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20-8 Export Controls: America's Other National Security Threat

Chad P. Bown

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ABSTRACT

While the public was transfixed by the Trump administration's policies alleging that imports were a threat to America's national security during 2017–20, there was a concomitant and more quiet US policy shift on the export side. Addressing the national security threat presented by exports posed different economic and institutional challenges from those associated with import policy, including the acknowledgment that export controls for legitimate national security reasons can be the first-best policy to confront the problem at its source. Yet, export controls could also be misused as a beggar-thy-neighbor policy to redistribute economic well-being across countries, even from one ally to another. This paper describes how US export control policy evolved over 2017–20, as well as the international institutions—first the Coordinating Committee for Multilateral Export Controls (COCOM), then the Wassenaar Arrangement—historically tasked with multilateralizing US export restrictions used to protect national security. With the potential for US export control policy to brush up more frequently against WTO rules designed to limit the use of export restrictions, the paper also highlights new challenges for the WTO's system of resolving trade disputes. Overall, a US failure to strike the right balance for its export control policy would result in it being ineffective at addressing national security risks, costly for the economy, and problematic for trade and diplomatic relations.

Chad P. Bown is the Reginald Jones Senior Fellow at the Peterson Institute for International Economics.

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INTRODUCTION

On January 6, 2020, the Trump administration announced new export controls on artificial intelligence (AI) software. For the first time, an American company would need to apply for a special license to sell satellite imagery software abroad.[1] And the US government could deny the application, nixing any revenue from export sales.

That was not the end of it. On February 16, the *Wall Street Journal* reported that the administration was contemplating a ban on exports of jet engines to China for use in civil aircraft.[2] This threatened to cut off some of General Electric's jet engine sales to one of the world's largest and fastest-growing markets for commercial aviation.

Then on February 17, the *Wall Street Journal* reported that the US administration was considering a new rule to prohibit American companies from supplying equipment to foreign manufacturers of semiconductors that wanted it to make chips to sell to China.[3] This could have curtailed hundreds of millions of dollars of US sales to customers like Taiwan Semiconductor Manufacturing Company, one of the largest semiconductor foundries in the world.

As the rumors swirled, on February 18 President Donald Trump intervened, tweeting that America would remain open for business, and that the "United States cannot, & will not, become such a difficult place to deal with in terms of foreign countries buying our product, including for the always used National Security excuse." He added, "I want China to buy our jet engines, the best in the World," a sentiment perhaps designed to comfort worried executives at General Electric.[4] The Semiconductor Industry Association responded with temporary relief, applauding "President Trump's tweets supporting U.S. companies being able to sell products to China and opposing proposed regulations that would unduly curtail that ability."[5]

Nevertheless, uncertainty persisted. The president's tweets have not historically been a guarantee of the path of policy, and in this instance were not enough to assuage those worried that further restrictions in the name of America's national security might be forthcoming. The whiplash around these events did little to clarify whether this was the beginning of a larger change

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1 The exception was that the software could be sold in Canada. See Wolf, Emme, and Monjay (2020) as well as James Politi, "US proposes new export controls on satellite imagery software," *Financial Times*, January 3, 2020.

2 Ted Mann and Bob Davis, "Trump Administration Considers Halting GE Venture's Engine Deliveries to China," *Wall Street Journal*, February 16, 2020.

3 Asa Fitch and Bob Davis, "U.S. Weighs New Move to Limit China's Access to Chip Technology," *Wall Street Journal*, February 17, 2020.

4 The series of four Trump Tweets of February 18, 2020, read, "The United States cannot, & will not, become such a difficult place to deal with in terms of foreign countries buying our product, including for the always used National Security excuse, that our companies will be forced to leave in order to remain competitive. We want to sell product and goods to China and other countries. That's what trade is all about. We don't want to make it impossible to do business with us. That will only mean that orders will go to someplace else. As an example, I want China to buy our jet engines, the best in the World. I have seen some of the regulations being circulated, including those being contemplated by Congress, and they are ridiculous. I want to make it EASY to do business with the United States, not difficult. Everyone in my Administration is being so instructed, with no excuses. THE UNITED STATES IS OPEN FOR BUSINESS!"

5 Semiconductor Industry Association, "SIA Statement on President Trump's Tweets Regarding Export Controls," February 18, 2020.

in US policy toward exports, and one with implications for tens of billions of dollars' worth of expected trade. And it was clearly not over when, in late March, additional reports swirled that the Trump administration was pushing ahead with export restrictions on semiconductor manufacturing equipment after all.[6]

Much of the call to action on export controls arose out of growing US government concern with China. In 2018, with bipartisan support, Congress passed and President Trump signed into law the Export Control Reform Act of 2018. But its scope and scale remained unclear well after the statute went into effect. In part, this was because Congress left it to the Trump administration to interpret and put into practice two key elements of the new law. First, what were the "emerging and foundational technologies" to be restricted? And second, how to define what was "essential to the national security of the United States"?

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It is not for this paper to assess the national security implications of individual technologies, nor to define what is in the national security interests of the United States. Rather, the purpose is to highlight the risks and unintended consequences of controls that might be poorly designed or badly implemented. Because intelligence-gathering and enforcement resources are scarce, prioritization matters. If everything is about national security, nothing is about national security.

There were reasons to be concerned. The Trump administration took an expansive view of what was "essential to the national security of the United States" when it used that justification to apply tariffs on imported steel and aluminum from America's allies in 2018. The president himself had politicized typically bureaucratic and legal export control decisions by using them as bargaining chips in trade negotiations with China. Furthermore, he was not known for careful consideration of economic expertise or of America's commercial interests when it came to trade.

And there were large economic interests at stake. Take a suddenly ubiquitous technology like AI; over a short period, it had been adopted by banks for fraud detection, retail outlets for online customer support, Netflix for movie recommendations, and carmakers for autonomous vehicles. What would the new AI export controls announced in January 2020 portend for its seemingly limitless commercial applications?

Export controls defined too broadly would make the United States a less attractive place for companies to do their research, development, and production, which they might shift elsewhere. Equally worrisome was the continuing cloud of uncertainty about future US export control policy. Would American companies hold back on R&D and key investment decisions until it was resolved? Squelching innovation was costly—the competitiveness of the American economy would suffer, as would American workers and communities losing out from that economic activity no longer taking place locally.

The final risk was that President Trump's preference for unilateralism would make ineffective the US export controls actually needed to address the most worrisome national security threats. Getting export controls to work at safeguarding national security would require multilateralism—other governments

6 Bob Davis and Katy Stech Ferek, "U.S. Moving Forward with Rule to Limit Chips to Huawei," *Wall Street Journal*, March 26, 2020.

need to agree to also hold back supplies of comparable technologies. But cooperation was being challenged by rising levels of distrust that some countries would seek to restrict exports—alleging a national security threat when there was none—to achieve political-economic gain in a beggar-thy-neighbor form. Thus, the multilateral institutions tasked with facilitating and policing export controls were confronted with new pressures that threatened to disrupt the delicate balance among cooperative rule making, exceptions to protect national security, and effective dispute resolution when inevitable frictions arose.

THE TRUMP ADMINISTRATION LINKS NATIONAL SECURITY, ECONOMIC SECURITY, AND TRADE POLICY

Almost from inauguration day, the Trump administration tied together trade and national security in ways not seen in US policy for decades. White House National Trade Council director Peter Navarro set the stage in early March 2017 with a high-profile speech implying that the US trade deficit was a threat to American national security.[7] The next month, the administration began two investigations, under Section 232 of the Trade Expansion Act of 1962, into whether imports of steel and aluminum threatened national security. In August, it opened another inquest, under Section 301 of the Trade Act of 1974, into whether China's unfair trade practices worked to "undermine American manufacturing, services, and innovation."[8] Finally, in December, the administration released its National Security Strategy blueprint, defining its America First policy with the mantra that "economic security is national security."[9]

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What had been mostly rhetoric in 2017 became concrete policy actions in 2018. Beginning in March, the administration imposed 25 percent tariffs on steel and 10 percent tariffs on aluminum, affecting nearly $50 billion of imports. Its Section 232 reports alleged that such imports were a threat to national security, despite the fact that most such imports were from Canada, NATO-allied countries in Western Europe, Japan, and South Korea. In May, the administration turned to the Section 232 statute again, launching a new investigation into whether $350 billion of imported automobiles and parts posed a threat to American national security. This began a sustained period in which the president repeatedly threatened the European Union and Japan with additional national security tariffs—threats suddenly made credible with his restrictions on steel and aluminum.[10]

An important inflection point for US policy came after the Trump administration released details of its unfair trade investigation of China. Made public was a long list of American grievances laying the groundwork for

7 See CSPAN, National Association for Business Economics Conference, Peter Navarro Remarks, March 6, 2017.

8 White House, Presidential Memorandum for the United States Trade Representative, August 14, 2017.

9 White House, National Security Strategy of the United States, December 2017.

10 Nearly a year later, in May 2019, as the Mexican Senate was meeting in a ceremony to consider passage of the US-Mexico-Canada Agreement on trade just negotiated with the president, Trump threatened to invoke the International Emergency Economic Powers Act and impose a 25 percent tariff on all goods imported from Mexico. His motivation was not trade related: Trump felt Mexico was not doing enough to address the flow of migrants arriving from Central America. In the end, he backed down without imposing tariffs.

subsequent policy actions.[11] Some concerns involved explicit Chinese policies, such as Beijing's Made in China 2025 industrial policy, rolled out in 2015, which identified 10 priorities for sectoral advancement that the US administration felt posed a direct threat to American technological leadership.[12] Other complaints alleged covert Chinese policies, such as state-sponsored cyberhacking, theft of industrial secrets, espionage for commercial (as opposed to intelligence-gathering) purposes, as well as predatory foreign investment and purchases to acquire advanced American technology. The administration essentially alleged that Beijing was pursuing a Chinese version of "economic security as national security."

The Trump administration's subsequent "trade war" with China focused on import-related policies to start.[13] Beginning in July 2018, the administration rolled out a series of tariff actions that ultimately covered $360 billion, or nearly two thirds, of US imports from China by September 2019.[14] Most of those imports faced additional US tariffs of 25 percent and remained in place despite the administration's truce with China implemented in February 2020.[15]

That the United States would ultimately deploy policies in addition to import tariffs was made explicit in the March 2018 presidential memorandum kicking off the trade war.[16] In a section on potential restrictions on Chinese investment, for example, the president directed his administration to consider "any available statutory authority, to address concerns about investment in the United States directed or facilitated by China in industries or technologies deemed important to the United States." Thus, it was not surprising when the administration turned to other US statutes, including those allowing the government to control what American companies could export to China.

The tariff decisions had signaled a major shift in US policy toward imports. Yet, on export control policy, some of the president's subsequent actions still caught many by surprise.

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11 USTR, Findings of the Investigation Into China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation under Section 301 of the Trade Act of 1974, March 22, 2018. See also USTR, Update Concerning China's Acts, Policies and Practices Related to Technology Transfer, Intellectual Property, and Innovation, November 20, 2018.

12 See Made in China 2025, Notice of the State Council, May 8, 2015. The 10 industrial policy priorities concerned the next generation of information technology; robotics, artificial intelligence, and automation; aerospace equipment; offshore engineering equipment and high-tech ships; advanced rail transportation equipment; new energy vehicles; power systems; agriculture machinery and equipment; advanced materials; and biomedicine and high-performance medical devices.

13 In addition to the tariffs, the administration filed a WTO dispute over Chinese laws and regulations that prevent foreign patent holders from enforcing their rights against a Chinese joint venture after a technology transfer contract ends. See *China – Certain Measures Concerning the Protection of Intellectual Property Rights – Request for consultations by the United States*, WTO legal document WT/DS542/1, March 26, 2018.

14 See Chad P. Bown and Melina Kolb, Trump's Trade War Timeline: An Up-to-Date Guide, *PIIE Trade and Investment Policy Watch*, February 14, 2020 (last updated).

15 See Chad P. Bown, Phase One China Deal: Steep Tariffs Are the New Normal, *PIIE Trade and Investment Policy Watch*, December 19, 2019.

16 White House, Presidential Memorandum on the Actions by the United States Related to the Section 301 Investigation, March 22, 2018.

US EXPANSION OF EXPORT CONTROLS UNDER EXISTING STATUTES DURING THE TRUMP-CHINA TRADE WAR

US export controls were one important example of President Trump's periodically injecting other policies into the mix during the first two years of his trade war with China. The primary initial targets of US export restrictions were Chinese telecommunications giants ZTE and Huawei. These companies faced the threat of lost access to American-made semiconductors, software, and other technologies on which they relied for production for sale in China and other foreign markets.

Preceding the trade war, in March 2017, ZTE had agreed to a settlement with the US government for its failure to abide by US sanctions prohibiting the sale of certain technology to Iran and North Korea. ZTE's agreement to plead guilty, pay a fine, and change some of its internal practices followed a multiyear investigation brought under the Obama administration; while serious, the settlement was received as relatively routine and apolitical.[17] That perception began to change when, on April 15, 2018, the US government enacted a denial order against ZTE that would have resulted in export controls for the company's violation of the terms set out in the March 2017 agreement.[18] But in a surprising move, President Trump brought the export controls levied on ZTE directly into his trade war negotiations with President Xi Jinping. Trump overruled his Commerce Department's denial order and demanded the department negotiate a settlement to lift the export controls and restore ZTE's access to American-made goods and services.[19]

Huawei faced a separate set of actions during the trade war. In May and August 2019, the US government claimed that Huawei and a number of its affiliate companies were involved in "alleged violations of the International Emergency Economic Powers Act (IEEPA), conspiracy to violate IEEPA by providing prohibited financial services to Iran, and obstruction of justice in connection with the investigation of those alleged violations of US sanctions."[20] Huawei was thus added to the "entity list" of companies that were required to receive a license to obtain any product subject to existing US export controls.

The controls—and threats of more—heightened awareness at ZTE and Huawei, and in the Chinese government, of the companies' vulnerabilities. Cutting off access to American exports of semiconductors, software, and related technologies could have been devastating, putting tens of thousands of Chinese out of work. Thus, one unintended consequence of the Trump administration's policy may have been for Beijing to pursue an even more aggressive approach to industrial policy. The fear of being cut off could have created the incentive

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17 See Aruna Viswanatha, Eva Dou, and Kate O'Keeffe, "ZTE to Pay $892 Million to U.S., Plead Guilty in Iran Sanctions Probe," *Wall Street Journal*, March 7, 2017, and Stephan Haggard, The ZTE Case, *PIIE North Korea: Witness to Transformation* blog, March 15, 2017.

18 Paul Mozur and Ana Swanson, "Chinese Tech Company Blocked from Buying American Components," *New York Times*, April 16, 2018.

19 "President Xi of China, and I, are working together to give massive Chinese phone company, ZTE, a way to get back into business, fast. Too many jobs in China lost. Commerce Department has been instructed to get it done!" Tweet of Donald J. Trump, May 13, 2018.

20 See BIS, Department of Commerce Announces the Addition of Huawei Technologies Co. Ltd. to the Entity List, May 15, 2019, and Department of Commerce Adds Dozens of New Huawei Affiliates to the Entity List and Maintains Narrow Exemptions through the Temporary General License, August 19, 2019.

to speed up diversification of its supplier base, perhaps with the Chinese government increasing its already considerable state support for domestic semiconductors.[21]

The US administration's export control actions also revealed some immediate costs to American businesses of being cut off from Chinese buyers. Google's Android would lose out if Huawei chose other operating systems for its smartphones.[22] Qualcomm, Acacia Communications, and other American companies suffered hits to their stock prices when markets discovered that ZTE could be forced to stop purchasing American-made technologies.[23]

Nevertheless, the March 2020 revelation that the administration was still considering an extension of US export controls to semiconductor manufacturing equipment was a major potential escalation.[24] Despite the president's February 18 tweets, the Trump administration seemed intent on going ahead with a modification to something called the "direct product rule," that would attempt to extend the reach of US controls to other countries' suppliers seeking to make sales to Huawei.

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The policy had farther-reaching economic implications for American industry, as illustrated with the example of a non-Chinese semiconductor company, Taiwan Semiconductor Manufacturing Company (TSMC), that had considerable sales to Huawei.[25] The proposed US export controls were reportedly designed to confront a company like TSMC with a choice: To retain access to US equipment, TSMC would have to give up its sales to Huawei of chips made using that equipment. Alternatively, TSMC could keep its Huawei business, but it would need to switch from American-made to semiconductor manufacturing equipment produced by firms in South Korea, Japan, or elsewhere.

The proposed export controls were a bet that companies like TSMC would choose continued access to American equipment over their future sales to Huawei. But what if they didn't? TSMC's decision would also depend, of course, on the availability of substitute equipment from non-American suppliers. And that availability would also hinge on whether the US export control would be multilateralized, so that other exporting countries applied it too. In this example, the South Korean and Japanese governments would need to impose controls on their equipment suppliers' sales to firms like TSMC.

A failure to get US-imposed controls multilateralized to other countries would potentially be devastating for the US semiconductor industry. Its fears were described in a March 2020 study commissioned by the Semiconductor Industry Association.[26] The study imagined a scenario in which a US policy of the sort

21 See OECD (2019b).

22 Yang Jie and Dan Strumpf, "Who Needs Google's Android? Huawei Trademarks Its Own Smartphone OS," *Wall Street Journal*, May 25, 2019.

23 Jay Greene, "In ZTE Battle, U.S. Suppliers Are Collateral Damage," *Wall Street Journal*, April 24, 2018.

24 Karen Freifeld, David Shepardson, and Alexandra Alper, "U.S. prepares crackdown on Huawei's global chip supply – sources," Reuters, March 26, 2020. For additional discussion of the direct product rule, see Whitten and Mays (2019).

25 Asa Fitch and Bob Davis, "U.S. Chip Industry Fears Long-Term Damage from China Trade Fight," *Wall Street Journal*, March 9, 2020.

26 See Semiconductor Industry Association, Report Shows Risks of Excessive Restrictions on Trade with China, March 9, 2020; Boston Consulting Group, How Restricting Trade with China Could End US Semiconductor Leadership, March 9, 2020.

reported in February 2020 was a bad bet; i.e., that unilateral US export controls would result in many foreign companies choosing to engage with China instead of the United States for equipment and input sourcing. The study estimated the cost to the US industry at tens of billions of dollars of annual revenue—revenue that was the main source of R&D funding needed for American companies' next generation of chips. Because less R&D would make the next round of American semiconductors less competitive globally, future customers would be even less likely to choose US equipment and inputs. The study pointed to a vicious cycle of American industrial decline, with the pain extending to American workers at these companies and their communities reliant on the jobs and economic activity supported by the industry.

MAJOR CHANGES TO US LAW AND TO EXPORT CONTROL REGULATIONS BEGAN IN 2018

In the midst of the trade war and the battle with ZTE in 2018, the US government undertook a separate legislative process to overhaul its export control regime. The debate between Congress and the Trump administration involved a number of proposals, some even more far-reaching than the final legislation.[27] Nevertheless, the new statute had the potential to severely curtail US exports for products that might have "dual use" (both military and commercial application). The Export Control Reform Act of 2018 (ECRA) came into law on August 13, 2018, as part of the John S. McCain National Defense Authorization Act. It was passed with bipartisan support of 87 votes in the Senate and 351 votes (including 131 Democrats) in the House of Representatives.

In the midst of the trade war and the battle with ZTE in 2018, the US government undertook a separate legislative process to overhaul its export control regime.

To many, the ECRA was long overdue.[28] It codified existing US government practices into law by replacing executive orders that had been issued annually under the IEEPA since the statutory authority for the Export Administration Regulations (EARs) set up by the Export Administration Act of 1979 lapsed in 2001.

But ECRA also had the potential to do much more. Under the law, Congress tasked the Bureau of Industry and Security (BIS) in the Department of Commerce to update US export controls on "emerging and foundational technologies" that were "essential to the national security of the United States." BIS would lead an ongoing interagency process to identify and add products to the EARs. To fulfill its very challenging new mandate, BIS eventually requested additional budgetary resources from Congress.[29]

In the implementing regulations to guide the process, BIS came up with 14 new categories of representative technologies for which it sought public input into whether to implement new export controls and, if so, how far-reaching they

27 For a discussion, see Kevin J. Wolf, Steven C. Emme, Thomas J. McCarthy, and Andrew R. Schlossberg, "The Export Control Reform Act and Possible New Controls on Emerging and Foundational Technologies," Akin Gump International Trade Alert, September 12, 2018; and Martin Chorzempa and Gary C. Hufbauer, Trump Awaits Congress on Investment and Technology Controls, *PIIE Trade and Investment Policy Watch*, July 9, 2018.

28 The Obama administration had attempted a reform of US export controls, but it was never enacted into law. For a discussion, see Congressional Research Service (2020).

29 "Commerce requests 8 percent BIS funding hike to counter China's tech rise," *Inside US Trade*, February 12, 2020.

should be.[30] New limits would be considered for goods and services such as AI, machine learning, quantum computing, and 3D printing. In seeking to define the specific emerging and foundational technologies to control, BIS established technical advisory committees "composed of representatives from industry, academia, and the U.S. Government and reflect[ing] diverse points of view on the concerns of the exporting community."[31]

The American business community was nonetheless concerned that the BIS scoping exercise would be indifferent to its input. Billions of dollars of R&D expenditures had been premised on access to foreign markets, and more expansive export restrictions could hamper the expected commercial benefits.[32] As Kevin Wolf, who directed US export control policy as former assistant secretary of commerce for export administration in the Obama administration, said in testimony before the Senate Banking Committee almost a year after the new law went into effect, "many are wondering what the impact on their businesses will be and how BIS will justify any new controls based on the ECRA standards."[33]

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Uncertainty over the commercial implications of new US export control policy increased with the activity and reports of January and February 2020. US government concerns with ZTE and Huawei were longstanding and predated the Trump administration. But these events signaled something new.

The January 6 announcement of new export controls on satellite imagery software, for example, was significant because AI was on the BIS list of "emerging and foundational technologies" under examination. The first control on AI exports seemed narrow, but was it just a start?

Autonomous vehicles were another example of a product for which AI was critical.[34] Fears that the United States would attempt to control AI for self-driving cars were reportedly impacting joint ventures between American and Chinese startups, as well as their access to funding.[35]

30 See Federal Register, Review of Controls for Certain Emerging Technologies: A Proposed Rule by the Industry and Security Bureau on 11/19/2018. These 14 categories were biotechnology; artificial intelligence and machine learning technology; position, navigation, and timing technology; microprocessor technology; advanced computing technology; quantum information and sensing technology; logistics technology; additive manufacturing (e.g., 3D printing); robotics; brain-computer interfaces; hypersonics; advanced materials; and advanced surveillance technologies.

31 See Federal Register, Technical Advisory Committees; Notice of Recruitment of Members: A Notice by the Industry and Security Bureau on 04/01/2019.

32 See Martin Chorzempa's *PIIE Trade and Investment Policy Watch* blogs, Worst Case Averted on Foreign Investment Reviews, August 20, 2018; and The Trump Administration's Rush to Curb Technology Leakage Is in Danger of Backfiring, January 8, 2019.

33 Kevin Wolf, "Confronting Threats from China: Assessing Controls on Technology and Investment," testimony before the Senate Committee on Banking, Housing, and Urban Affairs, June 4, 2019.

34 For early research on AI and international trade, and potential implications for policy, see Goldfarb and Trefler (2019).

35 Trefor Moss, "U.S.-China Trade Tensions Jeopardize Rollout of Self-Driving Vehicles," *Wall Street Journal*, September 24, 2019.

More generally, economists Kyle Handley and Nuno Limão have documented evidence from a variety of settings showing that uncertainty over foreign market access due to *import* tariffs can hamper investment, production, and exports.[36] Changes in US *export* control policy provided one more channel by which costs of elevated levels of uncertainty might impact American-based businesses.

Finally, as one other central part of ECRA, Congress mandated that BIS ensure the multilateral adoption of any new US controls, noting that unilateral US export controls on "widely available" goods would be ineffective.[37] ECRA indicated that if the administration did not succeed in getting a particular control adopted by other countries within three years, the US government should drop it.[38]

This multilateralization requirement mattered for both national security and commercial reasons. A control would do little to safeguard US national security if the equivalent technology were available on global markets from other foreign suppliers. And American companies would be hurt commercially if they were the only ones unable to sell it.

But getting other key national governments to adopt any new US export control required international cooperation. Understanding how to work the multilateral process was fundamental if the United States was to considerably expand the scope of its export controls. (The Trump administration's poor record of engaging in, as opposed to disrupting, other multilateral initiatives presents a particular challenge for international cooperation.[39])

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Previous multilateralization of US export controls, and some of the problems that arose, provided clues as to where challenges might be expected.

COCOM AND MULTILATERAL EXPORT CONTROLS DURING THE COLD WAR

How the United States would convince other countries to adopt more stringent export controls was not, of course, an entirely new question. The origins of the modern approach date to shortly after the Second World War, as a response to growing tensions that the United States and its Western European allies had

36 See, for example, the discussion in Handley and Limão (2017).

37 Section 1752, Statement of Policy, reads "Export controls applied unilaterally to items widely available from foreign sources generally are less effective in preventing end-users from acquiring those items. Application of unilateral export controls should be limited for purposes of protecting specific United States national security and foreign policy interests."

38 In particular, Section 1758, Requirements to Identify and Control the Export of Emerging and Foundational Technologies, states
(C) Multilateral Controls.—
(1) In General.—The Secretary of State, in consultation with the Secretary and the Secretary of Defense, and the heads of other Federal agencies, as appropriate, shall propose that any technology identified pursuant to subsection (a) be added to the list of technologies controlled by the relevant multilateral export control regimes.
(2) Items On Commerce Control List Or United States Munitions List.—If the Secretary of State proposes to a multilateral export control regime under paragraph (1) to add a technology identified pursuant to subsection (a) to the control list of that regime and that regime does not add that technology to the control list during the 3-year period beginning on the date of the proposal, the applicable agency head may determine whether national security concerns warrant the continuation of unilateral export controls with respect to that technology.

39 The Trump administration's destructive actions concerning the multilateral trading system and WTO (Bown and Keynes 2020) are one example; others include pulling out of the Paris Climate Accord and the Joint Comprehensive Plan of Action for Iran sanctions, as well as threats to defund the World Health Organization in light of the COVID-19 pandemic.

with the Soviet Union. The fear was that the Soviet Union would improve its military capabilities through acquisition of western equipment and commercial technologies that might have dual use, fears that intensified over the following 40 years of the Cold War.

The allies negotiated the Coordinating Committee for Multilateral Export Controls (COCOM), which went into effect on January 1, 1950. The original members were the United States, United Kingdom, France, Italy, Belgium, the Netherlands, and Luxembourg;[40] with the exception of Iceland, members of the North Atlantic Treaty Organization (NATO) all joined over the following years.

COCOM was very different from other agreements affecting international commerce developed in parallel, most notably the General Agreement on Tariffs and Trade (discussed below). COCOM was not treaty-based; it was an informal agreement that was established in secret and did not create binding legal obligations on the countries involved. Consensus drove decision making, which also meant that any country had a veto. An export control arose by agreeing to place a product on one of three lists. The first two lists concerned international munitions and atomic energy. For export control purposes, products on these lists faced an embargo.[41]

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The third list, involving dual-use technologies, was referred to as the International List, and its products were subject to export control review as opposed to bans. Products on this list could be exported subject to a licensing requirement. Frequent debate emerged between COCOM countries over whether to add a new product to the International List, and the United States was often more keen than the European members. The geographic proximity of the European allies to Eastern Europe and the Soviet Union—and their Warsaw Pact alliance—meant that the average export control had a greater impact on European foreign commercial interests.

On occasion, COCOM debates did escalate into conflict. Most notable was a 1980s dustup involving exports of submarine technology from Japan and Norway to the Soviet Union. In what became known as the Toshiba-Kongsberg Incident, a Japanese and Norwegian firm were charged with falsifying documents and evading government controls to export quiet submarine propellers to the Soviet fleet to help it evade Western sonar capabilities.[42] Each company was sanctioned by its government, but a new debate emerged *within* the US government as to the appropriate American policy response. The Congress was furious that it might have to allocate hundreds of millions of dollars of additional military funding to address the new national security threat caused by Soviet acquisition of the sonar-evading propellers. It proposed legislation, the Garn Amendment, that would have slapped US sanctions on Toshiba and Kongsberg.

40 For more on COCOM, see Whang (2019). When the Korean War broke out in 1950 and Chinese troops became involved, the United States pushed for COCOM to apply its export controls to China. They eventually did, and for the next four decades the relative restrictiveness of the export control regime with respect to the Soviet Union and China shifted back and forth, based on political developments. For a discussion, see Meijer (2016, pp. 33–54).

41 Over the second half of the 20th century, other agreements emerged that banned exports of specific types of military goods, including chemical and biological weapons (Australia Group), nuclear weapons (Nuclear Suppliers Group), and missiles (Missile Technology Control Regime).

42 See Wrubel (1989) and Morehead (1988-1989) for historical accounts of the Toshiba-Kongsberg incident, as well as David E. Sanger, "U.S. Changes Its Stance On Damage by Toshiba," *New York Times*, March 14, 1988.

The Reagan administration pushed back against congressional demands for additional US penalties beyond those imposed by the Norwegian and Japanese governments. One administration concern was that the sanctions might cripple Toshiba's ability to fulfill its contracts, hurting American consumers and suppliers to the companies. But another worry was that additional US punishment could have systemic implications for COCOM itself: COCOM was voluntary and even allied governments might choose to pull out if penalties for violating rules on export controls became excessive.

This incident highlighted the trade-offs that any multilateral export control regime must navigate. The lack of multilateral controls meant that one country's (the United States') unilateral export restriction was insufficient to protect national security (i.e., the target country acquired the technology). But allowing for excessive punishment of parties that violated the agreement could have resulted in reduced engagement and cooperation overall.

The Wassenaar Arrangement followed the COCOM model in only some respects.

THE WASSENAAR ARRANGEMENT AND MULTILATERAL EXPORT CONTROLS SINCE 1995

COCOM was dissolved with the end of the Cold War, in 1994, and a new form of multilateral cooperation emerged to take its place. In 1995, the Wassenaar Arrangement was established with 33 members as the new, multilateral vehicle for export controls. Importantly, it included Russia, which, as part of the Soviet Union, had obviously been a main target of the COCOM export control efforts.[43] While participation in the Wassenaar Arrangement expanded to 42 countries by 2020, China remained a major nonparticipant.[44] The European Union was also not a formal participant, despite engagement by EU member states in their national capacities.

The Wassenaar Arrangement followed the COCOM model in only some respects. It continued to be based on voluntary submissions of products that countries wanted to control. However, it prioritized transparency and shifted its focus to nonproliferation. To do so, it maintained two lists: The Munitions List covered conventional arms and included rifles, handguns, machine, submachine guns, bombs, torpedoes, rockets, and missiles; the list of Dual-Use Goods and Technologies, where more commercial concerns arose, covered nine categories: special materials and related equipment, materials processing, electronics, computers, telecommunications and information security, sensors and lasers, navigation and avionics, marine, and aerospace and propulsion.[45]

A good or service must satisfy four criteria to be subject to the dual-use list for export control. First, there was little utility in subjecting an export to restraints if it was already available from countries that did not participate in the Wassenaar Arrangement. Second, countries were discouraged from proposing

43 See Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, Public Documents, Volume I, Founding Documents, WA-DOC (17) PUB 001.

44 The Wassenaar Arrangement has periodically engaged in "outreach activities" to nonparticipating states, including China. See, for example, Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, Public Documents, Volume IV, Background Documents and Plenary-related and Other Statements, WA-DOC (19) PUB 006.

45 For the lists as of December 2019, see Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies Public Documents, Volume II List of Dual-Use Goods and Technologies and Munitions List, WA-DOC (19) PUB 002.

limits on products where the restriction would knowingly not work. Third, product definitions should include a "clear and objective specification"; broad descriptions would catch commercial items for which controls were unnecessary. And finally, the product should not be already controlled by some other regime (e.g., the Munitions List or the Nuclear Suppliers Group).[46]

Nevertheless, a potentially more expansive US export control policy suggested at least three areas of tension with the Wassenaar Arrangement framework.

First, the modern pace of technological change posed an immense challenge to any control regime. Consider an attempt to control semiconductors. According to Moore's Law, the number of transistors on a chip doubles about every two years. A controlled technology today could become a potential commodity item tomorrow. Such a fast pace of innovation raised the concern that BIS couldn't possibly evaluate and multilateralize controls for new products quickly enough—i.e., before the technology became widely distributed.

A second concern involved the breadth and precision of new export controls. Some emerging and foundational technologies under the US review process did not naturally fit under the nine Wassenaar Arrangement categories. Furthermore, the Wassenaar criterion of an item having a "clear and objective specification" could run afoul of US attempts to introduce more general classifications of products it wanted to control.

Finally, an asymmetry remained between the potential target of US controls—which might include China—and those agreed multilaterally. The traditional focus of the Wassenaar Arrangement had been on nonproliferation and keeping controlled items away from rogue states. Thus, any US attempt to get partners to control a technology with respect to a certain country (e.g., China) would require additional bilateral engagement outside of Wassenaar with the other key suppliers.

For example, recall the Trump administration proposal to stop granting GE a license to sell commercial jet engines to China.[47] For this control to protect national security, BIS would have needed to convince the governments of competing engine makers—e.g., Rolls Royce—to similarly deny such export licenses from their jurisdictions. Failure to convince the UK government would have left GE at a commercial disadvantage relative to its global competitors.

Overall, the consensus nature of the Wassenaar Arrangement, as well as potentially divergent economic interests among its participating countries, posed a challenge for US unilateralism and thus an effective export control policy. It would turn out to be much more difficult to multilateralize US export control priorities than even during the Cold War—the last time such controls for dual-use items were put to such a stringent multilateral test.

Overall, the consensus nature of the Wassenaar Arrangement, as well as potentially divergent economic interests among its participating countries, posed a challenge for US unilateralism and thus an effective export control policy.

46 "Wassenaar Arrangement "Criteria for the Selection of Dual-Use Items" (adopted in 1994 and amended by the plenary in 2004 and 2005).

47 Ted Mann and Bob Davis, "Trump Administration Considers Halting GE Venture's Engine Deliveries to China," *Wall Street Journal*, February 16, 2020.

GOVERNMENTS SOMETIMES LIMIT EXPORTS FOR POLITICAL OR ECONOMIC REASONS UNRELATED TO NATIONAL SECURITY

Any US export control would be effective only if adopted multilaterally and if the technology were not already widely available from noncontrolled sources. One challenge for rule making was thus already clear: allied trading partners may not have commercial incentives to sign on to America's additional controls. American-made jet engines vacating the Chinese market would pave the way for additional sales from Rolls Royce, for example. This posed one challenge to cooperation.

But there was a separate problem. Even allied governments suspected that the true motive behind US efforts to restrict exports was economic or political (redistributive) gain at their expense. A quick tour through a simple, hypothetical economic model clarifies why a country can have incentives to abuse the national security threat justification for its export restrictions and why partners are wise to be skeptical.

Take the example of the United States being a "large" global supplier of semiconductor-making equipment. Being large simply means that a change in the level of US exports affects the world price of the equipment. If it increases supply, the price in the rest of the world falls; if the United States limits supply, the world price increases.

Now assume that a legitimate national security threat exists and a "negative externality" arises: The United States and other countries experience social costs not taken into consideration by commercial actors (similar to the impacts of cross-border pollution or climate change)—but only if the equipment is *traded*. No extra social costs result from local US production or consumption, but something bad happens if the equipment is sold abroad. In this instance, the standard Pigouvian economic logic for policymakers holds: the first-best government policy is to attack the externality at its source and limit equipment exports. If the negative externality of the national security threat is large enough, the first-best policy could even be a complete export ban.[48]

But now suppose there is no legitimate national security threat to trading the equipment. The concern is that the United States may sometimes benefit from restricting exports of the equipment anyway. The wariness of trading partners arises because this benefit occurs at their expense.

But why might the United States impose an export restriction when there is no national security threat? Limiting foreign sales means more is kept locally, with American consumers (e.g., the US semiconductor chip industry) enjoying lower prices and increased equipment availability. However, the reduction in how much the US equipment industry can sell globally and the lower prices for domestic sales result in a loss to the industry's economic well-being. Overall, losses to American equipment makers are larger than the gains to US

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48 This would likely be the argument of those proposing the restriction of exports to China—i.e., that China's access to technology allows its industry to develop and this in itself poses a national security threat to the United States. Again, it is not for this paper to assess the national security implications of any individual technology or industry.

consumers.[49] Even so, the US government might implement an export restriction for political reasons—for example, because it values the well-being of the US semiconductor chip industry (consumers) more than that of the equipment makers (producers).

Nevertheless, any benefit to the United States arising through the export restriction comes at the expense of its trading partners. Limiting US equipment exports increases the price to foreign consumers (semiconductor companies like TSMC), hurting them more than the benefits to the rest of the world's equipment makers (in Japan or South Korea). Similar to the more familiar example of a large consuming country imposing a small *import tariff*, the US export restriction here is therefore a beggar-thy-neighbor policy.[50]

Beyond political motives, there may be additional economic incentives pushing the US government to impose such restrictions. As one last tweak, suppose the consumers in the model—the semiconductor industry—are themselves producers and their industry benefits from increasing returns to scale. Because of learning by doing, each additional unit that the domestic industry produces allows it to lower its average costs. In that case, the US export restriction on equipment generates a separate channel through which the American consumer (the semiconductor industry) benefits at the expense of its competitors in the rest of the world. The export restriction means firms, like TSMC, in other countries face higher costs for their equipment inputs relative to the US semiconductor industry. TSMC's having to reduce its output increases its costs while the US industry enjoys a reduction to its costs by producing more with inputs made cheap only by the export restriction on equipment.

The conundrum confronting national export control policy and international cooperation is now clear. Export controls for legitimate national security reasons can be the first-best policy to attack the problem at exactly its source and provide benefits to allies. But export controls can also be misused as a beggar-thy-neighbor policy to redistribute economic well-being, even from one ally to another.

Trading partners may be suspicious that the real motive for the policy is economic if there is an informational asymmetry as to whether the national security threat is legitimate. Information asymmetries may be difficult to overcome if it is hard to foresee all of a technology's potential (nefarious) uses at the time the good is traded, or if the full details of the adversarial threat can't be

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49 For the country as a whole, a standard economic result is that a small export restriction imposed as a tax can allow overall American economic well-being (of consumers, producers, and the government combined) to be higher than it is in free trade. But this result is contingent on the receipt of tax revenue. An export control that prevents a product from being exported altogether is a quantitative restriction—or quota—with the volume limit set at zero. More generally, the licensing procedures associated with export controls (even if all applications for export are accepted) are a nontariff barrier: They impose additional compliance costs to firms that are similar to a tax, but in which the government collects no tax revenue.

50 See, for example, Bagwell and Staiger (2002). Note that the simplest example—that a country can be slightly better off with a unilateral export tax relative to free trade—relies on the collection of tax revenue. An export control such as a ban or a nontariff barrier with compliance costs will not generally make a large supplying country better off. Nevertheless, a large country that imposes an export control for political or distributional reasons will still pass some of the cost of that policy on to trading partners.

revealed to protect the source of the information. Suspicions are also heightened after the excuse has been abused, as when the Trump administration imposed national security tariffs on steel in 2018.

Thus, just as there is a need to multilateralize legitimate export controls, there are economic efficiency gains to agreeing to international rules so that governments cooperate and do not impose excessive and reciprocal export restrictions when national security threats are *not* present. Without such rules to guide policy, the noncooperative outcome could prevail: one country limits its exports (and imposes costs on partners), and other countries do the same (imposing reciprocal costs). This is the classic prisoner's dilemma in which all are made worse off relative to cooperation.

WTO RULES AND EXPORT CONTROLS

In addition to unilateral and multilateral export controls, governments have developed international rules that help limit the imposition of beggar-thy-neighbor export restrictions for economic or redistributive gain. A number of rules in this vein, as well as exceptions for permissible export restrictions, are set out under the World Trade Organization (WTO). The WTO has also provided a forum for dispute resolution when inevitable trade frictions arose.[51] However, the WTO has only begun to face the challenges of interactions between trade, national security exceptions, and export controls.

The WTO came into effect in 1995, building on its predecessor, the General Agreement on Tariffs and Trade (GATT). A contemporary of COCOM, the GATT established the initial multilateral rulebook for national commercial policies affecting exports and imports following the Second World War.

The WTO treats the two main export policies—taxes and quotas—quite differently, albeit in parallel to its treatment of import-restricting policies. Countries are generally prevented from exercising export restrictions in the form of quotas or bans. Just as the WTO frowns on quantitative *import* limits, export quotas are discouraged under GATT Article XI. Export taxes, on the other hand, are broadly permissible under the WTO, similar to the preference for import tariffs over import quotas. Export taxes must also be implemented on a nondiscriminatory basis and are thus subject to the WTO's most favored nation (MFN) rule.[52]

There are important exceptions. One is GATT Article XXI, which allowed a broad carve-out for "security exceptions." When imposing export controls, as long as countries respected the spirit of Article XXI, matters addressed by COCOM did not generally come up under the GATT. A second involves Article XI(1), which allows for "Export prohibitions or restrictions temporarily applied to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party." This would presumably serve as the justification

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51 See Bown and Keynes (2020) for a discussion of the WTO's current dispute settlement status.

52 See Mavroidis (2016, pp. 87–89) on export taxes under the GATT and WTO. Wu (forthcoming) provides a discussion of export tax commitments that countries have undertaken as part of preferential trade agreements.

adopted by a country challenged to explain its export restriction on food staples imposed during the commodity price spike of 2008–11, or on medical supplies during the COVID-19 pandemic.[53]

One crucial difference between export taxes and import tariffs is that few countries have taken on legal commitments at the WTO to constrain how high their export taxes might go. For decades starting in 1947, countries negotiated rounds of reductions to their import tariffs and then agreed to schedule (bind) them, legally promising not to raise them above a certain level. For the most part, governments have not made similar promises about their export taxes under the GATT or WTO.[54] There are a few exceptions, with China being the most significant. China committed to schedule and bind its export taxes when it acceded to the WTO in 2001.

WTO DISPUTE SETTLEMENT, NATIONAL SECURITY, AND EXPORT RESTRICTIONS

In addition to its rules, a second main function of the WTO historically has been to provide a forum to resolve commercial disputes between members.[55] Because countries have political and economic incentives to impose export restrictions unilaterally, some frictions over such policies were inevitable.

Nevertheless, there have been very few documented cases in which a government imposed an export control, faced a WTO dispute, and used national security as a defense. One example is the WTO dispute over Japan's more stringent controls on exports to South Korea in 2019. Japan suddenly made Wassenaar Arrangement–controlled fluorinated polyimide, resist polymers, and hydrogen fluoride—inputs used to make products like smartphones, television displays, and semiconductors—subject to license requirements for sale to South Korea.[56]

South Korea quickly filed a WTO dispute; in its view, Japan's action did not arise from an increased national security threat but was simply retribution for a diplomatic flare-up involving reparations for Japanese mistreatment of South Koreans during the Second World War. At the timing of writing, the WTO

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53 See Giordani, Rocha, and Ruta (2016) and Martin and Anderson (2012) for export restrictions on food; for export restrictions related to COVID-19, see Soumaya Keynes, New trade barriers could hamper the supply of masks and medicines, *The Economist*, March 11, 2020; Chad P. Bown, EU limits on medical gear exports put poor countries and Europeans at risk, *PIIE Trade and Investment Policy Watch*, March 19, 2020; and Chad P. Bown, COVID-19: Trump's curbs on exports of medical gear put Americans and others at risk, *PIIE Trade and Investment Policy Watch*, April 9, 2020. The US export controls of April 2020 on medical gear were imposed under the Defense Production Act and not ECRA.

54 The United States does not generally implement export taxes as they are banned under US Constitution Article I, Section 9, Clause 5.

55 WTO dispute settlement is facing a separate challenge due to the Trump administration's refusal to allow the appointment of new members to its Appellate Body (Bown and Keynes 2020). While critical, these additional institutional challenges are not a focus here.

56 See, for example, 1.C.9.b, 3.C.2, and 6A.6.d.5 in Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies Public Documents, Volume II List of Dual-Use Goods and Technologies and Munitions List, WA-DOC (19) PUB 002. Prior to Japan's action, South Korea was on a white list of countries where such shipments didn't require an individual license.

dispute was still in process. If it moves forward, Japan may claim that its export controls arose after a threat to its national security, justifying its actions under an Article XXI defense.[57]

There have even been few WTO disputes in which countries adopted the national security defense for challenges to their *import*-restricting policies. The only case to have reached a legal decision involved Russia, which used the justification when Ukraine challenged trade barriers imposed during the military conflict between the two countries.[58] There are other such defenses in the pipeline, however, including a number of challenges to the Trump administration's tariffs on steel and aluminum imposed in 2018.[59]

There have been three main reasons behind the limited number of formal WTO disputes involving a country's national security: Countries were hesitant to impose trade restrictions in the name of national security, trading partners were hesitant to file disputes in which that was the likely defense, and countries were hesitant to invoke the defense if challenged. These three hesitations arose out of recognition that the WTO would be put in a lose-lose position if forced to rule on any country's national security defense. Striking down the measure would jeopardize the legitimacy of the WTO from one side—the WTO would be accused of threatening a member country's sovereignty. But upholding the measure meant attacks from the other side—countries would be free to invoke the defense over seemingly anything, rendering meaningless even the most basic WTO rules.[60]

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Unrelated to national security, countries have made some WTO challenges to the beggar-thy-neighbor effects of trading partners' export restrictions. China has faced the most disputes, in part because it has taken on the most commitments over limiting its export restrictions. Japan, the United States, and the European Union, for example, felt the brunt of China's export restraints on rare earth elements and brought a dispute in 2012. At the time, China provided 97 percent of the world's supply of elements of critical importance for both renewable energies and the defense industry.[61] But countries have been concerned about the negative impact on their industries of other Chinese export restrictions, including some on raw materials and primary aluminum. By

57 See *Japan – Measures Related to the Exportation of Products and Technology to Korea*, WT/DS590/3, September 30, 2019.

58 See *Russia – Measures Concerning Traffic in Transit - Report of the Panel*, WT/DS512/R, May 4, 2019.

59 See, for example, *United States – Certain Measures on Steel and Aluminium Products – Request for consultations by the European Union*, WT/DS548/1, June 6, 2018.

60 Pinchis-Paulsen (2020) notes these and related concerns that came up during the original GATT negotiations in the 1940s that resulted in Article XXI.

61 See Morrison and Tang (2012) as well as Bond and Trachtman (2016) for a discussion of the WTO dispute.

limiting exports strategically, Beijing was providing unfair advantages to Chinese manufacturing—which relied on inputs made cheap locally because of the restrictions—that caused harm to foreign competitors.[62]

Because most other WTO members have fewer legal obligations, there was less constraint on their use of export restrictions and thus there were fewer disputes. Nevertheless, some cases have arisen. In the late 1990s, out of concern for its manufacturers of footwear, automotive seating, and other leather-consuming industries, the European Union challenged Argentina, Pakistan, and India for their limits on cowhide and leather exports.[63]

In a few instances, disputes arose when countries were too aggressive at countering the beggar-thy-neighbor effects of the export restrictions unilaterally. Consider Indonesia's export tax for palm oil and Argentina's export tax for soybeans.[64] The economic effect was that each country provided an implicit subsidy to its downstream biodiesel industry, which the European Union targeted with countervailing and antidumping duties. Indonesia and Argentina challenged the EU trade remedies targeting the export restrictions, but the restrictions went unaddressed in Geneva.

All told, the relatively limited frequency of trade disputes over export controls, export-restricting policies, and invocations of the national security justification could change. Certainly a US policy decision to impose additional export controls for dual-use technologies would likely bump up against other US commitments in international agreements, including those at the WTO, and lead to more of such frictions. Given the extreme political sensitivity of such cases and those who would point to this as an erosion of national sovereignty, the multilateral trading system may need to contemplate new means of resolving such frictions.

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CONCLUSION

Much of 2017–20 found the Trump administration debating and then imposing tariffs under the justification that imports, as well as China itself, posed a threat to America's national security. Somewhat less public was a concomitant, but perhaps more politically bipartisan, potential shift of US *export* policy. Though the exact direction of US export control policy remains uncertain, farther-reaching government restrictions on foreign sales of American-made goods and services seem likely.

Exports pose a distinct national security threat than imports. And how to effectively restrain American exports presented a number of different policy challenges—domestically, in the Wassenaar Arrangement, and even at the WTO. Furthermore, any sudden policy shift would lead to both short- and long-run

62 See the WTO disputes *China – Raw Materials (DS394)* and *China – Raw Materials II* (DS508). According to OECD (2019a), China's downstream aluminum manufacturing has benefited from implicit subsidies resulting from its export restrictions on primary aluminum. Thus this would have also likely been an issue in the *China – Subsidies to Producers of Primary Aluminium* (DS519) that the Obama administration filed at the very end of its administration but that was not pursued by the Trump administration.

63 See *Argentina – Hides and Leather* (DS155), *Pakistan – Export Measures Affecting Hides and Skins* (DS107), and *India – Measures Affecting Export of Certain Commodities* (DS120).

64 For a discussion, see Fischer and Meyer (2020) as well as *EU – Biodiesel* (DS473) and *EU – Biodiesel (Indonesia)* (DS480).

costs for the US economy. In the interim, lingering policy uncertainty over future access to foreign markets may have crimped US investment in R&D and imposed separate costs of its own.

New conflicts between the United States and its allies also seemed likely to emerge in the struggle to align export controls, because of divergent commercial interests. Cooperation was hindered by increased international skepticism—fed by American abuse of the national security justification—that countries were acting without their national security actually being under threat. With the existing multilateral framework for adopting export controls the legacy of an earlier era, a result could be more trade frictions sent to the WTO—a multilateral institution both without much experience resolving these types of disputes and already under attack by the US administration.

As of the time of writing, US export policy was still a work in progress. Major unknowns included how America's own list-review regulatory process would evolve, as well as whether and how successful the United States would be at getting allies to adopt similar controls multilaterally. What is clear is that failure to strike the balance between protecting national security and minimizing negative commercial consequences would be costly for the US economy, ineffective at addressing national security risks, and problematic for trade and diplomatic relations.

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