusive identities are sharpened. Political entrepreneurs offering to blow up the system blamed for such conditions become credible. Those who are perceived as having benefited from the corrupt system—long-standing institutions of government, foreign countries and populations, immigrants, minorities getting a “free ride,” elites—become targets of recrimination and violence. The simple solutions of course, don’t work, deepening the underlying crisis, but in the process politics is poisoned. If this sounds like the US, it should, but it also describes major European countries (the UK, France, Italy, Germany, Poland, Hungary, the Czech Republic), and could be an indication of things to come for non-Western democracies like India.

We have emphasized throughout this chapter the interaction of four structural forces in shaping the future, and this interaction is evident here as well. Is it merely coincidence that the period of democratic decline documented by Freedom House, coincides precisely with the global financial and economic crisis? Lower growth, increasing joblessness, wage stagnation, superimposed on longer-term widening of inequality and declining mobility, constitute a forbidding stress test for democratic systems, and many continue to fail. And if we are correct about secular stagnation, the stress will continue, and authoritarianism’s fourteen-year run will not be over for some time. The antidemocratic trend will gain additional impetus from the illiberal direction of globalization, with its growth suppressing protectionism, weaponization of global economic exchange, and weakening global economic institutions. Multipolarity also contributes, in several ways. The former hegemon and author of globalization’s liberal structure has lost its appetite, and arguably its capacity, for leadership, and indeed has become part of the problem, succumbing to and promoting the global right-wing populist surge. It is suffering an unprecedented decline in life expectancy, and recently a decline in the birth rate, signaling a degree of rot commonly associated with a collapsing Soviet Union. While American politics may once again cohere around its liberal values and interests, the time when American leadership had the self-confidence to shape the global system in its liberal image is gone. It may build coalitions of the like-minded to launch liberal projects, but there will be too much power outside these coalitions to permit liberal globalization of the sort imagined at the end of the Cold War. In multipolarity, the values around which global politics revolve will reflect the diversity of major powers, their interests, and the norms they embrace. Convergence of norms, practices, policies is out of the question. Global collective action, even in the face of global crises, will be a long shot. To expect anything else is fantasy

Unbrave New World and Future Challenges

At the outset of this chapter we described these structural forces as interacting to produce more conflict and diminished prosperity. We also predicted a world with shrinking collective capacity to address new challenges as they arise. What specifically will such a world look like? We address below three principal challenges to global problem solving over the next decade.

Interstate Conflict

In the world experienced by most readers of this volume, conflict is observed within weak states, sometimes promoted by regional competitors, by terrorist groups, or by great powers, acting through surrogates or by indirect means. Sometimes, as in Syria, this conflict spills over to contiguous states and contributes to regional instability, and challenges other regions to respond effectively, a challenge that Europe has not met. Much of this will continue, but the global significance of such local conflicts will be greatly magnified by increasing great power conflict, which will feed—rather than manage or resolve—local instabilities and will in turn be exacerbated by them. Great powers will jockey for advantage, support their local partners, escalate preemptively. Conflicts initially confined to failing states or unstable regions will be redefined by great powers as global in scope and significance.

This tendency of states to view local conflicts in the context of a zero-sum, global struggle for power is familiar to students of the Cold War, but now with the additional challenges to collective action, expanded uncertainty and worst-case thinking associated with the power transition to multipolarity. We can easily observe increased conflict in US–China relations, as we will in US–Russia relations as future US administrations try to make up for ground lost during the Trump presidency, especially in the Middle East. We can observe it among powerful states with mutual historical grievances, now with a weakening presence of the hegemonic security guarantor and having to consider the renationalization of their defense: Japan-South Korea, Germany-France. We can observe it among historical rivals operating in rapidly changing security landscapes: India-China. We can observe it within the Middle East, as internal rivalries are appropriated by regional powers in a contest for regional dominance. We can observe it clearly in Syria, where the regime’s violent suppression of Arab Spring resistance led to all-out civil war, attracted outside support to proxy forces by aspiring regional hegemons Saudi Arabia and Iran, enabled the rise of ISIS, and eventually to great power intervention, principally by Russia. In a world of effective great power collaboration or American primacy, the Syrian civil war might have been settled through power sharing or partition, or if not, contained within Syria. The collapse of Yugoslavia, occurring during a period of US “unipolarity” and managed effectively, demonstrates the possibilities. Instead, with the US retrenching, Middle East rivals unconstrained by great powers, and great power competition rising, the Syria civil war was fed by outside powers, then metastasized into the region, and—in the form of refugee flows—into Europe, fundamentally altering European politics. Libya may be at the early stages of this scenario.

This is not the end of the Syria story. Russia has established itself as a major player in Syria and the Middle East’s power broker, the indispensable country with leverage throughout the region. China is poised to reap the financial and power benefits of Syrian reconstruction. The US has just demonstrated, in its act of war against the Iranian regime, its willingness, without consultation, to put its allies’ security in further jeopardy, accentuating the risks of security ties with Washington and generating added opportunities for Russia and China. The purpose here is not to critique US policy, but to point out the dramatically shifting power balance in a critical region, toward multipolarity. The dangers of such a shift will become apparent as some future US president attempts to reassert US influence in the region and finds a crowded playing field.

Can a multipolar distribution of power among several states whose interests, values, and political practices are divergent, all experiencing bottom-up nationalist pressures, all seeking advantages in the oversupply of regional instability, be made to work? I think not. Will this more dangerous world descend into direct military confrontation between great powers, and could such confrontation lead to use of nuclear weapons? Here the question becomes, what will this more dangerous world actually look like; what instruments of coercion will be available to states as technology change accelerates; how will states employ these instruments; how will deterrence work (if at all) among several states with large but unequal levels of destructive capacity, weak command, and control, disparate— or opaque—strategies and simmering rivalries; can conflict management work in a world of weak institutions? The collapse of the Cold War era nuclear arms control regime, the threat to the Non-Proliferation Treaty represented by the demise of the JCPOA, and multiple indications of an accelerating nuclear arms race among the three principle powers, augurs badly. Given the structural forces at play, and without predicting the worst, we are indeed entering perilous times.

Global Poverty and Inequality

Despite the challenges of volatility and disruptive change inherent in globalization, the world under American liberal leadership has managed a dramatic reduction of extreme poverty. According to World Bank estimates, in 2015, 10 percent of the world’s population lived on less than $1.90 a day, down from nearly 36 percent in 1990.34 In fact, as of September 2018, half the world is now middle class or wealthier.35 The uneven success of the UN Millennium Development Goals (MDGs) exemplifies this achievement, and demonstrates what is possible when open markets are managed through strong global institutions, effective leadership and interstate collaboration. What this liberal hegemonic system did not achieve, however, was a fair distribution of the gains from globalization within states, and among those states that for various reasons were not full participants in this system.

This record of partial achievement leaves us with a full agenda for the next fifteen years, but without the hegemonic leadership, strong institutions, ascendant liberalism or robust global growth that enabled previous gains. There are powerful reasons to question the sustainability of these poverty reduction gains, leading to doubts about the realization of the Sustainable Development Goals, which have replaced the MDGs as global development targets.36 (See Jens Rudbeck’s chapter and Sidhu’s UN chapter for SDGs). Skeptics have pointed to slowing global growth, specifically in China, whose demand for imported commodities was a major factor in developing country growth and job creation; growing protectionism in developed country markets, fueled by bottom-up forces of nationalism, and from top-down by a weakened global trading regime and increased geopolitical rivalry; the effects of accelerating climate change on agriculture, migration and communal conflict in poor countries; and the growth burst among poor countries from the rapid transition to more efficient use of resources, a transition that is now slowing down.37

Perhaps the greatest concern in this scenario is a general deterioration in the developing country foreign investment climate. Foreign direct investment (FDI) has been a major contributor to growth, job creation, and poverty alleviation among poor countries. It has incentivized growthfriendly policies, reduced corruption, introduced technology and effective management practices, and linked poor countries to foreign markets through global supply chains.38 It has stimulated growth of indigenous manufacturing and service companies to supply new foreign investments.

It has been the major cause of economic convergence between rich and poor countries. From 2000 to 2009, developing economies’ growth rates were more than four percentage points higher than those of rich countries, pushing their share of global output from just over a third to nearly half.39 However, FDI flows into poor countries are imperiled by the structural forces discussed here. Political instability arising from slower growth and environmental stress will increase investors’ perception of higher risk, reinforcing their developed country bias. Protectionism among developed countries will threaten the global market access upon which manufacturing investment in developing countries is premised, causing firms to pare back their global supply chains. As companies retrench from direct investment in poor countries, the appeal to those countries of Chinese debt financed infrastructure projects, under the Belt-Road Initiative with little or no conditionality, but at the risk of “debt traps,” will increase.

Global Warming

The question posed at the beginning of this section is whether the international system, evolving toward multipolarity and rising nationalism, will find the collective political capital to confront challenges as they arise. Global warming is the mother of all challenges, and the weakness in the system’s capacity to respond is clear. With the two major political/economic powers and greenhouse gas emitters locked in deepening geopolitical conflict (and with one of them locked in climate change denial, possibly through 2024), the chances of significantly slowing global warming or even ameliorating its effects are very slim. We are reduced to the default option, nation-specific adaptation to climate change, which will impose rising human, political and economic costs on all, and will widen the gap between rich countries with adaptive capacity (of varying degrees), and the poor, who will suffer deteriorating economic, political, and social conditions. (For a contrary, optimistic view see Michael Shank’s chapter, which credits new actors—like cities—as playing a more constructive role in climate mitigation.) This would bring to a close liberal globalization’s greatest achievement; the raising of 1.1 billion people out of extreme poverty since 1990,40 with all its associated gains in quality of life (in the WHO Africa region, for example, life expectancy rose by 10.3 years between 2000 and 2016, driven mainly by improvements in child survival and expanded access to antiretrovirals for treatment of HIV).41

Several forces are at work here. The problem itself is graver—in magnitude and in rate of worsening—than predicted by climate scientists. The UN Intergovernmental Panel on Climate Change (IPCC), the major source of information on global warming, has consistently underpredicted the rate of climate deterioration. This holds true even for its “worst-case scenarios,” meaning that what was meant as a wake-up call has in fact reinforced complacency.42 (see Michael Shank’s chapter for further discussion of climate change). The IPCC, in its 2019 report, has tried to undo the damage by emphasizing the acceleration in the rate of warming and its effects, the only partially understood dynamic of climate change, and—given wide uncertainty—the possibility of unpleasant surprises yet to come. This strengthens the scientific case for urgency—to both severely limit greenhouse gas emissions, and to increase investment in ameliorating the effects.

Unfortunately, the crisis comes at a moment when the climate for collective action is ice cold. Geopolitical competition incentivizes states to out produce each other, regardless of the environmental effects. Multipolarity complicates collective action. Economic stagnation mandates job creation, making regulation politically toxic. Bottom-up nationalism/populism causes states to pursue “relative gains,” meaning that if the nation is seen as gaining in a no-holds-barred economic competition with others, the negative environmental effects can be tolerated. A post-Trump presidency would help, with the US rejoining the Paris Agreement, and lending its weight to tighter regulation, increased R and D, and stronger economic incentives to reduce carbon emissions. Keep in mind, however, that President Obama was fully behind such efforts, but in a deeply polarized America was unable to implement measures needed to fulfill the Paris obligations through legislation, and his executive orders to do this were swiftly overturned by Trump.

Conclusion

It may be tempting to hope that post-Trump, the US can regain its global leadership and exert its considerable power in a liberal direction, but with enough self-awareness of its relative decline to share responsibility with others. This was, I believe, the broad direction of the Obama strategy, evidenced by the JCPOA and the Trans-Pacific Partnership: liberal, collective solutions to global problems, as US dominance receded.

This would constitute an optimistic scenario, and it confronts two major problems: can US internal politics support it (can, for example, the country legislate controls on carbon, essential for the global credibility and durability of such commitments); and is the world ready to reengage with American leadership, given the damage to its reputation and the structural forces discussed in this chapter?

My educated guess is no, on both counts. The rot within is extensive, the concrete evidence clear in the economic inequality/immobility numbers, the life expectancy numbers, the deep political polarization, between the two major parties, between regions, between cities and rural areas. We are in fact a long way from fitness for global leadership, and the recognition of this by others will accelerate the decline of American influence. The rest of the world is well on its way toward adjusting to post-American hegemony, some by renationalizing their defense, or by cutting deals with adversaries, by building new alliances or by seizing new opportunities for influence in the vacuum left by American retrenchment. The evidence for this will accumulate. Observe the current and emerging Middle East, where all these post-hegemonic strategies are visible.

#### Platform dependency on China fuels digital authoritarianism – separations and start-up entrance decouples US platforms from Chinese markets.

Sitaraman ’20 [Ganesh; Co-founder and Director of Policy @ Great Democracy Initiative, Professor of Law @ Vanderbilt University; “Too Big to Prevail: The National Security Case for Breaking Up Big Tech,” *Foreign Affairs* 99(2), p. 116-126; AS]

But the national security case against breaking up Big Tech is not just weak; it is backward. Far from competing with China, many big technology companies are operating in the country, and their growing entanglements there create vulnerabilities for the United States by exposing its firms to espionage and economic coercion. At home, market concentration in the technology sector also means less competition and therefore less innovation, which threatens to leave the United States in a worse position to compete with foreign rivals. Rather than threatening to undermine national security, breaking up and regulating Big Tech is necessary to protect the United States’ democratic freedoms and preserve its ability to compete with and defend against new great-power rivals.

DESTINATION: CHINA

Competition with China will define U.S. national security conversations for decades to come, and Americans need to think carefully about the role technology will play in this increasingly competitive environment. But to claim that the likes of Amazon and Google are helping counter China’s technological and geopolitical rise simply because they are American companies makes little sense.

Almost all big U.S. technology companies have extensive operations in China today. Google announced plans for an AI research center in Beijing in 2017 and is exploring a partnership with the Chinese Internet behemoth Tencent. Microsoft is expanding its data centers in China and has recently built an entire operating system, Windows 10 China Government Edition, for the Chinese government. Amazon’s cloud service in China is second in popularity only to that of its Chinese counterpart, Alibaba. Apple famously designs its phones in California but manufactures them in China. Facebook, notably, does not operate in China—but not for lack of trying. The company repeatedly attempted to gain access to the Chinese market only to be blocked by Chinese government officials.

Merely operating in China may seem harmless. Yet according to scholars, U.S. government officials, and even American business associations, any U.S. technology company working in China could very well be supporting the Chinese state and the expansion of digital authoritarianism. In the course of their operations in the country, U.S. companies routinely interact with Chinese companies, some of which are run or partly owned by the state. Those that are not still have informal ties to state and Communist Party officials and face strong incentives to behave as the state wishes even without direct pressure from the government. Because the Chinese market and the state are intertwined in this way, Chinese companies that partner with foreign ones are highly likely to pass along operational and technological developments to the Chinese government and military, including in ways that could advance Beijing’s emerging surveillance state and accelerate its ability to spread its model of digital authoritarianism around the world.

These challenges are particularly clear in the case of AI, as commercial innovations in that field can also have military implications. Under Beijing’s doctrine of “civil-military fusion,” Chinese researchers and private companies are working ever more closely with the government and the military, which means that technological innovations that may have originated with a foreign company active in China can find their way to supporting the People’s Liberation Army. “If you’re working in China,” Ashton Carter, a former U.S. defense secretary, has said, “you don’t know whether you’re working on a project for the military or not.”

In addition to widely known concerns about Chinese espionage and surveillance, integration with the Chinese market also opens Big Tech—and the United States—to pressure from China, which can use that influence to hurt U.S. interests. Scholars refer to this tactic—turning economic interdependence into political leverage—by a variety of terms, including “geoeconomics,” “reverse entanglement,” and “weaponized interdependence.” Whatever it’s called, China has a long track record of doing it, across countries and industries. To retaliate against South Korea’s adoption of a U.S. missile defense system in 2017, China blocked Chinese travel agencies from offering trips to the country. And after the dissident Liu Xiaobo was awarded the Nobel Peace Prize in 2010, China temporarily blocked imports from Norway.

To avoid offending Chinese officials and potentially losing access to the country’s large market, companies are adapting their behavior even outside China’s borders. Hollywood studios have been accused of rewriting scripts and editing scenes for that purpose: choosing to blow up the Taj Mahal instead of the Great Wall of China in the movie Pixels, according to Reuters, and replacing China with North Korea as the main adversary in the 2012 remake of Red Dawn, according to the Los Angeles Times. In 2019, Daryl Morey, the general manager of the NBA basketball team the Houston Rockets, tweeted in support of pro-democracy protesters in Hong Kong; soon thereafter, he deleted the post. In the days that followed, the owner of the Rockets wrote that Morey did “NOT speak” for the team, and the NBA said it was “regrettable” that Morey’s views had “deeply offended many of our friends in China.” (After a public outcry, the NBA clarified that it would not censor or fire Morey.) A year earlier, Mercedes-Benz had posted a quote from the Dalai Lama on Instagram. After an online backlash in China, the automaker quickly erased the quote, and its parent company, Daimler, said that the post had contained an “erroneous message” and had “hurt the feelings of people” in China. The People’s Daily, China’s largest newspaper, later branded Mercedes-Benz as an “enemy of the people.”

Such conduct by Western companies illustrates a broader point: they act based on their commercial interests, not in the name of abstract democratic principles or for the cause of U.S. national security. The same is true when these companies try to influence government policy. The potential stakes are high. The U.S. Department of Commerce, for instance, has the power to set export restrictions on some sensitive technologies, including AI; those restrictions may be important from a national security standpoint, even if they negatively affect some companies’ bottom lines. Yet the dominant ideology among corporate lawyers today holds that the sole aim of managers is to maximize shareholder profits, and corporate lobbyists are thus likely to advocate public policies that support those profits even if they run counter to U.S. national interests.

Practically all U.S. companies active in China are subject to such pressures to one degree or another, and how to address that predicament is another question altogether. But the size and dominance of American technology companies are part of the problem. As the U.S. technology sector becomes more concentrated and the few players in it become more dependent on the Chinese market for consumers and profits, these firms—and, by extension, the United States—become more vulnerable to pressure from Beijing. Antimonopoly policies could help remedy this problem: in a fractured market with many players, the sheer number of firms would all but guarantee that some would build supply chains that circumvented China, or build their products wholly in the United States, or simply choose not to engage in the Chinese market—whether because of idiosyncratic preferences, competitive dynamics, product differentiation, higher costs, or other factors.

Consider another industry whose structure resembles that of Big Tech: Hollywood. Like the technology industry, today’s entertainment sector consists of a handful of studios that are increasingly dominant at the box office and able to pressure theaters to give their content preferential treatment. If these big, integrated companies comply with Chinese censors out of a concern for market access, then U.S. consumers will not see content that offends the Chinese government. By contrast, in a system with a large number of small studios and competitive distribution channels, many companies would lack the size, scope, or desire to cater to the Chinese market, let alone be dependent on it. Nor would they have the power or scale to lock out new competitors through vertical integration. The result would be a market in which Americans had a range of content choices, including entertainment that might not accord with the views of foreign censors.

Of course, in theory, it is possible that a small number of big U.S. technology firms, each with monopoly-like power, might be so profitable as to have no need for the Chinese market, whereas small companies with razor-thin profit margins might depend more on that market for consumers and profits. But this hypothesis has not been borne out. The current technology sector is already highly concentrated, and yet today’s technology companies are not forsaking the Chinese market; instead, they are desperate to expand their business there.

As they do so, they will likely be subject to the same pressures bearing down on Hollywood, the NBA, Mercedes, and other entities that want to operate in China. Companies such as Amazon and Google, which both produce their own content and distribute it through their platforms, may over time be tempted to make that content palatable to Chinese censors. And because those firms have immense market power within the United States, American consumers will be left with no serious, scalable alternatives.

A more competitive technology sector, with many smaller players, would also mitigate the ill effects of lobbying, for much the same reasons. Fewer companies would be dependent on the Chinese market, and those that were would be differentiated enough to often end up on different sides of policy debates. Their lobbying efforts would be less likely to cut in a single direction and thus less likely to capture government.

THE VIRTUE OF MONOPOLY

Big Tech’s market dominance, some will argue, has benefits: free of constant worries about vicious competition, technology giants can focus on the big questions. They have the time and resources to invest copiously in cutting-edge research, where success is rare but the potential payoff—for technological innovation and thus for U.S. competitiveness and national security—is massive.

Whether or not they say it explicitly, those who want to protect Big Tech from antitrust laws and other regulations are advocating a “national champions” model—a system in which the state shields a few select big companies from competition, allowing them to spend on research and development. But there is strong evidence that this approach is imperfect, at times even counterproductive. As the legal scholar Tim Wu has noted, it is usually competition, not consolidation, that fosters innovation. Competitors have to find ways to differentiate themselves in order to survive and expand. Large, protected firms become lethargic, are slow to innovate, and rest on their laurels.

Recall the race for supremacy in the electronics industry that played out between the United States and Japan in the 1980s. Japan, according to Wu, chose to protect its national champions, giving direct government support to such powerhouses as NEC, Panasonic, and Toshiba. The United States took the opposite tack. Its largest electronics firm at the time, IBM, came under antitrust scrutiny by U.S. authorities, and the ensuing decade-long legal battle discouraged the company from engaging in conduct that might run afoul of antitrust laws. That created the space for a variety of other hardware and software companies, among them Apple, Lotus, and Microsoft, to flourish. Competition led to innovation and the creation of some of the most forward-looking companies of the era.

National champions also have an incentive to hide breakthroughs that might undermine their market power. Bell Labs, one of the pillars of AT&T’s telecommunications empire, has long been celebrated for its role as an “ideas factory.” But Bell Labs and AT&T also suppressed innovations that threatened their business model. Starting in the 1930s, for example, AT&T’s management sat on recording inventions that could have been used for answering machines, for fear this innovation might jeopardize the use of the telephone.

Skeptics might argue that this time is different—that today’s next-generation technologies are so resource-intensive that smaller companies in a competitive environment couldn’t afford the necessary investments. But even if broken up and regulated, Big Tech’s main players would have considerable money left to spend on AI, robotics, quantum computing, and other next-generation technologies. Facebook would still have billions of users without Instagram and WhatsApp. Amazon’s platform would still have enormous market power in online sales even if it wasn’t allowed to produce its own products.

Whatever resource constraints did arise could be offset by greater public investment in R & D. As the economist Mariana Mazzucato has argued, such government spending has historically been a significant driver of innovation; the Internet, for example, began as a U.S. Defense Department network. There is no reason the government could not play the same role today.

Unlike research by national-champion firms, research funded by public investment would not be tied to the profit motive. It could therefore cover a wider range of subjects, extend to basic research that does not have immediate or foreseeable commercial applications, and include research that might challenge the incumbency and business models of existing companies. Public research could also de-emphasize areas of inquiry that may be profitable but are socially undesirable. For many of the biggest technology companies, surveillance, personalized targeting, and the eliciting of particular behavioral responses lie at the heart of their business models, which means that their efforts to innovate are geared in no trivial way toward improving those tactics. An authoritarian country may see those as valuable public goals, but it is not at all clear why a free and democratic society should.

Public investment in R & D also has the potential to spread the benefits of technology, innovation, and industry throughout the United States. At present, much of the country’s technological and innovative prowess is concentrated in a few hubs—the most prominent being Northern California, Seattle, and Boston. This is not surprising, as unlike the government, technology companies have no reason to want to spread development evenly. Amazon’s competition to decide the location of its second headquarters is a good example. After inviting countless pitches from cities across the country and much public attention, the company settled on New York and Washington, D.C.—two cities that hardly need an economic boost. Public investment, as the economists Jonathan Gruber and Simon Johnson have argued, could remedy these geographic imbalances and spur successful economies in dozens of midsize cities all over the country, with spillover benefits for their regions.

Mountains of data are needed to improve AI’s precision and accuracy, and some might think that only Big Tech can collect and handle data in such vast quantities. But this need not be the case, either. The United States could create a public data commons with data collected from a variety of government sources (and regulate it with strict rules about personal privacy), for use by businesses, local governments, and nonprofits to train machines. Any new data would be fed back into the data commons, allowing the quality and quantity of the information to improve over time. Alternatively, the government could require technology companies to make their data available in interoperable formats. If those companies effectively have monopoly power over data, then they could be regulated as monopolies—with public access to the data sets as a condition for their continued protection as monopolies. No legal obstacles stand in the way of these options, and both would enable innovation and expand the number of players working on important technological developments.

SQUEEZING THE GOVERNMENT

For the moment, such public initiatives exist only as proposals. Big technology companies have considerable market power, and the U.S. government increasingly relies on their services, including to run its national security apparatus. Technology is, of course, a crucial aspect of warfare, and firms such as Amazon and Microsoft have contracts to provide cloud services to U.S. defense and intelligence agencies. These technology companies are fast becoming part of the United States’ defense industrial base—the collection of industries that are indispensable for U.S. military equipment. As they do so, the curse of monopoly capitalism that already affects the country’s overconsolidated defense sector—causing higher costs, lower quality, reduced innovation, and even corruption and fraud—will likely grow worse.

To see the challenge ahead, consider the present state of the U.S. weapons industry, which is already remarkably uncompetitive. In 2019, the Government Accountability Office found that 67 percent of 183 contracts for major weapons systems did not have a competitive bidding process. Almost half the contracts went to one of five companies—a stunning testament to the dominance of a handful of firms. And in 2018, the Defense Department released a report on the military’s supply chain that listed numerous items for which only one or two domestic companies (and in some cases none) produced the essential goods. Perhaps most striking of all, the report found that the United States no longer had the capacity to build submarines on a rapid timetable because of single suppliers and declining competition.

Unsurprisingly, as Frank Kendall, a former head of acquisitions at the Pentagon, has pointed out, large defense contractors “are not hesitant to use this power for corporate advantage.” In a recent article in The American Conservative, the researchers Matt Stoller and Lucas Kunce argue that contractors with de facto monopoly at the heart of their business models threaten national security. They write that one such contractor, TransDigm Group, buys up companies that supply the government with rare but essential airplane parts and then hikes up the prices, effectively holding the government “hostage.” They also point to L3 Technologies, a defense contractor with ambitions, in the words of its one-time CEO, to become “the Home Depot of the defense industry.” According to Stoller and Kunce, L3’s de facto monopoly over certain products means that it continues to receive lucrative government contracts even after it admitted in the settlement of a 2015 civil fraud lawsuit that it had knowingly supplied defective weapons sights to U.S. forces.

As technology becomes more integral to the future of U.S. national security, Big Tech’s market power will likely lead to much the same problems. Technology behemoths will amass defense contracts, and the Pentagon will be locked into a state of dependence, just as it is currently with large defense contractors. Instead of healthy innovation, the government will have created what Michael Chertoff, a former homeland security secretary, has called a “technological monoculture,” which is unwieldy and vulnerable to outside attack. The cost to taxpayers will increase, whether due to higher prices or fraud and corruption, and much of their money—funding that could have been available for innovation—will become monopoly profits for technology executives and shareholders.

A WAY FORWARD

That technology companies do not want to be broken up is unsurprising. They are profitable, growing, and powerful. Nor is it a mystery why they try to play the trump card of invoking national security in their defense. But even from the viewpoint of national security, the case for shielding Big Tech from competition is weak. Technology companies are not competing with China so much as integrating with it, at significant risk to U.S. interests.In the United States, competition and public investment in R & D, not today’s consolidated technology sector, will provide the best path forward to innovation.

Policymakers should embrace proposals to break up and regulate big technology companies: to unwind mergers and acquisitions such as Facebook’s decision to buy the social networking and messaging services Instagram and WhatsApp. They should require technology platforms such as Amazon to separate from businesses that operate on their platforms. They should apply nondiscrimination principles drawn from public utilities and common carrier laws to digital platforms. And they should adopt stringent privacy regulations.

In this era of great-power competition, the best way to remain competitive and innovative is through market competition, smart regulations, and public spending on R & D. Breaking up Big Tech won’t threaten national security; it will bolster it.

#### Digital authoritarianism causes extinction.

Manstead ’20 [Katherine; Non-Resident Fellow @ Alliance for Securing Democracy and Senior Adviser for Public Policy @ Australian National University’s National Security College; “Strong Yet Brittle: The Risks of Digital Authoritarianism”; https://securingdemocracy.gmfus.org/wp-content/uploads/2020/05/Strong-Yet-Brittle-The-Risks-of-Digital-Authoritarianism.pdf]

While digital authoritarianism can enhance regime durability and national power, it also introduces deep-seated vulnerabilities, eight of which are considered below. Significantly, digital authoritarians may find themselves in a state of constant contest with other regime types, trapped in cycles of overreach and backlash, and prone to strategic miscalculations that pull them into interstate conflict. The current turn to digital authoritarianism therefore also has broader implications for international peace and stability.

Brittle Legitimacy

Reliance on information control makes authoritarians brittle. Small chinks in their information control armor could have existential consequences, particularly during political or economic crises (i.e. when the regime needs to rely on control for legitimacy because it is not delivering for citizens). The information and ideas most dangerous to authoritarians include:

• the identity of opposition groups and leaders and their levels of support; 17

• technical means for subverting control of communications and surveillance technologies;18

• ideas about values that transcend state sovereignty, such as liberalism and human rights;19

• evidence that the central government is not delivering efficient outcomes;20 and

• ideas that undermine the myths and narratives used to legitimize authoritarian rule or the power of the ruling elite.21

Constant Contest

Since technologies and ideas are dynamic, the battle for information control is a constant struggle. It can never be ‘won.’ Authoritarians are therefore in a perpetual state of information warfare, inside and outside their regime, and feel perpetually insecure. This dynamic may lead authoritarian governments to assess that it is worth engaging in information or cyberattacks to discredit liberal ideas at their foreign source or to shape or disable systems that jeopardize their information control—despite real risks of conflict escalation and global pushback.

Overreach and Backlash

The fundamental importance of information control to authoritarians increases the likelihood of overreach, leading to cycles of backlash and reprisal. Many perceive China’s heavy-handed narrative warfare in Hong Kong and confrontational efforts to control narratives about coronavirus to be strategic missteps. For example, CCP efforts to stifle dissent by punishing online gaming company Blizzard and the National Basketball Association (NBA) arguably aided Hong Kong protester narratives;22 while CCP obfuscation about coronavirus has prompted unprecedented diplomatic rebukes from world leaders.23 Despite rising international awareness and condemnation of China’s sharp power tactics,24 China is accelerating, not muting, these behaviors.25 One explanation for this is that the CCP calculates that the risks of international backlash (and occasional overreach by its officials) are acceptable, compared with the risk of letting domestic information control falter.

Impaired Feedback Mechanisms

Authoritarians embrace technology to increase the legibility of their societies. But legibility requires cooperation from society. It is facilitated by an open information ecosystem, robust civil society, mechanisms of transparency, and protections for political speech.26 Conversely, information control and technology-enabled systems of surveillance and enforcement discourage accurate reporting and punish whistleblowing, while incentivizing officials to conceal failures and exaggerate successes.27 In 2007, Le Keqiang (before he became China’s premier) described China’s national income figures as “man-made” and unreliable, and noted that more objectively verifiable proxies should be preferred to official statistics collected by provinces.28 Without elections, authoritarians can also struggle to understand public sentiment, a problem highlighted by the Chinese government’s mismanagement of massive ongoing protests in Hong Kong. Party leaders wrongly assessed that the protestors’ grievances were primarily economic rather than political and that they did not enjoy broader public support.29 As Zeynep Tufekci has observed, the costs of China’s “authoritarian blindness” have been immense: a solvable issue (demands to withdraw a relatively unimportant extradition treaty) became “a bigger, durable crisis” with ongoing political consequences.30

China’s delayed reaction to coronavirus is a stark example of the authoritarian legibility and feedback problem. Local officials and hospital administrators in Wuhan suppressed information about the outbreak and punished doctor whistleblowers—depriving other provinces and the central government (not to mention international authorities) of vital signals that would have allowed swifter action to control the pandemic.31 Once authorities acknowledged the pandemic, China deployed the full weight of its digital surveillance capabilities. It was able to implement top-down lockdowns quickly; marshal its tech sector to build health apps; force citizens to download these apps; and access vast commercial holdings of personal data to cross-check compliance. However, it lacked critical bottom-up feedback systems that may have obviated the need for such draconian measures in the first place.32 Indeed, controlling for income and population size, authoritarian regimes appear to be more lethal than democracies during epidemics, arguably because of their closed information ecosystems.33

Overreliance on Technological Systems which ‘Fail Hard’

Many authoritarian governments are embracing AI-driven surveillance and control methods—from ‘smart cities’ to digital currencies, e-payment platforms and social apps. However, when AI systems fail, they tend to fail in unpredictable, often catastrophic ways. While citizens in democracies lament slow adoption of digital governance, authoritarians’ speed comes with the risk that authorities roll out unsafe or vulnerable systems.34 Imagine a critical failure of China’s social credit system—whether by accident or sabotage—which affected the integrity of records. The implications for regime stability could be significant.

AI systems do not need to fail to produce problematic results. They draw insights and make predictions based on correlations in vast datasets but are not good at identifying causal mechanisms. This means that AI systems often produce outcomes which humans cannot reverse engineer or routinely evaluate. Like using asbestos to build a city, AI governance systems might produce good results in the short-term, but inconsistencies or oversights in their approaches could lead to cascading failures that humans struggle to identify, let alone rectify.35

Unintended Consequences from High-Tech Modernism

Fixation by central governments on achieving targets or deploying certain technologies creates incentives for local officials to deploy “technology placebos” that do little to address underlying economic and social concerns. For example, many so-called smart city projects in authoritarian societies have failed to meet development and economic goals. They are fraught with issues such as “unclear strategic goals” (e.g. they often optimize for surveillance, not development) and “inadequate implementation.”36 This problem may be particularly pronounced for less-developed authoritarian governments which have been persuaded, for strategic reasons, to buy Chinese-exported digital surveillance tools that are not customized to local circumstances. These cities may also become locked into unstable or insecure technical architectures37 and economic dependence on China.38

Commitments to targets, and ideological fervor about technology, can also distort commercial decisions and raise unrealistic public expectations. Analysis of China’s AI industry, for example, suggests that companies are eschewing investment in basic research and focusing on quick wins in applied research.39 Additionally, China is already behind on meeting a number of its technology targets40—a lag that will likely be exacerbated by the global economic downturn following the coronavirus pandemic, and rising security fears in foreign markets about the security of Chinese technology and IP theft by its companies.

From a strategic perspective, there are risks that authoritarian governments’ fixation on technology-centric strategies will lead them to overestimate what technology can in fact achieve. For example, Chinese military strategists have posited that AI could lift the ‘fog’ of war and eliminate uncertainty and confusion on the battlefield. This is an ahistorical and unlikely prediction that could inspire miscalculation.41 Russian strategists theorize about how psychological operations might subdue adversaries without a shot being fired—an approach that may overestimate what cognitive warfare can achieve, at least without being combined with other elements of national power.42

Challenges to Social Cohesion

The medium- and long-term social consequences of digital authoritarianism are yet untested. Overreliance on surveillance and enforcement systems could attenuate relationships within a society, exacerbating authoritarians’ underlying low trust problems. Since they tend to reduce citizens to data inputs, these systems may deny citizens’ intrinsic desire for dignity and identity—with unexpected results.43 Information control tactics—such as flooding—can repress opposition, but long-term may exacerbate public uncertainty and decrease business confidence and trust in official information, with implications for social cohesion and economic progress.44

Dysfunctional Innovation Ecosystems

Information control and state-led pushes for technology dominance risk hampering innovation. For example, to achieve Xi Jinping’s ‘Made in China 2025’ goals, the CCP is supporting high-tech monopolies, restricting international collaboration, and yoking the state and market together.45 However, monopolies are notoriously inefficient and cross-border collaboration is an important driver of innovation. Further, innovation works best under free market conditions and in open societies.46 Some analysts argue that China’s success in deploying AI applications is an exception to this rule. However, there is a risk that Chinese companies are prioritizing shortterm breakthroughs (e.g. analyzing existing datasets to find new insights) at the expense of long-term investment in basic research.47 While authoritarians may excel at developing and deploying AI applications, conceptual research is arguably the real engine of AI advancement—and something that will continue to thrive in open societies.

Summary and Further Research

All states face risks in the information age, but the extent to which regime type affects the relative likelihood of these risks materializing, and their magnitude, is understudied. For example, much has been written about liberal democracies’ vulnerabilities to propaganda and foreign interference via social media.48 But while information warfare against open societies is more likely, arguably it is a higher magnitude threat for authoritarians, where control of information is core to regime survival. Similarly, analysts often lament that democratic governments have been slow to digitize governance systems and craft forward-looking technology policy.49 But while digital authoritarians might outcompete democracies in the roll-out of advanced technologies, this creates new vulnerabilities and risks. Inappropriate safeguards and accidents may result in cascading failures, while heavily digitized governance systems may be susceptible to foreign attack. Regime type may also affect the relative ability of authoritarians and democracies to mitigate their information age risks. For example, a democracy can build resilience to cyber and information threats through a variety of civil society and market-based interventions. Digital authoritarians must rely on a more limited set of top-down policy tools. Ultimately, a more systematic effort to map the comparative strengths and vulnerabilities of authoritarians and democracies in the information age could help both to better understand the other’s threat perceptions and manage escalation risks. It might also highlight ways in which democracies can hold digital authoritarians’ core interests at risk, in order to deter authoritarian interference in their own digital environments.

### 1AC – Plan

#### The United States federal government should adopt the principle of separating platforms from commerce for platforms in the private sector.

### 1AC – Dependency Trap

#### Advantage two is dependency trap.

#### Digital platform conglomeration generates a dependency trap that threatens inclusive growth.

Buthelezi ’21 [Thembalethu; Principal Economist @ Economic Research Bureau of the Competition Commission of South Africa; and James Hodgeet; Chief Economist @ Economic Research Bureau of the Competition Commission of South Africa; “Competition and Consumer Protection Policies”; The United Nations; https://unctad.org/system/files/official-document/ditccplp2021d2\_en\_0.pdf; AS]

Making markets more inclusive not only addresses social imperatives, but also can make markets more competitive and benefit consumers. Most economists see a large and vibrant small business sector as essential in providing dynamism, growth and employment opportunities to an economy. Digital start-ups play the same role, especially in terms of dynamism through innovation. Consumer benefits may manifest themselves in lower prices, but equally important are the benefits from greater choice, and better privacy protection and innovation. Indeed, the open banking initiative in the United Kingdom has seen the most benefits from increased innovation by challengers but also the incumbents that have been forced to innovate more with their own data, which is now also accessible to challengers.

However, there is a distinct risk that the digital age could threaten this inclusion in two ways. First, there is a risk that digital markets are dominated by developed economy global giants exploiting the vast economies of scale and scope that exist. Second, there is also a risk that digital markets become dominated by a few large digital conglomerate firms even if they are domestically owned.

Conglomeration is a clear trend in digital markets, with larger digital platforms rapidly moving into adjacent markets, including producing or providing the products sold on their platforms. This is in stark contrast with the most recent trend of the industrial age, which is to focus on core competencies and abandon conglomeration which was often punished by investors. Various factors are driving this trend. One is the economies of scope associated with data gathered or consumers accessing those platforms, which can then be monetized in various ways. Rather than exchanging this data, firms have sought to exploit it themselves. Amazon’s move from online retailing of books to all other products, including its own brands, is a classic case. A second is the enormous resources at their disposal. For example, Amazon invested early in data centres to support the development of its e-commerce activities but then later decided to enter the market for cloud services (through Amazon Web services).44 The third way that inclusion 44 Bourreau M and de Streel A. (2019). Digital Conglomerates and EU Competition Policy. CRIDS Namur Digital Institute. can be undermined is that the control of consumer access enables platforms to displace those that depend on it. Amazon and Google shopping are examples for commercial goods, but Facebook and Apple do the same with apps.45 Finally, the observation of global trends indicate that digital conglomerates are much more likely to acquire start-ups than be challenged by them.46 Conglomeration is not only a global platform phenomenon. The same economic forces can support local conglomeration. South Africa has its own Internet giant, Naspers, which built its position through acquiring shares in Chinese social networking and gaming firm Tencent early on. Naspers has been building its local e-commerce and digital online platforms, in part through a series of acquisitions. It has also been expanding the product range of such platforms. Furthermore, the gradual expansion of the highly successful South African healthcare insurer Discovery into life insurance, short-term insurance and now banking is a more “old economy” example of how such data and consumer access can be leveraged into adjacent markets.

Conglomeration by global and local digital market firms has the potential to negatively impact inclusion, even if there is sufficient competition among these larger players to maintain price and non-price market outcomes at competitive levels. This is particularly concerning in the South African context, where market concentration levels are already high, and the likely impact of increased conglomeration are heightened barriers to entry for potential entrants since the large digital platforms become “gatekeepers” to access markets.

Therefore, from a competition policy perspective, more needs to be done to ensure that digital markets are also open to domestic start-ups and challengers, and that global firms share in the rewards that they derive from developing markets. Locally, additional tools will be required to address the threat of conglomeration. For example, merger control needs to be revisited not only for killer acquisitions, which have attracted most attention, but also to combat increased conglomeration through merger creep. Such acquisitions do not necessarily kill a potential competitor, but rather gives the conglomerate platform a foothold in an adjacent market that can be leveraged later.47

Merger control also needs to be alert to the removal of a potential entrant of another sort. In a developing country context, there is also a tendency for global platforms to acquire the largest local home-grown platform rather than enter themselves. Such mergers deny consumers the benefit of additional competition and a potentially less concentrated market in the future. In addition, taking a tougher stance on conglomerate strategies, such as self-preferencing, exclusive and most favoured nation agreements, may also be appropriate. In its draft buyer-power enforcement guidelines48 the CCSA has already highlighted that behaviour such as self-preferencing would be considered as unfair trading practice by dominant online platforms that bring together thirdparty suppliers and consumers, such as e-commerce platforms.

Developing domestic firms to compete in this space is another area for competition and even industrial policy. Online businesses can sell products globally without a physical presence in the countries they service. Such global reach and costless replication mean that the previous drivers of localized production are frequently left out. For instance, transport costs for raw materials, import tariffs or domestic distribution all provided a rationale for a local presence. That rationale may be missing in many (but not all) future digital markets. As a result, the driving force of innovation and back-end jobs created by these firms may remain in their headquartered country, leading to even greater exclusion of developing countries. Furthermore, global platforms may choose to shift their profits to low-tax jurisdictions – a strategy not necessarily viable for local platforms – that provide these global firms with a significant competitive advantage over local platforms.

If this is to be avoided, then developing countries will need to provide industrial policy incentives for global firms to station operations in their jurisdictions. It will also need to support the development of local digital firms to participate in the digital age, much like the infant industry arguments of old times. It will also require investment in skills and capital financing. This must include the funding of research through universities and will require regulators such as the CCSA to invest in-house talent focused on digitalization of the economy.

Policymakers and regulators in developing countries must also focus their efforts on how to support entrepreneurs to unleash these opportunities and deconcentrate markets. Doing so would directly address the twin objectives of competition policy, namely, more competitive and more inclusive markets. This support may be best achieved through proactively unblocking whatever hindrances remain for these digital entrants, particularly from incumbent firms. Ownership of data and access to consumers or distributional channels are market features that favour large firms purely by dint of their size and incumbency, rather than guaranteed superior product offerings.

3. Data portability and interoperability

Data is seen as a source of significant advantage in the digital age. Data is also the basis for many new and old services. While data portability and interoperability are at the heart of loosening the ~~FAAGs’~~ [GAFA’s] gatekeeper power, there is also tremendous scope for a general regime on data portability and interoperability to open markets to new innovative businesses, while ensuring privacy and security of personal data. Such a regime may be an effective tool in addressing the market power of existing “brick and mortar” incumbents by reducing barriers to entry, allowing new entrants to disrupt traditional industry and have an impact across all markets. Data is not the only area. The European Union expert report’s findings on digital markets around strategies to frustrate new entry deployed by digital firms also resonate to a large extent with existing old economy platforms such as financial service Consideration needs to be given to whether such rule changes should have broader application in markets where incumbents fight digital disruptors. Another benefit of a proactive approach is that it may well prevent emerging digital markets from becoming concentrated and less inclusive over time. A potential advantage of developing countries is that some of these digital markets are not as well developed, or there is still scope for new entry and market growth as a large part of the population is not yet connected. This means that there is still space to keep these markets competitive and not have the difficult task of either regulating entrenched monopolists or seeking to develop entrants in their presence. After all, if there is one lesson for competition policy from the ~~FAAGs’~~ [GAFA’s] debate, it is that it is extremely hard to address economic power once it is in place, especially for a competition regulator in a developing country.

The European Union expert report on digital markets has suggested a shift in onus for dominant digital firms on certain conduct.50 However, a developing country competition regulator should also consider whether there are additional rules which could be imposed even on non-dominant digital firms to ensure competitive markets in the future. For example, rules on data interoperability, limitations on most favoured nation or best price clauses, and limits to self-preferencing on digital platforms more generally could be imposed in competition law enforcement regardless of dominance. Limiting large platforms from selling in competition with those that access consumers through them might be another area for consideration.51

#### Structural separations between platforms and commerce equalize international bargaining power.

Johannsen ’21 [German; PhD Candidate and LLM @ Max Planck Institute for Innovation and Competition; and Andrés Gonzalez; LLM and Chilean Competition Law Compliance Officer; “Digital Platforms & Economic Dependence in Chile Any Room for Competition Theories of Harm without Dominance?”; https://law.haifa.ac.il/images/ASCOLA16/GJAG.pdf; 15 June 2021; AS]

1. Platforms and economic dependence

As transactions —both economic and social— move to the Internet, the role of digital intermediary platforms (hereinafter "platforms") in the economy has increased as facilitators of interactions between the several economic agents (users, buyers, sellers, advertisers, suppliers, etc.). At a global level, some platforms have reached a large size, in some cases becoming part of digital conglomerates with a multinational presence, among which are the so-called TechGiants.7 In Chile, while there is a consolidated presence of platforms that base their business on exploiting the attention of users (e.g. social networks or video platforms), in other sectors platforms are in early stages of expansion8 (e.g. e-commerce in Chile9 ).

In their expansive or developing stage, the platforms seek to increase the amount of users who interact through them. In general terms, more users on one side of the platform, gives more value to the users of that side and/or the other sides (direct and indirect network effects). Already in the world-renowned US Microsoft case this effect was reported when it was pointed out that developers preferred writing applications for operating systems that had enough consumers, and consumers preferred operating systems that already had multiple applications, an effect that is recognized as a barrier to entry.10 Additionally, in the data economy, the more members, the more and better data, which allows for improved service/user experience (databased network effects).11 In other words, by acting as an intermediary, the platform captures revenue, but also internalizes positive externalities, adding value to its whole infrastructure. The positive feedback generated by network effects, in addition to economies of scale and scope, can lead to a platform reaching a size where, for its rivals, it is no longer profitable to compete.12 Once this tipping point is reached, it is easier for the platform to win the whole market.13 This economic rationale defines how and for what purpose platforms compete. On the other hand, the platforms' business models seek to create a long-term relationship with users and suppliers.14 In this regard, the platform can track those who participate in it (via personal accounts and devices) and extract data to create profiles, study preferences and predict behaviour.15 This generates efficiencies related to the personalization of services, which reduces the efforts to match supply and demand. The information obtained from the data analysis generates value that, added to the positive network externalities, increases switching cost for users and suppliers.16 Regarding users, switching costs could be lower if they interact through several platforms (multi-homing).17 However, many times this is not the case since users incur in convenience costs or the platform sets strategies to make muti-homing unlikely.

18 Regarding suppliers, switching costs also depend on whether they had to adapt their technology and business model to the platform’s requirements. 19 Increasing switching costs can make it unrealistic for a provider to switch platforms and still operate in an economically viable way.20 The result is an asymmetry of bargaining power to the detriment of those who depend on the platform. In other words, there is an economic dependence, asis known in comparative doctrine.21 The brick-and-mortar retail sector,22 several agro-industrial sectors,23 and in the context of digital platforms show different market structures leading to dependence. 24 Yet, in the latter, there are two major differences. On one hand, economic dependence can be a decisive factor in the winner-takes-all race. On the other hand, platforms can be placed in a strategic position, as the orchestrator of marketplaces where other players —most of them not rivals of the platform— are going to compete. Therefore, it is critical to understand to what extent economic dependence regarding a platform may affect the wellfunctioning of the market.

2. Dominant power and uneven bargaining power

Economic dependence accounts for an unequal distribution of bargaining power.25 This imbalance allows the holder of such power to exercise aggressive negotiation strategies both at the contractual level (e.g. tied sales, arbitrary interruption of trade relations) and extracontractual level (e.g. refusal to buy or sell), which end up imposing an excessive economic burden on the weaker party. In comparative law, this type of uneven bargaining power is often called superior bargaining position or relative market power26 (hereinafter, indistinctly, “bargaining power” or “relative power”). The exercise of relative market power can have, in turn, a feedback-loop effect, as it reinforces the existing situation of economic dependence.

Regarding digital platforms that provide services as a distribution channel, their strategic position as an intermediary and the size of suppliers who offer goods through it —many of which are small or medium businesses— allows them to be in a position of relative power visà-vis many suppliers. Under these circumstances, the platform can incur in various forms of abuses. The most obvious would be to increase unilaterally the commissions for transactions or enter into exclusivity contracts. A less obvious would be to use the information it obtains as intermediary to favour the marketing of its own branded products 27 or deny access to data that is relevant to users (e.g. about recommendations) and suppliers (e.g. about ranking).28 Not being able to access such data can increase the cost of switching platforms, as it makes data portability more difficult, which in turn may increase the degree of dependence.

While these commercial practices are a manifestation of economic and contractual freedom, in some cases they might be abusive as they could undermine good faith and/or fairness in commercial relationships. In other words, these normative foundations serve as a basis for establishing a boundary between practices with relative market power that are socially acceptable and those which are not. Both at a national and comparative law, the materialization of this dividing line is found mainly in the field of contract law and unfair commercial practices laws. 29

On the other hand, from the perspective of the market’s functioning, although imbalances of bargaining power are inherent in all markets —so much so that they are usually considered a sign of competition—, 30 the exercise of relative market power could, under certain circumstances, cause negative effects on the market structure. As such, a second normative foundation for limiting relative market power could be competition. 31

For instance, taking the commissions’ example, if the platform’s relative market power allows it to raise commissions only to certain suppliers, the resulting differentiated charges can lead to a downstream distortion of competition. 32 On the other hand, in the refusal to grant access to data example, while a vertical-bilateral approach would enable a claim for damages generated on those who cannot access their data, a horizontal-collective approach allows an analysis of whether there are artificial barriers that obstruct competition in the platform market. Moreover, the imposition of exclusive distribution clauses or other formulas that increases switching costs can cause the same effect. 33

Platforms have incentives to be the first to adopt this type of strategy, because by doing so they can take advantage in the winner-takes-all race. 34 In this context, one of the main questions is when these aggressive strategies should be regarded as anti-competitive. To this end, competition law usually resorts to the rule of dominance.35 Dominant power is a legal fiction that —based on economic parameters— distinguishes whether a firm has sufficient market power to behave with independence from competitors36 and/or customers37 on a constant basis. If so, their behaviour is scrutinised to assess whether it has an economic justification or, on the contrary, whether it was carried out to exclude competitors or exploit the market. Yet, in digital platform markets (and in the data economy in general) this rule faces several difficulties.38 First, since platforms have multiple sides, it is complex to understand the distribution of power among them.

39 Second, in the data economy it is complex to know what the true utility or value of a company's accumulated data is and how important it is to access this data for third parties to compete.40 On the other hand, the rule of dominance seems not able to handle all cases of economic dependence threatening competition. Indeed, according to the examples we saw, a third difficulty is that there could be a scenario of dependence distorting downstream or upstream competition (where the platform does not compete, or competes, but is not dominant). Finally, a fourth difficulty is that, even without dominance, a platform can make strategic use of dependence to reach a position of dominance that will later allow it to win the whole market.

#### Structural separations reorient the coordinates of geo-economic power.

Gurumurthy ’20 [Anita et al; Executive Director of IfTC and Expert Advisor for the UN Secretary General; “Unskewing the Data Value Chain: A Policy Research Agenda for Equitable Platform Economies”; (September 1, 2020); Available at SSRN: https://ssrn.com/abstract=3872492; AS]

Development is about how developing countries can move out of highly competitive activities with low margins to higher value activities with higher knowledge premiums, a process that has been recognized as structural transformation (Mann & Iazzolino, 2019). Fuelled by digital intelligence, all sectors of the economy are today undergoing a rapid makeover; a transition that requires developing countries to ensure that their productivity gains and digital capabilities are in a virtuous cycle. However, the “intelligence premium” harvested by dominant platform-lead firms in global data value chains constitutes a barrier to entry, impairing the global competitiveness of developing countries (Gurumurthy et al., 2019). The private enclosures of data and digital intelligence unfairly cement the competitive advantage of rich countries in global data value chains and thwart the potential for structural transformation of developing countries. Hence, while the data paradigm presents an urgency for systemic coordination towards national digital industrialization, it also represents a highly contested faultline in global resource redistribution.

The development question for the digital economy then is this: how can the data value chain be unskewed for redistributive equity and inclusion?

This conundrum has been the topic of significant, even if nascent, debates. Both traditional and new age policy proposals are being put forth from various quarters: institutional reform proposals from multilateral agencies and regional political blocs such as OECD, policy review assessments initiated at the national level, and unconventional and radical solutions from progressive civil society networks and scholars.

The emerging proposals can broadly be divided into three main areas: reining in Big Tech power, carving out a new resource governance regime for data resources, and building intelligence infrastructure capabilities in the Global South. Admittedly, many of the ideas involved are fledgling and demand in-depth exploration and robust debate before they can coalesce into clear and effective policies. But the juggernaut of Big Tech impunity and a yawning democratic deficit in global/regional policies in critical areas like trade, taxation and capital flows demand bold and agile action that eschews incremental, status quoist measures. They call for a conceptual overhaul that accounts for the realpolitik of geo-economic power.

The following sections take stock of noteworthy policy proposals that have emerged in each of the three areas, examining them critically and posing priority directions for a research agenda11 that can answer the following questions:  How are current policy directions and emerging institutional mechanisms able to address questions of market fairness and economic equity in the digital economy?  How do emerging global policy frameworks on data and AI impact national development priorities and pathways?

Area 1. Reining in Big Tech power through traditional policy instruments

In mainstream policy discourses in the digital arena, there is increasing recognition that competition and taxation policy reform are urgently needed to effectively curb Big Tech power in global data value chains.

With respect to competition policy, there is mounting consensus that industrial era competition law frameworks need to be overhauled so that they are able to effectively address the anti-competitive risks of network-data effects in data value chains. In 2020, the European Commission for Competition announced an in-depth study aimed at the updation of its merger assessment rubrics to address the realities of asset light, data heavy platform business models of the digital age (Modrall, 2020). The United States House Judiciary Committee has just concluded an investigation into the structural separations to be effected in data value chains to ensure that corporations controlling essential platform infrastructures are not also competing with the businesses that transact goods and services on them, the urgently needed “separation of platforms and commerce” that legal scholar, Lina Khan, has flagged in her study of Amazon’s antitrust behavior (Khan, 2017; 2019). Such interventions to overhaul traditional competition laws are urgently needed in the Global South as well.12

Currently, the European Union is exploring a limited form of structural separation by prohibiting specialized data sharing services from deploying the data that they transact for other uses, in an attempt to establish boundaries between data intermediation and intelligence services layers. But as the proposed regulation in its current form does not extend to cloud service providers, content intermediaries, and data exchange platforms developed in the context of IoT, it can be argued that this regulatory solution does not go far enough.13

#### Digital inequality undermines the LIO and sparks populist backlash.

Flaherty ’21 [Thomas; PhD Candidate and NSF Graduate Fellow @ University of California – San Diego; and Ronald Rogowski; Distinguished Professor of Political Science @ University of California – Los Angeles, Weatherhead Scholar @ Harvard University; “Rising Inequality as a Threat to the Liberal International Order,” *International Organization* 75(2), p. 495-523; AS]

Presiding over the November 2016 meeting of the International Political Economy Society, which followed that year’s US presidential election by only three days, David Lake began by saying, “To our theories, this result unfortunately comes as no surprise.” And indeed the field at large has believed that the growing “populist”1 backlash against the Liberal International Order (LIO)—not just the Trump victory but Brexit, the election of illiberal governments in Hungary, Poland, Turkey, the Philippines, and Brazil (to name only a few), and growing support for anti-immigrant and illiberal parties and candidates in many other democracies—has followed almost inevitably from the very changes the LIO has wrought, including of course increased trade and migration but also one major concomitant, rising economic inequality within states. According to our traditional economic theories,2 advanced and even middle-income countries are abundantly endowed with human capital, and poorly endowed with low-skill labor. And it is a rudimentary implication of international economics that, in those countries, expanded trade—or, even more, immigration of low-skill workers—will benefit the highly skilled and harm the less educated. Inequality will rise, and—perhaps the most prescient conclusion of the traditional analysis—partisanship will correlate increasingly with possession of human capital: opposition to the LIO will be strongest among the least educated and will decrease monotonically with more years of schooling.

The evidence, which we survey briefly, admits of no doubt that in almost all of the wealthier (and not a few semiwealthy) countries, inequality has risen, often quite sharply; returns on education3 have risen markedly; and education, even more than occupational status, has emerged as one of the most important predictors of electoral support for antiglobalization parties. What our theories however did not anticipate, and so far cannot explain, may well prove to have been even more important:

1. Not all who are well endowed in human capital, but chiefly a very thin upper layer—the top 1 percent, or even 0.1 percent—have harvested most of the gains from globalization.

2. The antiglobalization movements we observe • adopt a populist rhetoric that often excoriates not just globalization or immigration but also allegedly nefarious elites, who conspire, both domestically and across borders, to enrich each other at the expense of their fellow citizens;4 • benefit chiefly parties of the radical Right; and • have in important cases attracted non-negligible support among university-educated segments of the electorate, albeit far less than among the less skilled.5

We suggest that the extreme inequality and the anomalies are related, and that some insights from recent work in international economics may help explain them. Three advances in trade theory predict extreme inequality. “New new” trade theory (NNTT), with its emphasis on superstar firms, offers a natural framework. So too does an “enriched” neo-H-O-S-S (Heckscher-Ohlin-Stolper-Samuelson) perspective that explores how superstar workers arise in the context of heterogeneous talent.6 Finally, economic geography, explored thoroughly by Broz, Frieden, and Weymouth in this issue, shows how globalization gives rise to superstar cities.7 These three trade theories predict top-heavy inequality primarily by allowing for unit heterogeneity—an assumption that the actors our traditional theories treated as identical actually differ in important ways. Firms within sectors differ in productivity, workers within a factor class differ in innate talents, and regions within countries differ in agglomeration economies.

None of this suggests, of course, that rising inequality is the only, or even necessarily the most important, cause of the growing popular backlash against the LIO. Skill-biased technological innovation and resistance to cultural change also matter, as we discuss more fully later. We do find, however, at least from a cursory analysis of European elections, that backlash against shocks from immigration and imports is conditional on high inequality, disappearing where inequality is low; and we suspect that rising “top-heavy” inequality is related to a particularly prominent strain, within the antiglobalization movements, of anti-elite and anti-expert sentiment.

We go on to suggest why rising inequality matters, not only as a source of opposition to the LIO but as an impediment to economic growth and an exacerbant of domestic polarization and international conflict.

We assess the implications of top-heavy inequality for the LIO. What remedies have been proposed? And if they lack sufficient political support, what sources of resilience can sustain the LIO under top-heavy inequality? Relatedly, we return to the question of why antiglobalization sentiment has benefited the political Right more than the Left. Finally, we chart a course for future research on models of top-heavy inequality, and discuss how they illuminate “blind spots” in the literature on international political economy.

First, however, we survey briefly the extent of growing economic inequality in advanced economies and its seeming relation, chiefly through a human-capital channel, to antiglobalization and anti-elite attitudes and voting.

Convergence Across Countries, Divergence Within Them

The triumph of the LIO in the 1980s and 1990s—the collapse of Communism, the dismantling of trade barriers, the strengthening of institutions of international governance—coupled with, and facilitated by, breakthrough innovations in transport, communication, and finance, affected economic inequality in two ways that standard factor-endowment theories predicted: inequality declined significantly between countries, thus beginning to erode three centuries of the Great Divergence between rich and poor nations; but inequality within countries, especially among the advanced economies, increased almost as sharply.

• Between countries. As late as 1990, the richest 10 percent of the world’s population earned on average over ninety times what the poorest decile received; only twenty years later, that ratio had fallen to sixty-five times,8 or only slightly more than the within-country ratio of Brazil, where in 2008 the average income of the richest decile was about fifty times that of the poorest.9

• Within countries. Beginning even earlier, inequality of incomes, whether measured as the Gini index or the share of total income accruing to the top decile, has risen in virtually all of the advanced economies,10 and indeed in many of the middle-income ones.11 Bourguignon notes that the collapse of the Soviet empire and the opening of China, India, and Latin America injected roughly “a billion workers, for the most part unskilled, into international competition.”12 That will have drastically lowered the global capital-labor ratio and hence further raised returns on human and physical capital, while reducing those on low-skill labor, in virtually all but the poorest, most labor-abundant countries. In short, across much of the globe, the enormous overall gains from trade have benefited the highly skilled, the inventive entrepreneurs, and the owners of capital; the incomes of the less skilled and the capital-poor have risen more slowly, stagnated, or actually declined—exactly the development whose early manifestations alarmed Dani Rodrik two decades ago.13

Surely not all of the rise in inequality stems from globalization.14 Many analyses attribute much of the widening within-country gap—in the US, perhaps as much as four-fifths15—not to globalization but to skill-biased technological innovation.16 Bourguignon contends, to be sure, that innovation has been largely endogenous to globalization: wider markets and intensified competition have raised the returns on cost-reducing innovation.17 Cheaper labor, however, whether from offshoring or the competition of low-wage imports, might be expected to curtail the demand for labor-saving technologies, not to increase it.18 A stronger case is implied by “new new” trade theory: if managerial pay correlates closely with firm size, and if the most successful firms in a globalized economy tend to be the largest, it follows that globalization contributes directly to the rise in top incomes.19 Perhaps most importantly, however, whatever skill-biased innovation may have contributed to the gains of the top quintile or decile, it can say little about the gains of the top 1, or 0.1, percent of the distribution.20 Trade, as we argue, can more readily explain those disproportionate gains.

Rising Skills Premia

Also consistent with mainstream theory were the rising returns on education and the widening gap between high- and low-skill workers’ attitudes toward trade and migration. Exactly as theory would lead us to expect, antiglobalization sentiment rose sharply, and was increasingly concentrated, among voters with the least human capital—that is, the less educated.

Returns on education have indeed risen sharply. In the US in the 1970s, workers with a college degree earned only about a quarter more than ones of comparable ethnicity and age who had completed only high school; by 2010, that gap had risen to almost 50 percent.21 The “raw” difference in annual earnings (i.e., without controlling for ethnicity and age) between college graduates and those who have completed only high school is now 64 percent in the US, and on average in the OECD economies 45 percent.22

At the same time, less educated voters have mobilized strongly against globalization in almost all of the advanced economies. In the US, whites with less than a college education, having up to the year 2000 differed little in their partisanship from whites with university degrees, began to tilt Republican in the early 2000s23 and supported Trump in 2016 by a margin of more than two to one (64 to 28 percent).24 In the Brexit referendum, similarly, 70 percent of voters with only a General Certificate of Secondary Education, roughly equivalent to a US high-school diploma, supported leaving the European Union, while those with university degrees voted by almost the same margin (68 percent) to remain.25 And a recent International Monetary Fund working paper finds that since 2002 tertiary (i.e., university or equivalent) education has correlated, more than any other single variable, with not voting for a populist party in European parliamentary elections—an effect that has grown only stronger since 2012.26

The Riddle of the 1 Percent

In many ways, then, a standard factor-proportions picture of globalization’s distributional and political effects holds up. What it cannot explain, as economists have by now noted repeatedly,27 is why so much of the bounty has gone to the top 1 percent and why even the remainder of the top decile, let alone the highly educated generally, have benefited comparatively little. This pattern is reflected in average real income trends since 1991 across five advanced economies (Figure 1). Much of the real income growth of the top 10 percent owes to gains by the top 1 percent (compare panels 1 and 2); the next 9 percent (i.e., the remainder of the top decile) have seen a comparatively paltry increase. At the same time, the incomes of next 9 percent, which stagnate or even decline after about 2000, mirror those of the middle 40 percent (compare panels 2 and 3). Taken together, the three panels demonstrate the extent to which a narrow elite has risen above the rest of society’s otherwise skilled workers.

Haskel and colleagues more vividly make this case in the US with data on returns on education, finding that the median income of the top 1 percent had risen by 60 percent between 1990 and 2010, while the returns on university education, even for holders of advanced degrees, had declined in real terms after about 2000, virtually erasing their modest gains from the previous decade.28

The seemingly inexorable rise of the 1 percent, when contrasted with the relative stagnation of the rest of the top decile, and of owners of human capital in the middle 40 percent, raises at least three questions. Can our standard theories be modified to explain this “top-heavy” form of inequality? Would such a modified theory still provide a plausible link to globalization? And does such a theory help us understand the simultaneously anti-elitist and antiglobalization character of recent populist movements?

Heterogeneous Workers, Firms, and Regions: Three Ways Globalization Affects Top-Heavy Inequality

We argue that the top-heavy inequality we observe is consistent with three recent advances in trade theory. Each highlights how the bulk of globalization’s gains concentrate in a narrow subset of superstar workers, superstar firms, or superstar cities. An “enriched” H-O-S-S model shows how globalization concentrates wages in a small share of highly talented workers. New new trade theory implies that globalization concentrates profits in a few multinational corporations. Finally, economic geography, extensively reviewed by Broz, Frieden, and Weymouth (in this issue), predicts that globalization concentrates economic growth in a few metropolitan regions.29 By producing far more extreme inequality than traditional models suggest, these theories may help explain the puzzling composition of antiglobalization interests and why these movements adopt a populist tone that demonizes elites.

In presenting these advances, we spare the reader their mathematical exposition and instead focus on their sometimes subtle intuitions. We then explore their similarities and differences, as well as how they illuminate the puzzles of LIO backlash.

Neo-H-O-S-S

The first advance injects new life into the increasingly disesteemed, yet still heavily used, factor-endowments framework of Heckscher-Ohlin and Stolper-Samuelson. It turns out that modest enhancements introduced by Haskel and colleagues yield productive insights into the puzzles of LIO backlash.30 The key amendment introduces heterogeneous workers with varying degrees of innate talent. To state briefly the salient and surprising implications of that model, a drop in the relative price of labor-intensive goods, whether induced by globalization or by technology, can not only reduce the wages of low-skill workers, as in traditional models, but also distribute almost all of the resultant gains to a thin layer of highly talented people—and, at least as importantly, induce stagnation, or actual decline, in the earnings of highly skilled but less talented workers.31 And, once we observe that such a shift is both quite recent and plausibly linked to globalization, we may have shed some light on (a) the rabidly anti-elitist and antiglobalization tinge of the populist movements, (b) why such movements have recently peaked, and (c) why they gain (and may well continue to gain) support not only from the “usual suspects” among low-skill workers but also from those with moderate or even relatively high endowments of human capital.32

For those who appreciate a more rigorous introduction, we offer a graphical exposition of the “richer” H-O-S-S model in online Appendix A2. More intuitively, the key to understanding that model is what happens to high-skill workers when the relative price of capital rises.33 First consider the unsurprising fact that within most firms, sectors, and professions, some workers possess natural talent while the majority are perfectly average. Naturally, the most talented employees are far more productive than their average colleagues, even when everyone works with the same amount of capital. In Hollywood, for example, all actors may read the same script, but only A-list talent like Meryl Streep, Denzel Washington, or Tom Hanks can turn that script into an Oscar-winning performance.

In the classic model, trade lowers wages and raises the relative cost of capital; in the enriched model, the owners of capital make up for that higher cost by lowering the wages of mediocre employees and raising the wages of superstars. Capital owners become less able to afford mediocre workers whose productivity cannot keep up with rising capital costs. Instead, they hire the superstars, whose superior productivity can more than cover the increased costs of capital.

Consider the Hollywood example that Haskel and colleagues used, where film scripts represent intellectual capital, indeed the most important form of capital for the entertainment industry. As the world’s tastes and purchasing power increase demand for Hollywood entertainment, the price of scripts rises—those of stellar scripts, most of all. As that price rises, studios or streaming services become less and less likely to hire actors of only middling quality to perform such a script. The studios’ investment in a high-quality script will pay off, and bring their film the requisite audience, only if it stars actors of extremely high talent: Robert Downey Jr., Scarlett Johansson, or Samuel L. Jackson (or all three in the same film!).34

Admittedly, this analysis assumes, rather than explains, that we can attribute the rise of the top 1 percent to differences in talent but a lot of evidence supports the thesis. For one thing, in almost all countries—including such improbable cases as France and Spain—half to two-thirds of the income of the top 1 percent consists of salaries (compensation for work). Rarely, in any present-day advanced economy, do returns on capital constitute more than a quarter of the incomes of the top 1 percent (in the US, it is less than 15 percent), Thomas Piketty’s arguments notwithstanding.35 As one observer notes, “The fact that so many of [today’s] top earners work for a living is striking,”36 given that a century ago the great majority of elite incomes came from investments in property, bonds, or equities. For another, the model accurately predicts the kind of “fractal” inequality that so far has seemed to prevail almost everywhere in advanced and semi-advanced economies.37 That is, inequality seems to have grown not only between, but within firms and occupations: the top lawyers, academics, physicians, middle managers, and even shop floor workers, have begun to earn far more than the median member of their profession, or even the median co-worker of equal qualifications in their firm.

Once we grant that such differences in talent can become important, the model suggests that any globalization-induced rise in the relative price of capital-intensive goods (or, equivalently, decline in the relative price of labor-intensive products) in advanced economies will depress (or threaten to depress) the wages not only of low-skill workers but also of high-skill ones of less than superlative talent. It thus raises the prospect that the growing resistance to global markets may be embraced, sooner rather than later, not only by low-skill workers but by a growing segment of those with higher education or advanced training.

New New Trade Theory

“New new” trade theory (NNTT) offers an alternative firm-centric view of top-heavy inequality.38 Whereas neo-H-O-S-S focuses on how workers of different talents select into different sectors, NNTT focuses on how firms of different productivity levels sort into import-export activities. One of its salient implications is that increases in foreign trade concentrate the distribution of profits into the largest and most productive firms in each sector.39

The intuition is simple: import and export activities require large upfront costs, such as setting up global logistics networks and investing overseas—costs that only the largest firms can afford. The benefits of trade, access to larger markets, for example, then make these large firms even larger, which subsequently allows them to out-compete their smaller domestic rivals. Armed with global economies of scale, superstars like Walmart and Amazon flood the domestic market with lowcost goods and services. This squeezes out the smallest firms, for example, local mom-and-pop establishments, while reducing the profits of the midsize firms, whose middling productivity permits them to sell only domestically. In sum, NNTT implies, and offers evidence to show, that superstar firms in each sector reap the lion’s share of the gains from globalization.

In its earliest formulation, NNTT implied no wage inequality, because it assumed workers to be homogeneous. Recent advances draw implications for wage inequality by allowing some profits to pass through to workers—what the literature calls rentsharing. One modification allows firms to screen, and bargain over quasi-rents with, workers of varying abilities.40 More productive exporting firms pay higher wages to attract higher-ability talent. In the end, rent-sharing allows inequality in firm profits to spill over into inequality in workers’ wages.41

NNTT implies that globalization-induced inequality should manifest itself principally at the level of the firm, pulling up the compensation of all workers in the larger and more successful firms, and leaving behind all of those employed in smaller, domestically oriented firms (or those unemployed through the demise of the smallest firms). This is exactly what Helpman and colleagues find in Brazil, where 70 percent of overall inequality occurs within sectors and occupational categories; similar results were obtained by Akerman and co-authors in an analysis of wage inequality in Sweden from 2000 to 2007.42

Economic Geography

Economic geography explores the origins and effects of one of society’s most readily observable features: the unequal distribution of economic activity across space, a phenomenon commonly called agglomeration.43 Broz, Frieden, and Weymouth (in this issue) document how globalization’s effects appear most clearly at the level of communities, and operate through the mechanisms specified by economic geography.44 Here we complement their account by situating economic geography within only the broader set of trade models that contribute to extreme inequality. Globalization, we contend, exacerbates regional inequality by inflicting economic stagnation and decline on all but a handful of superstar cities. The mechanism works through the joint effect of agglomeration forces and trade costs. Globalization facilitates the lowering of trade costs (not just those of transportation and communication, but also costs imposed by tariff policies), and this frees up firms to locate in the places that confer the greatest advantage.

The literature identifies many advantages to urban agglomerations. Large cities increase access to suppliers of intermediate inputs, as well as to transportation infrastructure, large pools of specialized talent, and diverse consumers. Moreover, they facilitate the exchange of information about changes in competition, technology, and consumer tastes.45 Some locations also offer a fixed advantage such as access to deep ports or natural resources. Overall, large cities exist and continue to grow because they confer some large basket of benefits on those who locate there.46 The link to globalization seems obvious: the cheaper transportation becomes, and the farther tariff barriers fall, the easier it is for firms and workers to realize the benefits of agglomeration.

For regional inequality to speak to the puzzle of earnings inequality, it must be true that changes in regional growth both reflect and pass through to the wages of resident workers. We find this plausible and consistent with evidence of the stark spatial inequality in returns on skills. A growing literature documents the “end of spatial wage convergence” since 1980, with the bulk of wage gains going to high-skill workers concentrating in just a handful of large cities.47 However, enormous wage inequality within the largest cities suggests that between-region inequality provides only a partial picture. In reality, heterogeneity among workers and firms likely overlaps with, and is accentuated by, the effects of large cities.

Notable Similarities and Differences

All three advances in trade theory point to the same pessimistic outcome, that globalization produces extreme inequality, where a narrow segment of society benefits to the exclusion of the rest. Each theory identifies a different set of “superstars” within this narrow segment: workers with superlative talents, extraordinarily productive firms, or urban agglomerations. Despite varying mechanisms, each arrives at the conclusion of extreme inequality by introducing some form of unit heterogeneity—an assumption that the actors we once treated as identical actually differ from one another in important ways. Workers of similar education differ in innate talent; firms in the same sector vary in productivity; and regions in the same country vary in their advantages of agglomeration. This heterogeneity suggests a radically different perspective on the politics of globalization, one where we should not be surprised that populist protectionist movements arise; that they vilify elites; or that, despite finding their base constituency among lowskill workers, they enjoy nontrivial support from high-skill workers across many sectors.

We highlight two differences among these theories. First, they arrive at the implication of extreme inequality by varying degrees of theoretical complexity. In this regard, neo-H-O-S-S offers a clear advantage: its general framework requires no added assumptions about heterogeneous firms, economies of scale, locational mobility, or rent sharing.

Second, and at least as important, is the empirical accuracy of key theoretical assumptions. In the case of NNTT, evidence for the crucial rent-sharing assumption is decidedly mixed.48 For economic geography, countries almost certainly differ in the degree to which factors are spatially mobile. The neo-H-O-S-S model of differently talented workers will enjoy the most traction in longer-run analyses of wage outcomes, where factors are fully mobile across sectors and regions. Overall, the evident variance in empirical support for different modeling assumptions should caution users to validate these assumptions in their particular research contexts.

Finally, these unit heterogeneity models are not mutually exclusive—they likely reinforce one another in interesting ways. The most talented workers can earn the highest wage by working for the largest firms that can afford them. Regional agglomeration facilitates this advantageous match by locating these superstar workers and superstar firms in the same city. Thus, the top-heavy inequality we observe may very well arise at the intersection of heterogeneous workers, firms, and regions.

Hypothesis

Under any of the three trade theories described here, globalization produces topheavy inequality, wherein a thin margin of workers benefits while the rest are left behind. This drives a populist strain of backlash that views globalization as a struggle of the masses versus the elites. To our mind, this casts a different light on recent research that sees the backlash as a response to shocks from immigration or imports. To state our key hypothesis:

H: when top-heavy inequality is high, shocks from trade, whether in goods, services, or factors of production, increase public support for populist parties.49 In the absence of top-heavy inequality, however, such shocks have no effect on support for populism.50

This assumes that inequality reflects the long-run wage effects of trade and migration. That is, if our trade theories accurately predict wage outcomes, then we should observe extreme, or top-heavy, inequality. As previously discussed, even though much of the inequality we observe does reflect trade patterns, inequality also derives from other sources, such as technological change.51

Inequality and Antiglobalization: Evidence from European Elections

We offer a very preliminary test of this hypothesis in the context of two recent studies of populist far-right vote shares in Europe. Their wide empirical coverage, spanning between them twenty-eight countries over twenty-six years (1988 to 2014), affords a high degree of external validity, at least among economically developed nations in recent decades. Also, the two studies focus on different aspects of globalizationrelated shocks, one on immigration and the other on imports. Finally, both papers offer rigorous research designs. In further examining and extending their findings, we introduce as few modifications as possible to the original designs.

Immigration and Inequality

The study by Georgiadou, Rori, and Roumanias (hereafter GRR) requires the least modification.52 It explores the role of immigration shocks and inequality in all national and European Parliament elections in the twenty-eight member states of the European Union between 2000 and 2014. In particular, the authors study, at the level of Eurostat’s NUTS-2 regions,53 the vote shares obtained by “populist radical right” parties,54 which rose dramatically in the wake of the 2008–09 financial crisis (from 0.05 to 0.15 mean vote share across all countries).

In their original analysis, GRR find a positive association between right-populist vote share and both inequality and immigration, controlling for unemployment, immigration, and economic growth.55 Figure 2 replicates this result under the model labeled GRR2018.56

IO2020 extends that model simply by interacting their measures of inequality and immigration. We report the coefficients in standardized units for visual comparability and ease of interpretation. These models are also posted in Table A2 in the online appendix. Two findings follow from our analysis. First, GRR’s original finding remains intact: an increase of one standard deviation in national-level inequality, all else equal, is associated with a 2.8-percentage-point increase in populist vote shares (p < .01). Since this exercise holds immigration constant, it suggests that inequality independently undermines support for the LIO. This likely reflects, as we discuss later in the paper, inequality’s well-known effects on economic growth, polarization, and external conflict.

Second, our interaction model produces strong evidence for our key hypothesis, that surges in populist support from immigration shocks (which GRR found to have a modest and imprecisely estimated effect) are important but highly conditional on the level of inequality: magnifying backlash at extreme levels and nullifying backlash at lower levels. We visualize this result in a marginal effects plot in Figure 3. The differences in magnitudes are impressive. A one-standard-deviation (0.3 percentage point) increase in the share of migrants in the local population is associated with precisely zero change in vote shares for populist parties at even moderate levels of inequality (Gini < 0.29). At high levels of inequality (Gini > 0.34), the same one-standard-deviation increase in the share of migrants relates to a twenty-point increase in vote share for populist parties. These magnitudes are striking, given that the average NUTS-2 vote share for these parties is 6 percent, with a maximum of 54 percent. Rising immigration, it seems, poses a populist threat to the LIO only when paired with an income distribution that is, or has become, highly unequal.

Imports and Inequality

That inequality mediates shocks from immigration raises the obvious parallel question: does it similarly mediate import-related shocks? To this end, we repeat the earlier analysis, this time employing the data set from Colantone and Stanig (hereafter CS), who examine “China trade shocks” in the European context: fifteen Western European countries over the years 1988 to 2007.57 They report strong effects of Chinese imports on vote shares for radical Right parties58 at the level of the electoral district.59 We replicate their principal results, including their two-stage least squares estimators,60 in specifications 1 and 2 of Table A3 (in the online appendix).

The CS data set does not include a measure of income inequality. To test our interactive hypothesis, we employ inequality measures from the World Inequality Database.61 We report top 1 percent shares of post-tax income at the country level.62 We also apply logarithmic transformations to address issues of fit resulting from extreme outliers.63 Finally, we adopt a multilevel estimator that serves our particular data needs.64 The results rely on this preferred hierarchical estimator.65 Table A3 (in the online appendix) documents how these modifications affect the original CS findings.66

The results for import shocks closely mirror those for immigration. Figure 4 plots the coefficients of our preferred model (IO2020) alongside a baseline model in CS (CS2018). As expected, the positive association between Chinese imports and populist vote shares is highly conditioned by inequality. The coefficient on the China shock remains significant only when interacted with top-1-percent income shares. The marginal effects plot in Figure 5 translates this into real-world terms. At low to medium top-heavy inequality (top 1 percent shares < 0.09), a one-standard deviation increase in imports (approximately 170 EUR per NUTS-2 worker) relates to no statistically significant change in district vote shares for populist parties—that is, no populist backlash from rising imports. However, in countries where the top 1 percent earns approximately 10 percent or more of national income, the same magnitude of imports is associated with a 25-to-50-percent increase in district vote shares, on average, for right-populist parties.

In combination with the results from immigration shocks, this analysis provides strong support for our hypothesis that the politics of LIO backlash are best understood from the perspective of the three recent advances in trade theory that predict topheavy inequality. Trade in goods, or in factors of production, in the context of heterogeneous firms, workers, and regions, produces top-heavy inequality that, we argue, sets the stage for a particularly populist form of backlash. We provide suggestive evidence from European elections that is largely consistent with this; migration and imports drive support for populist parties only where we observe high inequality.

Possible Remedies and Sources of Resilience

An optimistic reading of this analysis is that national redistribution provides an effective remedy against right-populist backlashes. This finding is consistent with the “compensation hypothesis,” that government redistribution to globalization’s losers increases public support for trade.67 Our paper contributes to this literature by suggesting that redistribution targeted at top-heavy inequality (superstar earners, regions, and firms) to the benefit of otherwise skilled workers in smaller firms and cities would be especially effective.

However, democracies famously fail to address rising inequality with redistribution.68 This leads us to a more pessimistic conclusion that, even though lower inequality increases support for globalization, there is little evidence that governments will redistribute in countries with already high top-heavy inequality. We therefore agree with Atkinson that more redistribution of the large gains from globalization would be both possible and effective; but mass support for it, paradoxically, is weak.69 There is hope for other policy suggestions, as well. Investment in education, even if it could achieve the requisite political support, would fail to address the central problem: outsized gains from “superstar” talent, cities, and firms. Global forms of redistribution, such as the world “Tobin tax” on cross-border financial transactions, promise to tax capital without encouraging capital flight. However, such visions have been dismissed as “utopian.”70 They would also raise the substantial issues of global governance that Rodrik’s “globalization trilemma” has highlighted: who would enact such a tax, and to whom would the revenues flow?71

Instead, governments are far more likely to enact protection—restrictions on imports and immigration that reduce welfare but undeniably also reduce inequality. Williamson shows that the choking-off of US immigration from the 1920s to the 1960s contributed significantly to the “great leveling” of American inequality, including the Great Migration of African Americans out of the US South, as Northern employers began to substitute Black for immigrant labor.72 Restricting low-wage imports would of course have a similar effect. These options offer the losers from globalization only a larger slice of a (likely much) smaller pie.

If governments under pressure from top-heavy inequality continue to substitute protectionism for redistribution, can the LIO that stands for globalization nonetheless be sustained? We see two possible sources of resilience. First, powerful interests in the LIO can be expected to defend it.73 Second, international institutions still matter. The retreat of the US, as a principal guarantor of the LIO, poses an undeniable threat to its institutions and to the peace and cooperation they foster. However, IR research cautions against premature reports of its demise. Despite declining US support, international institutions will continue to serve vital functions for their members—functions that make these institutions “sticky” in the face of shocks.74 More recent scholarship in this vein suggests that the international institutions that were hardest to create, and whose rules are flexible, are the most likely to weather the shock of declining US support.75 To the extent that other institutions were created with less effort and exhibit less flexibility, however, other powerful states will seek to install alternatives that better serve them.

Limitations and Future Research

Future research in this area will need to address at least three shortcomings of our analysis: imprecise measurement, identification, and external validity. First, our nationallevel measures of inequality cannot discriminate among the three possible trade theories, since all predict top-heavy inequality. One solution would require decomposition of earnings into worker, firm, and region heterogeneity.76 Future measures should also be mindful of several indirect routes by which inequality undermines the LIO, independent of globalization shocks. It slows economic growth,77 probably by restricting the formation of human capital.78 It exacerbates domestic polarization79 and, seemingly, induces aggressiveness in foreign policy, especially among less welloff voters.80 And, to the extent that it installs governments of the Right, it further increases inequality.

Second, the lack of a careful identification strategy leaves much for future research, which must isolate the variation in top-heavy inequality that is independent of technological change (as discussed earlier), institutions, and redistributive politics, among other sources of endogeneity. Instrumental variable approaches, such as those featured by Enamorado and colleagues, offer one promising direction.81

Future research will also need to account for non-economic aspects of globalization and inequality. Our analysis assumes that inequality operates narrowly through economic mechanisms. We doubt that material interests alone explain the variance in attitudes to globalization.82 Surely status anxiety and cultural threats matter too in ways not reflected in the theory here.83 We know that some voters do not consider trade salient enough,84 or find it too complicated,85 for economics alone to determine vote preferences. Relatedly, attitudes on trade and migration partially reflect sociotropism and out-group anxieties.86 Nonetheless, an at least equally large literature confirms that economic shocks accurately predict election outcomes,87 and our own analysis shows that these economic shocks especially drive voting where inequality is high. Clearly, both economic and cultural factors matter, probably in mutually reinforcing ways. To know for sure, future research will need to test our three trade theories with individual-level data.88 What we contribute to this important debate is a way to sharpen the way international political economy thinks about the economic side of globalization politics.

Third, future research will need to investigate whether these results extend, as recent research suggests,89 to low- and middle-income countries.90 We also expect, although we lack the data to prove it, that our analysis does not extend to support for left-populist parties.

Why does rising inequality move many voters toward right-wing populism rather than left-wing populism? Put simply, the Left’s failure to enact adequate redistribution91 has pushed many of its own voters to support right-wing parties whose protectionist policies offer a plausible alternative to redistribution.92 In the US, the pattern of “Obama-toTrump” voters, particularly among less educated workers, is well documented.93 In Germany, the right-populist Alternative für Deutschland received about 15 percent of its support from traditional left-wing parties in 2017, and similar patterns seem to have driven support both for France’s Le Pen and for the right-populist FPÖ (Freedom Party) in Austria.94 In all three cases, manual workers demonstrably form the core of right-populist support.95 These shifts from redistributive to protectionist parties, we suspect, are exacerbated by the Left’s growing association with elitism, expertise, and globalization: all things that those farther down in the income distribution have come to distrust, or even to despise.

Conclusion

The openness to trade in goods, services, and factors of production the LIO has so effectively advanced over decades has concentrated real income growth in a very thin layer of workers. While this rise in top-heavy inequality doubtless has other causes, chief among them skill-biased technological innovation, trade openness has contributed mightily, particularly since the “China shock” of 2001;96 and certainly the populist movements that reject the LIO cast openness to trade and migration as the chief villain.

The ways in which rising inequality has threatened the LIO expose lacunae in international political economy’s intellectual apparatus—“blind spots” that require remediation. Most importantly, our basic economics are, if not wrong, at least outdated. The field’s adherence to classical trade models blinds us to the distributional effects revealed by top-heavy inequality: far more people lost from globalization, and fewer gained, than traditional theories (factor proportions and specific factors) suggested. While economists rapidly updated their trade models to account for the emerging reality of extreme inequality, political science largely stayed the course —and ran the danger, now realized, of misapprehending the domestic politics of globalization.

The trade literature offers three explanations for top-heavy inequality. The “enriched” Heckscher-Ohlin model of Haskel and colleagues shows how only a thin layer of extraordinarily talented individuals within the larger set of high-skill workers unambiguously benefits from a rise in the relative price of a skill-intensive product; the wages of both the less talented high-skill and the low-skill workers stagnate or fall.97 New new trade theory shows how a similarly narrow subset of very large and productive firms, and their employees, absorb the bulk of trade’s gains at the expense of all other firms. Finally, economic geography suggests that trade concentrates economic growth in a few large metropolitan regions while inflicting stagnation and decline elsewhere. Each offers a pessimistic view of the politics of globalization in which variously defined superstars gain a far larger share than the society at large.

We validate these theories of top-heavy inequality with data on local election outcomes from as many as twenty-eight countries over twenty-six years. We find that public support for right-populist parties rises dramatically with exposure to imports and immigration, but only in those countries with high top-heavy inequality. The fact that the huge gains from trade and technology have flowed to such a small elite, while earnings in other categories have stagnated, may go far to explain why the antiglobalization movements blame not only crucial elements of the LIO, but increasingly a small and nefarious global elite, for what one politician luridly portrayed as the “carnage” among many regions and sectors of the advanced economies.

That these movements, with rare exceptions, seek relief in restrictions on trade and migration from populist movements of the Right, rather than in redistribution or training, probably owes much to the failure of the political Left to redistribute sufficiently.98 That so much of these parties’ electoral support, both in Europe and in the US, comes from manual workers and former supporters of the political Left lends credence to this conjecture.

The ill effects of rising inequality, however, extend well beyond the rising tide of antiglobalization movements and politicians. They extend to slower economic growth (bound to exacerbate existing resentments), increased political polarization, and even a heightened risk of international conflict.

While eminent scholars have advanced quite plausible and growth-enhancing remedies for rising inequality, none elicits, or seems likely to elicit, sufficient political support. Tragically, inequality will likely be reduced, in any serious way, only by what Scheidel has accurately counted as one of history’s “great levelers,” our current high-mortality pandemic.99 While COVID-19 mercifully inflicts nothing approaching the death toll of history’s worst plagues, in the long run its combined effects of labor shortage, capital abundance, and panicky deglobalization will likely result—despite short-term unemployment and recession—in greater equality (but also less prosperity) in the advanced economies, greater inequality in the less developed countries, and greater between-nation inequality. Those developments may partially reduce developed-country hostility to the LIO; but, to survive, the LIO will have to find stronger sources of resilience among business elites and political leaders.

We thus conclude by disagreeing with Lake’s morning-after observation about the 2016 election. While it seemed that the populist backlash came as “no surprise” to the field of international political economy, some of its most important aspects, including the link to top-heavy inequality and the rejection of elites and expertise, were neither foreseen nor understood by our conventional theories. As Abraham Lincoln said during an earlier time of trial, “As our case is new, we must think anew and act anew.”100

#### LIO collapse causes extinction.

Harari ’20 [Yuval Noah; Professor in Department of History @ Hebrew University of Jerusalem; “How to Survive the 21st Century: Three Existential Threats to Humanity,” *Journal of Data Protection & Privacy* 3(4) p. 463-468]

As we enter the third decade of the 21st century, humanity faces so many issues and questions, that it is really hard to know what to focus on. So I would like to use the next 20 minutes to help us focus on all the different issues we face. Three problems pose existential challenges to our species. These three existential challenges are nuclear war, ecological collapse and technological disruption. We should focus on them. Now nuclear war and ecological collapse are already familiar threats, so let me spend some time explaining the less-familiar threat posed by technological disruption. In Davos, we hear so much about the enormous promises of technology — and these promises are certainly real. But technology might also disrupt human society and the very meaning of human life in numerous ways, ranging from the creation of a global useless class to the rise of data colonialism and of digital dictatorships. SOCIO-ECONOMIC UPHEAVAL Automation will soon eliminate millions upon millions of jobs, and while new jobs will certainly be created, it is unclear whether people will be able to learn the necessary new skills fast enough. Suppose you are a 50-year-old truck driver, and you just lost your job to a self-driving vehicle. Now there are new jobs in designing software or in teaching yoga to engineers — but how does a 50-year-old truck driver reinvent himself or herself as a software engineer or as a yoga teacher? And people will have to do it not just once but again and again throughout their lives, because the automation revolution will not be a single watershed event following which the job market will settle down into a new equilibrium. Rather, it will be a cascade of ever bigger disruptions, because artificial intelligence (AI) is nowhere near its full potential. Old jobs will disappear, new jobs will emerge, but then the new jobs will rapidly change and vanish. Whereas in the past humans had to struggle against exploitation, in the 21st century, the really big struggle will be against irrelevance. And it is much worse to be irrelevant than exploited. Those who fail in the struggle against irrelevance would constitute a new ‘useless class’ — people who are useless not from the viewpoint of their friends and family, but useless from the viewpoint of the economic and political system. And this useless class will be separated by an ever-growing gap from the ever more powerful elite. THE AI REVOLUTION CREATING UNPRECEDENTED INEQUALITY BETWEEN CLASSES AND COUNTRIES In the 19th century, a few countries like Britain and Japan industrialised first, and they went on to conquer and exploit most of the world. If we are not careful, the same thing will happen in the 21st century with AI. We are already in the midst of an AI arms race, with China and the US leading the race, and most countries being left far, far behind. Unless we take action to distribute the benefit and power of AI between all humans, AI will likely create immense wealth in a few high-tech hubs, while other countries will either go bankrupt or become exploited data colonies. Now we are not talking here about a science fiction scenario of robots rebelling against humans. We are talking about far more primitive AI, which is nevertheless enough to disrupt the global balance. Just think what will happen to developing economies once it is cheaper to produce textiles or cars in California than in Mexico? And what will happen to politics in your country in 20 years, when somebody in San Francisco or Beijing knows the entire medical and personal history of every politician, every judge and every journalist in your country, including all their sexual escapades, all their mental weaknesses and all their corrupt dealings? Will it still be an independent country or will it become a data colony? When you have enough data, you do not need to send soldiers in order to control a country. THE RISE OF DIGITAL DICTATORSHIPS AND GLOBAL MONITORING This danger can be stated in the form of a simple equation, which I think might be the defining equation of life in the 21st century: B ×C×D =AHH! Which means? Biological knowledge multiplied by computing power multiplied by data equals the ability to hack humans, ahh! If you know enough biology and have enough computing power and data, you can hack my body and my brain and my life, and you can understand me better than I understand myself. You can know my personality type, my political views, my sexual preferences, my mental weaknesses, my deepest fears and hopes. You know more about me than I know about myself. And you can do that not just to me, but to everyone. A system that understands us better than we understand ourselves can predict our feelings and decisions, can manipulate our feelings and decisions and can ultimately make decisions for us. Now in the past, many governments and tyrants wanted to do it, but nobody understood biology well enough, and nobody had enough computing power and data to hack millions of people. Neither the Gestapo nor the KGB could do it. But soon at least some corporations and governments will be able to systematically hack all the people. We humans should get used to the idea that we are no longer mysterious souls — we are now hackable animals. That is what we are. The power to hack humans can be used for good purposes — like providing much better healthcare. But if this power falls into the hands of a 21st-century Stalin, the result will be the worst totalitarian regime in human history. And we already have a number of applicants for the job of 21stcentury Stalin. Just imagine North Korea in 20 years, when everybody has to wear a biometric bracelet that constantly monitors your blood pressure, your heart rate, your brain activity 24 hours a day. You listen to a speech on the radio by the great leader, and they know what you actually feel. You can clap your hands and smile, but if you are angry, they know, you will be in the gulag tomorrow. And if we allow the emergence of such total surveillance regimes, do not think that the rich and powerful in places like Davos will be safe, just ask Jeff Bezos. In Stalin’s USSR, the state monitored members of the communist elite more than anyone else. The same will be true of future total surveillance regimes. The higher you are in the hierarchy — the more closely you will be watched. Do you want your chief executive officer or your president to know what you really think about them? So it is in the interest of all humans, including the elites, to prevent the rise of such digital dictatorships. And in the meantime, if you get a suspicious WhatsApp message, from some Prince, do not open it. Now if we indeed prevent the establishment of digital dictatorships, the ability to hack humans might still undermine the very meaning of human freedom. Because as humans will rely on AI to make more and more decisions for us, authority will shift from humans to algorithms and this is already happening. Already today billions of people trust the Facebook algorithm to tell us what is new, the Google algorithm tells us what is true, Netflix tells us what to watch, and the Amazon and Alibaba algorithms tell us what to buy. In the not-so-distant future, similar algorithms might tell us where to work and who to marry, and also decide whether to hire us for a job, whether to give us a loan, and whether the central bank should raise the interest rate. And if you ask why you were not given a loan, and why you the bank did not raise the interest rate, the answer will always be the same — because the computer says no. And as the limited human brain lacks sufficient biological knowledge, computing power and data — humans will simply not be able to understand the computer’s decisions. So even in supposedly free countries, humans are likely to lose control over our own lives and also lose the ability to understand public policy. Already now, how many humans understand the financial system? Maybe 1 per cent, to be very generous. In a couple of decades, the number of humans capable of understanding the financial system will be exactly zero. Now we humans are used to thinking about life as a drama of decision-making. What will be the meaning of human life when most decisions are taken by algorithms? We do not even have philosophical models to understand such an existence. The usual bargain between philosophers and politicians is that philosophers have a lot of fanciful ideas, and politicians basically explain that they lack the means to implement these ideas. Now we are in an opposite situation. We are facing philosophical bankruptcy. The twin revolutions of infotech and biotech are now giving politicians the means to create heaven or hell, but the philosophers are having trouble conceptualising what the new heaven and the new hell will look like. And that is a very dangerous situation. If we fail to conceptualise the new heaven quickly enough, we might be easily misled by naïve utopias. And if we fail to conceptualise the new hell quickly enough, we might find ourselves entrapped there with no way out. Technological disruption of not just our economy, politics and philosophy but also our biology In the coming decades, AI and biotechnology will give us godlike abilities to reengineer life, and even to create completely new life forms. After four billion years of organic life shaped by natural selection, we are about to enter a new era of inorganic life shaped by intelligent design. Our intelligent design is going to be the new driving force of the evolution of life and in using our new divine powers of creation, we might make mistakes on a cosmic scale. In particular, governments, corporations and armies are likely to use technology to enhance human skills that they need — like intelligence and discipline — while neglecting other humans skills – like compassion, artistic sensitivity and spirituality. The result might be a race of humans who are very intelligent and very disciplined but lack compassion, artistic sensitivity and spiritual depth. Of course, this is not a prophecy. These are just possibilities. Technology is never deterministic. In the 20th century, people used the same industrial technology to build very different kinds of societies: fascist dictatorships, communist regimes, liberal democracies. The same thing will happen in the 21st century. AI and biotech will certainly transform the world, but we can use them to create very different kinds of societies. And if you are afraid of some of the possibilities I have mentioned, you can still do something about it. But to do something effective, we need global cooperation. GLOBAL PROBLEMS THAT DEMAND GLOBAL SOLUTIONS Whenever a leader says something like ‘My country first!’ we should remind that leader that no nation can prevent nuclear war or stop ecological collapse by itself, and no nation can regulate AI and bioengineering by itself. Almost every country will say, ‘Hey, we don’t want to develop killer robots or to genetically engineer human babies. We are the good guys. But we can’t trust our rivals not to do it. So we must do it first’. If we allow such an arms race to develop in fields like AI and bioengineering, it does not really matter who wins the arms race — the loser will be humanity. Unfortunately, just when global cooperation is more needed than ever before, some of the most powerful leaders and countries in the world are now deliberately undermining global cooperation. Leaders like the US president tell us that there is an inherent contradiction between nationalism and globalism, and that we should choose nationalism and reject globalism. But this is a dangerous mistake. There is no contradiction between nationalism and globalism. Because nationalism is not about hating foreigners. Nationalism is about loving your compatriots. And in the 21st century, in order to protect the safety and the future of your compatriots, you must cooperate with foreigners. So in the 21st century, good nationalists must be also globalists. Now globalism does not mean establishing a global government, abandoning all national traditions or opening the border to unlimited immigration. Rather, globalism means a commitment to some global rules. Rules that do not deny the uniqueness of each nation, but only regulate the relations between nations. THE WORLD CUP: AN EFFECTIVE MODEL FOR GLOBAL COOPERATION The World Cup is a competition between nations, and people often show fierce loyalty to their national team. But at the same time, the World Cup is also an amazing display of global harmony. France cannot play football against Croatia unless the French and the Croatians agree on the same rules for the game. And that is globalism in action. If you like the World Cup — you are already a globalist. Now hopefully, nations could agree on global rules not just for football, but also for how to prevent ecological collapse, how to regulate dangerous technologies and how to reduce global inequality. How to make sure, for example, that AI benefits Mexican textile workers and not only American software engineers. Now of course, this is going to be much more difficult than football — but not impossible. Because the impossible, well we have already accomplished the impossible. We have already escaped the violent jungle in which we humans have lived throughout history. For thousands of years, humans lived under the law of the jungle in a condition of omnipresent war. The law of the jungle said that for every two nearby countries, there is a plausible scenario that they will go to war against each other next year. Under this law, peace meant only ‘the temporary absence of war’. When there was ‘peace’ between — say — Athens and Sparta, or France and Germany, it meant that now they are not at war, but next year they might be. And for thousands of years, people had assumed that it was impossible to escape this law. But in the last few decades, humanity has managed to do the impossible, to break the law and to escape the jungle. We have built the rule-based liberal global order that, despite many imperfections, has nevertheless created the most prosperous and most peaceful era in human history. Peace has changed ‘Peace’ no longer means just the temporary absence of war. Peace now means the implausibility of war. There are many countries that you simply cannot imagine going to war against each other next year — like France and Germany. There are still wars in some parts of the world. I come from the Middle East, so believe me, I know this perfectly well. But it should not blind us to the overall global picture. We are now living in a world in which war kills fewer people than suicide, and gunpowder is far less dangerous to your life than sugar. Most countries — with some notable exceptions like Russia — do not even fantasise about conquering and annexing their neighbours. Which is why most countries can afford to spend maybe just about 2 per cent of their gross domestic product on defence, while spending far, far more on education and healthcare. This is not a jungle. Unfortunately, we have gotten so used to this wonderful situation that we take it for granted, and we are therefore becoming extremely careless. Instead of doing everything we can to strengthen the fragile global order, countries neglect it and even deliberately undermine it. The global order is now like a house that everybody inhabits and nobody repairs. It can hold on for a few more years, but if we continue like this, it will collapse — and we will find ourselves back in the jungle of omnipresent war. We have forgotten what it is like, but believe me as a historian — you do not want to be back there. It is far, far worse than you imagine. Yes, our species has evolved in that jungle and lived and even prospered there for thousands of years, but if we return there now, with the powerful new technologies of the 21st century, our species will probably annihilate itself. Of course, even if we disappear, it will not be the end of the world. Something will survive us. Perhaps the rats will eventually take over and rebuild civilisation. Perhaps, then, the rats will learn from our mistakes.

#### Only the FTC can cooperate with foreign antitrust agencies to properly administer remedies.

Pachnou ’17 [Ms. Despina, Organization for Economic Co-operation and Development, “DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS COMPETITION COMMITTEE” https://www.ftc.gov/system/files/attachments/us-submissions-oecd-2010-present-other-international-competition-fora/et\_remedies\_united\_states.pdf]

5. The Agencies’ Cooperation with Foreign Jurisdictions on Remedies

18. Achieving effective remedies often entails cooperation with foreign jurisdictions. Such cooperation may allow the U.S. agencies to secure relief that sufficiently protects U.S. competition and consumers without applying the remedy to conduct or assets outside the United States. When an extraterritorial remedy is necessary to address harm or threatened harm to U.S. commerce and consumers, cooperation helps to minimize the risk of conflict with obligations of foreign laws or foreign remedial orders.35 Cooperation and coordination on remedies can be efficient for enforcers and the parties under investigation, especially given that over 130 jurisdictions have antitrust laws and over 80 require pre-merger notification. Cooperation may result in a remedies package that addresses competition concerns in multiple jurisdictions.36 The Agencies work closely with competition enforcers in other jurisdictions on cases under common review, including to help foster convergence and consistent remedy determinations.37

6. U.S. Case Examples

19. To the extent that the Agencies rely on extraterritorial remedies, they do so in both merger and conduct cases, although they arise most frequently in the merger context. In all cases, the Agencies seek remedies that are appropriately tailored and that do not apply extraterritorially unless necessary to address the harm or threatened harm to U.S. commerce or consumers.

6.1. Merger Cases

20. In most mergers, the Agencies can obtain an effective remedy for U.S. competition and consumers without extraterritorial divestitures or other relief. This is the case even when an Agency coordinates with other jurisdictions in investigating a transaction that raises concerns in both domestic markets and markets outside the U.S. Even in these instances, however, coordination between jurisdictions can be helpful. For example, the FTC benefited from coordinating with antitrust authorities in Canada, the EU, and Mexico during the investigation of Emerson Electric Co.’s acquisition of Pentair plc, even though the potential harm to U.S. markets was resolved exclusively through the divestiture of a U.S. switchbox facility.38 Similarly, in the General Electric-Alstom SA merger, effective relief for U.S. markets required divestiture of only U.S. based assets; however, coordination between the Department and the EC in connection with the Department’s investigation “facilitated [the Department’s] investigation and helped formulate remedies that [preserved] competition in the United States and internationally.”39 A coordinated remedy resulted in the Department and the EC announcing separate settlements that eliminated harm to consumers in their respective jurisdictions. 40 There are many more cases in which the Agencies have coordinated with their foreign counterparts on mergers that affect multiple jurisdictions.41

21. Although a merger may affect competition in several jurisdictions, the Agencies focus on preserving competition in the domestic markets that may be harmed by the proposed acquisition. On some occasions, relief secured by foreign jurisdictions means that no remedy, domestic or extraterritorial, is necessary to protect domestic competition. Though our experience in deferring to another authority’s remedy is limited, we have relied on informal deference and remain interested in doing so, under the right conditions. A notable example was in connection with Cisco’s acquisition of Tandberg in 2010. The Department declined to challenge the merger in part due to certain commitments that Cisco made to the European Commission (EC) to facilitate interoperability in products related to a type of videoconferencing called telepresence. Waivers of confidentiality by the parties and industry participants allowed the Department and the EC to cooperate closely in their parallel reviews of the transaction, resulting in an efficient outcome for the enforcers and the merging parties.42

22. Nevertheless, certain merger investigations resolved by consent decree have required the divestiture of assets located outside the United States to preserve competition within the United States. For example, the FTC consent decree resolving concerns regarding the merger of cement manufacturers Holcim Ltd. and Lafarge SA required, in part, divestiture of a Canadian cement plant and related U.S. terminals along with two Canadian terminals related to a U.S. cement plant. The FTC explained that the divested assets “remedy competitive concerns in northern U.S. markets [and are] part of a larger group of Holcim assets located in Canada that Holcim and Lafarge have agreed to divest to address competitive concerns raised by the [Canadian Competition Bureau (“CCB”)]. Commission staff worked closely with staff from the CCB to reach outcomes that benefit consumers in the United States.”

43 An extraterritorial remedy was also required to resolve Department’s investigation of the Anheuser-Busch InBev SA/NV & Grupo Modelo S.A.B. merger. The consent decree in that matter similarly required divestiture of a facility outside of the United States, the Grupo Modelo brewery in Mexico, and a perpetual and exclusive U.S. trademark license to the seven brands of beer that Modelo then offered in the United States, as well as three brands not yet offered in the United States, but currently sold by Modelo in Mexico. This remedy allowed the acquirer “to meet current and future demand for Modelo Brand Beer in the United States,” which resolved concerns that the merger would harm competition in twenty-six local U.S. markets.

### 1AC – Systemic Risk

#### Advantage three is systemic risk.

#### Societal collapse is inevitable – dominant platforms are too big to fail – digitalization is financialization on steroids.

Curran ’20 [Dean; Assistant Professor in Sociology @ University of Calgary, PhD in Sociology; “Connecting risk: Systemic risk from finance to the digital,” *Economy and Society* 49(2), p. 239-264; AS]

The risks of tightly-coupled universal intermediaries

Irrespective of the importance of these insights into systemic fragility, insofar as we are interested in its impacts on overall social life, then the identification of the fragility of a system is only part of the problem. The other key question is: how important is this specific system to the overall functioning of society? To provide one set of contrasting examples, both pre-2008 finance and the Ryanair flight network in the summer of 2017 were systems that exhibited extremely low levels of redundancy and significant fragility to disruption (see Financial Times, 2017). Yet, Ryanair’s cacophony of cancelled and delayed flights was an inconvenience to a small portion of the population of Europe, while the stuttering of the credit provision system in finance resulted in a massive social crisis. As such, not only is the risk that a system will cease to function properly important, but insofar as we are oriented to systemic social risk and the potential for social crises, we must also focus on the level of dependence of society on this system. While existing approaches have focused on the fragility of a network, insofar as the intention of the analysis is to tack closely to the point of the social science study of risk – the potential damages to society – then the vulnerability of society to breakdowns in the network is just as important as the vulnerability of the network in itself.

This is what makes systemic financial risk so problematic in the twenty-first century. Firstly, finance has become interconnected to the point where it is a single, though highly uneven, system in which almost all parts are vulnerable to any other part of the financial system. Secondly, society as a whole exhibits very little redundancy vis-à-vis this single private finance system. Through its monopoly on credit provision and the near universality of employment of credit by corporations and private individuals, this network of contemporary privately-run financial institutions is increasingly emerging as a universal intermediary. Finance itself does not make anything, but it has increasingly become a single network that is a fundamental means to the provision of a vast array of other social functionings.13 Credit has become so central to economic processes across society that some bankers could speculate that, if the state had not intervened after the Lehman bankruptcy, grocery stores could have run out of food as their credit ran dry (Luyendijk, 2015). In this context, through financial institutions’ role as fundamental intermediaries in complex financial networks of interdependence, the failure of the system of privately owned finance would have disrupted everything else that depends on these networks of financial interdependence for continued functioning. Consequently, the ‘financialization of daily life’ (Langley, 2008; Martin, 2002), in which credit plays an increasingly fundamental role in commercial transactions, is not merely a massive sea change in subjectivities and a financial strategy for financial institutions to increase the scope of profit-making activities – it is also a systemic increase in the tight-coupling of society vis-à-vis the financial system. In this way, the proper functioning of the credit system itself has become a necessary condition to the reproduction of an ever greater number of social functionings – thus causing a massive increase in social dependence on this single, private system of finance.

Insofar then as universal intermediaries exhibit systemic fragilities there is significant potential for systemic social risk that can result in social crises, as emerged from the global financial crisis of 2008. Reducing this vulnerability can proceed via either making the system that is the intermediary more stable or through reducing its power as a necessary condition by generating other, independent ways of securing the goods to which this system is a means. This point, while not made explicit in the risk literature, is an important insight that can be generated by bringing together literatures on organizational and legal power and ecological, systemic risk. Almost all of the literature on contemporary finance focuses on making the system more stable, though there are also important treatments on replacing the private system of credit provision with a public system. Yet, from a social systemic risk perspective, the contemporary financial system is so dangerous not only because it is fragile and susceptible to crises, but because there is no back-up or alternative to contemporary global private finance for society. Reducing social dependence on credit and/or providing other forms of credit provision, including public and non-profit that are not integrated into the networks of interconnection of the existing private system, could not only provide greater security from systemic financial risk, but also massively reduce the necessary-condition-power of private finance that makes bailouts so difficult to avoid.

This is likewise where the ‘networked digitalisation of daily life’, akin to the financialisation of daily life, is increasingly important. As with the role of finance as an intermediary, digital giants are developing massive platforms that increasingly mediate almost all the basic functionings that human beings seek to achieve (Mansell, 2012; Srnicek, 2017).14 With the status of increasingly a universal intermediary for different social functions, if any of these platforms were to fail, all of the networks of dependence that rely on that platform would in turn fail. As banks enjoyed intermediary power as a means of enjoying market power, the major digital companies, including Apple, Alphabet, Amazon, Facebook and Microsoft are doing all they can to heighten their intermediary power by making themselves increasingly indispensable to more and more social and economic functions.

As with finance, this growing systemic risk should not be viewed simply as a relatively exogenous process of growing interdependencies due to globalization and technological development (cf. Centeno et al., 2015; Goldin & Mariathasan, 2014; World Economic Forum, 2015), but rather as fundamentally intensified by the pursuit of private efficiencies and monopoly power so as to realize profit and value maximization. Exemplified in the Silicon Valley ideology of ‘Unless you are breaking stuff … you are not moving fast enough’ (Zuckerberg in Anthony, 2017), the dependence of society on specific digital platforms continues to grow. The potential for ‘Schumpeterian profits’ from impeding competition by occupying the role of essential intermediaries for different social functions thus likewise intensifies the systemic risk associated with the failure of any of these digital giants.

As with contemporary finance, these digital giants seek to exhibit universal intermediary power. Insofar as they are necessary conditions to key functionings of our life, they exhibit a kind of dual power, that enables them to appropriate massive levels of economic rents due to their monopolistic position (Mazzucato, 2018), while also creating immense risks for society when they fail to successfully fulfil their roles – thus making it a core social interest that they not fail in their function. In these cases, companies, through what has been called ‘infrastructural imperialism’ (Vaidhyanathan, 2011) have sought to insert themselves as a universal means to the goods of our lives. More recently, cities themselves have been increasingly targeted by ransomware, which have threatened to bring urban governance to a halt. After a cyber attack hobbled Atlanta in 2018, which cost millions of dollars to recover from, in 2019 more than 40 municipalities in the United States have been hacked. These include major cities such as Albany and Baltimore, several smaller cities in Florida, along with 22 towns across Texas, which have been simultaneously afflicted (Fernandez & Sanger, 2019). As Wu (2010), has shown, insofar as digital companies appropriate these public ‘common carrier’ positions – including providing the infrastructure through which cities function – they become part of the critical infrastructure of social life. Yet, by enabling such a systemically risky system as the contemporary digital economy to develop in a manner that both amplifies the risk of the system itself and the social dependence on this system, we repeat the mistakes that were made in the lead-up to the 2008 financial crisis.

While at this point these cyber-attacks may be considered a considerable harm rather than a crisis, the growing infiltration of networked devices throughout our basic infrastructure associated with the revolution in IoT 15 and the potential for an entire networked smart city means that a level of interconnectedness implicit in current dynamics of innovation would turn a penetration at the scale of WannaCry or NotPetya, or the cyber-security and safety failures of AWS or Mirai, into a social catastrophe, in which the basic infrastructure of the city or an entire region could be disabled, or used as a tool for even more damaging cyber or infrastructural attacks. While cybersecurity is sophisticated and more can be done on this front, it is in many ways fighting a losing battle of trying to patch over an excessively interconnected and fragile system, on which we are increasingly intensely dependent. As Hypponen declares, summarizing the security status of digitally interconnected devices, ‘Whenever an appliance is described as being ‘smart’, it’s vulnerable’ (Hypponen & Nyman, 2017, p. 5). And yet the current trajectory is ever-greater damages as companies continue to work towards their goals of ever-greater network integration of social, material and political life with the digital economy.

With the growing complexity of digital interconnections – both within the digital system and at the human-digital interface (see Greenfield, 2017) – mismatches between the knowledge of programmers who create the code for software and the impacts that software’s vulnerabilities have continue to grow. This mismatch thus further intensifies the space for avoiding responsibility for the damages promulgated across these systems. As Naughton (2017) has highlighted, legal responsibility in the digital economy is rarely even close to commensurate to the damages wreaked through the failures of their created products. That it has not been seriously broached that any of the companies above be held even partially legally culpable for the collateral damages due to the breaches of their software exemplifies the extent to which the digital economy is dominated by intermediaries that are always seeking to further install themselves in people’s basic functionings and general capabilities, but are not held responsible when their intermediary roles are suspended – even when there are enormous path-dependent negative side-effects from breaches and breakdowns. The massive complexity of the networks of information they have contributed to creating and the inchoate nature of the damages they enable, which interact with many other causes – that is, they are not solely responsible for Russian political influence or the damaging of political discourse, but their business models play a definite, but indeterminate role in these processes – institutionalizes a kind of structural recklessness and irresponsibility at the centre of digital innovation.

While a critical, reflexive systemic risk analysis cannot be used to predict the future, it can aid in identifying important vulnerabilities that create the potential for system-wide risks. High levels of interconnectedness, complexity, low redundancy and high levels of mismatch between activity and knowledge, alongside low culpability is a toxic combination that created the conditions for a social crisis in 2008. Likewise this toxic combination is increasingly being manifested in the contemporary networked digital economy, which could generate another systemic social crisis that, given the existing scope and granularity of dependence of social life on digitally networked devices, potentially could be of even greater proportions.

#### 1 – Interconnectedness and lack of redundancy – it guarantees global internet and infrastructure collapse.

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Systemic financial and digital risk

The digital economy, which comprises ‘those businesses that increasingly rely upon information technology, data, and the internet for their business models’ (Srnicek, 2017, p. 4), is increasingly presenting itself as a hegemonic business model, which requires its own analytical treatment (Srnicek, 2017; see also Bauer & Latzer, 2016; Elder-Vass, 2016). Issues of risk and crisis raised by the financial crisis are particularly relevant to the emerging study of the digital economy in the face of the significant impacts from recent cyberattacks WannaCry and NotPetya and several breaches of confidential data, including 145 million people’s data held by Equifax and over 100 million held by Capital One.

While the shorthand of ‘digital economy’ is often and usefully used (Bauer & Latzer, 2016; Elder-Vass, 2016), core to this revolution is not simply the shift from analogue to digital, but in particular, the shift towards the use of computing devices that are networked. 4 As such ‘digital economy’ is employed as shorthand for the ‘networked digital economy’. This section further develops the framework for investigating emerging systemic risk proposed above, while also advancing evidence for the claim that the contemporary digital economy is manifesting systemic risk characteristics that have important similarities to the systemic risk characteristics of pre-2008 crisis finance. To pursue this dual task, I briefly develop a comparative systemic risk analysis of pre-crisis finance and the digital economy with respect to the following characteristics: interconnectedness and redundancy; interactive complexity, and mismatches between scope of knowledge and activity. Each of these subsections introduces brief illustrative cases to both clarify how to use this framework, or ‘toolbox’ of the political economy of systemic risk, and to provide prima facie evidence that significant digital systemic risk, and as is subsequently shown below, significant social systemic risk, is emerging from the current trajectory of the digital economy.

Problems of interconnectedness and redundancy in finance and the digital economy

As has been widely discussed in the literature on the 2008 financial crisis, in the lead-up to the crisis, the financial institutions that comprised the financial network became much more interconnected to the rest of the network, which increased the likelihood that solvency problems of one financial institution could threaten many other institutions in the network (Goldin & Mariathasan, 2014; Haldane, 2009; May et al., 2008). Alongside the growing interconnectedness of the financial network was a trend towards reduced redundancy, as banks significantly increased their leverage levels (Haldane et al., 2010). With increasing levels of leverage (the ratio of assets to equity), each financial institution had less back-up equity to employ when one of its investments failed to provide its anticipated return.

In the context of high interconnectedness and low redundancy, the failure of a small number of investments (such as when two of Bear Stearns’ hedge funds collapsed in July 2007) or, alternatively failure by an institution’s counterparty to meet their obligations (as occurred with Lehman Brothers in September 2008) could propagate risk across the network as these losses in turn created problems of liquidity and solvency for other counterparties and so on throughout the entire network (see Haldane, 2009). As the literature has previously discussed, with many investment banks having leverage ratios of 30 to one, losses of little more than 3 per cent could cause a bank to be insolvent (Curran, 2015; Haldane et al., 2010). With such a tightly connected network of firms and such little redundancy, the network was primed to have losses cascade throughout the network, until an institution with much greater levels of redundancy, the state, stepped in and ended the cascading losses through bailouts and stimulus packages.

In terms of analysing interconnectedness in the digitally networked economy, it is one of those few sectors that is considered to be even more connected than global finance. The growing scale of computing devices and their connection via the internet is a widely noted phenomenon (see Goldin & Mariathasan, 2014), with the internet being described as the world’s largest network (Perrow 2007, p. 249), and as a ‘world-spanning living organism’ (Pentland 2009, in Zuboff, 2015, p. 85). Moreover, this growth of connectivity has been extremely rapid, with not only massive increases in the number of digitally interconnected devices, but also the types of devices that are being connected continuing to proliferate (Schneier, 2018).

In terms of redundancy, while the internet is a massive network – which enables potential connection between any two devices that have IP addresses – it has been noted that the physical infrastructure of the internet exhibits a reasonably high level of redundancy. Even if one of the root-level servers was to be disabled, the system would be able to adjust, thus enabling continued availability of internet services (Perrow, 2007). Nevertheless, on top of this physical infrastructure of the internet has developed a series of oligopolistic or monopolistic providers of key services on the web such as Amazon, Apple, Google, Facebook and Microsoft, while Alibaba, Baidu and Tencent, occupy similar levels of market dominance in China (Webb, 2019). While monopolistic market structures are primarily viewed from a pricing perspective, market dominance also raises important questions from a systemic risk perspective that have only been addressed within the sector of finance. As such, while there is some recognition of the importance of ‘systematically important financial institutions’ (FSB, 2011), there has not yet been a corresponding regulatory recognition of the systemic risk associated with ‘systematically important digital institutions’. These dominant firms have become key nodes that support a vast array of web services, which in turn support a multitude of social practices. Google has eight products that have over one billion users, while Amazon, Microsoft, and Facebook exhibit similar levels of market dominance in their respective markets (Lardinois, 2018; Mazzucato 2018). This political economic structure of the digital economy, which benefits from the network effects of digital information markets (Hindman, 2018; Srnicek, 2017), alongside light-touch regulation (Curran, 2018), consequently has built a much more centralized functional web onto of the distributed technology of the internet.

Given the interoperability and interdependencies within these companies, the monopolistic, centralized nature of the web provision creates the potential for vulnerabilities to cascade widely through the web, even if the physical infrastructure is distributed. As Perrow (2007) has emphasized, having many systems that utilize the same software systems leaves them open to ‘commonmode’ failures, where a potential failure or breach anywhere in the network can lead to multiple, potentially cascading failures due to the systems being vulnerable to the same failure. The economic centralization of the infrastructure of the web thus leads to the potential for the identification and exploitation of a single vulnerability leading to the failure of thousands or even potentially millions of computing devices, which are vulnerable to the same weakness.5

The WannaCry cyberattack exemplifies the growing importance of the systemic fragilities involved with cyber risk, and on a truly global scale – affecting over 100 countries worldwide – based on the identification and exploitation of a single key vulnerability in Microsoft software (Larson, 2017). In terms of its impacts, one-third of the UK’s National Health Service (NHS) was rendered inoperative, Chinese students were locked out of their university files, over 1,000 computers at Russia’s interior ministry were disrupted, as were billion dollar businesses, such as FedEx and Telefónica. In total it is estimated that over 230,000 computers were infected by WannaCry (Thomas, 2019) and the costs of the attack are estimated at somewhere between $4–8 billion (Greenberg, 2018). For WannaCry, the malware took advantage of a vulnerability in Windows, which had been previously developed by the US-based NSA into an attack tool for its own hacking operations. This penetration tool, EternalBlue – based on a key ‘zero-day vulnerability’ for Windows operating systems – was stolen from the NSA and subsequently leaked on the internet in 2017 so that others could use it for cyber-attacks.

In evaluating cyber-threats there are three commonly discussed criteria for computer security: confidentiality, availability and integrity (Schneier, 2018). Confidentiality is that only parties that are authorized gain access to the information held on a system. Availability involves the continued access and functionality of computing services to authorized parties. Integrity involves only authorized parties making changes in a computer system.6 In the lead-up to WannaCry, one of, if not the most, sophisticated hacking groups in the world, the NSA, were unable to keep their own hacking tools confidential.

The EternalBlue vulnerability was again used the following year in the NotPetya malware. The NotPetya ransomware attack is considered the most costly attack yet, with estimates that it cost companies over $20 billion, while also shutting down key infrastructure (Clarke & Knake, 2019, p. 18). In this case, it was vulnerabilities in the update servers of a Ukrainian software company, Linkos, that provided a back door to thousands of computers in Ukraine, which enabled the hackers to release the NotPetya malware (Greenberg, 2018). NotPetya ‘crippled multinational companies including Maersk, pharmaceutical giant Merck, FedEx’s European subsidiary TNT Express, French construction company Saint-Gobain, food producer Mondele¯z, and manufacturer Reckitt Benckiser. In each case, it inflicted nine-figure costs’ (Greenberg, 2018).

Again, as with WannaCry, there were cascading effects on economic and material life. One example of its impacts is instructive, especially given the primary business model of the internet of maximizing connectivity and data collection and analysis.7 The Danish logistics company, Maersk, was hobbled by the attack. While Ukraine was the original target, given Maersk’s role in the global supply chain, ‘an attack on Maersk strikes everywhere at once’ (Greenberg, 2018). With a single breach of Maersk’s systems due to the installation of the unknowingly infected software in Odessa, this led to problems around the globe, as the malware caused the failure of a key ‘choke point’ in its shipping terminal system. This led to the closure for the day of 17 of its 76 terminals, including New Jersey, Los Angeles, Algericas (Spain), Rotterdam, and Mumbai, leading to massive delays and further problems given the focus on efficiencies and just-in-time deliveries in the global supply chain (Greenberg, 2018; see also Goldin & Mariathasan, 2014). While the software on Maersk’s ships were not infected, the terminals’ software had been wiped away, such that for ‘days to come, one of the world’s most complex and interconnected distributed machines, underpinning the circulatory system of the global economy itself, would remain broken’ (Greenberg, 2018).

The NotPetya attack is estimated to have cost Maersk $300 million; however, luckily the fundamental principle of the digital economy – connect (and collect) everything – was unintentionally violated in this case. In seeking to rebuild the logistics systems that plan how to sort and arrange their shipping process, a copy of the ‘domain controllers’, which serve as a map to the network, needed to be found. Maersk though had been syncing together all 150 domain controllers, and hence, in a clear case of the risks of the ethos of growing, almost reckless interconnectivity, all were wiped out by the NotPetya malware, except one, which remained exempt from the syncing process because a blackout in the Ghanaian office prior to the NotPetya infection had rendered the machine offline and disconnected from the network when NotPetya struck.8

As this case illustrates, a component can only serve effectively as redundancy if it is not too tightly-coupled to the network. If there is a high correlation between the failure of the part and its ‘back-up’ then there is not effective redundancy; yet the push to connectivity tends to infect all the parts in the case of an infection. In this case, redundancy was achieved, through a core principle of systemic risk minimization (modularity) unintentionally trumping the business model of the digital economy, of maximizing connectivity and interdependence.

Software increasingly functions as a core part of the infrastructure of our economic, social and political world. Yet, unlike the modularity of conventional infrastructure, networked software exhibits a series of interdependencies and potentialities for ‘common-mode’ failures that provides scope for an initial, single infection somewhere in the globe to cascade across the globe. Yet, despite the growing accumulation of costly ‘near-misses’ (see Perrow, 1984) little has changed in the fundamental business model of the digital economy, or of governments’ refusal to regulate for the systemic risk that is emerging from this massive growth in interconnectedness. In fact the digital economy aims to ever further increase the connectedness of life through the Internet of Things (IoT) (Schneier, 2018).

#### 2 – Complexity – monopolization of the digital economy makes the IoT vulnerable to cyber-attacks.

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Complexity in finance and the digital economy

In addition to the risks emerging from being a highly interconnected and low redundancy network, high levels of complexity in finance played a key role in the lead-up to the financial crisis of 2008. Perrow (1984) provides a basis for distinguishing between the risk properties of different types of complexity through his differentiation between linear complexity and interactive complexity. Linear complexity involves a system with many parts, but the interactions between these parts are linear, visible and generally predictable. Interactive complexity involves relations between parts that are not linear, such that there is a much greater chance of one component of the system interacting with and impacting components in many different parts of the system.9 This distinction is akin to Haldane’s (2009) distinction between more modular complexities, where there are relatively separable sub-structures, and interactively complex systems, where any part of the system exhibits a higher likelihood of dependence on any other part of the system in highly unpredictable, irregular ways. For the purpose of exposition, these two types of complexity will be called separable complexity and interactive complexity.

The lead-up to the financial crisis is widely acknowledged as having experienced a massive increase in the complexity of the financial system. Simple, short-chain securitization is consistent with risk reduction strategies (Engelen et al., 2011); however, complex forms of securitization led to such a level of opacity and unpredictable interactions between different financial transactions, and ultimately financial institutions, that a ‘modest increase of seriously delinquent subprime mortgages’ of 3 per cent ($34 billion) led to the fundamental disruption of the $57 trillion US financial system (Dodd, 2007).

In terms of the level of complexity that was reached in the years leading up to the 2008 crisis, ABS CDOs (Collateralized Debt Obligations in which the underlying assets are Asset-Backed Securities), can provide a useful illustrative case. ABS CDOs were a particularly complex security, in which the underlying components were bundles of different tranches of a series of ABSs. The tranches of these ABSs were built out of thousands of mortgages, with the different tranches classified based on the probability of default of their underlying mortgages, with the AAA tranches offering lower rates of return due to greater security, while the lower tranches (including BBB and BB) offering higher rates of return in compensation for a higher probability of default (see Financial Crisis Inquiry Commission, 2011, p. 73). ABS CDOs (which the Financial Crisis Inquiry Commission just calls ‘CDOs’) were then made out of the ‘mezzanine tranches’ of ABSs, in particular the AA, A, BBB and BB tranches, which were more difficult to sell because of the higher risk attached to them. Through constructing a new security by pooling together these different tranches, the sellers of these investments were able to claim that the process of creating ABS CDOs reduced correlation between assets through diversification and hence these mezzanine tranches were then sold as securities in which the majority of the ABS CDO was rated AAA (80 per cent), despite being made almost solely of higher probability of default securities (see Financial Crisis Inquiry Commission, 2011, pp. 127–129). The repackaging of these securities provided important arbitrage opportunities, especially because of the symbolic value attached to AAA rated investments. The resulting losses from these complex forms of securitization though played a key role in the lead-up to the 2008 financial crisis (MacKenzie, 2011, pp. 1779, 1782–1786).

In addition to high levels of interconnectedness and low redundancy, high levels of complexity are another key feature of the digital economy. In particular, the digital economy manifests not just a high level of complexity, but in particular a high level of interactive complexity, in which wide-ranging and unpredictable interconnections between different parts of a system are possible. Many of the software programs that are necessary to the web are immensely complex – much too complex for even the most sophisticated programmers in the world to adequately understand. Windows, for example, has over 60 million lines of code (Gisel & Olejnik, 2018).

Pasquale (2015) highlights an important element of contemporary power dynamics in that digital companies implement a two-sided mirror. They seek to know everything about their users, while their users know nothing about how they function. Yet, from a risk perspective there is also the larger point that given this level of complexity of these programs, no one, whether inside the company or outside, can hope to have a comprehensive picture of the interactions between these different lines of code – much less, how this software interacts with the external, social world. Even with the best programmers in the world, the complexity of these software systems regularly creates unanticipated mistakes in coding.10 When this level of complexity intersects with how tightly-coupled many software systems are, the exploitation of a single key vulnerability can lead to the complete breakdown of a computer or network of computers, as occurred with WannaCry and NotPetya. This complexity is so much more problematic in the context of the particularities of cyber-security. That is, it does not matter how many attacks are repelled because a single breach is enough to potentially generate a ‘class break’, in which a number of devices with similar software vulnerabilities can have their confidentiality, availability, or integrity breached (Schneier, 2018).

Yet, despite the continuing failures of cyber-security and the fragility of the system, the current trajectory of the business model of the digital economy, of seeking monopolistic network effects and of collecting as much data as possible, incessantly drives further growth in the size and complexity of the network (Hindman, 2018; Srnicek, 2017; Zuboff, 2019). While this is manifested by many trends, the pivot towards the Internet of Things (IoT) – as associated with projects such as the ‘smart home’ of surveillance capitalism (Zuboff, 2019) and ‘smart cities’ (Kitchin & Dodge, 2019) – exemplifies this in particularly stark terms. The addition of billions of further devices to the internet has not only immensely increased the ‘attack surface’ of interconnected devices on which cyber-security depends; it has also amplified the complexity of potential interactions between internet connected devices (see Schneier, 2018).

The Mirai botnet11 exemplifies well the potential risks of the interactive complexity of the contemporary networked digital economy, as well as some of the particular risks involved in shifting from a modular infrastructure to an interconnected infrastructure that is exposed to weaknesses anywhere across the global digital network. Unlike WannaCry and NotPetya, which involved sophisticated teams of computer hackers, the original source code for Mirai was developed by three 21 year olds in the United States. The botnet in turn was built out of this source code – which the original hackers had released onto the web (as an attempt to hide their identities from the FBI). Other, as of yet unidentified hackers, using the Mirai botnet to take control of IoT devices that had default passwords (security cameras, DVRs, routers (Graff, 2017)) used them to pursue a Distributed Denial of Service (DDoS) against the company Dyn. This attack caused widespread problems across the web because of Dyn’s core infrastructural role in the internet through its role as a Domain Name System (DNS) for other websites. This attack led to large parts of the internet on the Eastern Coast of the United States not working, causing disruptions to Twitter, Amazon, Spotify, PayPal, Reddit and Airbnb amongst others, while also disrupting parts of the internet in the rest of North America and in Europe (Graff, 2017). As a DNS, Dyn helps web browsers translate written addresses into numbered IP addresses and vice versa and thus is a core part of the functionality of the web. At the height of the attack, hackers were able to use over 600,000 infected devices through the Mirai botnet to launch an unprecedented record attack of 1.2 terrabits of network-clogging traffic to Dyn’s servers, which overloaded their servers, thus disrupting their ability to fulfil their normal functions (Graff, 2017).

While the disruption from this attack was felt in the United States and Europe, the insecure, infected devices did not come from these areas. Highlighting the complex interdependencies of the global nature of the internet and how any two devices with an IP address can be directly and instantaneously connected, this was ‘harm at a distance’ at its best, as the infected devices were primarily from Brazil, Columbia and Vietnam, while China, South Korea, Russia, Turkey and India also exhibited significant levels of infection (listed in descending order (Bursztein, 2017)). Contrary to separable complexity, interactive complexity functioned across the system as devices of different types (DVRs versus core infrastructure DNS) and geographical locations (Asia and South American versus the United States and Europe) became intricately interconnected because of a breach of a seemingly distant and disparate part of the system.

#### \*3 – Mismatch between knowledge and activity – malfunctions are likely and trigger a global domino effect.

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Mismatches between scope of knowledge and activity

In addition to high interconnectedness, low redundancy and high interactive complexity, pre-crisis finance also exhibited a significant mismatch between the scope of knowledge and activity. As Tett (2009, p. xiv) argues ‘The modern world is littered with these silos – pockets of specialist knowledge, where technical experts work in mental and structural silos. Indeed, these silos are proliferating, for as the pace of innovation speeds up, and spreads further and further around the globe, our world is becoming more technologically complex by the day’. As such, while Tett (2009, 2015) primarily focuses her critique on increasing silos of knowledge, as her quote suggests we are witnessing an even more dangerous process in which we have a dual process of the production of increasingly complex and interconnected systems, alongside the increasingly narrow, cordoned bases of knowledge and responsibility for those who are cumulatively producing this externalized complexity. This process is clearly on display in the lead-up to the financial crisis.

While, as discussed above, the complexity of interconnections between Mortgage Backed Securities grew the scope of knowledge of its producers did not correspondingly grow – in fact, in many ways it constricted. Rather than carefully investigating the different potential risks, ‘Mortgage lending had become an assembly-line affair in which loans were made and then quickly reassembled into bonds immediately sold to investors’ (Tett, 2009, p. 112). Even when key additional layers of complexity were added through the development of ABS CDOs, there was little additional knowledge or orientation to the additional connections that were being generated. Ultimately, the primary knowledge base and orientation of the producers and sellers of ABS CDOs was how to attain the desired credit rating on these investments – all other portions of complexity were externalized by the vast majority of those formulating these investments. Consequently, once the model of the Gaussian copula was identified as a way to solve the problem of estimating correlations, the complexities were neglected, with the Gaussian copula functioning as the ‘combustion engine of the CDO world’ (Tett 2009, p. 119–122). As MacKenzie’s (2011) discussion of different clusters of evaluation practices likewise shows, those who made and rated the ABS CDOs lacked a sufficient basis of knowledge to fully understand their actual activity – both in terms of the vulnerabilities of the investments they packaged and the vulnerability of the financial system to these extremely complex investment vehicles. As emphasized above, these mismatches between knowledge and activity not only left open the potential for creating extremely risky financial transactions, but also tended to shield those who created and benefitted from the risk from responsibility for the consequences of these risks.

The digital economy likewise manifests extreme mismatches between the scope of knowledge of those developing computing programs and the interdependencies that emerge on top of them. As emphasized above, contemporary computer programs exhibit a level of complexity well beyond the comprehension of a single person or group of people. Alongside this complexity then is a massive mismatch between the extremely small part of an overall program that any one set of programmers develop and understand – which even then can contain flaws in itself (Schneier, 2018) – and the emergent intersections of these units into larger systemic fragilities across the network. As interactive complexities build on top of interconnected and low redundancy systems and intensify the problems emerging from these features, this mismatch between scope of knowledge and activity intensifies these problems of interactive complexity. Moreover, problems of interactive complexity are amplified by how tightly-coupled computing systems can be – massive automated systems can be ~~disabled~~ [harmed] by even a single mistake as computers do not possess the type of hermeneutic interpretability that living agents do (see Kernighan, 2017). Yet, it is not only the physical nature of computing that leads to the potential for a single mistake to cascade through a computing device; the emerging monopolistic business model of the digital economy creates greater interdependencies as large digital companies seek to insert themselves as a universally necessary part of the ‘stack’ of digital computing services (Nunan & Di Domenico, 2017). An illustrative example, the cascading failure of websites in February 2017, exemplifies well how the interconnectedness and complexity of the web interacts with mismatches between the knowledge of specific individuals and the massive ramifications that their actions can have.

In February 2017, several websites on the East Coast of the United States stopped functioning properly, including the websites of Slack, GitHub, GitLab, Quora, Medium, Expedia, Adobe Cloud, with reports of Xero, SiriusXM, and Nest internet-connected devices also ceasing to function properly (Nichols, 2017). In fact, outage monitoring sites DownDetector and isitdownrightnow.com were also not functioning properly due to the overloading of the sites because of a massive spike in internet users checking on the functionality of these other websites (Nichols, 2017). Ultimately, this five-hour breakdown in availability of these websites and services was traced back to the malfunctioning of Amazon Web Services (AWS), a core cloud computing provider. The malfunctioning had occurred due to a single typo by an Amazon employee. The employee was debugging a billing system and ended up taking offline more servers than were intended. This ‘error started a domino effect that took down two other server subsystems and so on … ’ (Del Rey, 2017). AWS had also suffered a significant outage due to human error years earlier in 2011. In upgrading its primary servers, the traffic that the server usually manages was sent to a back-up server rather than being sent to the rest of the network. This back-up server was not intended to handle this much higher level of traffic, thus causing a significant amount of the traffic to get ‘stuck’. Despite this single mistake of redirection to the back-up server, if the system had functioned properly, the problem would not have cascaded in this way, but this mistake interacted with other as of yet previously unidentified bugs, thus amplifying the breakdown in service (Goldman, 2011).

The massive outage in February 2017 is estimated to have damaged the business of 54 of the top 100 internet retailers, with an estimated total economic impact of $150 million (Bort, 2017). This has led to the incident being described as ‘Amazon and the $150 million typo’ (Hersher, 2017). Reflecting on the systemic importance of a single cloud computing company, it was noted that AWS has ‘quietly become responsible for keeping much of the internet running’ and that ‘AWS has come to underpin so much of our daily life that we hardly even notice how important it’s become — until it stops working’ (Swearingen, 2018). Yet, different parts of AWS malfunctioned again in September 2017 and then in March 2018, hitting Alexa, Slack and Capital One. While Amazon apologized and promised changes, the cascading impacts of AWS outages continue to be felt. As with interconnectedness and low redundancy, the growing complexity and mismatch between knowledge and impacts in the digital economy, though shaped by the technology, is not an inevitable dimension of the technology, but rather massively intensified by the monopolistic characteristics of the digital economy and the goal of digital giants to grow as large as quickly as possible (see Hindman, 2018).

#### Cascading collapse escalates global hotspots, including reactor meltdowns – extinction.

Maavak ’21 [Mathew; Author @ Atlas Institute for International Affairs, external researcher (PLATBIDAFO) @ Kazimieras Simonavicius University in Vilnius, Lithuania, “Horizon 2030: Will Emerging Risks Unravel Our Global Systems?” *Salus Journal* 9(1), p. 2-17]

But what exactly is a global system? Our planet itself is an autonomous and selfsustaining mega-system, marked by periodic cycles and elemental vagaries. Human activities within however are not system isolates as our banking, utility, farming, healthcare and retail sectors etc. are increasingly entwined. Risks accrued in one system may cascade into an unforeseen crisis within and/or without (Choo, Smith & McCusker, 2007). Scholars call this phenomenon “emergence”; one where the behaviour of intersecting systems is determined by complex and largely invisible interactions at the substratum (Goldstein, 1999; Holland, 1998).

The ongoing COVID-19 pandemic is a case in point. While experts remain divided over the source and morphology of the virus, the contagion has ramified into a global health crisis and supply chain nightmare. It is also tilting the geopolitical balance. China is the largest exporter of intermediate products, and had generated nearly 20% of global imports in 2015 alone (Cousin, 2020). The pharmaceutical sector is particularly vulnerable. Nearly “85% of medicines in the U.S. strategic national stockpile” sources components from China (Owens, 2020).

An initial run on respiratory masks has now been eclipsed by rowdy queues at supermarkets and the bankruptcy of small businesses. The entire global population – save for major pockets such as Sweden, Belarus, Taiwan and Japan – have been subjected to cyclical lockdowns and quarantines. Never before in history have humans faced such a systemic, borderless calamity.

COVID-19 represents a classic emergent crisis that necessitates real-time response and adaptivity in a real-time world, particularly since the global Just-in-Time (JIT) production and delivery system serves as both an enabler and vector for transboundary risks. From a systems thinking perspective, emerging risk management should therefore address a whole spectrum of activity across the economic, environmental, geopolitical, societal and technological (EEGST) taxonomy. Every emerging threat can be slotted into this taxonomy – a reason why it is used by the World Economic Forum (WEF) for its annual global risk exercises (Maavak, 2019a).

As traditional forces of globalization unravel, security professionals should take cognizance of emerging threats through a systems thinking approach.

METHODOLOGY

An EEGST sectional breakdown was adopted to illustrate a sampling of extreme risks facing the world for the 2020-2030 decade. The transcendental quality of emerging risks, as outlined on Figure 1, below, was primarily informed by the following pillars of systems thinking (Rickards, 2020):

• Diminishing diversity (or increasing homogeneity) of actors in the global system (Boli & Thomas, 1997; Meyer, 2000; Young et al, 2006);

• Interconnections in the global system (Homer-Dixon et al, 2015; Lee & Preston, 2012);

• Interactions of actors, events and components in the global system (Buldyrev et al, 2010; Bashan et al, 2013; Homer-Dixon et al, 2015); and

• Adaptive qualities in particular systems (Bodin & Norberg, 2005; Scheffer et al, 2012)

Since scholastic material on this topic remains somewhat inchoate, this paper buttresses many of its contentions through secondary (i.e. news/institutional) sources.

ECONOMY

According to Professor Stanislaw Drozdz (2018) of the Polish Academy of Sciences, “a global financial crash of a previously unprecedented scale is highly probable” by the mid-2020s. This will lead to a trickle-down meltdown, impacting all areas of human activity.

The economist John Mauldin (2018) similarly warns that the “2020s might be the worst decade in US history” and may lead to a Second Great Depression. Other forecasts are equally alarming. According to the International Institute of Finance, global debt may have surpassed $255 trillion by 2020 (IIF, 2019). Yet another study revealed that global debts and liabilities amounted to a staggering $2.5 quadrillion (Ausman, 2018). The reader should note that these figures were tabulated before the COVID-19 outbreak.

The IMF singles out widening income inequality as the trigger for the next Great Depression (Georgieva, 2020). The wealthiest 1% now own more than twice as much wealth as 6.9 billion people (Coffey et al, 2020) and this chasm is widening with each passing month. COVID-19 had, in fact, boosted global billionaire wealth to an unprecedented $10.2 trillion by July 2020 (UBS-PWC, 2020). Global GDP, worth $88 trillion in 2019, may have contracted by 5.2% in 2020 (World Bank, 2020).

As the Greek historian Plutarch warned in the 1st century AD: “An imbalance between rich and poor is the oldest and most fatal ailment of all republics” (Mauldin, 2014). The stability of a society, as Aristotle argued even earlier, depends on a robust middle element or middle class. At the rate the global middle class is facing catastrophic debt and unemployment levels, widespread social disaffection may morph into outright anarchy (Maavak, 2012; DCDC, 2007).

Economic stressors, in transcendent VUCA fashion, may also induce radical geopolitical realignments. Bullions now carry more weight than NATO’s security guarantees in Eastern Europe. After Poland repatriated 100 tons of gold from the Bank of England in 2019, Slovakia, Serbia and Hungary quickly followed suit.

According to former Slovak Premier Robert Fico, this erosion in regional trust was based on historical precedents – in particular the 1938 Munich Agreement which ceded Czechoslovakia’s Sudetenland to Nazi Germany. As Fico reiterated (Dudik & Tomek, 2019):

“You can hardly trust even the closest allies after the Munich Agreement… I guarantee that if something happens, we won’t see a single gram of this (offshore-held) gold. Let’s do it (repatriation) as quickly as possible.” (Parenthesis added by author).

President Aleksandar Vucic of Serbia (a non-NATO nation) justified his central bank’s gold-repatriation program by hinting at economic headwinds ahead: “We see in which direction the crisis in the world is moving” (Dudik & Tomek, 2019). Indeed, with two global Titanics – the United States and China – set on a collision course with a quadrillions-denominated iceberg in the middle, and a viral outbreak on its tip, the seismic ripples will be felt far, wide and for a considerable period.

A reality check is nonetheless needed here: Can additional bullions realistically circumvallate the economies of 80 million plus peoples in these Eastern European nations, worth a collective $1.8 trillion by purchasing power parity? Gold however is a potent psychological symbol as it represents national sovereignty and economic reassurance in a potentially hyperinflationary world. The portents are clear: The current global economic system will be weakened by rising nationalism and autarkic demands. Much uncertainty remains ahead. Mauldin (2018) proposes the introduction of Old Testament-style debt jubilees to facilitate gradual national recoveries. The World Economic Forum, on the other hand, has long proposed a “Great Reset” by 2030; a socialist utopia where “you’ll own nothing and you’ll be happy” (WEF, 2016).

In the final analysis, COVID-19 is not the root cause of the current global economic turmoil; it is merely an accelerant to a burning house of cards that was left smouldering since the 2008 Great Recession (Maavak, 2020a). We also see how the four main pillars of systems thinking (diversity, interconnectivity, interactivity and “adaptivity”) form the mise en scene in a VUCA decade.

ENVIRONMENTAL

What happens to the environment when our economies implode? Think of a debt-laden workforce at sensitive nuclear and chemical plants, along with a concomitant surge in industrial accidents? Economic stressors, workforce demoralization and rampant profiteering – rather than manmade climate change – arguably pose the biggest threats to the environment. In a WEF report, Buehler et al (2017) made the following pre-COVID-19 observation:

The ILO estimates that the annual cost to the global economy from accidents and work-related diseases alone is a staggering $3 trillion. Moreover, a recent report suggests the world’s 3.2 billion workers are increasingly unwell, with the vast majority facing significant economic insecurity: 77% work in part-time, temporary, “vulnerable” or unpaid jobs.

Shouldn’t this phenomenon be better categorized as a societal or economic risk rather than an environmental one? In line with the systems thinking approach, however, global risks can no longer be boxed into a taxonomical silo. Frazzled workforces may precipitate another Bhopal (1984), Chernobyl (1986), Deepwater Horizon (2010) or Flint water crisis (2014). These disasters were notably not the result of manmade climate change. Neither was the Fukushima nuclear disaster (2011) nor the Indian Ocean tsunami (2004). Indeed, the combustion of a long-overlooked cargo of 2,750 tonnes of ammonium nitrate had nearly levelled the city of Beirut, Lebanon, on Aug 4 2020. The explosion left 204 dead; 7,500 injured; US$15 billion in property damages; and an estimated 300,000 people homeless (Urbina, 2020). The environmental costs have yet to be adequately tabulated.

Environmental disasters are more attributable to Black Swan events, systems breakdowns and corporate greed rather than to mundane human activity.

Our JIT world aggravates the cascading potential of risks (Korowicz, 2012). Production and delivery delays, caused by the COVID-19 outbreak, will eventually require industrial overcompensation. This will further stress senior executives, workers, machines and a variety of computerized systems. The trickle-down effects will likely include substandard products, contaminated food and a general lowering in health and safety standards (Maavak, 2019a). Unpaid or demoralized sanitation workers may also resort to indiscriminate waste dumping. Many cities across the United States (and elsewhere in the world) are no longer recycling wastes due to prohibitive costs in the global corona-economy (Liacko, 2021).

Even in good times, strict protocols on waste disposals were routinely ignored. While Sweden championed the global climate change narrative, its clothing flagship H&M was busy covering up toxic effluences disgorged by vendors along the Citarum River in Java, Indonesia. As a result, countless children among 14 million Indonesians straddling the “world’s most polluted river” began to suffer from dermatitis, intestinal problems, developmental disorders, renal failure, chronic bronchitis and cancer (DW, 2020). It is also in cauldrons like the Citarum River where pathogens may mutate with emergent ramifications.

On an equally alarming note, depressed economic conditions have traditionally provided a waste disposal boon for organized crime elements. Throughout 1980s, the Calabria-based ‘Ndrangheta mafia – in collusion with governments in Europe and North America – began to dump radioactive wastes along the coast of Somalia. Reeling from pollution and revenue loss, Somali fisherman eventually resorted to mass piracy (Knaup, 2008).

The coast of Somalia is now a maritime hotspot, and exemplifies an entwined form of economic-environmental-geopolitical-societal emergence. In a VUCA world, indiscriminate waste dumping can unexpectedly morph into a Black Hawk Down incident. The laws of unintended consequences are governed by actors, interconnections, interactions and adaptations in a system under study – as outlined in the methodology section.

Environmentally-devastating industrial sabotages – whether by disgruntled workers, industrial competitors, ideological maniacs or terrorist groups – cannot be discounted in a VUCA world. Immiserated societies, in stark defiance of climate change diktats, may resort to dirty coal plants and wood stoves for survival. Interlinked ecosystems, particularly water resources, may be hijacked by nationalist sentiments. The environmental fallouts of critical infrastructure (CI) breakdowns loom like a Sword of Damocles over this decade.

GEOPOLITICAL

The primary catalyst behind WWII was the Great Depression. Since history often repeats itself, expect familiar bogeymen to reappear in societies roiling with impoverishment and ideological clefts. Anti-Semitism – a societal risk on its own – may reach alarming proportions in the West (Reuters, 2019), possibly forcing Israel to undertake reprisal operations inside allied nations. If that happens, how will affected nations react? Will security resources be reallocated to protect certain minorities (or the Top 1%) while larger segments of society are exposed to restive forces? Balloon effects like these present a classic VUCA problematic.

Contemporary geopolitical risks include a possible Iran-Israel war; US-China military confrontation over Taiwan or the South China Sea; North Korean proliferation of nuclear and missile technologies; an India-Pakistan nuclear war; an Iranian closure of the Straits of Hormuz; fundamentalist-driven implosion in the Islamic world; or a nuclear confrontation between NATO and Russia. Fears that the Jan 3 2020 assassination of Iranian Maj. Gen. Qasem Soleimani might lead to WWIII were grossly overblown. From a systems perspective, the killing of Soleimani did not fundamentally change the actor-interconnection-interactionadaptivity equation in the Middle East. Soleimani was simply a cog who got replaced.

#### Grid collapse causes extinction.

Weiss ’19 [Matthew and Martin; May 29; National Sales Director at United Medical Instruments, UMI and Research assistant at the American Jewish University; Neurosurgeon at UCLA-Olive View Medical Center; Energy, Sustainability, and Society, “An assessment of threats to the American power grid,” vol. 9]

Consequences of a sustained power outage

The EMP Commission states “Should significant parts of the electrical power infrastructure be lost for any substantial period of time, the Commission believes that the consequences are likely to be catastrophic, and many people will die for the lack of the basic elements necessary to sustain life in dense urban and suburban communities.” [67].

Space constraints preclude discussion on how the loss of the grid would render synthesis and distribution of oil and gas inoperative. Telecommunications would collapse, as would finance and banking. Virtually all technology, infrastructure, and services require electricity.

An EMP attack that collapses the electric power grid will collapse the water infrastructure—the delivery and purification of water and the removal and treatment of wastewater and sewage. Outbreaks that would result from the failure of these systems include cholera. It is problematic if fuel will be available to boil water. Lack of water will cause death in 3 to 4 days [68].

Food production would also collapse. Crops and livestock require water delivered by electronically powered pumps. Tractors, harvesters, and other farm equipment run on petroleum products supplied by an infrastructure (pumps, pipelines) that require electricity. The plants that make fertilizer, insecticides, and feed also require electricity. Gas pumps that fuel the trucks that distribute food require electricity. Food processing requires electricity.

In 1900, nearly 40% of the population lived on farms. That percentage is now less than 2% [69]. It is through technology that 2% of the population can feed the other 98% [68]. The acreage under cultivation today is only 6% more than in 1900, yet productivity has increased 50 fold [69].

As stated by Dr. Lowell L Wood in Congressional testimony:

“If we were no longer able to fuel our agricultural machine in the country, the food production of the country would simply stop, because we do not have the horses and mules that used to tow agricultural gear around in the 1880s and 1890s”. “So the situation would be exceedingly adverse if both electricity and the fuel that electricity moves around the country……… stayed away for a substantial period of time, we would miss the harvest, and we would starve the following winter” [70].

People can live for 1–2 months without food, but after 5 days, they have difficulty thinking and at 2 weeks they are incapacitated [68]. There is typically a 30-day perishable food supply at regional warehouses but most would be destroyed with the loss of refrigeration [69]. The EMP Commission has suggested food be stockpiled for a possible EMP event.

A prescription for failure

Even if all the recommendations of the Congressional EMP Commission were implemented, there is no guarantee that the grid will not sustain a prolonged collapse. There should therefore be contingency plans for such a failure.

There is also another consideration. The foundational pillars of prior American nuclear defense policy, in today’s climate, are of uncertain validity. Mutual assured destruction is the Maginot line of the 21st century. Nonproliferation will prove difficult to resurrect.

The consequences of a widespread nuclear attack have been positioned to the public as massive deaths from blast effects, and then further lingering deaths from the effects of radiation. We suspect there will be no electricity, and there will be no electricity for a very long time.

There should be an actionable plan in anticipation of a possible prolonged collapse of the grid—a retro-structure and a skill set to provide a framework for survival. Our sense is there is no plan.

#### \*Cyber-attacks go nuclear – extinction.

Orlov ’20 [Vladimir, Founder & Director of the PIR Center, President of the Trialogue Club International, Head of the Center for Global Trends and International Organizations at the Diplomatic Academy, Ministry of Foreign Affairs of the Russian Federation, Co-Founder and Academic Supervisor of the International Dual Degree MA Program in Nonproliferation and Global Security Studies, MGIMO University, Professor at MGIMO University, author (or coauthor) of more than a dozen books and monographs and more than three hundred research papers, articles, and essays, publishes his views in Russian and foreign periodicals, “‘No Holds Barred’ and the New Vulnerability: Are We in for a Re-Run of the Cuban Missile Crisis in Cyberspace?,” SSRN Scholarly Paper, ID 3538078, Social Science Research Network, 02/14/2020, papers.ssrn.com, doi:10.2139/ssrn.3538078]

Not hundred per cent of the dialogue has been frozen, fortunately. Certain informal, mostly offthe-record, meetings of US and Russian experts on cyber agenda continue taking place, both through Track 2 and Track 1.5. One of the most intellectually stimulating meetings, with frank exchanges, took place in Vienna in December 2018. The report produced after the meeting stressed “the significant risk […] that cyber-attacks could conceivably lead to a military escalation that may further trigger a nuclear weapons exchange, a fact that became more explicit with the adoption of the current Nuclear Posture Review. This issue gets complicated given that third parties may have the capabilities to invoke a cyber conflict between Russia and the United States. Whether a country or a non-state actor, they could put the two countries on the verge of an armed conflict by attacking critical infrastructure of either of them and making it look as if the aggressor were the other one”[22]. However, one should have no illusion: such informal meetings may be fully fruitful only when their reports and policy recommendations are utilized by the governments. And for that, a warmer climate in bilateral relations is a must. So far, we see exactly the opposite: mercury falling to freezing levels.

Risk of cyber clashes growing into a chaotic global cyber war has been emphasized by the UN Secretary-General Antonio Guterres in his Agenda for Disarmament: “Malicious acts in cyberspace are contributing to diminishing trust among States… States should implement the recommendations elaborated under the auspices of the General Assembly, which aim at building international confidence and greater responsibility in the use of cyberspace.[23]” However, as the members of the US-Russian Track 1.5 working group on strategic stability recently concluded, “without a constructive dialogue on cyber issues between the United States and Russia, the world would most likely fail to agree on any norms of responsible behavior of states in cyber space”[24].

Do we really have to survive a cyber equivalent of the Cuban Missile Crisis to realize the importance of achieving some kind of agreement on cyber issues, and on the broader agenda of international information security?[25] Or is that kind of talk plain old alarmism?

I don’t want to sound a fatalist, but I am even less keen on sounding like an ostrich that’s buried its head in the sand. We cannot ignore the obvious: whether the world’s most powerful actors like it or not, the world is sliding to another major crisis like the one in 1962. The cyber war is already raging. There are no rules of engagement in that war. The uncertainty is high. The spiral of tension is getting out of control. The cyber arms race is gaining momentum. And there are no guarantees that the next crisis will be controllable, or that it will result in a catharsis as far as international information security regulation is concerned. There’s no telling what will happen once the cyber genie is out of the bottle.

#### Structural separations maintain system stability by valuing redundancy over efficiency.

Khan ’19 [Lina; Chairperson @ Federal Trade Commission, JD @ Yale Law School; “The Separations of Platforms and Commerce,” *Columbia Law Review* 119(4), p. 973-1098; AS]

Preserving System Resiliency

Another justification that recurs is promoting the resiliency of systems. Because several of the entities subject to structural separations serve an “infrastructural” role—structuring access to markets or to an essential good or service—the public has a strong interest in maintaining their stability and shielding them from disruption.497 Crashes that cripple these infrastructural services can have an outsized effect on economic activity, and involvement in multiple lines of business can increase the likelihood of system crashes. For this reason, policymakers treated strict limits on entry and exit as one way to shield critical services from undue risk.498 Structural separations in banking and telephony, too, were partly justified on grounds of promoting system stability.499

Precisely because banking services constitute a critical good, ensuring the soundness and stability of banking is a central goal of banking policy. Lawmakers and regulators have argued that preventing banks from expanding into commercial activities may help insulate banks from the vagaries of other sectors.500 This line of argument is premised on the idea that exposing banks to manufacturing, physical trading, or other commercial activities “increases the vulnerability of the banking and payments systems, the federal deposit insurance fund, and thereby the broader economy.”501 A question frequently raised during the 2013 debates around banks’ expansion into physical commodity trading was: What would happen if Morgan Stanley repeated the BP oil spill? Would taxpayers be on the line for the $61.2 billion in damages? In this way, a structural separation helps eliminate the risk that instability or disruption in commercial markets could necessitate a financial bailout.502 To be sure, not all commercial activities are inherently more risky than financial activity—and, some might argue, expanding into these spheres may help banks diversify risk. That said, it is true that some commercial activities—like drilling oil or mining—pose particularly expensive risks to which federally insured depository institutions should not be exposed.503

Concerns about system stability and resiliency also informed the FCC’s Computer Inquiries. The carriers argued that, in order to promote efficiency, they should be permitted to use excess capacity for data processing.504 The Commission stated, first, that “the potential abuses inherent” in the system far outweighed any purported efficiencies,505 and, second, the carriers should have a “‘back-up’ system” that “should be designed to meet foreseeable breakdowns of equipment dedicated to public service” and “should be available instantly for that purpose without the conflicting claims of other users.”506 In other words, the FCC privileged redundancy over efficiency, recognizing that the former would serve the public by helping to ensure the stability of communications services and networks. Although expanding into data processing wouldn’t necessarily heighten the risk of a crash, keeping that capacity for backup would enable the system to absorb any shocks, helping promote resiliency.

# 2ac

## dynamism adv

## dependency trap adv

## systemic risk adv

## t core

### t core – 2ac

#### W/M – plan could expand Sherman Act prohibitions on monopolistic behavior.

Grosso ’21 [Jacob; JD Candidate @ University of Richmond School of Law; “The Preemption of Collective State Antitrust Enforcement in Telecommunications,” *University of Richmond Law Review* 55(2), p. 615-656; AS]

The Sherman and Clayton Antitrust Acts are the primary sources of antitrust law, and their enactment granted federal regulators the power to enforce federal antitrust law. 16 The Clayton Act's Section 7 governs mergers, due to their high potential to create anticompetitive effects; Section 7 bans the acquisition of a competitor if the result would be to "substantially to lessen competition, or to tend to create a monopoly."17 The Sherman Act's Section 2 prohibits monopolistic behavior and provides that "[e]very person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty ... ."18 Additionally, the HartScott-Rodino Act requires companies to submit mergers above a certain threshold to federal agencies for review. 19 The Hart-ScottRodino Act applies to vertical and horizontal mergers.20 Federal agencies, the States' Attorneys General, and private actors may enforce these three statutes. 21

#### C/I – “core antitrust laws” are the Sherman, Clayton, and FTC acts.

FTC ‘ND [Federal Trade Commission; “The Antitrust Laws”; https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws/antitrust-laws; AS]

The Antitrust Laws

Congress passed the first antitrust law, the Sherman Act, in 1890 as a "comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade." In 1914, Congress passed two additional antitrust laws: the Federal Trade Commission Act, which created the FTC, and the Clayton Act. With some revisions, these are the three core federal antitrust laws still in effect today.

The antitrust laws proscribe unlawful mergers and business practices in general terms, leaving courts to decide which ones are illegal based on the facts of each case. Courts have applied the antitrust laws to changing markets, from a time of horse and buggies to the present digital age. Yet for over 100 years, the antitrust laws have had the same basic objective: to protect the process of competition for the benefit of consumers, making sure there are strong incentives for businesses to operate efficiently, keep prices down, and keep quality up.

## notice and comment cp

### notice and comment – 2ac

#### 9 – Delay deficit – impact is short term collapse of digital platforms.

Matthew J. McKinney, Ph.D. from the University of Michigan in Natural Resources Policy and Conflict Resolution and member of the Montana Consensus Council, Summer, ’99 (60 Mont. L. Rev. 499)

Negotiated rulemaking, by contrast, provides an opportunity for all stakeholders and the responsible agency to work together to draft a proposed rule. In some situations, additional negotiations among the agency and the stakeholders may be useful after the formal public comment period and during implementation of the rule. By allowing the agency and all affected interests to jointly frame the issues and search for mutually agreeable solutions, negotiated rulemaking is supposed to increase citizen participation in public decision making; improve the substance of a proposed rule; shorten the length of time necessary to implement a final rule; increase the level of compliance; and reduce litigation. In theory, it can also foster cooperative working relationships among the agency and stakeholders.

However, this process can be resource-intensive in the [\*501] short-term for both the agency and other participants. The agency may be compelled to retain a convener or facilitator to manage the process. The stakeholders may have to spend more time and resources with the agency before, during, and after the public comment period. A negotiated rulemaking process also requires the participants to review additional documents and generate ideas, proposals, and perhaps data – all of which takes time. While these short-term costs should not be ignored, proponents of negotiated rulemaking argue that it is important to focus on the long-term benefits that accrue through the process.

#### 10 – Say no – lobby money and natsec arguments corrupt the process.

Sitaraman ’20 [Ganesh; Co-founder and Director of Policy @ Great Democracy Initiative; Professor of Law @ Vanderbilt University; “The National Security Case for Breaking Up Big Tech,” *Knight First Amendment Institute at Columbia*; AS]

It is perfectly understandable why big tech companies don’t want to be broken up or regulated. They are profitable, growing, and powerful. It is also perfectly understandable why they deploy national security arguments to defend against the prospect. National security arguments have long been a trump card in law, policy, and politics, forming an exception to the normal rules that govern the economy.90

## adv cp

### adv cp – 2ac

## eu da

### eu da – 2ac

#### EU wants the US to break up platforms

Suominen, 20 (Kati Suominen , Kati Suominen is an adjunct fellow with the CSIS Europe, Russia, and Eurasia Program; Dr. Suominen holds a B.A. from the University of Arkansas, an M.A. from Boston University, an M.B.A. from the University of Pennsylvania’s Wharton School, and a Ph.D. from the University of California, San Diego. She is a life member of the Council on Foreign Relations., 10-26-2020, accessed on 7-20-2021, Csis, "On the Rise: Europe’s Competition Policy Challenges to Technology Companies", https://www.csis.org/analysis/rise-europes-competition-policy-challenges-technology-companies)//Babcii

WHAT IS **DRIVING EUROPEAN PROPOSALS**? Europe’s **antitrust** policy enforcement actions form part of a series of EU steps that have hampered U.S. companies over the past few years. Among them are the European Union’s 2018 copyright law forcing U.S. platforms to increasingly police content posted on their sites and adjudicate freedom of expression; the European Union’s 2018 General Data Protection Regulation (GDPR) that has cost American as well as European businesses billions of dollars to implement; Europe’s proposals to monitor data used for artificial intelligence applications; and several European nations’ [digital services taxes](https://taxfoundation.org/digital-tax-europe-2020/) that primarily impact U.S. technology companies by shifting corporate income taxes for digital services to where they are consumed, as opposed to where they are developed. In part, Europe’s proposals for greater antitrust powers against technology companies represent a continuation of a history of cases where European enforcers and courts applied [an array of tests](https://www.beuc.eu/publications/beuc-x-2018-071_goals_of_eu_competition_law_and_digital_economy.pdf) positing that a certain behavior is anticompetitive—such that it hurts potential competitors, consumer choice, or innovation. Indeed, the Commission’s interventionist approach has long contrasted with U.S. antitrust enforcers and courts that have largely accepted market leadership and consumer loyalty earned through hard competition and risky investments. For U.S. enforcers, protecting consumer welfare (or efficiency and lower cost)—rather than potential competitors—has been their North Star. There are, however, a number of reasons why Europe is acting now to establish a stricter muscular antitrust policy. First, European antitrust officials, much like policymakers in the United States, report being under great political **pressure to “do something” about big tech**nology companies. [Polls suggest](https://bdaily.co.uk/articles/2020/08/26/uk-consumers-put-a-price-on-privacy-half-would-pay-more-to-do-business-with-an-organisation-committed-to-protecting-their-personal-data) that most Europeans support the Commission’s actions against Google and other U.S. technology companies and worry about their personal data getting in the hands of America technology companies and, in the wake of the Snowden revelations, the U.S. government. Antitrust officials are also reported to be **pressured by local**, less digitized **businesses that struggle to compete with** the **digital platforms**, and too often rush to act on populist pressures, despite having no clear empirical basis. Second, Europe is using antitrust to clear space for its own companies in sectors it considers to be in Europe’s comparative advantage, such as financial services, the Internet of Things (IoT), smart factories and smart homes, and healthcare. Europeans have failed to seize on the various technology waves that brought us smartphones, cloud computing, search, and social media, and they lack the kind of market-leading platforms that the United States and China have produced such as Amazon, Facebook, Twitter, Google, Alibaba, and WeChat. Germany’s SAP, the Netherland’s Adyen, and Sweden’s Spotify have [barely 3 percent of the market capitalization](http://www.netzoekonom.de/plattform-oekonomie/) of major tech platforms compared to 68 percent held by U.S. companies. European policymakers are now concerned that **U.S. companies are going beyond their traditional** swim **lanes** of social networking, ecommerce, and search and moving into “European” sectors. After all, U.S. technology companies often look to apply their technologies in new sectors: Apple started its own credit card and TV service; Google bought Fitbit to get into the wearable tech market and; Amazon has become a global freight forwarder and air cargo carrier. In a more frontal attack, Tesla is now striking at Europe’s leadership in high-end, tech-driven vehicles, [looking to build a gigafactory outside of Berlin](https://www.nytimes.com/2019/11/13/business/tesla-elon-musk-berlin.html). Europe needs to pre-empt mergers that would enable these giants to reap even more **market share in Europe** or outright force American companies to open their proprietary data to European firms, so they can accelerate the build-out of valuable algorithms in new markets.

#### Competition law is key to trade liberalization – equal distribution of market power is necessary to the benefit of trade.

Peinert ’20 [Erik; Department of Political Science @ Brown University; “Cartels, competition, and coalitions: the domestic drivers of international orders,” *Review of International Political Economy*, p. 1-25; AS]

Trade, competition, and market power

Early IPE theories drew from neoclassical trade models, whether based on class (Rogowski, 1989) or industry coalitions (Frieden, 1991; Frieden & Rogowski, 1996) for or against free trade. These theories assumed competition to be present, absent any specific impediments that were rarely, if ever, considered. While intermediate variables like factor mobility (Hiscox, 2002) introduced some dimensions of competition—in that factor immobility implies a lessening of competition across industries—the issue was largely avoided, and trade liberalization was assumed to universally increase domestic competition, an assumption necessary for the predicted distributional outcomes of these trade theories.

Even though more recent scholarship focuses on firm-level differences in trade politics, it has still avoided direct engagement with issues of competition and market power. Building off earlier research (Busch & Milner, 1994; Milner, 1988, 1997) and insights from new trade theory (Melitz, 2003), this line of research emphasizes that factor endowments and mobility are less important than firm-level differences in productivity, cost structure, and size. There is an increasingly strong consensus that the primary beneficiaries of trade liberalization are highly productive firms characterized by large economies of scale (Baccini, 2019). Most notably, Baccini et al. (2017) find that Preferential Trade Agreements (PTAs) predominantly benefit the largest and most competitive firms, with increases in concentration ratios for those firms after trade liberalization. Significant research shows that these differences in the expected benefits of trade, driven by economies of scale, and productivity, are among the primary determinants of support for trade liberalization (Chase, 2003; Kim, 2017; Osgood, 2017a, 2017b; Plouffe, 2015, 2017).

However, these arguments reduce economic power to differences in productivity and efficiency, rather than see it as its own political issue, even though many points in this research strongly imply dynamics of market power. Manger (2009) argues that PTAs are primarily tools for multinationals to exclude competitors from regional or national markets, because of first-mover advantages in acquiring important infrastructure or shaping domestic regulations. Similarly, one of the less well-explored details from Baccini et al. (2017) was that the depth of a PTA (including provisions for competition rules) led to a more equal distribution of benefits across firms. While more fine-grained research is needed to isolate the effects of competition provisions,3 the intuitive implication is that the uneven distributional consequences are driven in part by practices or mechanisms that would be prohibited by competition rules. Nonetheless, the reduction of differences in economic power to questions of productivity makes existing literature and theory poorly suited to understand the relationship between trade and market power.

As an alternative starting point, this article looks to the sociology of markets, which does not see the efficiency of different economic arrangements, organizations, or firms as central (Fligstein, 2002, p. 9). The goal of firms and economic actors is survival and stability, not just profit or income optimization. Prices are not exogenous signals of value or scarcity, but are instead contingent on legal norms, economic practices, and social values that coordinate prices to stabilize markets against price-cutting (Fligstein, 1996). Firms look for mechanisms to stabilize prices to prevent ruinous price wars with competitors (Djelic, 1998; Dobbin & Dowd, 2000; Fligstein, 1990). Under this framework, the policies that allocate the coordination rights needed to control or limit price competition—cartels, price-fixing, collusion, mergers, market power, etc.—are the key political questions

, and the economic power of lead firms, and the legal infrastructure around them, are among these mechanisms. Unlike issues of direct trade liberalization or protectionism, issues of market power are more dependent on the specific power relationships among firms and competitors, and less reducible to abstract differences like productivity. The ability of antitrust and related policies to allocate coordination rights (Paul, 2020) needed to stabilize prices and markets means that prices—and thus seemingly apolitical measures like productivity—are not simply the result of which firms produce the most efficiently.

In this domain of antitrust, competition, and market power, the state plays a central role in the politics around trade. In the limited existing research specifically on the relationship between antitrust and trade politics, Bradford and Buthe ( € 2015) and Buthe ( € 2015) assert that competition policy is a necessary complement to trade liberalization—to avoid transnational collusion among firms—and antitrust policies are understood on the assumption that state actors genuinely aim to promote competition. This article expands on this to show that the state’s interests and policy interventions are more complex and fundamental than just avoiding collusion, and that the state’s preferences for competition are not just a functional response to trade liberalization. In contrast to public-choice perspectives in the antitrust literature that have subsumed antitrust and competition policy as nothing but another arena for regulatory rent-seeking by private interests (Guzman, 1998; Shughart, 1995), here I focus on the public interest concerns of state actors and follow the tradition of ‘state autonomy’ (Evans et al., 1985), arguing that the state is at least partially independent from the pressures of, or capture by, private interests. State actors have a more encompassing interest (Olson, 1965) in the overall functioning of markets, and they will go to great efforts to puzzle, learn, and understand how market relationships work in the aggregate. None of this framing is to suggest that private interests are not present or important, but state actors have significant space to implement their own agenda, as existing evidence is rather conflicted about the ability of concentrated or organized interests to reliably get their policy preferences.4

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#### All metrics show the US innovation is falling behind.

Kersten ’21 [Alexander; 4/14/21; Director of the Renewing American Innovation Project @ Center for Strategic and International Studies; Master of Arts in Law and Diplomacy from the Fletcher School of Law and Diplomacy @ Tufts University; “Why Renewing American Innovation? The “Endless Frontier Act” and Biden’s Bid for Maintaining U.S. Global Competitiveness”; https://www.csis.org/analysis/why-renewing-american-innovation-endless-frontier-act-and-bidens-bid-maintaining-us-global; AS]

The China Challenge

China today poses both a technological and security threat to the United States that no country has in modern history. U.S. companies operating under free market rules struggle to compete against state-backed Chinese firms that can ignore a poor quarter while enjoying one of the largest, most-protected markets in the world. With the support of the central government, key Chinese firms are free to innovate and compete in the global market without financial worries while Chinese scientists can focus on research and development instead of seeking grants for their university or research institution. According to Tulane University professor and former Aspen Institute CEO Walter Isaacson in 2019, China has modeled its approach along the lines of U.S. scientist Vannevar Bush’s 1945 report Science: The Endless Frontier, which, besides being the inspiration behind the name of the proposed legislative package, promoted government funding of basic research together with universities and industry—a priority of the Franklin D. Roosevelt administration. As the Chinese government sets long-term strategic goals like Made in China 2025, which was part of China’s 13th Five-Year Plan of 2016-2020, the United States needs to return to its post-World War II values of equating leadership in science and technology with national security and prosperity.

Today, U.S. companies locked in close competition lack the incentives to maintain in-house capabilities for innovation, like they did in the mid-century era of AT&T’s Bell Labs, DuPont’s central R&D unit, Xerox PARC, and others. Heightened competition, shareholder pressures, and new incentives pushed firms to cut these in-house research units back in the 1980s. Since then, the share of applied research in total corporate R&D expenditures fell from 30 percent in 1985 to below 20 percent in 2015—all well below the peak of almost 40 percent in the 1950s. Of course, the Harvard Business Review in 2014 famously suggested that, despite being the source of great inventions throughout history, China today is a “land of rule-bound rote learners” where breakthroughs are rare. Because of this, some argue the Chinese are not great innovators and China’s state-backed system could itself breed complacency and come back to bite it in the near future. However, even by then, experts warn, the United States will have missed the train on many important technologies and will be struggling to catch up.

Despite Silicon Valley and the millennial generation’s supposed penchant for innovative disruption, U.S. total factor productivity has been slowing since the 1970s. Productivity today is the lowest in more than a century. Innovation, historically a clear driver of U.S. productivity, means the creation of ideas and inventions that are translated into practical value and improve the quality of people’s lives directly or via their ability to grow the economy. Whether measured in terms of triadic patents (patents filed in the United States, Europe, and Japan), most available measures of productivity, or even startup company creation, the United States’ trademark innovative spirit has been gradually dampening for decades. And if not for China’s meteoric rise this century, the United States might still be sleepwalking—optimistically but without a serious plan—instead of waking up to the need for a coherent national strategy.

U.S. Complacency, and How We Got There

Noted George Mason University economist Tyler Cowen and other experts have recognized a growing “complacency” in American life as the indicator of a societal shift from the United States’ early dynamism. From the turn of the twentieth century until roughly the moon landing of 1969, the breakneck pace of groundbreaking technologies that directly affected the quality of life and the structure of U.S. society was simply astounding. Yet, since the first moon landing in 1969, only the internet and its application to more and more parts of our lives can claim to have made any meaningful impact—meaning that physically the world of 1969 is much more like that of 2021 than 1969 was of the early twentieth century. This, of course, is not meant to discredit the great advances in medicine and human genomics made in the last few decades, for example, but to show how the rate of society-changing innovations has not maintained the pace that existed from the mid-nineteenth century until roughly 1969.

In the developed world, this slowdown has unfortunately contributed to wage stagnation, the shrinking of the middle class, and greater political polarization domestically. Coinciding with the waning days of the Soviet Union’s power in the 1980s, the U.S. innovation decline was masked at home. Further, the Soviets of that period no longer posed a technological threat to the United States. Japan on the other hand, posed a great technological threat in the 1980s but was and is a staunch U.S. ally, and not a security threat. Unchallenged abroad and riding the dual-edged optimism of the internet boom of the 1990s and the victory over communism, the United States missed the ways in which it was giving up the advantages that made it such a powerhouse in the mid-twentieth century.

Industry experts have also suggested that the United States put its position up for grabs when it began to outsource important production—which President Biden alluded to during the signing of a February 2021 executive order aimed at reducing supply chain bottlenecks. Starting in the 1970s and 1980s, the United States began to outsource production of semiconductors and displays mostly to Taiwan and South Korea, which today account for almost half of all semiconductor manufacturing capacity in the world. Further, adding in mainland China and Japan shows that a whopping three-quarters of all semiconductor manufacturing capacity comes from East Asia—a sharp departure from 1990, when the United States still provided about 50 percent of all global manufacturing capacity. Removing itself from the production process means the United States misses out on important chances for innovating as well as for developing a strong high-tech manufacturing workforce.

#### Small firms key – differentiation, speed, and lack of concern about market share – that’s Sitaraman and Khan. AND distinct tech, incumbency pressure, and diverse approaches.

Federico ’20 [Giulio et al; European Commission; Fiona Scott Morton; Yale University and NBER; and Carl Shapiro; University of California, Berkeley, and NBER; “Antitrust and innovation: Welcoming and protecting disruption,” *Innovation Policy and the Economy* 20(1), p. 125-190; AS | GCD]

I. Introduction

We write in praise of market disrupters—firms that shake up the status quo, threaten incumbent firms, and sometimes transform entire industries. Through this process, which Joseph Schumpeter famously called “creative destruction,” disruptive firms promote economic growth and bring the benefits of new technologies and new business practices and business models to consumers.

We focus on the impact of antitrust policy—known globally as competition policy—on innovation.1 Competition policy seeks to protect and promote a vigorous competitive process by which new ideas are transformed into realized consumer benefits. In this fundamental way, competition spurs innovation. The productivity and growth literature teach us that innovation is the primary driver of rising standards of living over time, so promoting innovation through effective competition policy is likely to be very consequential for economic growth and welfare.

Disruptive firms drive a significant amount of innovation.2 They do not use the same technology or business model as incumbents. They offer consumers a distinct value proposition, not simply lower prices. By making its offer to customers attractive in a new way, a disruptive firm can destroy a great deal of incumbent profit while creating a large amount of consumer surplus. The resulting churn in products and market shares, as new products enter and old ones exit, and as newer business methods and business models supplant older ones, represents a healthy competitive process. If that competitive process is slowed or biased by mergers or by exclusionary conduct, innovation is lessened and consumers are harmed. This same competitive process promotes the development and diffusion of best practices, including what might be termed reductions in X-inefficiency. The trade and productivity literature both convincingly demonstrate that firms vary significantly in their productivity levels and that stiffer competition reallocates sales to more productive firms. The diffusion of best practices also is promoted if sales are contestable, going to the better-performing firms.

Competition policy seeks to protect the competitive process by which disruptive firms challenge the status quo. Competition policy is agnostic regarding the type of firm or the type of innovation involved. Start-ups that grow rapidly can certainly be disruptive. Uber and Airbnb are prominent recent examples. But large established firms can also be disruptive, especially when they attack adjacent markets. Think of Walmart entering local retail markets, Microsoft Bing challenging Google in search, or Netflix producing its own video content.

In contrast, the role played by successful incumbent firms in their own core markets is deeply conflicted. On the one hand, process innovations that lower costs can be most valuable at the largest firms, and market leaders often invest substantial sums to introduce new generations of products. Examples abound: Intel developing a new generation of technology and building new fabs to manufacture microprocessors; Boeing developing a new generation of large commercial aircraft; and Verizon investing to build its 5G wireless network. In many industries experiencing rapid technological change, the biggest firms are also some of the most impressive innovators, as Schumpeter observed 75 years ago.3 This should not be surprising, given the economies of scale associated with R&D, especially in industries where developing the next-generation product or process requires investments of hundreds of millions of dollars and/or extensive experience with the current technology.4 On the other hand, a successful incumbent firm that is profiting greatly from the status quo has a powerful incentive to preserve those profits, and this can mean slowing down or blocking disruptive threats. Successful incumbents also may find it very difficult organizationally to invest in disruptive technologies.5 Competition valuably increases the diversity of approaches taken to the development of new technology.

We stress in this article that innovation is best promoted when market leaders are allowed to exploit their competitive advantages while also facing pressure to perform coming from both conventional rivals and from disruptive entrants. These labels depend on context: the same firm can be a market leader in one area and a disruptive upstart in another. Market leaders may face competitive pressures to innovate coming from (a) other large firms in the same market, (b) other large firms in adjacent spaces, or (c) smaller, pesky disruptive firms. Casual empiricism indicates that all of these sources of competition are important in different settings. All have historically been protected using competition policy.

The central theme animating our analysis is that a market leader is best motivated to innovate if it fears losing its leadership position to a disruptive rival.6 Even a dominant incumbent will feel pressure to innovate if the bulk of tomorrow’s sales will be won by the firm that is most innovative, be that the incumbent or a disruptive challenger, and if other firms are in a position to leapfrog the current incumbent. Once one properly understands the dynamic nature of the competitive process, it becomes clear that greater rivalry—meaning greater contestability of tomorrow’s sales—leads to more innovation.7 The critical role of competition policy is thus to prevent today’s market leaders from using their market power to disable disruptive threats, either by acquiring wouldbe rivals or by using anticompetitive tactics to exclude them.

#### Turn: competition is better for national champions – best data.

Cavenaile et al. ’21 [Laurent; Department of Management @ University of Toronto Scarborough; Murat Alp Celik; Department of Economics @ University of Toronto; and Xu Tian; Department of Finance @ University of Georgia; “The Dynamic Effects of Antitrust Policy on Growth and Welfare,” *Journal of Monetary Economics* 121, p. 42-59; AS | GCD]

Next, we consider innovation by superstar firms. The decline in the frequency of single firm industries results in higher dynamic competition across superstar firms. When faced with peer competitors with similar productivities, superstars increase their innovation intensity as the escape-competition effect dominates the Schumpeterian creative destruction effect of lower profits. This is particularly true for industries with two superstars. Consequently, we observe a 0.75% increase in superstar innovation with lower HHI thresholds, and a 1.44% increase with a higher obstruction rate.

Combining the dynamic effects of innovation by small firms and superstars, as well as the synergy gains from successful mergers, we calculate that the growth rate of aggregate output increases by 3.54% of its value in the first experiment, and 4.03% in the second experiment. In addition, the increased growth in both experiments is the result of rather modest increases in the aggregate R&D expenditure share at 0.55% and 1.77% of its value. Combined with the more modest increases in allocative efficiency discussed earlier, stronger antitrust enforcement achieved through lowering HHI thresholds is calculated to increase social welfare by 1.98% in consumption-equivalent terms in the long run, whereas the gain is even larger at 2.29% with the more targeted higher obstruction rate experiment. Given the very limited impact on overall M&A activity, these results showcase that higher antitrust enforcement achieved through both methods could yield disproportionately large gains in welfare, since the dynamic effects on superstar innovation (through more intense dynamic competition in innovation among peer superstar firms) is found to be quite substantial despite the low rate of obstruction (4.87% among all merger transactions between superstar firms).

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#### DOJ agrees.

DOJ ’17 [Department of Justice; 1/5/17; “ANTITRUST LAWS AND YOU; https://www.justice.gov/atr/antitrust-laws-and-you; AS]

Many consumers have never heard of antitrust laws, but enforcement of these laws saves consumers millions and even billions of dollars a year. The Federal Government enforces three major Federal antitrust laws, and most states also have their own. Essentially, these laws prohibit business practices that unreasonably deprive consumers of the benefits of competition, resulting in higher prices for products and services.

The three major Federal antitrust laws are:

The Sherman Antitrust Act

The Clayton Act

The Federal Trade Commission Act.

#### So does the Chamber of Commerce.

CoC ‘ND [Chamber of Commerce; “Antitrust Laws”; https://www.uschamber.com/antitrust-laws; AS]

America’s Antitrust Laws Protect Competition and Benefit Consumers

Antitrust laws ensure competition in a free and open market economy, which is the foundation of any vibrant economy. And healthy competition among sellers in an open marketplace gives consumers the benefits of lower prices, higher quality products and services, more choices, and greater innovation.

The core of U.S. antitrust law was created by three pieces of legislation: the Sherman Antitrust Act, the Federal Trade Commission Act, and the Clayton Antitrust Act. These laws have evolved along with the market, vigilantly guarding against anti-competitive harm that arises from abuse of dominance, bid rigging, price fixing, and customer allocation.

#### And Econ PhDs.

Chen & Kelly ’21 [James; Former Director of Investing & Trading Content @ Investopedia, Former Head of Research @ Gain Capital; and Robert; Managing Director @ XTS Energy LLC, Adjunct Instructor in Energy Economics @ University of Houston and Rice University; PhD in Economics @ Harvard University; “Understanding Antitrust Laws”; 5/29/21; https://www.investopedia.com/ask/answers/09/antitrust-law.asp; AS]

The Big Three Antitrust Laws

Let’s take a brief look at the main antitrust laws in the United States. The core of U.S. antitrust legislation was created by three pieces of legislation: the Sherman Anti-Trust Act of 1890,1﻿ the Federal Trade Commission Act2﻿—which also created the FTC—and the Clayton Antitrust Act.3﻿

The Sherman Anti-Trust Act intended to prevent unreasonable "contract, combination or conspiracy in restraint of trade," and "monopolization attempted monopolization or conspiracy or combination to monopolize." Violations against the Sherman Anti-Trust Act can have severe consequences, with fines of up to $100 million for corporations and $1 million for individuals, as well as prison terms up to 10 years.1

The Federal Trade Commission Act bans "unfair methods of competition" and "unfair or deceptive acts or practices." According to the Supreme Court, violations of the Sherman Anti-Trust Act also violate the Federal Trade Commission Act. Therefore, even though the FTC cannot technically enforce the Sherman Anti-Trust Act, it can bring cases under the FTC Act against violations of the Sherman Anti-Trust Act.2﻿

The Clayton Antitrust Act addresses specific practices that the Sherman Anti-Trust Act may not address. According to the FTC, these include preventing mergers and acquisitions that may "substantially lessen competition or tend to create a monopoly," preventing discriminatory prices, services and allowances in dealings between merchants, requiring large firms to notify the government of possible mergers and acquisitions, and imbuing private parties with the right to sue for triple damages when they have been harmed by conduct that violates the Sherman and Clayton acts, as well as allowing the victims to obtain court orders to prohibit further future transgressions.3﻿

#### Law groups.

Gibbs ‘ND [Gibbs Law Group; “The Sherman Antitrust Act”; https://www.classlawgroup.com/antitrust/federal-laws/sherman-act/; AS]

The Sherman Antitrust Act is one of three core federal antitrust laws, along with the Clayton Antitrust Act and the Federal Trade Commission Act.

forbids monopolistic behavior.

#### Constitutional law.

CLR ‘ND [Constitutional Law Reporter; “THE FEDERAL ANTITRUST ACTS”; https://constitutionallawreporter.com/2016/05/25/the-federal-antitrust-acts/; AS]

In 1890, Congress enacted the country’s first antitrust law, the Sherman Antitrust Act. In 1914, Congress passed the Federal Trade Commission Act and the Clayton Act to further police anticompetitive business conduct. Together, the three laws continue to serve as the federal government’s core antitrust laws.

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#### Tech edge eroding across domains – try or die for startups.

Darby & Sewall ’21 [Christopher; CEO @ In-Q-Tel; and Sarah; DPhil @ Oxford, Former Professor @ Harvard's Kennedy School of Government Executive Vice President for Policy @ In-Q-Tel, Former US Undersecretary of State for Civilian Security, Democracy, and Human Rights; “The Innovation Wars: America's Eroding Technological Advantage,” *Foreign Affairs* 100(2), p. 142-153; AS]

Since the early days of the Cold War, the United States has led the world in technology. Over the course of the so-called American century, the country conquered space, spearheaded the Internet, and brought the world the iPhone. In recent years, however, China has undertaken an impressive effort to claim the mantle of technological leadership, investing hundreds of billions of dollars in robotics, artificial intelligence, microelectronics, green energy, and much more. Washington has tended to view Beijing ’ s massive technology investments primarily in military terms, but defense capabilities are merely one aspect of great-power competition today—little more than table stakes. Beijing is playing a more sophisticated game, using technological innovation as a way of advancing its goals without having to resort to war. Chinese companies are selling 5G wireless infrastructure around the world, harnessing synthetic biology to bolster food supplies, and racing to build smaller and faster microchips, all in a bid to grow China’s power.

In the face of China ’ s technological drive, U.S. policymakers have called for greater government action to protect the United States ’ lead. Much of the conventional wisdom is sensible: boost R & D spending, ease visa restrictions and develop more domestic talent, and build new partnerships with industry at home and with friends and allies abroad. But the real problem for the United States is much deeper: a flawed understanding of which technologies matter and of how to foster their development. As national security assumes new dimensions and great-power competition moves into different domains, the government’ s thinking and policies have not kept pace. Nor is the private sector on its own likely to meet every technological need that bears on the country ’ s security.

In such an environment, Washington needs to broaden its horizons and support a wider range of technologies. It needs to back not only those technologies that have obvious military applications, such as hypersonic flight, quantum computing, and artificial intelligence, but also those traditionally thought of as civilian in nature, such as microelectronics and biotechnology. Washington also needs to help vital nonmilitary technologies make the transition to commercial success, stepping in with financing where the private sector will not.

AMERICA’S INNOVATION CHALLENGE

In the early decades of the Cold War, the United States spent billions of dollars dramatically expanding its scientific infrastructure.The Atomic Energy Commission, formed in 1946, assumed responsibility for the wartime labs that had pioneered nuclear weapons, such as the Oak Ridge National Laboratory, the headquarters of the Manhattan Project, and went on to fund academic research centers, such as the Lawrence Livermore National Laboratory.The Department of Defense, founded in 1947, was given its own massive research budget, as was the National Science Foundation, established in 1950. After the Soviets launched the Sputnik satellite, in 1957,Washington created the National Aeronautics and Space Administration, or NASA, to win the space race, as well as what would become the Defense Advanced Research Projects Agency, which was tasked with preventing a future technological surprise. By 1964, research and development accounted for 17 percent of all discretionary federal spending.

Partnering closely with academia and companies, the government funded a large variety of basic research—that is, research without a specific end use in mind.The goal was to build a technological foundation, defined primarily as conventional and nuclear defense capabilities, to ensure the country ’ s security.The research proved astonishingly successful. Government investment spawned cutting-edge capabilities that undergirded the United States ’ military superiority, from supersonic jets to nuclear-powered submarines to guided missiles.The private sector, for its part, got to capitalize on the underlying intellectual property, turning capabilities into products and products into companies. GPS-enabled technologies, airbags, lithium batteries, touchscreens, voice recognition—all got their start thanks to government investment.

Yet over time, the government lost its lead in innovation. In 1964, the U.S. government was spending 1.86 percent of GDP on R & D, but by 1994, that share had fallen to 0.83 percent. During that same period, U.S. corporate R & D investment as a percentage of GDP nearly doubled. The numbers tell only half the story. Whereas much of the government’ s R & D investment was aimed at finding new, game-changing discoveries, corporate R & D was mostly devoted to incremental innovation. The formula for growing revenue, the private sector realized, was to expand on existing products, adding functionality or making something faster, smaller, or more energy efficient. Companies focused on nearer-term technologies with commercial promise, rather than broad areas of inquiry that might take decades to bear fruit.

Increasingly, the most innovative R & D was taking place not in the labs of large corporations but at nimbler, privately funded startups, where venture capital investors were willing to tolerate more risk. Modern venture capital firms—partnerships that invest in early-stage companies—first arose in the 1970s, leading to early successes such as Apple and Microsoft, but it wasn’t until the dot-com bubble of the 1990s that this style of investment really took off. If the first phase of R & D outsourcing was from government labs to corporate America, this was the second phase: away from big businesses and toward small startups. Large companies began to spend less on internal R & D and more on what they called “ corporate development, ” or acquiring smaller, venture-backed companies with promising technologies.

The rise of venture capitalism created a great deal of wealth, but it didn’t necessarily further U.S. interests. Venture capital firms were judged by their ability to generate outsize returns within a ten-year window. That made them less interested in things such as microelectronics, a capital-intensive sector where profitability arrives in decades more so than years, and more interested in software companies, which need less capital to get going.The problem is that the companies receiving the most venture capital funding have been less likely to pursue national security priorities. When the American venture capital firm Accel hit the jackpot by investing early in Rovio Entertainment, the Finnish video game company behind the mobile app Angry Birds, it may have been a triumph for the firm, but in no way did it further U.S. interests.

Meanwhile, government funding of research continued its decline relative both to GDP and to R & D spending in the private sector. The Department of Defense retained the single biggest pot of federal research funding, but there was less money overall, and it became more dispersed across various agencies and departments, each pursuing its own priorities in the absence of a national strategy. As the best researchers were lured to the private sector, the government’ s in-house scientific expertise atrophied. Once close relationships between private companies and Washington also suffered, as the federal government was no longer a major customer for many of the most innovative firms. U.S. agencies were rarely the first to buy advanced technology, and smaller startups generally lacked the lobbyists and lawyers needed to sell it to them anyway.

Globalization also drove a wedge between corporations and the government. The American market came to look less dominant in an international context, with the huge Chinese consumer market exerting a particularly powerful pull. Corporations now had to think of how their actions might look to customers outside the United States. Apple, for example, famously refused to unlock iPhones for the FBI, a decision that probably enhanced its brand internationally.

Further complicating matters, innovation itself was upending the traditional understanding of national security technology. More and more, technology was becoming “dual use, ” meaning that both the civilian and the military sectors relied on it. That created new vulnerabilities, such as concerns about the security of microelectronic supply chains and telecommunications networks. Yet even though civilian technologies were increasingly relevant for national security, the U.S. government wasn’t responsible for them. The private sector was, and it was innovating at a rapid clip with which the government could barely keep pace. Taken together, all these trends have led to a concerning state of affairs: the interests of the private sector and the government are further apart than ever.

THE CHINESE JUGGERNAUT

The changes in American innovation would matter less if the world had remained unipolar. Instead, they occurred alongside the rise of a geopolitical rival. Over the past two decades, China has evolved from a country that largely steals and imitates technology to one that now also improves and even pioneers it. This is no accident; it is the result of the state’s deliberate, long-term focus. China has invested massively in R & D, with its share of global technology spending growing from under five percent in 2000 to over 23 percent in 2020. If current trends continue, China is expected to overtake the United States in such spending by 2025.

Central to China’s drive has been a strategy of “military-civil fusion,” a coordinated effort to ensure cooperation between the private sector and the defense industry. At the national, provincial, and local levels, the state backs the efforts of military organizations, state-owned enterprises, and private companies and entrepreneurs. Support might come in the form of research grants, shared data, government-backed loans, or training programs. It might even be as simple as the provision of land or office space; the government is creating whole new cities dedicated solely to innovation.

China’s investment in 5G technology shows how the process works in practice. Equipment for 5G makes up the backbone of a country’s cellular network infrastructure, and the Chinese company Huawei has emerged as a world leader in engineering and selling it—offering high-quality products at a lower price than its Finnish and South Korean competitors. The company has been buoyed by massive state support—by The Wall Street Journal’ s count, some $75 billion in tax breaks, grants, loans, and discounts on land. Huawei has also benefited from China’s Belt and Road Initiative, which provides generous loans to countries and Chinese companies to finance infrastructure construction.

Massive state investments in artificial intelligence have also paid off. Chinese researchers now publish more scientific papers in that field than American ones do. Part of this success is the result of funding, but something else plays a big role: access to enormous amounts of data. Beijing has fueled the rise of powerhouse companies that sweep up endless information about their users. These include Alibaba, an e-commerce giant; Tencent, which developed the all-purpose WeChat app; Baidu, which began as a search engine but now offers a range of online products; DJI, which dominates the consumer drone market; and SenseTime, which provides facial recognition technology for China’s video surveillance network and is said to be the world’s most valuable artificial intelligence company. As a matter of law, these companies are required to cooperate with the state for intelligence purposes, a broad mandate that is almost certainly used to force companies to share data for many other reasons.

That information increasingly involves people living outside China. Chinese companies have woven a global web of data-gathering apps that collect foreigners’ private information about their finances, their search history, their location, and more. Those who make a mobile payment through a Chinese app, for example, could have their personal data routed through Shanghai and added to China’s growing trove of knowledge about foreign nationals. Such information no doubt makes it easier for the Chinese government to track, say, an indebted Western bureaucrat who could be convinced to spy for Beijing or a Tibetan activist who has taken refuge abroad.

China’s hunger for data extends to some of the most personal information imaginable: our own DNA. Since the COVID-19 pandemic began, BGI— a Chinese genome-sequencing company that began as a government funded research group—has broken ground on some 50 new laboratories abroad designed to help governments test for the virus. China has legitimate reasons to build these labs, but it also has an ugly record of forcibly collecting DNA data from Tibetans and Uighurs as part of its efforts to monitor these minorities. Given that BGI runs China ’ s national library of genomics data, it is conceivable that through BGI testing, foreigners ’ biological data might end up in that repository.

Indeed, China has shown great interest in biotechnology, even if it has yet to catch up to the United States. Combined with massive computing power and artificial intelligence, innovations in biotechnology could help solve some of humanity ’ s most vexing challenges, from disease and famine to energy production and climate change. Researchers have mastered the gene-editing tool CRISPR, allowing them to grow wheat that resists disease, and have managed to encode video in the DNA of bacteria, raising the possibility of a new, cost-effective method of data storage. Specialists in synthetic biology have invented a new way of producing nylon—with genetically engineered microorganisms instead of petrochemicals.The economic implications of the coming biotechnology revolution are staggering: the McKinsey Global Institute has estimated the value of biotechnology ’ s many potential applications at up to $4 trillion over the next ten to 20 years.

Like all powerful technologies, however, biotechnology has a dark side. It is not inconceivable, for example, that some malicious actor could create a biological weapon that targeted a specific ethnic group. On controversial questions—such as how much manipulation of the human genome is acceptable—countries will accept different degrees of risk in the name of progress and take different ethical positions.The country that leads biotechnology ’ s development will be the one that most profoundly shapes the norms and standards around its use. And there is reason to worry if that country is China.In 2018, the Chinese scientist He Jiankui genetically engineered the DNA of twin babies, prompting an international uproar. Beijing portrayed him as a rogue researcher and punished him. Yet the Chinese government’ s disdain for human rights, coupled with its quest for technological supremacy, suggests that it could embrace a lax, even dangerous approach to bioethics.

THINKING BIGGER

Washington has monitored China’s technological progress through a military lens, worrying about how it contributes to Chinese defense capabilities. But the challenge is much broader. China’s push for technological supremacy is not simply aimed at gaining a battlefield advantage; Beijing is changing the battlefield itself. Although commercial technologies such as 5G, artificial intelligence, quantum computing, and biotechnology will undoubtedly have military applications, China envisions a world of great-power competition in which no shots need to be fired. Technological supremacy promises the ability to dominate the civilian infrastructure on which others depend, providing enormous influence. That is a major motivation behind Beijing’s support for high-tech civilian infrastructure exports. The countries buying Chinese systems may think they are merely receiving electric grids, health-care technology, or online payment systems, but in reality, they may also be placing critical national infrastructure and citizens ’ data in Beijing ’ s hands. Such exports are China’s Trojan horse.

Despite the changing nature of geopolitical competition, the United States still tends to equate security with traditional defense capabilities. Consider microelectronics. They are critical components not only for a range of commercial products but also for virtually every major defense system, from aircraft to warships. Because they will power advances in artificial intelligence, they will also shape the United States ’future economic competitiveness. Yet investment in microelectronics has fallen through the cracks. Neither the private sector nor the government is adequately funding innovation—the former due to the large capital requirements and long time horizons involved and the latter because it has focused more on securing current supplies than on innovating. Although China has had a hard time catching up to the United States in this area, it is only a matter of time before it moves up the microelectronics value chain.