Texas National Security Review: Volume 3, Issue 3 (Autumn 2020)
Print: ISSN 2576-1021 Online: ISSN 2576-1153

ECONOMIC MIGHT, NATIONAL SECURITY, AND THE FUTURE OF AMERICAN STATECRAFT

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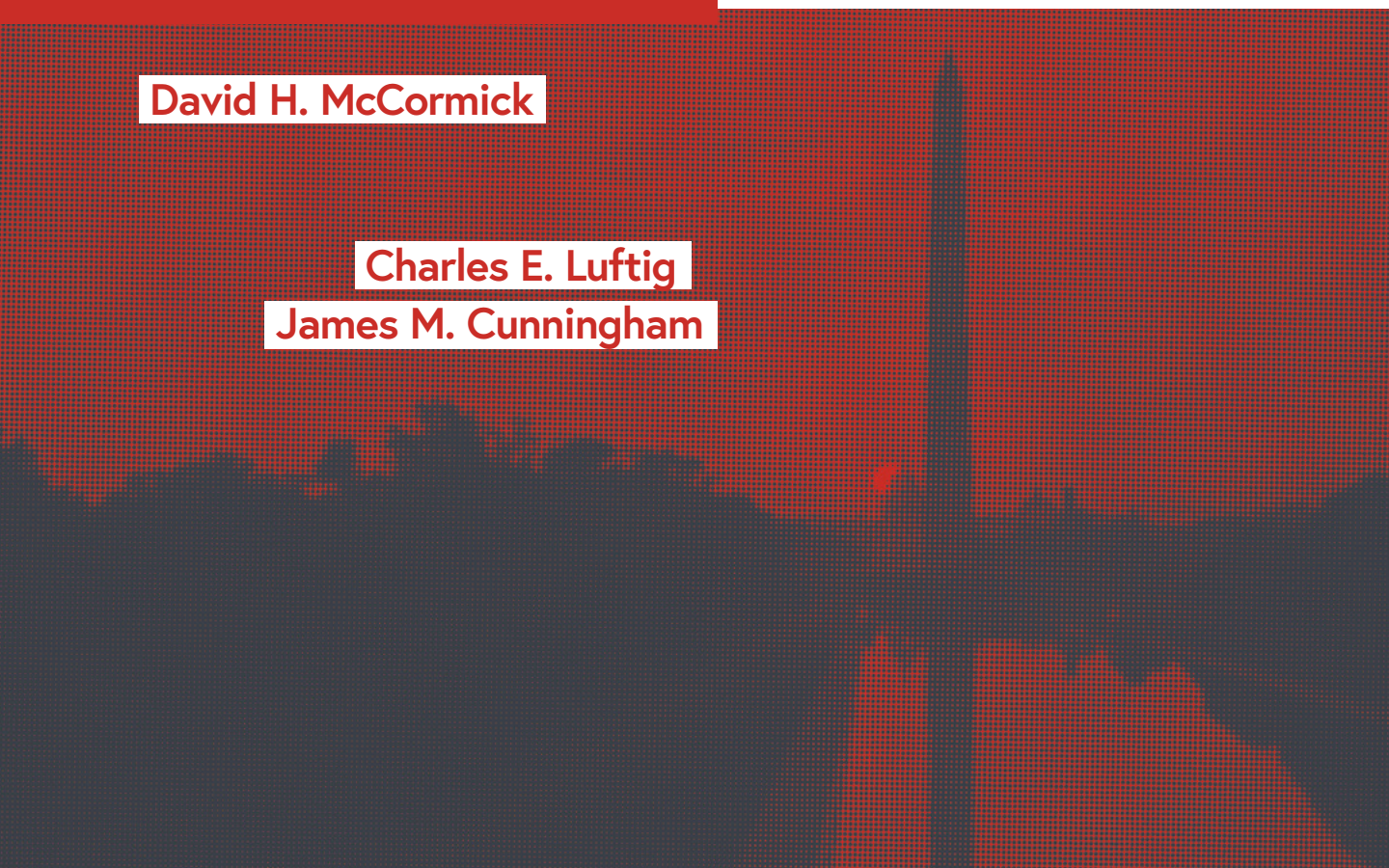

Given the many significant challenges America faces today — including high levels of debt, political discord, the rise of China, and the emergence of Asian economies as the drivers of global growth — what is the country's plan for preserving its great-power primacy? In this article, the authors examine the power that resides at the intersection of economics and national security, and propose how better to sustain the country's economic might and leverage it in the service of American primacy.

The COVID-19 crisis and the resulting economic devastation have fueled already growing concerns about the state of the U.S.-led world order.[1] For the past decade, public figures have raised concerns about the rise of China,[2] the erosion of the American dream,[3] the perceived failures of American leadership,[4] and America's relative loss of power.[5] Now, suffering through a tragic international crisis, it is only natural that people might wonder what the future holds. Whether one agrees with these concerns or not, it is undeniable that many Americans are uneasy about their country's future.[6]

The reality of American power is complicated. By most measures, the United States still enjoys preeminence: It maintains the world's most powerful military and is the global leader in technological development and innovation.[7] It possesses unrivaled structural power, due both to its reserve currency and to America's role in having shaped the principles of the global order and of international institutions.[8] Its network of like-minded allies and partners has endowed it with a unique ability to influence international affairs.[9] And a vibrant, strong economy has sustained the growth of American power,[10] helped along by America's unique political values and culture, and its standing as a symbol of democracy for the world.[11]

At the same time, despite its many advantages, America currently faces serious headwinds, including high levels of debt, reduced economic mobility, political discord, and the emergence of

1 See, e.g., Kurt M. Campbell and Rush Doshi, "The Coronavirus Could Reshape Global Order," *Foreign Affairs*, March 18, 2020, https://www.foreignaffairs.com/articles/china/2020-03-18/coronavirus-could-reshape-global-order; and Richard Haas, "The Pandemic Will Accelerate History Rather than Reshape It," *Foreign Affairs*, April 7, 2020, https://www.foreignaffairs.com/articles/united-states/2020-04-07/pandemic-will-accelerate-history-rather-reshape-it.

2 This perception is most notably captured in the "Thucydides Trap" concept, popularized by Graham Allison in, among others, Graham Allison, *Destined for War: Can America and China Escape Thucydides's Trap?* (New York: Houghton Mifflin Harcourt, 2017).

3 See, e.g., Josh Hawley, "Speech at the National Conservatism Conference," July 18, 2019, https://www.hawley.senate.gov/senator-josh-hawleys-speech-national-conservatism-conference.

4 See, e.g., Robert Kagan, "The Cost of American Retreat," *Wall Street Journal*, Sept. 7, 2018, https://www.wsj.com/articles/thecost-of-american-retreat-1536330449.

5 See, e.g., Fareed Zakaria, *The Post-American World* (New York: W. W. Norton, 2009).

6 A Pew poll, released in March 2019, reported that 60 percent of Americans surveyed thought America's global status would decline in the coming decades. Kim Parker, Rich Morin, and Juliana Menasce Horowitz, "Looking to the Future, Public Sees an America in Decline on Many Fronts," Pew Research Center, March 21, 2019, https://www.pewsocialtrends.org/2019/03/21/public-sees-an-america-in-decline-on-many-fronts/.

7 Scientific and technological expertise are leading sources of national power in the modern age. See, Ashley J. Tellis et al., *Measuring National Power in the Postindustrial Age* (Santa Monica, CA: RAND, 2000).

8 Hal Brands describes the benefits America's leadership in international institutions and guiding their underlying principles in, Hal Brands, *Making the Unipolar Moment: U.S. Foreign Policy and the Rise of the Post-Cold War Order* (Ithaca, NY: Cornell University Press, 2016). See also, Susan Strange, "The Persistent Myth of Lost Hegemony," *International Organization* 41, no. 4 (Autumn, 1987): 551–74, https://doi.org/10.1017/S0020818300027600.

9 Joseph S. Nye Jr., *Soft Power: The Means to Success in World Politics* (New York: Public Affairs, 2004), 5.

10 Economic power does not lend itself to a simple formulation, but Samuel Huntington identified some of the elements of economic power, including dominance of markets, foreign exchange reserves, and a strong currency. Samuel P. Huntington, "The Economic Renewal of America," *National Interest*, no. 27 (Spring 1992): 14–27. See also, William P. Bundy, "Elements of Power," *Foreign Affairs* 56, no. 1 (October 1977): 1–26, https://www.jstor.org/stable/20039804.

11 Aaron L. Friedberg, "The Future of American Power," *Political Science Quarterly* 109, no. 1 (Spring, 1994): 14–15.

a rising power.[12] Even prior to the outbreak of the pandemic, America's long-term spending commitments — including government and private debt, and pension and entitlement liabilities — totaled roughly 10 times the country's GDP.[13] These developments, combined with growing political polarization,[14] have contributed to domestic unease, something the pandemic may worsen.[15]

The emergence of Asian economies as the drivers of global growth and the rise of China have also challenged American preeminence.[16] The Chinese Communist Party has proclaimed its plans to achieve great-power primacy in the coming decades and has set about contesting American economic, military, structural, and cultural power.[17] These developments in China raise the question: What is America's plan for preserving its great-power primacy?

Some in America have gone through similar crises of confidence before,[18] and each time the country has leveraged its unique strengths and capacities to recover and reach new heights.[19] How then, with these current headwinds, can the United States repeat that cycle of renewal? What unique strengths and asymmetric advantages can today's leaders leverage to achieve that goal? That question is the primary focus of this article. To answer it, we examine the power that resides at the intersection of economics and national security and in doing so argue that America's economic power underwrites its national security. We believe more can be done to sustain the country's economic might and to leverage it in service of American primacy.

As the 2017 *National Security Strategy* succinctly puts it, "Economic security is national security."[20] Driven by economic interdependence, the race to develop transformational technologies, and the ubiquity of cyberspace, national security and economics are converging. And that convergence is, according to Henry Farrell and Abraham Newman, "turning the global networked economy into a space of strategic actions, counteractions, threats, targeting, counter-targeting and decoupling."[21] This has, in some respects, been true for decades, but it is accelerating.

Other countries, including Russia and China, have recognized this reality and are already integrating their economic and security strategies in order to compete with the United States.[22] However, over the past two decades the United States has been slow to adapt. The Trump administration's recognition that America is engaged in great-power competition and that China is its primary strategic competitor is a critical step in the right direction, as was the administration's acknowledgment that "promoting American prosperity makes America more secure and advances American influence in the world."[23] Yet, the United States still needs to improve and develop the structures and human capital that would best address those issues. And while the Trump adminis-

12 See an online series of articles by Ray Dalio: "The Changing World Order," https://www.principles.com/the-changing-world-order/.

13 Greg Jensen and Jason Rogers, "The Crisis Is Accelerating the New Paradigm," Bridgewater Associates, LP, March 30, 2020, https://www.bridgewater.com/research-library/daily-observations/the-crisis-is-accelerating-the-new-paradigm/.

14 See, e.g., Morris P. Fiorina, "The Democratic Distemper," The Hoover Institution, May 14, 2019, https://www.hoover.org/research/democratic-distemper.

15 Decay can be seen as losing the sources of domestic dynamism or of cultural, ideological, or political power. See, e.g., Samuel Huntington's review of the common arguments in, Samuel P. Huntington, "The U.S.: Decline or Renewal?" *Foreign Affairs* 67, no. 2 (Winter 1988): 76–96, https://www.jstor.org/stable/20043774. For more contemporary writing on decline and the perception of decline, see, e.g., Hal Brands, "American Grand Strategy in the Post-Cold War Era," in New *Directions in Strategic Thinking 2.0: ANU Strategic & Defence Studies Centre's Golden Anniversary Conference Proceedings*, ed. Russell W. Glenn (Acton, AU: Australian National University, 2018); and Ray Dalio, "The Changing World Order."

16 Dalio, "The Changing World Order."

17 Much has been written on China's rise and geopolitical ambitions. See, e.g., H.R. McMaster, "How China Sees the World: And How We Should See China," *The Atlantic*, May 2020, https://www.theatlantic.com/magazine/archive/2020/05/mcmaster-china-strategy/609088/; Ashley J. Tellis, "Pursuing Global Reach: China's Not So Long March Toward Preeminence," in *Strategic Asia 2019: China's Expanding Strategic Ambitions*, ed. Ashley J. Tellis, Alison Szalwinski, and Michael Wills (Washington, DC: The National Bureau of Asian Research, 2019); Gary J. Schmitt, "The China Dream: America's, China's, and the Resulting Competition," American Enterprise Institute, Jan. 18, 2019, https://www.aei.org/research-products/report/the-china-dream-americas-chinas-and-the-resulting-competition/; and Elizabeth C. Economy, *The Third Revolution: Xi Jinping and the New Chinese State* (Oxford: Oxford University Press, 2018).

18 For example, after the Soviet Union launched the Sputnik satellite and during the oil crisis of the 1970s.

19 See, e.g., H.R. McMaster, "Reclaiming America's Strategic Confidence," remarks at the Reagan National Defense Forum, Dec. 2, 2017, https://www.whitehouse.gov/briefings-statements/remarks-ltg-h-r-mcmaster-reagan-national-defense-forum-reclaiming-americas-strategic-confidence/; and Brands, *Making the Unipolar Moment*.

20 *The National Security Strategy of the United States*, The White House, December 2017, https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf.

21 Henry Farrell and Abraham L. Newman, "Introducing a New Paper on 'Weaponized Interdependence,'" *Lawfare*, July 31, 2019, https://www.lawfareblog.com/introducing-new-paper-weaponized-interdependence.

22 See, e.g., H.R. McMaster, "How China Sees the World."

23 *The National Security Strategy of the United States*, 18.

tration's forthcoming economic security strategy will likely outline valuable guidance, the United States has, for decades, lacked a clear agenda for coordinating its economic statecraft, domestic investments, and international partnerships to sustain American primacy.

We believe policymakers should take steps to integrate economic and national security policy. They can do this by adopting a three-part policy agenda to promote 1) innovation; 2) economic statecraft; and 3) international coordination. We propose a principled policy to fund, coordinate, and incentivize domestic innovation and to attract and develop the people needed to do so. We recommend policymakers evolve the country's economic statecraft toolkit and develop a more targeted and sustainable strategy for its use. And we encourage coordination with allies and partners, as well as engagement in some multilateral structures. Doing so will make pro-innovation policies and economic statecraft far more effective.

To make this new agenda a reality, the U.S. government will also need new approaches to policymaking and managing talent. In this article, we explore potential process and institutional reforms that could overcome longstanding stovepipes and bureaucratic interests, and we recommend new talent management strategies to ensure the right people, with the right expertise and experience, are seated around the policymaking table.

The policy agenda presented here is an effort to further strengthen America's economic dynamism and renew how the country builds and leverages its power in a rapidly changing and increasingly competitive landscape. There are other critical building blocks of American power — ranging from military readiness and modernization to the health of the democratic process — that deserve the attention of America's leaders but are not addressed here. This agenda focuses on advancing America's interests by, in the words of Sen. Marco Rubio, "rejuvenating our nation's economic power."[24] Our goal is ambitious and targeted — to adapt U.S. policy and policymaking to ensure America's economic, technological, and political leadership for decades to come.

The Convergence of National Security and Economics

National security and economics have long been connected, and, since its earliest days, the United States has leveraged that reality to advance its national objectives.[25] However, since World War II, these two spheres have grown ever more intertwined. In many respects, that convergence bolstered American primacy, particularly as a result of America's influence over the global economy and its leadership of international institutions and in innovation.

Economic interdependence between states is unbalanced, giving some states an asymmetric, or disproportionate, ability to influence their economic partners. Over time, globalization has also led to the development of asymmetric *networks*, which have given certain countries, particularly the United States, outsized advantage.[26] Today, money and information flow through central locations in the global economy, and the United States has long had preponderant influence over those choke points. With jurisdiction over the "hubs" of financial and information flows, such as The Society for Worldwide Interbank Financial Telecommunication (SWIFT) and the dollar clearance system, and the institutions built to enforce that jurisdiction, the United States has often been ahead of the curve in its use of economic tools for national security purposes.[27] Moreover, U.S. leadership allowed America to set the standards for many existing technologies and shape the formation of international institutions, further extending its influence.

However, the accelerated convergence of national security and economic affairs now threatens to undermine America's traditional power, as can be seen in three interdependent trends: 1) increasing economic interdependence and the shifting geography of the global economy; 2) the international development of transformational, dual-use technologies; and 3) the increasing ubiquity and importance of cyberspace. It is important to understand these trends before determining what steps the United States should take to address them.

24 Marco Rubio, "American Industrial Policy and the Rise of China," Remarks Delivered at the National Defense University, Dec. 10, 2019, republished in *The American Mind*, https://americanmind.org/essays/american-industrial-policy-and-the-rise-of-china/.

25 Robert Blackwill and Jennifer Harris review the foundations of economic statecraft and America's long history of employing economic power in, Robert D. Blackwill and Jennifer M. Harris, *War by Other Means: Geoeconomics and Statecraft* (Cambridge, MA: Harvard University Press, 2016).

26 Henry Farrell and Abraham L. Newman, "Weaponized Interdependence: How Global Economic Networks Shape State Coercion," *International Security* 44, no. 1 (Summer 2019): 42–79, https://doi.org/10.1162/isec_a_00351.

27 Former Bush administration official Juan Zarate has documented some of the innovative ways he and his colleagues used financial tools to punish and coerce rogue actors, especially through Section 311 sanctions. See, Juan C. Zarate, *Treasury's War: The Unleashing of a New Era of Financial Warfare* (New York: PublicAffairs 2013).

Economic Interdependence

After World War II, global trade began to grow rapidly and that growth has accelerated over the past 50 years. Trade, as a share of global GDP, has roughly doubled relative to the 1970s.[28] Today, nearly half of the goods manufactured in the United States are exported, and supply chains have grown more complex.[29] Although economic interdependence has plateaued in recent years, major economies are significantly more interdependent today than they were at the beginning of the century.[30] In some instances, economic interdependence has exacted significant costs to both national security and American communities, as recently evidenced by America's dependence on China-based supply chains during the COVID-19 crisis.

For many decades, America's central role in the global economy allowed it to set the standards for many existing technologies, shape the formation of international institutions, and develop leverage over primary choke points in the global economy. But that balance of the global economy is arguably shifting toward Asia. China is competing for greater leverage and jurisdiction and is encouraging the reintegration of Asia writ large.[31] Some even see a multipolar world emerging, which would severely degrade America's ability to influence a "China-centric Asia" through economic or political means.[32]

Although previous predictions of American decline have proven to be overly pessimistic, a tri-polar economic environment may be emerging. China is pushing to join the United States and Europe as a primary monetary system,[33] and Asia — in particular China — has become the key driver of global growth.[34] Significant divisions remain within Asia, but this new environment, left unchecked, threatens to diminish America's historical advantages, including its ability to influence the behavior of other states.

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Transformational Technologies

Longstanding U.S. leadership in technological development and innovation is also being contested — especially in sectors with significant security implications, such as 5G — though the United States continues to lead in machine learning and quantum sciences. These and other transformational technologies offer significant economic and military potential. The race to develop 5G, for example, could have a profound effect not only on economic prosperity,[35] but also on national security.[36] Moreover, 5G appears to be a winner-take-all sector where control of the infrastructure equates

28 Greg Jensen et al., "Peak Profit Margins? A Global Perspective," Bridgewater Associates, LP, March 27, 2019, https://www.bridgewater.com/research-library/daily-observations/peak-profit-margins-a-global-perspective/.

29 The United States leads in high-end semiconductor design, but China produces 70 percent of the rare earth metals and South Korea leads on displays and other crucial inputs. Jason Rotenberg and Jeff Amato, "Peak Globalization?" Bridgewater Associates, LP, November 11, 2016; and Magdalena Petrova, "We Traced What It Takes to Make an iPhone," *CNBC*, Dec. 14, 2018, https://www.cnbc.com/2018/12/13/inside-apple-iphone-where-parts-and-materials-come-from.html.

30 Signs of reduced interdependence include the leveling off of growth for exports and corporate foreign sales, according to research done by Bridgewater Associates, LP. See, e.g., "Peak Profit Margins? A Global Perspective."

31 Some of those efforts, notably One Belt One Road, appear to be running out of steam, but not all. See, Derek Scissors, "The Belt and Road Is Overhyped, Commercially," Statement Before the Senate Finance Committee Subcommittee on International Trade, Customs, and Global Competitiveness, June 12, 2019, https://www.finance.senate.gov/imo/media/doc/Derek%20Scissors%20-%20BRI%20Testimony.pdf.

32 "Globalisation Is Dead and We Need to Invent a New World Order," *The Economist*, June 28, 2019, https://www.economist.com/open-future/2019/06/28/globalisation-is-dead-and-we-need-to-invent-a-new-world-order.

33 Although use of the RMB remains low in comparison to the U.S. dollar or the Euro, it is the currency for the primary market in the engine of economic growth — Asia. Moreover, China's monetary policy operates independently from the U.S. Federal Reserve's. See, "2020 Strategic Report: Our Economic Outlook," Bridgewater Associates, 2020, https://www.bridgewater.com/outlook2020/Bridgewater-Associates-2020-Strategic-Report.pdf.

34 "2020 Strategic Report."

35 By some estimates, 5G could add another $500 billion to America's GDP and generate another $12.3 trillion in global sales. Michael Kratsios, "America Will Win the Global Race to 5G," Office of Science and Technology Policy, Oct. 25, 2018, https://www.whitehouse.gov/articles/america-will-win-global-race-5g/; Jill C. Gallagher and Michael E. DeVine, "Fifth Generation (5G) Telecommunications Technologies: Issues for Congress," Congressional Research Service, Jan. 30, 2019, https://fas.org/sgp/crs/misc/R45485.pdf; and Karen Campbell et al., "The 5G Economy: How 5G Technology Will Contribute to the Global Economy," IHS Markit, January 2017, https://cdn.ihs.com/www/pdf/IHS-Technology-5G-Economic-Impact-Study.pdf.

36 5G, for example, is expected to facilitate new military and intelligence applications, and vulnerabilities in 5G equipment could be used to conduct cyber attacks and espionage or to engage in military or industrial sabotage. John R. Hoehn and Kelley M. Sayler, "National Security Implications of Fifth Generation (5G) Mobile Technologies," Congressional Research Service, June 12, 2019, updated March 25, 2020, https://fas.org/sgp/crs/natsec/IF11251.pdf.

to control of data — data that will drive the emerging global economy and prove essential to effective national defense.[37] It is clear that if a bad actor can access any portion of the communications networks, the data that flows through that network will be compromised.[38] Unfortunately, the Chinese firm Huawei is outpacing its competitors in developing 5G, in part because it has received massive state subsidies and can offer favorable financing terms to prospective clients, which threatens the long-term security of U.S. data, and that of its allies and partners.[39]

In other technological sectors where the United States remains the leader, such as artificial intelligence (AI)-related technologies and quantum sciences, that leadership is not guaranteed. These technologies will likely have significant economic and national security implications,[40] and whoever leads in their development will set their standards and gain the immense competitive advantages they offer.[41] America's innovative edge cannot be taken for granted, and preserving it will require significant national commitment.[42]

Cyberspace

With more than 4 billion internet users, cyberspace has been a driving force behind global economic growth for three decades. It also increasingly ties into the physical world.[43] At the same time, as the Cyberspace Solarium Commission warned, "a broad array of threat actors are exploiting global connectivity to achieve their objectives."[44] The commission documented recent, illicit operations conducted by Russia, China, Iran, North Korea, and non-state actors and echoed the Trump administration's 2018 *National Cyber Strategy* in warning about the numerous vulnerabilities inherent to ubiquitous connectivity.[45]

Moreover, multinational technology companies have been sources of incredible innovation and economic development for the United States and the world, but they also short-circuit the traditional economic network and act almost as international governing bodies. They increasingly operate as choke points of information flows themselves and could soon create new networks of financial

37 If one company is contracted to provide the bulk of the network architecture, it could quickly knock its competitors out of the market. Jenalea Howell, "Press Release: Number of Connected IoT Will Surge to 125 billion by 2030, IHS Markit Says," InformaTech, Oct. 24, 2017, https://technology.ihs.com/596542/number-of-connected-iot-devices-will-surge-to-125-billion-by-2030-ihs-markit-says; Zak Doffman, "Network Effects: In 2019 IoT and 5G Will Push AI to the Very Edge," *Forbes*, Dec. 28, 2018, https://www.forbes.com/sites/zakdoffman/2018/12/28/network-effects-in-2019-iot-and-5g-will-push-ai-to-the-very-edge/#5c619a396bbe; Peter Harrell, "5G: National Security Concerns, Intellectual Property Issues, and the Impact on Competition and Innovation," Testimony Before the United States Senate Committee on the Judiciary, May 14, 2019, https://www.judiciary.senate.gov/imo/media/doc/Harrell%20Testimony.pdf; and Hoehn and Sayler, "National Security Implications of Fifth Generation (5g) Mobile Technologies."

38 See, Tom Cotton and John Cornyn, "Keep the Chinese Government Away from 5G technology," *Washington Post*, April 1, 2019, https://www.washingtonpost.com/opinions/keep-the-chinese-government-away-from-5g-technology/2019/04/01/ba7a30ac-54b3-11e9-9136-f8e636f1f6df_story.html.

39 Huawei has received, by some measures, as much as $75 billion in subsidies, tax breaks, and other forms of state support. Chuin-Wei Yap, "State Support Helped Fuel Huawei's Global Rise," *Wall Street Journal*, Dec. 25, 2019, https://www.wsj.com/articles/state-support-helped-fuel-huaweis-global-rise-11577280736.

40 Although estimates vary, one projection suggests that the total economic activity attributable to AI will total more than $13 trillion by 2030, and AI will likely radically change how businesses operate. Moreover, machine learning will likely offer new military capabilities, including advanced autonomous systems and more efficient intelligence gathering, and is expected to revolutionize cyber security, threat intelligence, and other applications relying on faster data-processing speeds. Jacques Bughin et al., "Notes from the AI Frontier: Modeling the Impact of AI on the World Economy," McKinsey & Company, September 2018, https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-ai-frontier-modeling-the-impact-of-ai-on-the-world-economy. See also, Mark Esper, "Remarks by Secretary Esper at National Security Commission on Artificial Intelligence Public Conference," Department of Defense, Nov. 5, 2019, https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/2011960/remarks-by-secretary-esper-at-national-security-commission-on-artificial-intell/. Although quantum computing is expected to have a slower build than 5G and AI, once matured, the value in this area could spike to $50 billion or more by 2030. Massimo Russo, Anant Thaker, and Suhare Adam, "The Coming Quantum Leap in Computing," Boston Consulting Group, May 16, 2018, https://www.bcg.com/en-us/publications/2018/coming-quantum-leap-computing.aspx.

41 *Summary of the Department of Defense Artificial Intelligence Strategy*, Department of Defense, 2018, https://media.defense.gov/2019/Feb/12/2002088963/-1/-1/1/SUMMARY-OF-DOD-AI-STRATEGY.PDF.

42 In the words of Attorney General William Barr, "For the first time in history, the United States is not leading the next technology era." William Barr, "Keynote Address at the Department of Justice's China Initiative Conference," Department of Justice, Feb. 6, 2020, https://www.justice.gov/opa/speech/attorney-general-william-p-barr-delivers-keynote-address-department-justices-china.

43 Including to infrastructure, public health systems, and other elements of the "Internet of Things." See, for example, Kate O'Flaherty, "U.S. Government Makes Surprise Move to Secure Power Grid for Cyberattacks," *Forbes*, July 3, 2019, https://www.forbes.com/sites/kateoflahertyuk/2019/07/03/u-s-government-makes-surprise-move-to-secure-power-grid-from-cyber-attacks/#64b90e863191; and "ICS Medical Advisory (ICSMA-19-080-01)," Department of Homeland Security, March 21, 2019, https://www.us-cert.gov/ics/advisories/ICSMA-19-080-01. This medical advisory warned that hundreds of thousands of implanted defibrillators, programmers, and heart monitors could be subject to cyber attacks.

44 *Report of the Cyberspace Solarium Commission*, Cyberspace Solarium Commission, March 2020, 8, https://www.solarium.gov/.

45 The cyber operations highlighted in the report include well-known cases, such as North Korea's 2014 cyber attack on Sony Pictures Entertainment, China's 2017 breach of Equifax, and the NotPetya attack on Ukraine in the same year, which spread globally and cost companies as much as $10 billion. *Report of the Cyberspace Solarium Commission*, 8–14. *National Cyber Strategy of the United States*, The White House, September 2018, https://www.whitehouse.gov/wp-content/uploads/2018/09/National-Cyber-Strategy.pdf.

transactions.[46] The United States, Europe, and China have developed three competing visions of Internet and data governance, but no international consensus has emerged, further complicating the global landscape.[47]

A New Policy Agenda

These three economic and technological trends pose challenges to American power, but they also present the United States with opportunities to leverage that power. As Secretary of Defense Mark Esper recently warned, "The reality of the 21st century is that many economic decisions are also national security decisions."[48] Still, balancing economic and national security policy is no easy task. Too often, security concerns related to economic decision-making get short shrift. But there is also an equal and opposite risk that unconstrained, ad hoc efforts to protect national security through economic policy could sap America's competitive advantage, or worse. If taken too far, restricting or constraining key industries in the name of national security could undermine national competitiveness. Policymakers must therefore be prudent in how they weigh their decisions to compete and to preserve America's and its allies' competitive advantages. The recommendations that follow are designed to help policymakers do just that. Our policy agenda seeks to confront the new reality described above by balancing investment in U.S. capacity with efforts to redress malicious behavior abroad, while at the same time strengthening America's network of partners and allies, through three primary areas of focus: 1) innovation; 2) economic statecraft; and 3) international cooperation.

I. Develop and Support a National Innovation Policy

During the Cold War, federal research and development funding contributed to the prosperity, security, and, ultimately, primacy of the United States. The U.S. government funded basic and applied research projects and developed capabilities that served agency mandates, including new weapons systems and space technologies.[49] It mostly stayed out of commercial development, but private sector entities still benefited from federally funded research, turning scientific and technological advances into new companies, jobs, and industries, thus contributing to America's unmatched prosperity.[50]

However, this approach is no longer sufficient given the convergence of economic and national security affairs. The private sector is the primary source of innovation and research and development funding now, yet new technologies increasingly blur the line between military and civilian use.[51] Moreover, as noted previously, these high-tech sectors are often winner-take-all. Foreign states and companies are challenging U.S. innovation leadership, including through anticompetitive policies and the two-way transfer of military and civilian technologies.[52] Each of these factors weakens the traditional U.S. approach to innovation, wherein the federal government focuses on either basic science research or specific applied research and development projects.

The Trump administration has taken some im-

46 Facebook's development of an internet-native currency, Libra, which is discussed later in the paper. For more on information networks, see, Niall Ferguson, *The Square and the Tower: Networks and Power, from the Freemasons to Facebook* (New York: Penguin Books, 2017).

47 See, for example, China's "New IP" proposal, presented to the International Telecommunications Union. Madhumita Murgia and Anna Gross, "Inside China's Controversial Mission to Reinvent the Internet," *Financial Times*, March 27, 2020, https://www.ft.com/content/ba94c2bc-6e27-11ea-9bca-bf503995cd6f.

48 Mark Esper, "Remarks Delivered at the Munich Security Conference," Department of Defense, Feb. 15, 2020, https://www.defense.gov/Newsroom/Speeches/Speech/Article/2085577/remarks-by-secretary-of-defense-mark-t-esper-at-the-munich-security-conference/.

49 "National Patterns of R&D Resources: 2017–18 Data Update," National Science Foundation, updated Jan. 8, 2020, https://ncses.nsf.gov/pubs/nsf20307#&.

50 The "knock-on" effects of federal research and development funding are well documented and include GPS, smartphone technologies, and, of course, the internet. See, e.g., Rubio, "American Industrial Policy and the Rise of China." Rubio said, "What I am calling for us to do is remember that from World War II to the Space Race and beyond, a capitalist America has always relied on public-private collaboration to further our national security. And from the internet to GPS, many of the innovations that have made America a technological superpower originated from national defense-oriented, public-private partnerships." See also, James Manyika and William H. McRaven, *Innovation and National Security: Keeping Our Edge*, Council on Foreign Relations, Independent Task Force Report No. 77 (September 2019), 2, https://www.cfr.org/report/keeping-our-edge/pdf/TFR_Innovation_Strategy.pdf.

51 In recent years, the federal government was the largest source of basic research funding — providing roughly 42 percent of it — but commercial entities provided 85.2 percent of development funding. "U.S. Research and Development Funding and Performance: Fact Sheet," Congressional Research Service, updated Jan. 4, 2020, https://fas.org/sgp/crs/misc/R44307.pdf.

52 The Chinese Communist Party's "Made in China 2025" plan, for example, called for significant government support of 10 high-tech and industrial sectors with the goal of ensuring primarily domestic supply chains and Chinese competitiveness on the global market. The party has since abandoned the label, but state subsidies and protectionist policies remain. See, Lingling Wei, "Beijing Drops Contentious 'Made in China 2025' Slogan, but Policy Remains," *Wall Street Journal*, March 5, 2019, https://www.wsj.com/articles/china-drops-a-policy-the-u-s-dislikes-at-least-in-name-11551795370; and "'Made in China 2025' Plan Issued," The State Council, The People's Republic of China, May 19, 2015, http://english.www.gov.cn/policies/latest_releases/2015/05/19/content_281475110703534.htm.

portant steps to promote America's economic dynamism.[53] It ought to accelerate these efforts to help ensure the success of U.S. companies in developing emerging technologies and to promote domestic innovation.[54] The administration should continue its work with commercial entities to develop and acquire dual-use capabilities, and it ought to pair innovation support with targeted economic sanctions and international coordination to address the reality that U.S. companies do not compete on a level playing field with many of their closest competitors.

We recognize the real and justified concerns about crony capitalism and the inefficient allocation of capital, and we are not endorsing China's centralized, top-down model. At the same time, we believe government should do more. To balance these competing objectives and to help ensure the government does not get in the habit of picking winners and losers, we propose the following principles to guide its investment.

Principle I: Promote development in sectors with winner-take-all structures or large first-mover advantages

Given the long-term shift toward investments in intangible capital and the scalability of software-driven products, companies can seize dominant market positions if they outpace their competitors. This phenomenon changes the nature of economic competition, but it also has convergent national security implications, as seen in the case of Huawei's 5G network infrastructure. If Huawei continues to seize market share, we could be facing a global 5G-infrastructure market with only one provider, a provider that poses significant security risks to the United States and its partners.[55] In cases like this, the U.S. government should promote alternatives that favor its standards and principles.

Principle II: Develop nascent technologies or capabilities with asymmetric upsides

Government funding for early stage research activities could yield significant benefits at relatively low cost. Research areas could include metamaterials, bio-synthetics, energy storage, and bioengineering, as well as manufacturing capabilities, such as advanced additive manufacturing or innovative computer-aided design tools enabled by high-performance computing.[56] These are high-reward, low-risk targeted investments — the sorts of projects that have produced great value for the United States in the past.

Principle III: Support domestic development in strategic sectors or technologies in which foreign firms are heavily subsidized by competitor states

The Chinese Communist Party's *Made in China 2025* plan makes clear that, in sectors of significant security import, Chinese firms will enjoy substantial state support, and that non-Chinese firms will compete on uneven ground.[57] Trade adjustments are often the response of choice to such anti-competitive practices, but considering the first-mover advantages present in the high-tech sector, *post facto* trade action may be too little too late.[58] Innovation support may prove necessary in these instances and could be coupled with complementary trade and export policies.

Principle IV: Develop technologies or capabilities with significant strategic importance

Directed by national strategy, the U.S. government should identify technologies or desired capabilities that would yield significant dual-use benefits, such as commercial space launch or advanced energy technologies.[59]

53 For example, the administration has reduced the pace of regulations and prioritized deregulation, promoting competition and economic dynamism. See, *The Economic Effects of Federal Deregulation Since January 2017: An Interim Report*, The Council of Economic Advisors, June 2019, https://www.whitehouse.gov/wp-content/uploads/2019/06/The-Economic-Effects-of-Federal-Deregulation-Interim-Report.pdf. See also, "Special Briefing with Under Secretary for Economic Growth, Energy, and the Environment Keith Krach," U.S. State Department, Feb. 4, 2020, https://www.state.gov/under-secretary-for-economic-growth-energy-and-the-environment-keith-krach/.

54 This view is shared by leaders on opposite ends of the political spectrum, from Elizabeth Warren to Marco Rubio. See, e.g., Julius Krein, "What Alexandria Ocasio-Cortez and Marco Rubio Agree On," *New York Times*, Aug. 20, 2019, https://www.nytimes.com/2019/08/20/opinion/america-industrial-policy.html.

55 Barr, "Keynote Address at the Department of Justice's China Initiative Conference."

56 See, e.g. "Energy Department to Invest $32 Million in Computer Design of Materials," Press Release by the U.S. Department of Energy, June 12, 2019, https://www.energy.gov/articles/energy-department-invest-32-million-computer-design-materials.

57 "'Made in China 2025' Plan Issued."

58 See, Brad Setser, "Hearing on Made in China 2025 and the Future of American Industry," Testimony Before the Senate Committee on Small Business and Entrepreneurship," Feb. 27, 2019, https://www.sbc.senate.gov/public/_cache/files/3/b/3bd85987-d8b4-48b3-a53e-8b49d2060821/4E39BD152B9F358A5E4254D80A512D8B.setser-testimony.pdf.

59 The Department of Defense, for example, recently awarded three contracts for small, mobile nuclear reactors to provide power at U.S. military installations. Aaron Mehta, "Pentagon Awards Contracts to Design Mobile Nuclear Reactor," *Defense News*, March 9, 2020, https://www.defensenews.com/smr/nuclear-arsenal/2020/03/09/pentagon-to-award-mobile-nuclear-reactor-contracts-this-week/.

Principle V: Spend what is needed to harness the private sector and market forces

In all cases, the government should attempt to channel market forces and incentivize private capital to the extent possible. Well-functioning markets remain the most productive driver of innovation. The government should engage enough to optimize private sector investment, which would help ensure the competitiveness and sustainability of private innovation initiatives.

Principle VI: Remember that not all sectors require innovation support

Some sectors that would qualify for government support under the preceding principles can be supported by diversifying supply chains, expanding strategic reserves, or enforcing controls on forced technology transfers. The government should not always turn to research and development funding as the first resort. Even when such funding is necessary, the government will often have to complement it with additional measures to secure supply chains or protect U.S. industries, as discussed in the following section.

To ensure these principles are followed and to direct innovation efforts, the policymaking process will need to adapt. These reforms should establish accountable systems for setting priorities, identifying sectors or capabilities for policy action, and rigidly adhering to these limiting principles.

A U.S. innovation policy governed by these principles would target those areas where government can provide distinct value and likely solve an existing market failure. Governments have a unique capacity to facilitate information sharing by opening channels of communication and establishing a regular process for public-private information sharing and engagement.[60] Doing so would help rebuild the relationships among the innovation triangle — the public sector, private industry, and academia — and would encourage mutual understanding, a necessary step for breaking down the cultural barriers that restrict collaboration between government and high-tech firms.[61]

60 Dani Rodrik, "Industrial Policy for the Twenty-First Century," Kennedy School of Government Working Paper, September 2004, https://drodrik.scholar.harvard.edu/files/dani-rodrik/files/industrial-policy-twenty-first-century.pdf.

61 See, for example, comments made at the House Armed Services Committee's Future of Defense Task Force Hearing "Supercharging the Innovation Base," held on Feb. 5, 2020. Video recording available at https://armedservices.house.gov/hearings?ID=682ABC1D-2B60-481E-B210-2F43BC9476B2.

Investment Strategies

Greater innovation will also require greater investment. We recognize that fiscal realities, especially in the wake of the much-needed pandemic relief packages, will constrain available resources.[62] Lawmakers will have to reorder their priorities and develop enduring, prudent solutions to long-term fiscal challenges, but should not do so at the expense of research and development funding. The cost of losing America's competitive edge in innovation far exceeds the cost of the investment required to keep it.

The federal government should expand existing programs, including offering federal grants for basic science research to universities, supporting federally funded research and development centers, and providing direct research and development funding. To incentivize investment in basic and applied sciences, Congress should also increase the research and development tax credit, which is currently smaller than that of most member countries of the Organisation for Economic Co-operation and Development.[63] With AI and machine learning in mind, the U.S. government ought to facilitate access to data — a "valuable national resource and a strategic asset"[64] — by creating more open-source datasets, and expand access to cloud computing resources.[65]

Many startups fail to innovate — to commercialize basic research at scale — in part due to a lack of demand at such an early stage.[66] SpaceX, by contrast, became the innovative success it is today with the support of NASA, which provided some 50 percent of its funding in its first 10 years.[67] The commercial space industry, in general, has received significant support from the Small Business Innovation Research and Small Business Technology Transfer programs, and the federal government has supported the accompanying infrastructure and developed standards to sustain the industry.[68]

The lesson is simple: There is no substitute for cash.[69] When the U.S. government identifies a specific area of need, it should consider not only support for basic and applied research but also ways to provide sustained funding. Government contracts are the most direct means, but the federal government can also help increase access to capital through other means. The Department of Defense took steps to do just that with the establishment of the Trusted Capital Marketplace, which is intended to support innovative small- and mid-size firms.[70] Government-backed venture funds serve that purpose as well.

The two most prominent examples of venture funds in the national security field are In-Q-Tel (where one of the authors currently serves on the board of directors) and the Defense Innovation Unit.[71] As these programs develop a track record of success, the government will be presented with an opportunity: The Department of Defense can massively scale the Defense Innovation Unit. Raj Shah, the former managing director of the Defense Innovation Unit, called for a "step-change to supercharge DoD access to innovation."[72] Funding for that program and other innovation efforts should increase by an order of magnitude. In addition to established venture funds, first-loss funds, wherein the government would provide some portion of initial investment and be responsible for a significant portion of potential losses, could be utilized to

62 See, e.g., Dov S. Zakheim, "Defense Budget Cuts Following the Pandemic Will Be Hard to Swallow," *The Hill*, April 19, 2020, https://thehill.com/opinion/national-security/492756-defense-budget-cuts-following-the-pandemic-will-be-hard-to-swallow.

63 "R&D Tax Incentives: United States, 2019," Organisation for Economic Co-operation and Development, December 2019, https://www.oecd.org/sti/rd-tax-stats-united-states.pdf.

64 "Project Open Data," available at https://project-open-data.cio.gov/.

65 See, *First Quarter Recommendations*, National Security Commission on Artificial Intelligence, March 2020, 12–13, https://drive.google.com/file/d/1wkPh8Gb5drBrKBg6OhGu5oNaTEERbKss/view.

66 See, for example, Rodrik, *Industrial Policy for the Twenty-First Century*.

67 "U.S. Government Support of the Entrepreneurial Space Age," Space Angels, June 17, 2019, 2, available for download at https://sbir.nasa.gov/content/publications.

68 "U.S. Government Support of the Entrepreneurial Space Age."

69 As Chris Brose, the former staff director of the Senate Armed Services Committee, once said, would-be defense contractors "need one thing more than any other from the U.S. government: revenue." Christian Brose, "Supercharging the Innovation Base," Testimony Delivered Before the Future of Defense Task Force, House Armed Services Committee, Feb. 5, 2010, http://docs.house.gov/meetings/AS/AS00/20200205/110475/HMTG-116-AS00-Wstate-BroseC-20200205.pdf.

70 Aaron Mehta, "To Counter China, Pentagon Wants to Create Patriotic Investors," *Defense News*, May 10, 2019, https://www.defensenews.com/pentagon/2019/05/10/to-counter-china-pentagon-wants-to-create-patriotic-investors/.

71 These funds facilitate defense and intelligence community procurement of new technologies, particularly from non-traditional contractors, and they encourage new entrants into the contractor market.

72 Raj Shah, "Supercharging the Innovation Base," Prepared Testimony for a Hearing Before the Future of Defense Task Force, House Armed Services Committee, Feb. 5, 2020, 3, https://docs.house.gov/meetings/AS/AS00/20200205/110475/HMTG-116-AS00-Wstate-ShahR-20200205.pdf.

incentivize private investment and harness market forces, while offsetting externalities that limit research and development funding. [73]

The Trump administration's efforts to enact regulatory reforms that loosen the reins on innovation and ease the adoption of new civilian technologies are excellent and should continue.[74] For example, agencies ought to look for opportunities to adapt regulations or develop new, permissive environments early in the innovation cycle.[75] They should also remove onerous occupational licensing requirements, which hinder productivity and limit opportunities for broad-based innovation.[76]

Finally, efforts to promote domestic innovation should be pursued in coordination both with international partners and with economic statecraft efforts to achieve the same goal. Consider the domestic semiconductor manufacturing equipment and semiconductor industries. They form the backbone of 5G network infrastructure, machine learning systems, and most other modern technology, including many critical national security capabilities. And yet, China's domestic development programs and the U.S. government's own export controls could combine to hamstring U.S. industry. China's state-supported effort to build out its domestic industry faces serious challenges but it could still reduce the market available to semiconductor firms in the United States and elsewhere, and in turn reduce their ability to fund research and development projects.[77] At the same time, unilateral U.S. efforts to limit the export of semiconductors or semiconductor manufacturing equipment could hurt domestic competitiveness by closing off market access.[78] The U.S. government should provide material support to these industries while working with international partners to help offset the market distortions caused by China's state subsides.

We remain mindful of the risks inherent to innovation policy. Close public-private partnerships can become politicized, introducing cronyism and preferential investment. But those risks, and the potential for inefficient capital allocation, can be mitigated somewhat through clear decision criteria, transparency, and oversight. However, risk does come with the territory. If the government wants to create a step change in U.S. innovation, it will have to expect and, more importantly, accept failure, as any entrepreneur can attest. Congress will have to give research and development projects some freedom to fail and learn from those failures, and the government will have to enforce ethics accountability. It will also need to ensure America has the human capital necessary to support continued innovation and dynamism.

Education and Immigration

To quote Undersecretary of State Keith Krach: "The team with the best people wins."[79] The ability to attract, develop, and retain high-skilled talent is critical to national innovation and economic security.[80] To that end, U.S. education and immigration policy should evolve both to support American-born individuals interested in pursuing careers in STEM fields and to keep America competitive in the global race to attract high-skilled talent.[81]

The first order of business should be supporting home-grown talent. This is essential to America's national security. Providing greater funding, data, computing power, and other infrastructure support to university researchers, as described above, would

73 For comparison, the Chinese Communist Party established "guiding funds" to incentivize private investment and establish venture funding for technology development. See the discussion of these funds in, Kai-Fu Lee, *AI Superpowers: China, Silicon Valley, and the New World Order* (Boston: Houghton Mifflin Harcourt, 2018), 64–65.

74 For example, the Federal Communications Commission's "Restoring Internet Freedom" order. See, *The Economic Effects of Federal Deregulation Since January 2017: An Interim Report*, The Council of Economic Advisers.

75 The Federal Aviation Administration, for example, is working with drone developers to modernize regulations. Patrick McGee, "US Considers How to Open Skies to Drones and Flying Cars," *Financial Times*, Feb. 27, 2020, https://www.ft.com/content/a0341b02-54cd-11ea-8841-482eed0038b1.

76 Jim Pethokoukis, "How Will Technological Change Affect the Economy? My Long-read Q&A with Erik Brynjolfsson," American Enterprise Institute, Feb. 27, 2020, https://www.aei.org/economics/how-will-technological-change-affect-the-economy-my-long-read-qa-with-erik-brynjolfsson/.

77 See, *2019 Annual Report to Congress*, U.S.-China Economic and Security Commission, November 2019, 135, https://www.uscc.gov/annual-report/2019-annual-report; and James A. Lewis, *Learning the Superior Techniques of the Barbarians: China's Pursuit of Semiconductor Independence*, Center for Strategic and International Studies, January 2019, https://www.csis.org/analysis/chinas-pursuit-semiconductor-independence.

78 See, e.g., John VerWey, *The Health and Competitiveness of the U.S. Semiconductor Manufacturing Equipment Industry*, Office of Industries and Office of Economics, U.S. International Trade Commission, Working Paper ID-058, July 2019, https://www.usitc.gov/publications/332/working_papers/id_058_the_health_and_competitiveness_of_the_sme_industry_final_070219checked.pdf.

79 Keith Krach, "Remarks at the Digital Panel at the Indo-Pacific Forum," Bangkok, Thailand, Nov. 4, 2019, https://www.state.gov/under-secretary-krach-remarks-at-digital-panel/.

80 See, e.g., *The Contest for Innovation: Strengthening America's National Security Innovation Base in an Era of Strategic Competition*, Reagan Institute Task Force on 21st-Century National Security Technology and Workforce, Dec. 3, 2019, 22, https://www.reaganfoundation.org/media/355297/the_contest_for_innovation_report.pdf; Manyika and McRaven, *Innovation and National Security*, 60; and *First Quarter Recommendations*.

81 We echo Eric Schmidt's recommendations to this effect: Eric Schmidt, "Eric Schmidt: I Used to Run Google. Silicon Valley Could Lose to China," *New York Times*, Feb. 27, 2020, https://www.nytimes.com/2020/02/27/opinion/eric-schmidt-ai-china.html.

open opportunities for students. Policymakers could buttress those efforts by sponsoring scholarship programs for both undergraduate and graduate students in STEM programs. The federal government should also work with states, universities, and businesses to incentivize job-training pipelines and potentially scholarships or debt-forgiveness programs.

An even more ambitious path would be to renew the National Defense Education Act, which helped spur American innovation after the launch of the Sputnik satellite.[82] Finally, any effort to improve America's talent pipeline must include reforming K-12 education and promoting STEM education from a young age. Although it is beyond the scope of this article, the poor state of too many of the nation's schools is a travesty and poses a high and growing risk to economic and national security.[83]

The ability to attract and retain foreign-born talent has always been a unique competitive advantage of the United States — which is first and foremost a nation of immigrants — and should remain a priority.

The ability to attract and retain foreign-born talent has always been a unique competitive advantage of the United States — which is first and foremost a nation of immigrants — and should remain a priority.[84] As of 2017, first-generation immigrants and their children had founded almost half of Fortune 500 companies,[85] and immigrants "accounted for 25 percent of all new high-tech companies from 2006 through 2012."[86] The STEM pipeline is also highly populated by foreign-born students, who account for 45 percent of STEM undergraduates and roughly half of STEM graduate students.[87] However, the United States is losing its ability to attract and keep top global talent.[88] Policymakers ought to incentivize students in STEM fields to remain in the United States following graduation and develop policies to attract workers in these fields to the United States. The country could, for example, increase the number of annual H-1B visas it offers.[89] More than 50 business school deans agreed, advocating in fall 2019 for the removal of per-country immigration caps and the creation of a new "heartland visa" for high-skill immigrants to settle in struggling communities.[90] Other options include establishing a new high-skill visa program for foreign workers in the high-priority sectors outlined above,[91] and encouraging high-tech academic and scientific exchange with both like-minded partners and more adversarial countries.

There are legitimate security concerns about immigration, talent exchanges, and, especially, high numbers of foreign students in STEM programs at U.S. universities, something both the government

82 Manyika and McRaven, *Innovation and National Security*, 60

83 Much has been written on K-12 education reform, and it is as much an implementation challenge as an intellectual one at this point. Our thoughts are derived in part from a private roundtable on K-12 education held by the Hoover Institution in Fall 2019. See, also, Margaret E. Raymond, *The Diploma Dilemma*, The Hoover Institution, February 2020, https://www.hoover.org/sites/default/files/research/docs/raymond_webreadypdf.pdf; Katharine B. Stevens, Michael Q. McShane, and Andrew P. Kelly, *An Education Agenda for the States: Fostering Opportunity from Pre-K through College*, American Enterprise Institute, April 2015, https://www.aei.org/research-products/report/an-education-agenda-for-the-states-fostering-opportunity-from-pre-k-through-college/; and Eric A. Hanushek et al., "The Achievement Gap Fails to Close," *Education Next* 19. no. 3 (Summer 2019), https://www.educationnext.org/achievement-gap-fails-close-half-century-testing-shows-persistent-divide/.

84 Gordon H. Hanson and Matthew J. Slaughter, *Talent, Immigration, and U.S. Economic Competitiveness*, Compete America Coalition, May 2013, https://gps.ucsd.edu/_files/faculty/hanson/hanson_publication_immigration_talent.pdf; and Kenneth F. Scheve and Matthew J. Slaughter, "How to Save Globalization," *Foreign Affairs* 97, no. 6 (November/December 2018), https://www.foreignaffairs.com/articles/united-states/2018-10-15/how-save-globalization.

85 "New American Fortune 500 in 2019: Top American Companies and Their Immigrant Roots," New American Economy, July 22, 2019, https://data.newamericaneconomy.org/en/fortune500-2019/.

86 Scheve and Slaughter, "How to Save Globalization."

87 Michael Brown and Pavneet Singh, *China's Technology Transfer Strategy*, Defense Innovation Unit Experimental, January 2018, https://admin.govexec.com/media/diux_chinatechnologytransferstudy_jan_2018_(1).pdf; and "Foreign STEM Students in the United States," Congressional Research Service, Nov. 1, 2019, https://crsreports.congress.gov/product/pdf/IF/IF11347.

88 *Interim Report*, National Security Commission on Artificial Intelligence, November 2019, https://www.epic.org/foia/epic-v-ai-commission/AI-Commission-Interim-Report-Nov-2019.pdf.

89 "H-1B Fiscal Year (FY) Cap Season," U.S. Citizenship and Immigration Services, https://www.uscis.gov/working-united-states/temporary-workers/h-1b-specialty-occupations-and-fashion-models/h-1b-fiscal-year-fy-2020-cap-season.

90 "Letter to President Donald J. Trump et al.," Graduate Management Admission Council, October 2019, https://www.gmac.com/-/media/files/gmac/research/talent-mobility/gmac-public-letter-b-schools.pdf.

91 The Reagan Institute Task Force proposed a similar concept — a "National Security Innovation Base Visa" — in its report: *The Contest for Innovation*, 24.

and universities are becoming alert to.[92] Foreign governments have used students in American universities, for example, to conduct influence operations, censor students and administrators, direct university policies, and even engage in espionage, including illegally acquiring intellectual property or research data from cutting-edge labs.[93] For this reason, universities, as well as scientific laboratories and relevant private sector companies, should develop robust rules, procedures, and technical guardrails to safeguard intellectual property, research data, and national security information. These measures should apply across the board, to all students. With such measures in place, foreign students, especially in STEM fields, can continue to be, by and large, great additions to the U.S. education and research ecosystem. And to further ensure that the benefits of this large and valuable majority of foreign students are not lost, the government, universities, and law enforcement should redouble existing efforts to promote transparency and reciprocity in research and student exchanges and aggressively investigate and prosecute the malicious behavior of the small minority who violate those rules.

II. Employ and Sustain the Means of Economic Statecraft

Domestic innovation builds a stronger foundation for economic competition and expands the economic statecraft toolkit. Long the preeminent global power, the United States possesses certain clear advantages in this arena. It is a singular global economic force, with reach and investments around the world, while the U.S. dollar remains the reserve currency. Unlike its competitors, America has traditionally led and worked effectively through international arrangements. It tends to operate in predictable, legalistic ways, preserving the values of property rights, the rule of law, and open markets. In addition, the United States remains home to the world's largest market as well as leading technology developers and companies.

But America's competitive advantage in strategic economic competition appears at risk. Challenges to U.S. standing have been emerging from competitor nations, from multinational companies, and from the rapid advance of technologies. The development of regional trade blocs reduces U.S. influence and asymmetric power; multinational companies are offering alternative nodes for the flow of information, and soon for transactions as well; and, as discussed below, block-chain or cryptocurrency-based transactions can elude traditional network pathways.

Recognizing that geopolitical competition centers around economic influence and power, the U.S. government has recently taken steps to reform its approach to economic statecraft in order to preserve America's advantaged position. As part of this agenda, and in light of the unique challenges presented by the converging trends noted earlier, policymakers will need to continue to pursue new, creative export control measures, as mandated by recent legislation, to reform the Committee on Foreign Investment in the United States process in order to account for the changing nature of foreign investment and technology transfer and persistent, costly intellectual property theft, as well as to enforce existing disclosure and transparency laws governing access to U.S. capital markets.[94] Moreover, while sanctions have been powerful tools of statecraft when employed in a targeted, strategic manner, emerging challenges to America's leverage over financial transactions — including block-chain or cryptocurrency-based transactions — threaten to undermine their long-term effectiveness.[95]

Export Controls

The United States has moved in the right direction on export control policies by imposing restrictions on the transfer of critical technologies to foreign persons or entities outside U.S. borders. With the Export Control Reform Act of 2018, Congress directed the Department of Commerce to establish controls on the export of emerging and foundational technologies.[96] However, aside from an initial list of technologies to target (including those related

92 Aruna Viswanatha and Kate O'Keeffe, "China's Funding of U.S. Researchers Raises Red Flags," *Wall Street Journal*, Jan. 30, 2020, https://www.wsj.com/articles/chinas-funding-of-u-s-researchers-raises-red-flags-11580428915.

93 See, e.g., Josh Rogin, "Preventing Chinese Espionage at America's Universities," *Washington Post,* May 22, 2018, https://www.washingtonpost.com/news/josh-rogin/wp/2018/05/22/preventing-chinese-espionage-at-americas-universities/.

94 "Foreign Investment Risk Review Modernization Act of 2018," H.R. 5515, Title XVII, P.L. 115-232, 115th Congress, 2017–18, https://www.congress.gov/bill/115th-congress/house-bill/5515/text.

95 Peter Harrell and Elizabeth Rosenberg, *Economic Dominance, Financial Technology, and the Future of U.S. Economic Coercion*, Center for a New American Security, April 29, 2019, https://www.cnas.org/publications/reports/economic-dominance-financial-technology-and-the-future-of-u-s-economic-coercion.

96 See, "John S. McCain National Defense Authorization Act for Fiscal Year 2019," H.R. 5515, Public Law No. 115-232, section 1758, 115th Congress, 2017–18, https://www.congress.gov/bill/115th-congress/house-bill/5515/text. (The Export Control Reform Act was part of the National Defense Authorization Act).

to AI and quantum sciences),[97] the Commerce Department has been slow to implement the changes mandated by the 2018 act.[98]

Moreover, the U.S. government should seek consistency in its treatment of Chinese telecommunications companies. As an example, it added ZTE to the U.S. Entity List in March 2016 but later removed it.[99] Huawei and its non-U.S. affiliates were also added to the list in 2019,[100] but the U.S. government then issued waivers to allow U.S. chipmakers to continue selling to them. Now policymakers appear poised to require companies to restrict sales of semiconductors made with U.S. equipment to Huawei, which seems more in line with the appropriately stern line that the administration has established regarding Huawei and 5G.[101]

Even once clearer guidance is issued, as directed by the Export Control Reform Act, export controls as a standalone policy tool will remain insufficient. However, if paired with a broader set of pro-innovation policies supporting U.S. manufacturers and nested within a broader strategy to develop emerging technologies with international partners — such as the approach to semiconductor and semiconductor manufacturing equipment outlined above — they will be much more likely to serve lasting policy objectives.[102] Enacting export controls on a unilateral basis is of limited benefit as it often harms not just the intended targets but also U.S. companies and the leading companies of America's like-minded partners and allies. However, enacting them in concert with industrial partners would increase their impact.[103]

Investment Screening

The recent expansion of the Committee on Foreign Investment in the United States review process, as directed by the Foreign Investment Risk Review Modernization Act, should also help protect U.S. firms from intellectual property theft and coercive investments. Building on the good work to date, the committee will need to grow even more agile and creative while recognizing that as Chinese investment in the United States declines it may become more challenging to track investments.[104] U.S. adversaries are also growing more creative in their investment in vital, dual-use technologies, including through third-party venture funds and by transforming initially innocent activity into illegal or illicit investment.[105] Therefore, the necessary, rigorous assessment of foreign investment will likely stress the committee, which will require Congress to stand ready to provide greater support if needed.

Similarly, the United States can and should help like-minded partners develop stronger investment screening, consistent with U.S. processes, as discussed in the following section. Private actors should also become more vigilant. Many U.S. companies recognize the dangers of doing business with actors from sanctioned and rogue states, and they, arguably, are growing wise to the evolving risks of foreign investment.[106] The more they can police and protect themselves, the more secure U.S. technologies and industries will be.

While the United States is right to encourage participation in its capital markets, it should also recognize the importance of those markets as points of economic and national security convergence.

97 "Review of Controls for Certain Emerging Technologies," Bureau of Industry and Security, Nov. 19, 2018, https://www.federalregister.gov/documents/2018/11/19/2018-25221/review-of-controls-for-certain-emerging-technologies.

98 Note that the Department of Commerce issued expansive new rules governing exports to "military end users" and "military end uses" shortly before this article was published. "Expansion of Export, Reexport, and Transfer (in-Country) Controls for Military End Use or Military End Users in the People's Republic of China, Russia, or Venezuela," Bureau of Industry and Security, Department of Commerce, Final Rule, April 28, 2020, https://s3.amazonaws.com/public-inspection.federalregister.gov/2020-07241.pdf. Derek Scissors, "Limits are Overdue in the US-China Technology Relationship," Testimony Before the Senate Committee on the Judiciary Subcommittee on Crime and Terrorism, On "Dangerous Partners: Big Tech and Beijing," March 4, 2020, https://www.judiciary.senate.gov/imo/media/doc/Scissors%20Testimony.pdf.

99 Jack R. Shane and Daniel P. Brooks, "BIS Removes ZTE from Entity List," Wiley Rein LLP, March 30, 2017, https://www.wiley.law/alert-Client_Alert-BIS_Removes_ZTE_from_Entity_List.

100 "Addition of Certain Entities to the Entity List," Bureau of Industry and Security, Department of Commerce, Final Rule, May 16, 2019, https://www.bis.doc.gov/index.php/all-articles/17-regulations/1555-addition-of-certain-entities-to-the-entity-list-final-rule-effective-may-16-2019. The Department subsequently granted temporary licenses to minimize some of the disruptions caused by the listing.

101 Bob Davis and Katy Stech Ferek, "U.S. Moving Forward with Rule to Limit Chips to Huawei," *Wall Street Journal*, March 26, 2020, https://www.wsj.com/articles/u-s-moving-forward-with-rule-to-limit-chips-to-huawei-11585261519.

102 See, e.g., VerWey, *The Health and Competitiveness of the U.S. Semiconductor Manufacturing Equipment Industry.*

103 Aaron L. Friedberg and Charles W. Boustany, Jr., "Partial Disengagement: A New U.S. Strategy for Economic Competition with China," *Washington Quarterly* 43, no. 1 (Spring 2020): 32, https://doi.org/10.1080/0163660X.2020.1736882.

104 So-called "greenfield" investments, for example, will be a particular challenge. See, e.g., Scissors, "Limits Are Overdue in the US-China Technology Relationship."

105 For more on foreign venture funding of U.S. research, see, Brown and Singh, *China's Technology Transfer Strategy.*

106 Rolfe Winkler, "Chinese Cash that Powered Silicon Valley Is Suddenly Toxic," *Wall Street Journal*, June 11, 2019, https://www.wsj.com/articles/chinese-cash-is-suddenly-toxic-in-silicon-valley-following-u-s-pressure-campaign-11560263302.

Foreign companies have long flouted U.S. rules and regulations governing financial disclosures and transparency while still accessing U.S. markets and exchanges. The Securities and Exchange Commission should rigorously police access and enforce existing rules. However, it may become necessary to take even more aggressive steps, in which case policymakers could consider removing companies that do not abide by disclosure laws and other regulations from U.S. exchanges or, in extreme cases, restricting portfolio investments.[107] Market access is a key choke point that the United States ought to leverage, and it can do so to enforce respect for norms and the rule of law — fundamental tenants of U.S. policy and sources of great advantage for America.

Managing Economic Sanctions

Over time, the United States has come to rely on economic sanctions as foreign policy instruments, often with significant success.[108] They have been a critical component of U.S. statecraft in the past and will continue to be in the future. However, the forces of convergence, particularly the growing import of cyberspace and the rise of cryptocurrencies, could reduce their efficacy unless the United States adapts. Moreover, the impact of sanctions will increasingly depend on how targeted and well-designed they are and how well they are integrated with other tools of economic statecraft.

Given these trends, policymakers will need to be more discriminating in their use of sanctions and clear-headed about whom to target and their desired impact.[109] To that end, experts with deep knowledge of target countries and actors should contribute to the development of sanctions packages. The proper composition of such a package depends on what behavior it is intended to change and whom to target in order to affect that change.[110]

The theft of intellectual property, for example, takes an enormous financial toll on the United States.[111] U.S. sanctions of Chinese entities that are intended to curb that theft should target bad actors, while also recognizing that those entities often act under the guidance or direction of political officials. Sanctions that only target individual companies or offenders — and not the figures motivating or even directing intellectual property theft — are inherently limited. Moreover, a coordinated response involving sanctions, export restrictions, and targeted tariffs should punish only known offenders. Sanctioning entities that have done nothing wrong only incentivizes bad behavior. It would, of course, take time and effort to identify the right culprits and tailor policy accordingly, but that further highlights the need for careful strategic planning. The U.S. government may sanction specific firms, but it should do so only as part of a broader strategy to secure America's position and change another state's behavior.

The long-term effectiveness of these kinds of sanctions strategies will depend on the centrality of the U.S. financial system and the dollar. The more money that sanctioned entities have had flowing through U.S. banks, generally the broader the impact of U.S. sanctions has been.[112] And the United States is always better able to apply and enforce sanctions when they are used in concert with complementary trade relationships and international networks. However, activities in cyberspace and the advent of cryptocurrencies threaten to reduce the centrality of the United States and thereby lessen the impact of its sanctions.

Sanctioned countries have begun developing cryptocurrencies that do not need to flow through the U.S. financial system, thereby evading U.S. sanctions. Venezuela, for example, developed a national

107 The administration has indicated it may restrict portfolio investment for the Thrift Savings Plan, a government retirement fund. James Rosen, "White House to Block Federal Pension Fund from Expanding China Investments," *WJLA*, April 30, 2020, https://wjla.com/news/nation-world/exclusive-white-house-to-block-federal-pension-fund-from-expanding-china-investments. See also, Marco Rubio, "You Can't Trust a Chinese Audit," *Wall Street Journal*, June 4, 2019, https://www.wsj.com/articles/you-cant-trust-a-chinese-audit-11559687739. Derek Scissors has also written extensively on possible capital flow controls. See, for example, Derek Scissors, "In Need of Direction: The Case for Moving Supply Chains out of China," *War on the Rocks*, Nov. 18, 2019, https://warontherocks.com/2019/11/in-need-of-direction-the-case-for-moving-supply-chains-out-of-china/.

108 As Peter Feaver and Eric Lorber write, there is wide disagreement about how to assess the effectiveness of sanctions, but they and others identify successful approaches, including financial enforcement to target rogue regimes and terror groups. Peter D. Feaver and Eric B. Lorber, *Coercive Diplomacy and the New Financial Levers: Evaluating the Intended and Unintended Consequences of Financial Sanctions* (London: Legatum Institute, 2010). See also, David A. Baldwin, *Economic Statecraft* (Princeton, NJ: Princeton University Press, 1985); and Gary Clyde Hufbauer, Jeffrey J. Schott, and Kimberly Anne Elliott, *Economics Sanctions Reconsidered* (Washington, DC: Institute for International Economics, 1985). For data on the use of sanctions, see, Kathy Gilsinan, "A Boom Time for U.S. Sanctions," *The Atlantic*, May 3, 2019, https://www.theatlantic.com/politics/archive/2019/05/why-united-states-uses-sanctions-so-much/588625/; and "Sanctions Programs and Country Information," U.S. Department of the Treasury, https://www.treasury.gov/resource-center/sanctions/programs/pages/programs.aspx.

109 Zack Cooper and Eric B. Lorber, "The Right Way to Sanction China," *National Interest*, Feb. 23, 2016, https://nationalinterest.org/feature/the-right-way-sanction-china-15285.

110 Eric B. Lorber, *Securing American Interests: A New Era of Economic Power* (Washington, DC: FDD Press, 2017), 14.

111 See, *The Theft of American Intellectual Property: Reassessments of the Challenge and United States Policy*, The National Bureau of Asian Research, 2017, http://ipcommission.org/report/IP_Commission_Report_Update_2017.pdf.

112 "Economic Sanctions: Agencies Assess Impacts on Targets, and Studies Suggest Several Factors Contribute to Sanctions' Effectiveness," U.S. Government Accountability Office, October 2019, https://www.gao.gov/assets/710/701891.pdf.

cryptocurrency called the *Petromoneda* (or Petro) in February 2018 that was backed by barrels of oil.[113] However, the effort has been unsuccessful for a variety of reasons, including an executive order signed by President Donald Trump in March 2018 that prohibits transactions involving "any digital currency, digital coin, or digital token, that was issued by ... Venezuela on or after January 9, 2018."[114] Nevertheless, North Korea, Russia, Iran, and others are also reportedly exploring cryptocurrencies as part of an effort to evade sanctions.[115]

In addition, sanctioned countries can engage in cyber theft against financial institutions or steal cryptocurrencies as a source of funding, thereby undermining the impact of sanctions. North Korea seems to be aggressively pursuing this path. According to the U.S. Treasury Office of Foreign Assets Control, North Korean state-sponsored cyber groups have stolen over $1.1 billion dollars from financial institutions and banks in multiple countries. The groups have also reportedly stolen $571 million in cryptocurrency alone, primarily from five exchanges in Asia between January 2017 and September 2018.[116]

This suggests that the United States should be integrating its sanctions program within a broader cyberspace strategy. At a July 2019 hearing of the U.S. Senate Banking Committee, David Marcus, the head of Facebook's new digital currency, suggested that fragmentation of financial services was a risk to sanctions and that, "[i]f we don't lead, others will."[117] The United States would be in a position to lead — and maintain leverage over block-chain-based alternative financial networks — "if the technology were developed or operated by a U.S. company obliged to adhere to U.S. sanctions, technology-export restrictions, and other relevant laws, or a foreign company with significant U.S. exposure."[118] This reality speaks to the importance of lateral, integrated economic policies. The U.S. government requires a strategy to bridge the gap between its sanctions program and the realities of cyberspace and emerging technologies.[119]

In sum, a durable and strategic approach to economic statecraft would use the different tools in the toolbox in concert. It would complement restrictions on outbound investment with technology transfer controls, other forms of targeted sanctions, and domestic investment initiatives. It would adapt investment screening and export controls, implementing reforms mandated by recent legislation and recognizing the increasingly complex and creative statecraft of America's adversaries. And it would also respond to emerging challenges to America's economic influence, including cryptocurrencies and other alternative financial networks, and to the long-term viability of U.S. statecraft tools.

The United States has an extensive economic statecraft toolbox, one that can be expanded further. Those tools are an asymmetric capability that America should treat as such to maximize its advantage. However, they will be most effective if implemented in concert with like-minded partners, though doing so can be complicated and slow, or even limit specific policy options.[120] The statecraft and investment measures described above must go hand-in-hand with international coordination on technological development, supply-chain management and protection, and trade and investment strategies.

III. Increase International Cooperation

The COVID-19 pandemic has highlighted the universal vulnerabilities inherent to globalization, but it also serves as a reminder of America's unique position in the world. The United States has a singular ability to lead international efforts, and that ability endows it with great power. One of us witnessed that reality firsthand during the financial crisis when, as undersecretary of treasury for interna-

113 Jack Karsten and Darrell M. West, "Venezuela's 'petro' Undermines Other Cryptocurrencies – and International Sanctions," The Brookings Institution, March 9, 2018, https://www.brookings.edu/blog/techtank/2018/03/09/venezuelas-petro-undermines-other-cryptocurrencies-and-international-sanctions/.

114 "Taking Additional Steps to Address the Situation in Venezuela," Executive Order 13827, March 19, 2018, https://www.treasury.gov/resource-center/sanctions/Programs/Documents/13827.pdf.

115 *How North Korea Revolutionized the Internet as a Tool for Rogue Regimes*, Insikt Group, Feb. 9, 2020, https://go.recordedfuture.com/hubfs/reports/cta-2020-0209.pdf.

116 "Treasury Sanctions North Korean State-Sponsored Malicious Cyber Groups," U.S. Department of the Treasury, Sept. 13, 2019, https://home.treasury.gov/index.php/news/press-releases/sm774.

117 David Marcus, "Examining Facebook's Proposed Digital Currency and Data Privacy Considerations," Testimony Before the Senate Banking Committee, July 16, 2019, https://www.banking.senate.gov/hearings/examining-facebooks-proposed-digital-currency-and-data-privacy-considerations.

118 Harrell and Rosenberg, *Economic Dominance, Financial Technology, and the Future of U.S. Economic Coercion*, 25.

119 In 2018, the Treasury Department designated two Iran-based individuals: "Treasury Designates Iran-Based Financial Facilitators of Malicious Cyber Activity and for the First Time Identifies Associated Digital Currency Addresses," U.S. Department of the Treasury, Nov. 28, 2018, https://home.treasury.gov/news/press-releases/sm556. But sanctioning individuals involved in certain bitcoin transactions is not the same as having a strategy for maintaining the effectiveness of sanctions in the face of proliferating digital currencies.

120 See, for example, Friedberg and Boustany, jr., *Partial Disengagement*. See also the 2019 Government Accountability Office report — titled "Economic Sanctions" — which found "strong evidence" that "sanctions have been more effective when implemented through an international organization, or when targeted countries had some existing dependency on or relationship with the United States."

America's partnerships and its leadership of multinational institutions are invaluable in a global crisis, but those relationships are also unique resources to leverage and reshape in this era of great-power competition.

tional affairs, he helped coordinate the international policy response. The United States makes the most meaningful progress when it leads and orchestrates international cooperation.

America's partnerships and its leadership of multinational institutions are invaluable in a global crisis, but those relationships are also unique resources to leverage and reshape in this era of great-power competition. Many international organizations have drifted from their founding principles and are in need of reform. The United States should continue to help lead those reform efforts and ensure international trade, internet governance, technology, and public health standards evolve in line with American principles and interests.[121] The 2017 *National Security Strategy* rightly highlighted the "invaluable advantages that our strong relationships with allies and partners deliver."[122] America's leaders should continue to develop its network of like-minded partners and use them to further the innovation and statecraft agendas outlined above. In fact, those policies are unlikely to be effective without such international coordination.

More specifically, to reinforce its domestic innovation agenda, the United States should consider opportunities to establish partnerships dedicated to the principled, multinational development and fielding of core technologies.[123] This effort could expand the existing multinational industrial base and lean on America's longstanding military and intelligence partnerships,[124] including its robust intelligence-sharing relationship with the "Five Eyes" partners.[125] Close friends, like Japan and possibly India, should be central to these efforts. U.S. leaders ought to also consider expanding the Defense Innovation Unit model and establishing international venture funds with the Five Eyes partners plus Japan, NATO, and other treaty allies to help jointly fund research in these nascent capabilities. These coalitions could set standards for the adoption and use of emerging technologies,[126] and they would not only optimize each country's resources and capabilities but also increase the interoperability of their respective technologies — a boon for military alliances and economic partners alike. Similarly, encouraging academic and talent exchange programs among this group of close partners would help develop knowledge and innovative capacity both at home and abroad.

The case of the 5G network infrastructure is instructive. The recently released *National Strategy to Secure 5G* outlines a number of initiatives to develop and govern 5G, including supply chain risk management and international development goals.[127] The United States is right to voice concerns about supply chain security and the impact of 5G technology. But, while Australia, Japan, and New Zealand share America's concerns, even close U.S. partners think they can mitigate the security risks posed by Huawei's 5G technology, as we have seen with the United Kingdom.[128] Ultimately, the fate of efforts to resist Huawei's bids will depend on the availability of affordable alternatives.

A bipartisan group of U.S. senators provided one blueprint for how the United States could work with its partners to make non-Huawei suppliers more viable and affordable: by promoting the research and development of open architecture networks, providing material support to countries considering alternatives to Huawei, and becoming more active in standards-setting bodies.[129] Another approach would be to establish a U.S.-led "5G Development Fund that would extend lines of credit … to strategic partners seeking to develop 5G networks," as

121 See, for example, Danielle Pletka, "It's Time for a New World Order," *The Dispatch*, April 14, 2020, https://thedispatch.com/p/its-time-for-a-new-world-order. On technology standards, see, Robert Strayer, "The Role of Global Standards in the Battle for 5G Leadership," Remarks Given at the Hudson Institute, Dec. 17, 2019, https://s3.amazonaws.com/media.hudson.org/Transcript_Role%20of%20Global%20Standards%20in%20the%20Battle%20for%205G%20Leadership.pdf.

122 *The National Security Strategy of the United States*, 2.

123 For a similar proposal, see, Daniel Kliman et al., *Forging an Alliance Innovation Base*, Center for a New American Security, March 2020, https://s3.amazonaws.com/files.cnas.org/documents/CNAS-Report-Alliance-Innovation-Base-Final.pdf?mtime=20200329174909.

124 See, "Defense Primer: The National Technology and Industrial Base," Congressional Research Service, Jan. 31, 2020, https://fas.org/sgp/crs/natsec/IF11311.pdf.

125 See, "Five Eyes Intelligence Oversight and Review Council," Office of the Director of National Intelligence, https://www.dni.gov/index.php/who-we-are/organizations/enterprise-capacity/chco/chco-related-menus/chco-related-links/recruitment-and-outreach/217-about/organization/icig-pages/2660-icig-fiorc.

126 See, for example, Rebecca Arcesati, "Chinese Tec Standards Put the Screws on European Companies," Mercator Institute for China Studies, Jan. 29, 2019, https://www.merics.org/en/blog/chinese-tech-standards-put-screws-european-companies.

127 *National Strategy to Secure 5G of the United States of America*, The White House, March 2020, https://www.whitehouse.gov/wp-content/uploads/2020/03/National-Strategy-5G-Final.pdf.

128 Max Colchester, "U.K. Allows Huawei to Build Parts of 5G Network, Defying Trump," *Wall Street Journal*, Jan. 29, 2020, https://www.wsj.com/articles/u-k-allows-huawei-to-build-parts-of-5g-network-11580213316.

129 For more information, see, "National Security Senators Introduce Bipartisan Legislation to Develop 5G Alternatives to Huawei," Press Release from the Office of Sen. Richard Burr, Jan. 14, 2020, https://www.burr.senate.gov/press/releases/national-security-senators-introduce-bipartisan-legislation-to-develop-5g-alternatives-to-huawei.

a Reagan Institute task force suggested in 2019.[130] Through such a fund, the United States and its partners could offer financial support to any middle- or low-income country that chooses a non-Huawei provider. America could also help establish an international consortium to support alternatives to Huawei's 5G technology, such as Nokia or Ericsson. There is, in other words, a range of options for international coordination on 5G development, which the U.S. government is wisely considering. Similar opportunities can be found in AI development and other emerging technologies.[131]

Actively engaging and leading standards-setting bodies would help the United States further promote both domestic and partner innovation. America's competitors work to influence and set international technical standards to advance their goals of technological leadership.[132] These efforts function alongside state subsidies and market access restrictions to net long-term market shares.[133] Indeed, as noted by Alan Beattie, "first-mover advantage in setting standards and rules can give a powerful edge to companies and businesses."[134] The *National Strategy to Secure 5G* recognizes that to maintain its innovation leadership and market access in high-tech sectors the United States should be more proactive in promoting favorable and open standards. It can do so by increasing its presence in key multilateral bodies, encouraging U.S. firms to engage in standards-setting bodies through tax incentives, and ensuring export controls or other sanctions do not prevent U.S. entities from engaging in these organizations.

To secure international innovation and expand its own statecraft efforts, the United States should help its partners develop and implement mechanisms to review foreign investments and address technology transfer. America's partners have been subject to malicious foreign investments.[135] The European Union has awoken to the challenge and is developing guidance for screening investments in critical or dual-use sectors, including health, energy, and communications.[136] While the United States should tread carefully, E.U. members may need help implementing that guidance and establishing processes for deliberate, thorough review, modeled after the U.S. approach. The United States could similarly work with G7 members and other partners around the world to strengthen their measures.

The United States should also continue to offer technical assistance and financial support to countries considering major foreign infrastructure investments.[137] Though often overstated, China's infrastructure and investment programs, such as the Belt and Road Initiative, and its push to export its internet governance model have challenged America's position in the global economy over the past decade. The United States has been wise not to try to out-compete China in every corner of the world. Instead, it should expand its initiatives to work with partners to offer alternatives to Chinese-backed projects that create unsustainable debt levels or corrupted networks. As Matt Pottinger, the deputy national security adviser, explained at the Raisina Dialogue in January 2020, the United States can work with the private sector, like-minded partners, and international lending bodies to promote commercial development, transparency, and high standards and to help developing states integrate into that principled, fair, and open system, which in turn will buttress America's position with-

130 *The Contest for Innovation*, 20.

131 See, for example, Mike Gallagher and Tom Tugendhat, "Five Eyes Must Lead on 5G," *War on the Rocks*, April 25, 2019, https://warontherocks.com/2019/04/five-eyes-must-lead-on-5g. (In this article, the authors describe a technical cooperation program related to AI).

132 The new "China Standards 2035" plan, for example, sets out an ambitious initiative to shape the standards of technologies that will be central to critical infrastructure. See, Arjun Kharpal, "Power Is 'up for grabs': Behind China's Plan to Shape the Future of Next-Generation Tech," *CNBC*, April 26, 2020, https://www.cnbc.com/2020/04/27/china-standards-2035-explained.html.

133 China, for example, has worked to influence AI and Internet of Things standards, among others. For more information about their AI-related efforts, see, *2019 Annual Report to Congress*, U.S.-China Economic and Security Commission, 214–15. For more on Internet of Things efforts, see, John Chen et al., *China's Internet of Things*, U.S.-China Economic and Security Commission, October 2018, https://www.uscc.gov/sites/default/files/Research/SOSi_China%27s%20Internet%20of%20Things.pdf.

134 Alan Beattie, "Technology: How the US, EU and China Compete to Set Industry Standards," *Financial Times*, July 23, 2019, https://www.ft.com/content/0c91b884-92bb-11e9-aea1-2b1d33ac3271.

135 For accounts of foreign direct investment in Europe, see, Agatha Kratz et al., *Chinese FDI in Europe: 2019 Update*, Mercator Institute for China Studies, April 8, 2020, https://www.merics.org/en/papers-on-china/chinese-fdi-in-europe-2019; and Elisabeth Braw, "China Is Bargain Hunting—and Western Security Is at Risk," *Foreign Policy*, April 15, 2020, https://foreignpolicy.com/2020/04/15/china-is-bargain-hunting-and-western-security-is-at-risk/.

136 For recent E.U. guidance, see, "Guidance to the Member States Concerning Foreign Direct Investment and Free Movement of Capital from Third Countries, and the Protection of Europe's Strategic Assets, Ahead of the Application of Regulation (EU) 2019/452 (FDI Screening Regulation)," European Commission, March 25, 2020, https://trade.ec.europa.eu/doclib/docs/2020/march/tradoc_158676.pdf.

137 The administration's Blue Dot Network, for example, is a step in the right direction. For more information, see, "Blue Dot Network," U.S. State Department, accessed May 4, 2020, https://www.state.gov/blue-dot-network/.

in the global economy.[138] The International Development Finance Corporation — formerly the Overseas Private Investment Corporation — and multinational organizations, such as the Inter-American Development Bank and the World Bank, will be the key actors in directing infrastructure investments. Fortunately, they require relatively low levels of federal funding.[139]

Finally, U.S. policy should give preference to expanded trade and investment relationships with like-minded states. As Rep. Mike Gallagher has argued, trade is a powerful tool for incentivizing allies and partners to adopt U.S. security standards regarding new technologies and supply chains, which in turn advances America's economic statecraft objectives.[140] Such agreements also reduce dependencies on other countries with interests that may diverge from those of the United States and give the United States greater influence over a range of global decisions that address areas of convergence, including data protection, ethical standards for the use of emerging technologies, and other issues related to data flows. Offering favorable trade terms in return for agreement on security protocols is a win-win opportunity for the United States that protects America's asymmetric position. To quote Aaron Friedberg and Charles Boustany, Jr., "High-standard trade agreements linking the economies of North America, Europe, and parts of Asia would help fuel the growth of all the nations involved, enhancing their collective wealth and power and strengthening their ability to defend shared interests and common values."[141]

International coordination of the type envisioned here will require regular collaboration between U.S. and partner-state leaders, namely finance ministers. Fortunately, U.S. leaders already meet with America's chief partners at the annual G7 summit and other conclaves. Rather than reinventing the wheel, the United States should consider establishing a follow-on session to the G7 summit that is focused on the convergence of national security and economic affairs, incorporating additional countries such as Australia, New Zealand, and India. Leaders could exchange information about existing strategies, trade arrangements, and investments, similar to what already takes place in the security arena at NATO summits.

Process and Personnel Reforms

This agenda, as important as it is, is unlikely to move forward without dramatic shifts in the policy process that has been in place for decades. To support this policy agenda, policymaking must shift from a siloed, often tactical approach, to one that is interdisciplinary, broadly focused, and consistently strategic. The policymaking process will need to include clear lines of authority for directing a responsible pro-innovation policy, including mechanisms for deciding which sectors to support and overseeing those efforts. And the U.S government will need to supplement these reforms by attracting, training, and retaining people with diverse, multidisciplinary backgrounds to support highly informed, high-quality decision-making.

It is easy to call for change, but, as history has shown across a wide range of government reform initiatives, it is difficult and sometimes impossible to make them happen.[142] As change looms on the horizon, time and again the forces of inertia — budgetary, bureaucratic, political — have emerged to quash such possibilities before they gained momentum. So we are under no illusion that change will be easy, and we accept that there are likely a variety of means by which these goals could be achieved. At the same time, we are convinced that bold modifications to how policy is made and to who makes it will be necessary to ensure the spheres of economic policy and national security policy are fully integrated, thus securing America's economic and political leadership going forward. What follows are a series of suggested reforms and guiding principles to precipitate the kind of radical change that is required.

138 See, Matt Pottinger, remarks on the "Coalitions and Consensus: In Defense of Values that Matter" panel at the Raisina Dialogue, New Delhi, Jan. 16, 2020, https://www.youtube.com/watch?v=gotKrQTVKQ4.

139 Zack Cooper, "Bridging the Transatlantic Divide on China," Testimony Before the House Foreign Affairs Committee Subcommittee on Europe, Eurasia, Energy, and the Environment on China's Expanding Influence in Europe and Eurasia, May 9, 2019, https://docs.house.gov/meetings/FA/FA14/20190509/109430/HHRG-116-FA14-Wstate-CooperZ-20190509.pdf

140 Mike Gallagher, "Let the Trans-Atlantic Trading Begin," *Wall Street Journal,* Feb. 6, 2020, https://www.wsj.com/articles/let-the-trans-atlantic-trading-begin-11581033321.

141 Friedberg and Boustany, Jr., *Partial Disengagement*, 36.

142 For example, past efforts to reform the National Security Council process have had mixed success and the defense acquisitions process has gone through nearly continuous cycles of reform, yet costs continue to rise. See, e.g., Charles P. Ries, *Improving Decisionmaking in a Turbulent World* (Santa Monica, CA: RAND Corp., 2016), 23–25, https://www.rand.org/pubs/perspectives/PE192.html; Obaid Younossi, et al., "Is Weapon System Cost Growth Increasing? A Quantitative Assessment of Completed and Ongoing Programs," RAND Corp., 2007, https://www.rand.org/content/dam/rand/pubs/monographs/2007/RAND_MG588.pdf; and Thomas L. McNaugher, "Weapons Procurement: The Futility of Reform," *International Security* 12, no. 2 (Fall 1987): 63–104, https://www.jstor.org/stable/2538813.

Reform Policymaking Organizations and Processes

For decades, policymaking structures have not been optimized for a converged environment. Making the secretary of the treasury a statutory member of the National Security Council in 2017 better integrated the policymaking community, but much more can be done. Within the White House itself, authority over the interconnected issues of economic and national security affairs has long been spread across multiple offices. The National Security Council is "the President's principal forum for considering national security and foreign policy matters."[143] At the same time, the National Economic Council advises the president on domestic and global economic policy. The Council of Economic Advisers is "charged with offering the President objective economic advice on the formulation of both domestic and international economic policy,"[144] while the Office of Science and Technology Policy is responsible for providing "advice on the scientific, engineering, and technological aspects of the economy, national security ... [and] foreign relations."[145] Each office contributes valuable input, but the bureaucratic separation between them is an impediment to developing national priorities or presidential decisions on innovation, economic statecraft, and related issues with implications for both economics and national security.[146]

The U.S. government's policy planning has similarly been fragmented across numerous strategy documents for decades. Strategies on national security and defense draw headlines,[147] but various arms of the state also publish strategies on cyber security, spectrum management, and other issue areas.[148] These documents, and the underlying efforts that guide them, serve an important role in setting priorities and expectations and can help each office understand what the others are doing. But in past administrations, they have rarely been well coordinated across disciplines.

Even when priorities are set, no single entity or person has responsibility for the execution of economic statecraft. The secretaries of defense and state and the director of the national intelligence have clear ownership over the other three aspects of national power — diplomacy, the military, and intelligence, respectively. By contrast, the tools of economic power and their use are split across agencies, including the treasury and commerce departments.[149] As a result, there has long been insufficient top-down authority for the large-scale execution of national objectives in this arena.

These longstanding barriers have limited generations of policymakers. In the convergent environment, it will be ever more important to integrate national security and economic decision-making. To do so, the U.S. government should consider new approaches to developing policy and setting priorities for economic statecraft and innovation policy. These processes should include international coordination and should break down existing bureaucratic barriers, establish clearer policymaking authorities in the realm of economic competition, and develop mechanisms to coordinate research, development, and innovation.[150]

Below we consider several distinct potential reform models to the policymaking process and structure, looking at methods to address economic statecraft and innovation both together and separately. Some of these are not novel approaches, and all

143 "National Security Council," The White House, https://www.whitehouse.gov/nsc/.

144 Council of Economic Advisers, The White House, https://www.whitehouse.gov/cea/.

145 Office of Science and Technology Policy, The White House, https://www.whitehouse.gov/ostp/. There are other groups that could be mentioned among those identified in the text, such as the American Technology Council or the Office of Management and Budget, the latter of which includes both an Office of the Chief Information Officer and the U.S. Digital Service.

146 See, e.g., *The Contest for Innovation*, 14.

147 *The National Security Strategy of the United States;* and "Summary of the National Defense Strategy of the United States," Department of Defense, January 2018, https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.

148 See, e.g., *Description of the National Military Strategy of the United States*, The Joint Chiefs of Staff, January 2018, https://www.jcs.mil/Portals/36/Documents/Publications/UNCLASS_2018_National_Military_Strategy_Description.pdf; *The National Cyber Strategy of the United States*; *The National Strategic Overview for Quantum Information Science*, Committee on Science of the National Science and Technology Council, September 2018, https://www.whitehouse.gov/wp-content/uploads/2018/09/National-Strategic-Overview-for-Quantum-Information-Science.pdf; "Presidential Memorandum on Developing a Sustainable Spectrum Strategy for America's Future," The White House, Oct. 25, 2018, https://www.whitehouse.gov/presidential-actions/presidential-memorandum-developing-sustainable-spectrum-strategy-americas-future/; and *The National Artificial Intelligence Research and Development Strategic Plan: 2019 Update*, Select Committee on Artificial Intelligence of the National Science and Technology Council, June 2019, https://www.nitrd.gov/pubs/National-AI-RD-Strategy-2019.pdf.

149 For a breakdown of export control authority, see, "The U.S. Export Control System and the Export Control Reform Initiative," Congressional Research Service, updated January 28, 2020, https://fas.org/sgp/crs/natsec/R41916.pdf.

150 A 2015 Government Accountability Office study, for example, found insufficient interagency coordination on the protection of critical technologies and called for the lead departments, including Treasury, Commerce, State, and Defense, to do more to coordinate their efforts to protect technologies. "Critical Technologies: Agency Initiatives Address Some Weaknesses, but Additional Interagency Collaboration Is Needed," Government Accountability Office, February 2015, https://www.gao.gov/assets/670/668382.pdf.

of them have pros and cons, but each is worthy of consideration as a means of restoring, or in some cases creating, the required focus and necessary infrastructure where it is most needed.[151]

I. Coordinate economic statecraft and innovation in parallel by putting the National Security Council in charge of interagency coordination of economic statecraft and creating an innovation policy cell in the National Economic Council.

In this model, the National Security Council would manage an interagency process to identify policy objectives and facilitate executive decision-making regarding economic statecraft. Likewise, the National Economic Council would establish an interagency process to coordinate innovation activities. Both offices would also be responsible for coordinating their efforts with international partners and with each other. Ultimately, they would be most effective, as discussed above, if they maintained open communication with the private sector and non-government leaders to get their input and their buy-in.

To coordinate economic statecraft policymaking, the National Security Council could create a new office headed by a deputy national security adviser and responsible for an interagency process on economic statecraft.[152] The office would be led by a senior official who would report to both the national security adviser and to the director of the National Economic Council. As with the former Office of International Economics, now part of the National Economic Council, this official would be a deputy assistant to the president on the National Security Council and deputy director of the National Economic Council. This new office would chair an interagency planning committee to ensure real-time cooperation, communication, and, hopefully, collaboration among operational agencies, bureaus, and offices, including the U.S. trade representative. And it would have a mandate to coordinate not only sanctions but also inducements — positive measures to promote international coordination and advance U.S. interests, such as foreign aid and infrastructure investments. Japan has taken a similar step with the express goal of coordinating more closely with the United States.[153]

To coordinate innovation activities, the National Economic Council could establish an innovation office, geared toward facilitating interagency, public-private, and international communication and coordination on matters of innovation, as guided by the principles listed above.[154] The same official in charge of the economic statecraft office at the National Security Council could lead this office as well. By wearing two hats, this person would be responsible for ensuring innovation and statecraft activities work in tandem.

In some respects, these two councils are the natural centers for interagency processes, given their existing interagency roles and the White House's unique executive authority and ability to cut across bureaucratic siloes.[155] They also are flexible by design — with decision-making structures directed by the president — making them ideal for addressing these rapidly evolving challenges.[156] In addition to practical benefits, establishing these two offices in the White House could also signal the importance of innovation and economic statecraft and of integrating economic and national security policymaking processes.

However, the flexible design of the councils could limit the permanence, depth, and potential sustainability of these efforts. Both policymaking structures would also have limited capacity to influence programming and budgeting, restricting the innovation arm in particular.[157] Moreover, it is easy to picture these new offices turning into separate pockets

151 Past efforts to work around existing agency structures and interagency processes have often struggled — for example, the tendency toward appointing "czars" or special envoys to address emerging challenges. See, Ries, *Improving Decisionmaking in a Turbulent World*.

152 In the past, these responsibilities could have been given to the Office of International Economics. However, the administration has moved that office to the National Economic Council. There are pros and cons for doing so, and that decision is a reminder that the right policymaking process is often a moving target that is in need of consistent reevaluation and study. See, Robert C. O'Brien, "Robert C. O'Brien: Here's How I Will Streamline Trump's National Security Council," *Washington Post*, Oct. 16, 2019, https://www.washingtonpost.com/opinions/robert-c-obrien-heres-how-i-will-streamline-trumps-national-security-council/2019/10/16/2b306360-f028-11e9-89eb-ec56cd414732_story.html.

153 Shunsuke Shigeta, "Japan to Add Economic Team to National Security Council," *Nikkei Asian Review*, Oct. 29, 2019, https://asia.nikkei.com/Politics/Japan-to-add-economic-team-to-National-Security-Council.

154 As addressed elsewhere in this article, the executive branch has a unique capacity to facilitate information sharing and deconflict projects across public, private, and international domains.

155 Colin Dueck, "The Role of the National Security Advisor and the 2006 Iraq Strategy Review," *Orbis* 58, no. 1 (Winter 2014): 15–38, https://doi.org/10.1016/j.orbis.2013.11.007.

156 McGeorge Bundy argued, quoting Robert Cutler, that the National Security Council's flexibility was "a peculiar virtue" in a letter to Sen. Henry Jackson. *Organizing for national security: Hearings before the Subcommittee on National Policy Machinery of the Committee on Government Operations United States Senate, Vol. 1* (Washington, DC: GPO, 1961), 1336.

157 Both councils are non-operational and should remain that way. For a discussion of National Security Council roles, see, Kim Holmes, "Memo to a New President: How Best to Organize the National Security Council," The Heritage Foundation, April 14, 2016, https://www.heritage.org/defense/report/memo-new-president-how-best-organize-the-national-security-council.

within the National Security Council and National Economic Council staff. Should they become divorced from other council functions, they would not help increase the president's decision-making capacity.[158] There is also the real risk of overly centralized decision-making processes and insufficient accountability, especially regarding innovation efforts, so a careful design would have to guardrail against these offices overstepping their bounds.[159]

II. Address economic statecraft separately by establishing an interagency, cabinet-level coordinating body, chaired by a member of the president's cabinet.

As another possibility, the U.S. government could develop a cross-agency committee responsible for setting principles and directing traffic across the economic statecraft portfolio.[160] It could be modeled on the Committee on Foreign Investment in the United States process and be chaired by a cabinet member. This new committee would be responsible for strategic planning and setting policy priorities for the execution of economic statecraft and the various dimensions of the aforementioned agenda. Members could include senior leaders from relevant agencies and executive offices. Participating agencies, such as the Departments of Commerce and Treasury, may need to develop more extensive policy-planning capabilities to contribute to this process.[161] Specifically, this new committee, like the Committee on Foreign Investment in the United States, would be complemented with a working group ideally composed of sub-cabinet officials from the Departments of Treasury and Commerce offices involved in the rulemaking process for the Bureau of Industry and Security and the Office of Foreign Assets Control; the U.S. Trade Representative's office and other White House offices; and the National Security Council and the National Economic Council. The committee could be housed either within the executive office or within an executing agency, as the Committee on Foreign Investment in the United States is, and motivated by strict timelines for action, recalling what makes the foreign investment committee most effective.

The committee would need to engage with the private sector to understand international threats, identify areas of need, and, to the extent possible, encourage private actors to accept some of the risks inherent to modern economic competition. There are many ways to do this, including through rulemaking processes or an advisory body made up of business leaders, academics, analysts, and former officials, which would issue regular reports and send representatives to high-level committee discussions. Participating agencies could also convene similar executive boards. As we noted previously, the private sector has in important role to play in addressing technology transfer, investment risks, and emerging dynamics, including cryptocurrencies and data governance. This committee should recognize that reality.

This type of structure would help establish clear executive direction over economic statecraft, as exists for other elements of national power. As such, it would need buy-in from participating agencies; authority to, at a minimum, set priorities for policy and rules; and clear oversight authority. However, it risks becoming another silo in the expansive bureaucratic landscape that is the executive branch. Its success would depend on presidential support, clear strategic goals, and the right personnel.

III. Promote innovation separately by 1) establishing an interagency coordinating body responsible for innovation policy; and 2) creating a cross-disciplinary advanced research and development agency.

Similar to the economic statecraft coordinating committee just described, an innovation coordinating committee would be responsible for working with agencies, the private sector and outside experts, as well as international partners to identify, communicate, and direct funding to innovation priorities with the goal of ensuring comprehensive research and development efforts.[162] The committee would also help develop the types of international innovation programs described above.

Its members could include senior agency leaders with knowledge of ongoing innovation work, such as the undersecretary of defense for research and engineering; White House representatives from the

158 Luke Strange, *The National Security Council: A Tool for Decision*, American Enterprise Institute, March 2018, 10, https://www.aei.org/wp-content/uploads/2018/03/NSC.pdf.

159 See, e.g., Colin Dueck, *Strategic Planning for the New Administration*, Hoover Institution, Dec. 15, 2016, https://www.hoover.org/research/strategic-planning-new-administration.

160 Alexander Bobroske, "Reforming the National Security Council," American Action Forum, Dec. 21, 2016, https://www.americanactionforum.org/research/reforming-national-security-council/.

161 Eric Lorber has recommended that the Treasury Department establish its own office of policy planning. Lorber, *Securing American Interests*, 10.

162 The Reagan Institute's task force on innovation recommended a similar body and outlined positive principles for its role, which we draw from here. *The Contest for Innovation*, 15.

National Security Council, the National Economic Council, and other executive offices; and heads of major research laboratories. Given that it would be responsible for strengthening and motivating private sector innovation, this body would need a mechanism to ensure regular coordination across academia, national laboratories, private industry, and other innovation hubs. An advisory board, like that described in the previous option, may suffice. This new committee could also maintain a standing subcommittee of non-government advisers and could be housed either within the executive office or within an executing agency.

This committee risks running into many of the same problems as the economic statecraft committee, as well as the risk of overstepping its bounds and getting into the business of picking winners and losers. The investment principles outlined above would form necessary guardrails to its activities, as would congressional oversight and regular reporting on funding priorities.

A cross-disciplinary advanced research and development agency could direct funding for innovation priorities and be responsible for promoting the development of technologies that maintain America's innovation leadership. It would be the means to fund research and development projects that fall outside existing agency mandates and could direct funding across sectors. If modeled after DARPA, such an agency would set and execute its own investment projects, though it ought to be bounded by our investment principles. It would ideally replicate the successes enabled by DARPA's autonomy and bottom-up governance structure and therefore encourage greater risk tolerance among policymakers.[163] It could, moreover, serve the dual purpose of strengthening the innovation iron triangle and facilitating multilateral innovation initiatives.

A generalized research and development agency could also be the execution arm of the innovation committee described above. With knowledge of the research and development programs at each government agency, that committee would be responsible for ensuring projects are not duplicative; would set priorities for this agency's work; and would receive congressional appropriations, earmarked for the research and development agency to distribute.

However, as multiple Government Accountability Office studies have found, DARPA's model is most effective when pursuing defined technical goals in areas with either clear customer demand or existing expertise.[164] It struggles in the absence of those conditions and when asked to translate research projects into programs of record or sustained development projects.[165] A national research and development agency would need to overcome both these obstacles. And it would ideally receive not only clear strategic guidance about what sorts of projects it could fund but also hands-off oversight, which introduces risks of undue influence and cronyism.

The options outlined here are by no means exhaustive, and each has its advantages and disadvantages. But they all point to a set of guiding principles that should inform any effort to reform the policymaking process:

Principle I: Establish strong lines of executive authority

For this new policy agenda to be effective, there needs to be clearer, more decisive authority to direct economic statecraft and innovation policy, as there is in other areas of national power. The policymaking process can leverage the extensive strategic planning that already occurs across government to set priorities, but there should be more cross-disciplinary execution authority.

Principle II: Establish clear budgetary authority and prudent oversight and accountability measures

To the extent possible, new policymaking structures should be given authority over budget priorities or even be authorized to direct funding. There are substantial risks to forming national innovation policies and centralizing authority, but fear of failure should not get in the way of innovation, which is a costly, inefficient process. While accountable parties and regular congressional oversight are necessary, the policymaking process ensures some measure of risk tolerance on the part of overseers.

Principle III: Convene policymakers from across all relevant government offices at the cabinet or sub-cabinet level

To reinforce the significance of the reforms and break down bureaucratic barriers between execu-

163 Erica R.H. Fuchs, "Cloning DARPA Successfully," *Issues in Science and Technology* 26, no. 1 (Fall 2009): 65–70, https://www.jstor.org/stable/43315003.

164 See, e.g., "Defense Science and Technology: Adopting Best Practices Can Improve Innovation Investments and Management," Government Accountability Office, June 29, 2017, https://www.gao.gov/products/GAO-17-499; and "Defense Acquisitions: DOD's Use of Other Transactions for Prototype Projects Has Increased," Government Accountability Office, Nov. 22, 2019, https://www.gao.gov/products/GAO-20-84.

165 "Defense Science and Technology: Adopting Best Practices Can Improve Innovation Investments and Management."

tive offices and executing agencies, the policymaking process must include and influence each of those authorities.

Principle IV: Coordinate with the private sector, academia, and international partners

The policymaking process should find ways to support the private sector through co-investments and public-private partnerships, to work more closely with allies and partners, and to leverage the unique capabilities of the U.S. government.

A variety of organizational models could adhere to these principles. None will be perfect, but whatever form it takes, the policymaking process must change the way it has operated for decades. The president should consider establishing a bipartisan commission to study and identify organizational and process reforms. The commission could be comprised of current and former government officials with experience in these issue areas, as well as business leaders and outside experts, and members could be appointed by both the White House and Congress. Its goal would be to propose new policymaking designs that would systematically integrate national security and economic policy, guided by the principles presented here. However, even with the right processes and organization, policymaking will suffer without the right people sitting around the table. That is the final component of this reform agenda.

Reform Government Talent Management

To get the right people, personnel and talent management policies should evolve to include programs to attract, retain, and train people with different profiles: lateral, creative, out-of-the-box thinkers as well as substantive experts, particularly in science and technology. The range of policy responsibilities outlined above necessitates different competencies, but they all require cross-disciplinary thinkers, with a mix of technical and soft skills, often with non-traditional backgrounds. Some efforts have already been undertaken to draw this type of talent into civil servant roles in departments and agencies, producing pockets of technology talent in areas such as the U.S. Digital Service (located within the Office of Management and Budget) and 18F (located within the Technology Transformation Service at the General Services Administration), as well as tech-focused offices within the Intelligence Community and Department of Defense.

To ensure America's primacy in this new era, these efforts will need to be accelerated. To begin with, federal agencies should exercise their substantial, but underutilized, hiring authorities to develop a stronger career workforce.[166] The pay gap between public and private sector jobs disincentivizes top talent from entering government jobs. Agencies could help overcome that obstacle and improve recruiting and retention numbers by providing greater access to continuing education and training — as the U.S. military does for uniformed personnel — and should consider offering alternative career pathways that support such talented civilian employees.[167]

At the same time, the executive branch ought to develop cross-disciplinary relationships and expertise through "joint" appointment structures. Similar to the military's requirement for joint billets in order to be promoted, agencies could adopt a new model of "national security professionals" and make promotion to the senior executive service contingent upon cross-department experience.[168] Participating agencies could include the Departments of State, Commerce, Treasury, Defense, and even Justice, Energy, and Homeland Security. While the ideal professional experiences and backgrounds would vary by role, these sorts of joint career experiences would help prepare senior professional staff for the increasingly integrated spheres of economic and national security policymaking.

In addition, the federal government should develop far more robust partnerships with private industry to draw on its talent and ideas. Individuals participating in these partnerships could sign up for temporary, multi-year "tours of duty" or for more permanent arrangements that would place private sector talent into agencies on a longer-term basis. These partnerships could also facilitate the flow of ideas and solutions into the U.S. government, whether through short-term private competitions or through longer-term research and development relationships. Agencies could also establish fellowship programs, in the vein of the White House fellowships, to draw in talented young people with varied skill sets. These programs have their faults, but if well-managed and housed within a particular

166 For example, agencies can rapidly hire people into AI-facing jobs and draw talent from outside traditional career pipelines. See, *Interim Report*, National Security Commission on Artificial Intelligence, 37.

167 The "Section 809 Panel" proposed creative reforms to the defense acquisition workforce. Similar models could be considered in other agencies, including the Departments of Treasury and Commerce. See, "Section 809 Panel," available at https://section809panel.org/.

168 Ries, *Improving Decisionmaking in a Turbulent World*, 44.

agency, multiyear fellowships could fill known gaps in agency workforces and bring in technologists, entrepreneurs, and other non-traditional talent. More broadly, the federal government must reform USAJOBs (the federal government's online hiring portal) and reduce other unnecessary hiring barriers that might deter otherwise interested talent.[169]

Similar arrangements should be established with universities and other institutions to promote the education of students committed to public service in a variety of fields. These students could either enter government to help shape the next generation of leaders or participate in the research and development necessary to help position the United States to compete and succeed in this new landscape. Such programs could be linked to scholarship or debt-forgiveness programs as referenced above. Other countries have already undertaken similar efforts. Israel, for example, handpicks young students with a high cyber aptitude to join Unit 8200 of the Israel Defense Forces.[170] This has significant knock-on effects, as those individuals often stay in the military long term and add their expertise to Israel's public mission.

Personnel reforms should not be limited to career appointments and civil servants. Political appointments should draw from a more varied talent pool of people with unique track records of success and experience. Such individuals are needed to help confront ever more complex issues at the intersection of security, technology, and economics. Those with backgrounds in related issues, especially with cross-disciplinary and high-tech experience, will be best prepared to take on these challenges. Yet, this is where the current policies, pay limitations, and rigorous Senate ethics rules and confirmation processes can deter even the most patriotic of high-quality candidates from accepting appointments. These rules exist for good reason, and risks of corruption and unethical behavior must be balanced against the risks of not getting the right people. But in order to attract and retain the kind of talent that will be necessary for America to prevail in great-power competition, some dramatic changes will be required as highlighted in a recent study by Business Executives for National Security.[171]

In sum, the U.S. government's "talent strategy" and the much needed reforms should be guided by the following principles: 1) attract the best people possible with diverse, cross-disciplinary, and technical backgrounds, for both political and career appointments; 2) exercise existing hiring authorities in full and employ new, flexible hiring tools; 3) expand career and educational opportunities for civil servants; 4) be open to temporary or alternative work arrangements; and 5) draw on the expertise of the private sector and universities.

* * *

There is a great deal to be done. The world is changing in unprecedented and disruptive ways, as the coronavirus pandemic is making clear. To preserve America's primacy, its political leaders must leverage the country's unique advantages through policies that strengthen America's innovative capacity, economic statecraft, and position as the leader and center of gravity of the international community while also making needed reforms to the processes and the workforce that guide such efforts.

To quote Samuel Huntington, "The ultimate test of a great power is its ability to renew."[172] We are optimistic that by taking these, and other, important steps, the United States will rise to this historic challenge.

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The views reflected in this article are those of the authors alone.

169 *Inspired to Serve*, National Commission on Military, National, and Public Service, March 2020, https://inspire2serve.gov/reports/final-report.

170 Dov S. Zakheim, "Brains, not Brawn, Matter Most in the Next War — and We're not Being Smart About It," *The Hill*, Oct. 22, 2019, https://thehill.com/opinion/national-security/466679-brains-not-brawn-matter-most-in-the-next-war-and-were-not-being.

171 *Making Senior Government Service More Attractive*, Business Executives for National Security, May 2015, https://www.bens.org/file/policy---bens-impact-documents-/Government-Services-Report___May2015.pdf.

172 Huntington, "The U.S.: Decline or Renewal?" 90.