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POLICY BRIEF

24-14 The Rise of US Economic Sanctions on China: Analysis of a New PIIE Dataset

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Apprehension over China's military and economic ambitions has led the United States to rely increasingly on financial sanctions and export controls on Chinese businesses, individuals, government-linked research institutes, and other entities of concern. The US goal is to influence Chinese behavior and protect national security while avoiding direct military confrontation and collateral damage to US and allied commercial and political interests. But the sheer complexity of sanctions and controls deployed by various arms of the US government makes it difficult to account for their magnitude or assess their effectiveness and cost.

This Policy Brief introduces a newly constructed dataset to help policymakers and the public understand and analyze this vitally important aspect of US statecraft vis-à-vis China. The research it presents identifies the sectors most affected by the expansion and outlines the commercial and governance challenges they create. The fully documented, searchable, and openly available dataset provides details on Chinese entities subject to US sanctions and export controls as of May 2024.[1] It is a particularly important time to assess past policy as the incoming second Trump administration considers its own sanctions approach.

The data show that the first administration of President Donald J. Trump added three times as many Chinese entities to export control and other sanctions lists than the previous four administrations had over the previous 16 years. The

1 The dataset is in Excel format and available for download on the PIIE website at https://www.piie.com/publications/policy-briefs/2024/rise-us-economic-sanctions-china-analysis-new-piie-dataset.

administration of President Joseph R. Biden Jr. added even more to these lists.[2] Thus, there has been more continuity than change over the past two administrations.

Sanction regimes have been established over many decades, with the broad purpose of countering rogue countries like North Korea and Iran, human rights violators like Cuba, and hostile players like Russia and Syria. This Policy Brief focuses exclusively on China. It describes US sanctions that target individuals, businesses, parts of the government, research institutes, and similar entities with the intent of cutting them off from US goods, technologies, financing, and even use of the US dollar in their transactions.

One challenge to analyzing the prevalence and magnitude of the sanctions is that they are carried out by different arms of the government—principally the Treasury, Commerce, State, and Defense Departments, overseen by the National Security Council at the White House. We examine the four main tools used by these parts of the government. Each has its own criteria and objectives, complicating efforts to assemble data on the expanding lists and make sense of the many different types of restrictions they entail.

The dataset encompasses four sanctions lists targeting specific Chinese entities:[3]

- **The Entity List:** Restrictions on exports or transfers of technology or data imposed on individuals and organizations deemed to threaten US national security or foreign policy interests. It is compiled by the Commerce Department's Bureau of Industry and Security (BIS) together with other agencies.
- **The Military End User List:** Restrictions on exports of certain categories of goods to buyers suspected of purchasing them for military end-use by China, Russia, or Venezuela. It is also compiled by the Commerce Department's BIS.
- **The Specially Designated Nationals and Blocked Persons List:** Ban on all forms of commerce with listed entities. Financial sanctions can include freezing of assets to named entities or any entity dealing with them. It is compiled by the Treasury Department's Office of Foreign Assets Control (OFAC).
- **The Non-SDN Military-Industrial Complex List:** Ban on US investment in firms that operate in or are exposed to defense or surveillance activities in China. It is enforced by OFAC.

2 US economic statecraft also shapes US import patterns. Trump-era trade war tariffs cover about two-thirds of Chinese goods exports to the United States. US imports from China are also affected by the levy of antidumping and countervailing duties and by the Uyghur Forced Labor Prevention Act, which bans all imports from the Chinese Autonomous Region of Xinjiang unless importers can prove that no forced labor was used in their production.

3 This dataset is up to date as of May 28, 2024, and available for download on the PIIE website at https://www.piie.com/publications/policy-briefs/2024/rise-us-economic-sanctions-china-analysis-new-piie-dataset. Kilcrease and Frazer (2023) provide a detailed count of sanctioned Chinese entities under various US authorities through December 2022, documenting similar patterns. Hume and Scarpino (2024) updated their count with data through August 2024. Goujon, Bouchaud, and Qi (2024) also confirm the pattern of increasing reliance on this form of economic statecraft, while speculating on possible changes to sanctions lists after the 2024 US presidential elections.

The dataset provides counts of sanctions listings, including both Chinese firms located on the mainland and at least some Chinese firms or subsidiaries located outside the country. Double-counting was corrected when relevant.

Use of sanctions expanded and the prioritization of China increased even before President Trump took office in 2017. The largest number of sanctions have targeted high-tech sectors, especially electronics; military and defense entities (including aviation, space, and aerospace); and emerging technology industries. They have been imposed in response to heightened concern about Chinese military modernization and human rights abuses in the Xinjiang Uyghur Autonomous Region. The sectors least targeted include consumer products, finance, services, agriculture, and raw materials.

The proliferation of these sanctions raises important challenges for transparency, oversight, administration, and governance. Difficult to quantify are their expected benefits, the potential costs to important US and allied business sectors, and the potential net benefits of alternative actions that might achieve similar results.

This Policy Brief's user-friendly dataset of listed Chinese firms should spur new research about the design, extent, impact, and effectiveness of economic sanctions and export controls. The complex array of sanctions leaves unclear who makes the ultimate decisions to impose them or how decision makers arrived at their determinations. Every Chinese entity added to these lists poses questions about the balance between state and private interests, as sanctions also affect US companies whose technological leadership is key to future US influence over global supply chains.

The US government has not developed a rigorous framework for assessing the tradeoffs between the costs and benefits of trade restrictions. Congress should push the Executive Branch to build out the expertise, methods, data, and technology needed to analyze these tradeoffs and grant the resources they need to do so. In some cases, the costs could be high and the effects weak, potentially putting businesses and sectors vital to US competitiveness at a competitive disadvantage while having little effect on China's ability to achieve its ambitions. Analysis of cost and effectiveness could also help convince often skeptical allies that going along with US restrictions may be worth the cost to them as well.

Washington also needs to weigh the risks of using its financial sector's clout and the use of the dollar to penalize countries doing business with China. Such actions may encourage countries to set up alternative payment and financing systems or turn to the black market. In short, the United States and its allies must work together to ensure that penalties are weighed against the significance of the threat they are intended to address.

SANCTIONS PROGRAMS TARGETING SPECIFIC ENTITIES

Economic sanctions have been imposed against adversaries since antiquity (Hufbauer, Schott, and Elliott 2009). At the start of the Cold War, the US Export Control Act of 1949 set a modern precedent by restricting the export of strategic materials and equipment to the Soviet Union and other Communist countries. In 1949, the United States and its allies established the Coordinating Committee for Multilateral Export Controls (CoCom) to restrict the flow of nuclear technology, weapons, and a wide variety of "dual use" goods (goods with both military

and civilian uses) to the Warsaw Pact countries and China. It was succeeded in 1996 by the Wassenaar Arrangement, whose members (which include Russia) coordinate to create lists of technology and goods to control but leave decisions about which exports to approve with each national government.

The United States has used export controls and financial sanctions to a much greater extent than other countries, in pursuit of a variety of security and foreign policy interests.[4] Export controls can be imposed on an entire country or a type of use (civilian or military) or on specific firms, institutes, and universities. They limit the sale of goods and services or the transfer of specific technology from the United States or, in some cases, by US firms or persons as well as exports from other countries made with US technology.

Financial sanctions identify economic actors the United States seeks to influence, isolate, or put out of business. They bar countries or businesses from using the US financial system, effectively preventing any transaction that uses dollars. Financial sanctions have been applied to entire countries (such as North Korea) and to entities within a country. The United States identifies actors subject to financial sanctions unilaterally, albeit often in the context of diplomatic outreach to friends, allies, and even targeted actors.[5] Financial sanctions can be used to deprive their target of US goods for diversion to Iran or access to payments infrastructure that might be used to facilitate weapons trade with Russia. Sanctions and export controls are occasionally used in concert, to prohibit financial transactions with entities of concern and block access to proscribed goods, services, and technologies. A Chinese tech firm might defer working with China's military if it knows that doing so could land it on a list depriving it of US exports it needs for its larger consumer business. The reach of financial sanctions is so powerful that Chinese banks comply with US financial sanctions on Russia to avoid being sanctioned themselves.[6]

Table 1 illustrates the two types of sanctions lists we examine: export controls and financial sanctions. It provides an overview of the four main sanctions programs targeting specific Chinese entities today.

Export control regimes

Export control programs take many forms. Some apply to all Chinese entities, as exemplified by the US ban on sales of advanced semiconductors to any entity in China, imposed in October 2022 and extended to Chinese-controlled

4 Jeff Stein and Federica Cocco, "How Four US Presidents Unleashed Economic Warfare across the Globe," *Washington Post*, July 25, 2024.

5 The European Union and others rely more heavily on restrictions of sales of specific goods and technologies and the imposition of country-agnostic licensing requirements. The United States makes more frequent use of controls based on country, end-use (military or civilian), and specific end-user ("Public Comments of Kevin Wolf, Emily Kilcrease, and Jasper Helder Regarding Areas and Priorities for US and EU Export Control Cooperation under the US-EU Trade and Technology Council," January 14, 2022, https://www.akingump.com/a/web/da8PXpEZoaPekNsTPUmfmr/011422us-euttcwolfkilcreasehelderfinal.pdf).

6 Nate Ostiller, "Chinese Banks Reject about 80% of Russian Yuan Payments, Media Reports," *Kyiv Independent*, July 29, 2024, https://www.yahoo.com/news/chinese-banks-reject-80-russian-082131174.html?guccounter=1.

Table 1

Purpose and impact of selected export control programs limiting US trade

Export control program	Jurisdiction	Purpose and criteria	Impact
Entity List	Bureau of Industry and Security (BIS), Department of Commerce	Prohibit exports to entities engaged in "activities contrary to US national security and/or foreign policy interests" or entities that pose a risk of diverting US exports to prohibited uses or users.	Imposes specific licensing requirements on exports to entities listed, in addition to general license provisions. Applies only to listed entity.
Military End User (MEU) List	Bureau of Industry and Security (BIS), Department of Commerce	Restrict exports to buyers who are determined to be military end users in China, Russia, or Venezuela.	Imposes specific licensing requirements on exports to entities listed, in addition to general license provisions. Applies only to listed entity.
Specially Designated Nationals and Blocked Persons (SDN) List	Office of Foreign Asset Control (OFAC), Department of the Treasury	Block commerce with entities involved in proscribed activity, including narcotics trafficking, human rights abuses, nuclear proliferation, and aiding adversaries.	Financial sanctions can include freezing of assets in the US and blocking of financial transactions with listed firms. Secondary sanctions apply to firms that deal with sanctioned entities. Covers not just an entity but also its subsidiaries.
Non-SDN Military-Industrial Complex (CMIC) List	Office of Foreign Asset Control (OFAC), Department of the Treasury	Block US investment in firms that operate in the defense or surveillance sector of China.	Restricts US entities from investing in publicly traded securities of listed entities or funds with significant exposure to them. Applies only to listed entity.

entities outside China in 2023.[7] More often export controls block US sales to specific Chinese firms, institutes, and universities. These controls typically require an exporter to obtain permission from the US government before selling to a proscribed entity.

There are important differences in the limits placed on sales to named entities, even within the same export control program. A narrow set of controls are extraterritorial (that is, they apply to sales by foreign companies if they use certain American-made inputs, designs, or equipment in production). Other controls apply only to exports from the United States.

The most frequently used form of export control on China is the Entity List, administered by the Bureau of Industry and Security (BIS) of the Department of Commerce.[8] When it was created, in 1997, it focused on deterring the proliferation of goods related to weapons of mass destruction (WMD); after 2016, its scope expanded to cover companies, institutes, and universities engaged

7 "Commerce Imposes Significant New Controls on Advanced Semiconductors," Akin, October 24, 2023, https://www.akingump.com/en/insights/alerts/commerce-imposes-significant-new-controls-on-advanced-semiconductors.

8 The Entity List is one export control program among the group of entity lists.

in intellectual property theft, China's military modernization, human rights violations, and more.[9]

A US exporter wanting to sell to a Chinese buyer on the Entity List is subject to entity-specific licensing requirements, in addition to general constraints that may apply to the sale of those goods to China. The Entity List restriction applies only to the specific legal entity on the list, not to subsidiaries or related firms.[10] Large Chinese firms are often conglomerates with many subsidiaries; adding a single large firm can therefore require adding many entities to the list, to avoid leaving one of its subsidiaries legally able to buy goods the United States wants to control. New entities can also pop up in an attempt to circumvent controls.

A Chinese firm on the Entity List may be subject to a blanket ban on US-origin exports or cut off from specific inputs related to US concerns. An example of a targeted ban is the one imposed on China's leading semiconductor producer, the Semiconductor Manufacturing International Corporation (SMIC). The company was added to the Entity List in 2020 because of its alleged links to China's military-industrial complex. US exporters must obtain licenses for any shipment of US origin to SMIC. Equipment for advanced (10 nanometer or below) semiconductors faces a presumption that it will be denied a license; equipment for making less advanced semiconductors may be approved case by case. This flexibility allows the BIS to determine whether denying a license to sell the good would uselessly deprive a US firm of revenue without any effect on Chinese capabilities (as is the case when the good is freely available from non-US sources). Even when licenses for export are approved, however, the cost and delay they involve can be substantial.

The US government has leveraged its position in supply chains to internationalize some unilaterally imposed export controls (Bown 2020). Starting in 2020, it tightened controls on the Chinese telecommunications giant Huawei, which it accused of diverting US-origin goods to Iran (McCarthy et al. 2022).[11] To do so, it invoked the "Foreign Direct Product Rule" (FDPR), which applies US export controls to foreign exports that are made with key US technology like blueprints or semiconductor manufacturing equipment. While this started with Huawei only, the Commerce Department created new FDPRs in 2022 and 2023 to limit the ability of any Chinese entity to obtain the most advanced chips for

9 See the following sites from the BIS: "Entity List FAQs," https://www.bis.doc.gov/index.php/cbc-faqs/faq/281-1-what-is-the-entity-list#faq_282; "Export Control Officer Program," https://www.bis.doc.gov/index.php/enforcement/oea/eco; "Six Years of Enhancing Scrutiny & Expanding Controls: BIS Licensing Policy toward the People's Republic of China (2018–2023)," https://www.bis.gov/sites/default/files/files/7.2.2024_BIS%20SUMMARY%20DOCUMENT%20FINAL.pdf; and "End-Use and End-User Based Export Controls, Including US Persons Activities Controls: Military and Intelligence End Uses and End Users," https://www.federalregister.gov/documents/2024/07/29/2024-16496/end-use-and-end-user-based-export-controls-including-us-persons-activities-controls-military-and.

10 US Bureau of Industry and Security, Department Commerce, "Deemed Exports FAQs: Do the License Requirements and Policies of the Entity List Apply to Separately Incorporated Subsidiaries, Partially Owned Subsidiaries, or Sister Companies of a Listed Entity," https://www.bis.doc.gov/index.php/policy-guidance/deemed-exports/deemed-exports-faqs/faq/134-do-the-license-requirements-and-policies-of-the-entity-list-apply-to-separately-incorporated-subsidiaries-partially-owned-subsidiaries-or-sister-companies-of-a-listed-entity.

11 Extraterritorial export controls were added for some entities on the Entity List using authority under the Export Control Reform Act of 2018. See https://www.federalregister.gov/documents/2020/05/19/2020-10856/export-administration-regulations-amendments-to-general-prohibition-three-foreign-produced-direct.

training and running artificial intelligence. There is also an additional FDPR to apply extraterritorial controls to a subset of entities on the Entity List with what is called a "footnote 4" designation.

The Military End User (MEU) List was created by the BIS in 2020. It targets US exports subject to an "unacceptable risk of use in or diversion to a 'military end use' or 'military end user' in China, Russia, or Venezuela."[12] The purpose of the MEU is to ensure that the militaries of these three countries cannot gain access to sensitive US goods and technology through civilian supply chains. The United States has long constrained exports destined for military end-use; the MEU provides a clear, though nonexhaustive, list of firms to which these rules apply.

Financial sanctions

The Specially Designated Nationals and Blocked Persons (SDN) List is the primary tool for financial sanctions, administered by the US Treasury's Office of Foreign Assets Control. The primary purpose of the SDN List is to advance national security and foreign policy objectives by isolating named individuals and entities from the US financial system and potentially freezing their US assets. SDN listing blocks US persons or entities from undertaking financial transactions with listed entities; even entities outside the United States often comply. The SDN List is powerful because banks and firms with significant exposure to US dollar business break all ties with entities on the SDN List to avoid being listed themselves as sanctions busters and thus isolated from the global financial system. For this reason, SDN sanctions have far wider reach and scope than export controls. Moreover, unlike the Entity List, SDN restrictions apply to all majority-owned subsidiaries of a sanctioned entity. A single SDN listing may thus implicate dozens or hundreds of entities.

The fourth major sanction program applied to Chinese entities is the Non-SDN Chinese Military-Industrial Complex (CMIC) List, administered by OFAC, which determines which entities are placed on the list. The CMIC List was created by executive order in 2020 to limit US investment in firms that "operate or have operated in the defense and related materiel sector or the surveillance technology sector" of China.[13] Like the Entity List, it applies prohibitions to specific entities only; parents and subsidiaries of listed entities must be listed individually. Exporters may face a reputational cost to supplying firms on the list, but inclusion on the CMIC List does not limit a Chinese firm's ability to buy US goods or technology.

The SDN List is the most powerful of the four sanctions programs described in this Policy Brief, but the Entity List is the most relevant for US exporters. The SDN List has the broadest extraterritorial reach, because of the nearly universal dominance of the US dollar in international commerce; it is used when

12 Federal Register, "Addition of 'Military End User' (MEU) List to the Export Administration Regulations and Addition of Entities to the MEU List," https://www.federalregister.gov/documents/2020/12/23/2020-28052/addition-of-military-end-user-meu-list-to-the-export-administration-regulations-and-addition-of.

13 White House, *Executive Order on Addressing the Threat from Securities Investments that Finance Certain Companies of the People's Republic of China* (Executive Order No. 14032), Washington, https://www.whitehouse.gov/briefing-room/presidential-actions/2021/06/03/executive-order-on-addressing-the-threat-from-securities-investments-that-finance-certain-companies-of-the-peoples-republic-of-china/.

international isolation of the targeted entity is the desired result. Although some Chinese companies do appear on the SDN List, this sanction has been used sparingly against major Chinese entities, in order to limit unintended consequences, such as creating frictions with allied countries that wish to transact with listed companies. Although the Entity List carries less serious consequences than the SDN List, the bar for its listing is lower. The Entity List includes major foreign technology businesses with which US companies previously transacted and, in the absence of controls, would likely continue to do business.

DESCRIPTION OF THE DATASET

We aggregated data on export control programs from US government websites to create a unified set of lists available for downloading. The dataset is current as of May 28, 2024.[14] The listings are faithful to the original sources in providing the names of listed entities.

The dataset includes the following features:

- the number of Chinese entities included in all four of the programs studied, including entities located on and some outside the mainland;
- the number of Chinese listings by program and date of listing;
- for Chinese entities on the SDN List, the program under which each is sanctioned; and
- the main business activities of each entity and the number of times sanctions under the four export control programs are applied to business activity in each of 19 sectors.

Our dataset allows for a description of the evolution over time in the use of these programs and the sectoral composition of their targets. (The appendix provides details on how the dataset was constructed.)

Coming up with an exact count of the number of sanctioned entities is complicated by the convoluted organizational structure of Chinese corporations, whether subsidiaries are counted as separate entities, and how well the researcher identifies aliases. Our dataset reflects efforts to include all unique entities subject to these control programs.[15]

Listings by presidential administration and industry

By our count, starting with President George W. Bush's first term (2001–05), 905 Chinese entities have been added on net to the Entity List, 70 to the MEU List, 611 to the SDN List, and 68 to the CMIC List. There is surprisingly little overlap across most of these designations. The CMIC List and the Entity List have the most overlap: 26 of the 68 CMIC–listed firms have a parent company

14 The dataset is a research tool, not a compliance tool; any US exporter or financial institution must conduct its own due diligence to ensure compliance with relevant US laws and regulations.

15 The lists presented in the dataset and analysis include only current listings as of May 28, 2024, and do not reflect entities that have been removed. Delistings are rare, however; we record Entity List delistings since 2011 and MEU List delistings on a separate sheet in each list's Excel file in the dataset.

that appears on the Entity List, probably because of these lists' shared focus on limiting China's military modernization. Together these two tools limit both investments in and exports to those firms. By contrast, entities on the SDN List are typically not also on the Entity List. Inclusion on the Entity List would be duplicative of inclusion on the SDN List, because an SDN designation precludes US exports to that entity. Only 3 parent companies of the 70 firms on the MEU list are also on the Entity List.

Comparing the number of distinct units on the Entity List with the number on other lists is not a straightforward exercise. Subsidiaries are added individually to the Entity List, unlike the SDN List, which requires only one listing for all subsidiaries to be covered. Huawei is the most targeted company on the Entity List: We count 67 listings under Huawei on the Chinese mainland, 7 in Hong Kong, and 75 in other countries, a total 149 listings for a single firm. Huawei is one of 70 groups of companies with at least two related entities on the export control Entity List. When all such related companies are counted under their parents, there are only 525 distinct firms on the list.[16] It thus appears that fewer parent groups are targeted under the Entity List than the SDN, despite the former's larger headline number.

For our analysis of listings by presidential term and industry, we use the total number of additions to the lists rather than a consolidated count; we flag the need to account for related parties in some analyses. This choice reflects our focus on the impact of entity listings on American companies. In terms of its impact on US firms selling to China, adding to the Entity List a large parent group like Huawei—which previously spent billions of dollars annually on US goods and technology licensing—is many times more consequential than adding a small-time individual arms smuggler to the SDN List. Counting a large firm's numerous subsidiaries individually can thus serve as a useful if imperfect proxy for its size and economic heft.

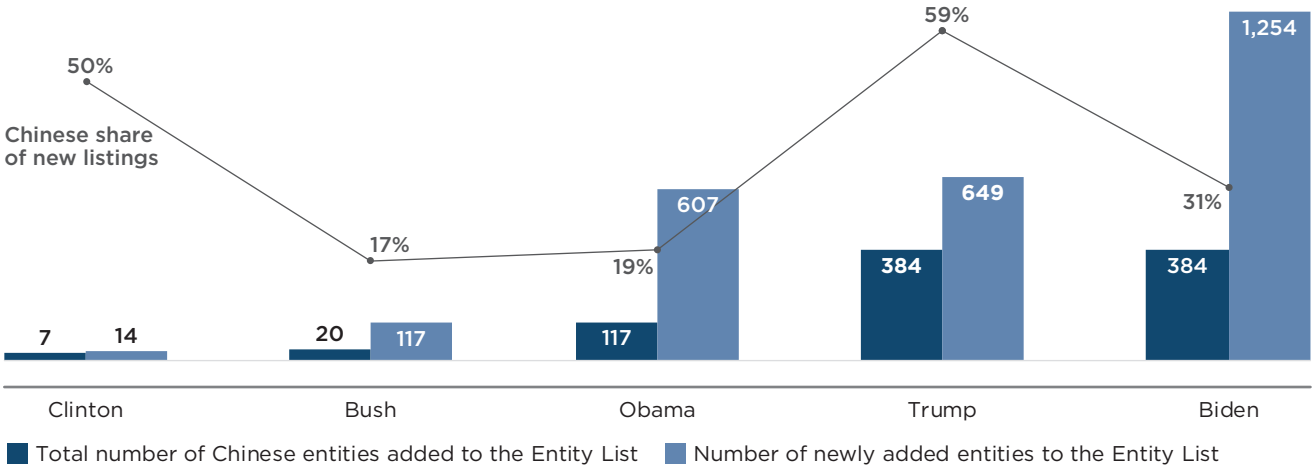
Figure 1 shows the number of new additions of Chinese entities to the export control Entity List under every president since Bill Clinton. It shows that reliance on the Entity List as a tool of US foreign policy and defense vis-à-vis China increased over the past decade and is not merely a feature of one administration.

Expansion of the Entity List began under President George W. Bush, who added 117 entities of all nationalities to the list, more than eight times as many as President Clinton; 17 percent were Chinese. President Barack H. Obama added 607 entities to the list—five times more than Bush during his eight years as president; 19 percent were Chinese.

The pattern shifts substantially under President Trump, under whom the Entity List targeted primarily Chinese entities (59 percent of the total). President Trump not only added many more entities than President Obama (by our count 649 new listings); he also did so at a much faster pace, as the additions took place over just four rather than eight years. The Biden administration added 1,254 new listings through May 28, 2024, nearly twice as many as the Trump administration did. Presidents Biden and Trump added the same number of

16 The total number of distinct parent groups, 525, is nearly 42 percent less than the total number, 912, of separate entries (which includes both parents and subsidiaries and affiliates) on the Entity List.

Figure 1
Number of entities added to the Entity List and Chinese share of new listings, by presidential term



Source: Authors' calculations based on listings from the US International Trade Administration, US Department of Commerce.

Chinese firms (384) to the Entity List. The Biden administration's increase in the overall number of listings was driven by Russia's invasion of Ukraine, which led to the addition of many Russian entities.

Use of the SDN List to restrict commerce with China also increased over time. President George W. Bush added 16 Chinese entities to the SDN List; President Obama added 42. Figure 2 illustrates the programs under which Chinese firms were added to SDN Lists. They correspond to the type of security or other threat underpinning the listing, from fentanyl smuggling to sanctions targeting entities aiding Syria or Iran. The Obama administration rarely used the SDN List, although it added four times as many Chinese entities to the list in his second term as it did in his first, mainly under programs targeting Iran and the proliferation of weapons of mass destruction. This pattern reflects increased frictions and frustrations with China well before Trump's trade war, although none of the SDN Listings under Obama was related to economic issues.

As with the Entity List, there was a pronounced change in the use of the SDN List under Trump. The Trump administration added more than five times as many entities to the list as the Obama administration and in half the time (236 added by Trump in four years, 42 under Obama in eight). Most of these designations were for Iran, North Korea, and WMD proliferation, but the Trump administration also expanded programs addressing human rights violations, cybercrime, election interference, Hong Kong, and narcotics trafficking.[17]

President Biden added even more Chinese entities (317) to the SDN List than his predecessors did, over 70 percent of which were related to Iran, Russia, or WMD proliferation. His administration also targeted entities engaged in the flow of fentanyl and its precursors from China to the United States.

17 Sanctions on Hong Kong were imposed in response to China's erosion of its "one country, two systems" policy.

Figure 2

Frequency of Specially Designated Nationals and Blocked Persons (SDN) List designations targeting China, by presidential term and program

	Belarus	Russia	Cyber crime	North Korea	Election interference	Human rights	Hong Kong	Iran
Bush 1st term	0	0	0	0	0	0	0	0
Bush 2nd	0	0	0	0	0	0	0	2
Obama 1st	0	0	0	1	0	0	0	5
Obama 2nd	0	0	0	2	0	0	0	11
Trump	0	1	8	75	6	10	25	87
Biden	1	74	5	20	0	19	18	101

	Iraq	Weapons of mass destruction	Terrorism	Narcotics	Syria	Transnational crime	Ukraine	Venezuela
Bush 1st term	0	0	2	0	0	0	0	0
Bush 2nd	0	2	0	11	0	0	0	0
Obama 1st	0	3	1	0	1	0	0	0
Obama 2nd	0	21	7	4	2	0	0	0
Trump	1	33	6	16	0	5	6	2
Biden	0	57	27	49	0	1	1	0

Intensity of sanctions

110 88 66 44 22 0

Note: An entity may be sanctioned under multiple program designations. The total number of designations shown thus exceeds the number of entities on the SDN List.

Source: Authors' calculations based on listings from the Office of Foreign Assets Control (OFAC), US Department of the Treasury.

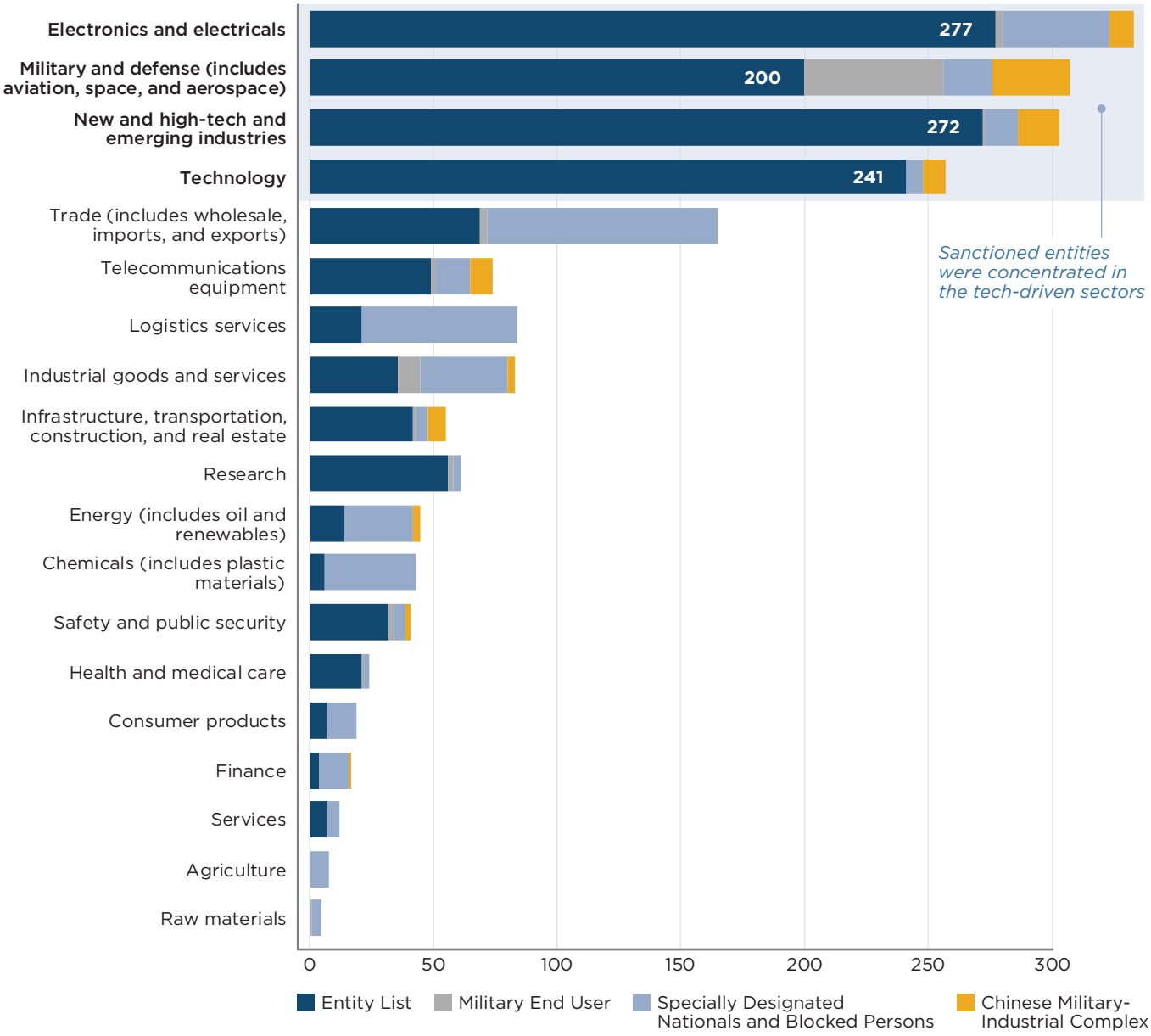
The CMIC List focuses only on Chinese firms. Presidents Trump and Biden added similar numbers of entities (44 and 39, respectively) to that list. The MEU List was created and expanded under Trump.

Rationale for sectors targeted

Figure 3 shows the number of Chinese entities on each of the four lists by sector. (For the classification scheme used to sort activities into sectors, see table A.1 in the appendix.) It reveals the concentration of sanctioned entities in technology-driven sectors. Enterprises engaged in electronics and electrical components account for a larger share of sanctioned entities than do enterprises whose primary commerce is in defense-related aviation, aerospace, and space activity,

Figure 3

Number of Chinese entities sanctioned by the United States, by sector and list



Note: Data are as of May 28, 2024. The total number of entities across all sectors exceeds the total number of listed entities, because some entities are categorized under multiple sectors. Appendix table A.1 identifies the industries included within each sector.

Source: Authors' calculations based on listings from Office of Foreign Assets Control (Specially Designated Nationals and Blocked Persons and Chinese Military-Industrial Complex Lists), and US International Trade Administration (Entity and Military End User Lists) as of May 28, 2024.

the second-most frequently sanctioned sector. The sector with the third-most numerous group of entities is emerging technologies, which includes firms engaged in artificial intelligence, semiconductors, and quantum computing.

The distribution across sectors reflects the large number of names on the Entity List (in part because of its inclusion of parent and subsidiaries separately). Their distinct nature is reflected in the distribution of targeted sectors within

each program. Technology companies and institutes make up a large share of the firms on the Entity List. The Entity List is about equally divided between electronics and electrical components, high-tech and emerging industry, and information technology companies (table 2). Military and defense companies comprise the largest share of the CMIC and MEU Lists, in keeping with their focus on the military-industrial complex.

The blanket sanctions of the SDN List fall on a very different subset of firms and individuals, mostly (a) firms facilitating the movement of goods and services, including wholesale trade and logistics services acting as front companies diverting US goods to Iran and North Korea and (b) firms selling fentanyl and its precursors. The Golden Warrior Shipping Company was listed for allegedly "providing logistical support for the Iranian oil trade."[18] Hanhong Pharmaceutical was added for allegedly selling large amounts of fentanyl precursor chemicals to drug traffickers in the United States and Mexico.[19] The SDN List does not appear to include any large Chinese company with a focus on consumer technologies.[20]

The prevalence of technology firms on the Entity List reflects two factors driving the recent use of economic sanctions. First, sanctions have become a more common response to a relatively new set of foreign behaviors that are assisted by Chinese technology firms and that the United States views as problematic or threatening, many of them involving specific frictions with China in an expanding variety of domains.[21] For example, China's actions in Xinjiang, the northwestern region inhabited by millions of Uyghurs, have led to sanctions on enabling technology firms on the grounds of human rights violations. Other technology entities have been sanctioned because of Chinese military activity, as China has aggressively pushed its claims and built military installations in the South China Sea and ramped up military exercises around Taiwan. Chinese entities have also been listed for aiding Russia's war machine in Ukraine with dual use technology.

Second, US concerns that Chinese advances in civilian technology pose a security threat to the United States have risen. They reflect not only the blurring line between civilian technology and technology that poses security concerns but also China's heightened global role in advanced technology supply chains. China's Civil-Military Fusion strategy, which the State Department says is aimed at "elimination of barriers between China's civilian research and commercial sectors, and its military and defense industrial sectors," raises concerns that US technology imported by Chinese firms nominally engaged in civilian sales could be diverted to military modernization (US Department of State 2020). In the past, it may have been possible to differentiate special "radiation-hardened" semiconductors used in satellites, for example; today's advanced chips can be just as useful for modeling WMD and hypersonic missiles as they are at training a chatbot or a recommendation algorithm for movies. As a result, recent

18 See https://www.state.gov/designation-of-entities-supporting-trade-of-iranian-petroleum-and-petrochemical-products/.

19 See https://home.treasury.gov/news/press-releases/jy1779.

20 "Consumer technologies" include sectors such as electronics, telecommunications, and certain consumer-facing cloud computing and artificial intelligence services.

21 The rapid rise in entity listings is not unique to China; from Obama's presidency to the end of our dataset, 38 percent of the entities on the list are Chinese.

Table 2
Sectors of sanctioned Chinese entities, by list

Industrial sector	Sector share of entities (percent)
Specially Designated Nationals and Blocked Persons (SDN) List	
Trade (includes wholesale, imports, and exports)	15.2
Logistics services	10.3
Electronics and electricals	7.0
Chemicals (includes plastic materials)	6.1
Industrial goods and services	5.7
Non-SDN Military-Industrial Complex (CMIC) List	
Military and defense (includes aviation, space, and aerospace)	45.6
New and high-tech and emerging industries	25.0
Electronics and electricals	14.7
Telecommunications equipment	13.2
Technology	13.2
Entity List	
Electronics and electricals	30.4
New and high-tech and emerging industries	29.8
Technology	26.4
Military and defense (includes aviation, space, and aerospace)	21.9
Trade (includes wholesale, imports, and exports)	7.6
Military End User (MEU) List	
Military and defense (includes aviation, space, and aerospace)	80.0
Industrial goods and services	12.9
Electronics and electricals	4.3
Trade (includes wholesale, imports, and exports)	4.3
Telecommunications equipment	2.9

Note: An entity can be categorized into multiple sectors.
Source: Authors' calculations.

administrations have been willing to subject the civilian economy to the potential economic losses deemed necessary to restrain China in these areas. The United States typically imposes sanctions in these domains unilaterally, especially when it comes to additions of specific Chinese names to the Entity List. A major challenge is the lack of consensus by the United States and its allies and partners about the advisability of using these tools on China.[22]

The latest SDN List reflects mounting concerns about Russian entities. The United States has been more willing to use this tool against Russia than China for multiple reasons. First, despite tensions and militarized islands in the South China Sea, unlike Russia with Ukraine, China has not gone so far as invading its neighbors. Secondly, the US and China are far more interconnected through complex financial and supply chain relationships than the US and Russia, and China's economy is far larger, meaning the unintended consequences and economic blowback of SDN listing major Chinese entities would be far larger than the costs of listing Russian entities has been.[23] Lists covering the broader use of sanctions, such as the Global Sanctions Data Base, show that the United States is not alone in using powerful economic sanctions against transnational threats, although it accounts for more than half of global sanctions (Syropoulos et al. 2022).

ADMINISTRATIVE AND GOVERNANCE CHALLENGES

The extraordinary reach and power of sanctions is illustrated by the case of Carrie Lam, the former chief executive of Hong Kong, who was sanctioned for undermining Hong Kong's autonomy. But the case also reflects the limits of sanctions to change behavior.

OFAC sanctioning of Lam reportedly completely cut her off from the banking system of the territory she was responsible for governing, forcing her to take her salary and pay for everything in cash.[24] Hong Kong's highly international banks complied because they could not risk being cut off from the US dollar. But Lam's successor (also sanctioned) has if anything taken an even tougher line on security and integration with Beijing than she did. Thus, although the US sanctions were effective at inconveniencing individuals, it is not clear that they did anything to improve human rights in Hong Kong.

Increased reliance on entity-specific sanctions heightens the need for inspection of how they are administered and governed. Administrative challenges focus on program management, including how the lists are created, updated, and coordinated across agencies, as well as enforcement. Governance issues address broader systemic issues related to program design and assessment and how national security objectives are weighed against their implications for private companies, the interests of allies and partners, and the net benefits of alternative actions.

22 Controls on semiconductor manufacturing equipment—imposed together with the Netherlands and Japan—are more an exception than the rule.

23 Rowan Scarpino, and Jocelyn Trainer, *Sanctions by the Numbers: 2023 Year in Review*, Center for a New American Security, June 27, 2024, https://www.cnas.org/publications/reports/sanctions-by-the-numbers-2023-year-in-review.

24 BBC, "Carrie Lam: Hong Kong's Leader Says She Has to Keep Piles of Cash at Home," November 28, 2020, https://www.bbc.com/news/world-asia-china-55113149.

Administrative challenges: Promoting transparency, ensuring accountability, and enhancing enforcement

The Entity List provides a case study of the difficulty of balancing competing interests while advancing national security goals and demands for transparency and accountability. The BIS must bring together policymaking and technical expertise to develop regulations, engage in outreach with the private sector and international partners, investigate violations of controls, and take enforcement action. Export controls are not its only mandate; it also administers requests for exclusions to Section 232 steel and aluminum tariffs, which number in the tens of thousands annually.[25] To accomplish these tasks, for fiscal year 2025, the BIS requested a total of $223 million to fund 611 positions.[26]

An evaluation of how BIS administers the Entity List is well beyond the scope of this brief. But it is important for the public to understand how BIS identifies potential targets, is accountable to the public, and engages in enforcement activity.

The process by which potential targets are brought forward for investigation is largely kept secret—necessarily so, because of its reliance on classified sources of information. The BIS chairs the End Use Review Committee (ERC), which is composed of representatives of the Departments of Commerce, State, Defense, Energy, and sometimes the Treasury. The ERC can add an entity to the Entity List if a majority of its members finds that the entity is "reasonably believed to be involved, or to pose a significant risk of being or becoming involved, in activities contrary to the national security or foreign policy interests of the United States."[27] The initial process of discovering and adding names to the Entity List thus draws on expertise from across the relevant agencies. The bar for listing is vague, but the growing sanctions lists suggest that the types of conduct by foreign entities meeting it has expanded. Occasionally, entities are removed from the list, but the barrier for removal is high, requiring a unanimous decision of ERC representatives. The authors' review of Federal Register notices from BIS in recent years, which includes both additions and removals from the entity list, found that only a handful of Chinese entities have been removed in recent years.

Especially for placement of large Chinese buyers on the Entity List, which is likely to have significant commercial repercussions for individual US and foreign companies, it is important to have a credible, independent process to ensure that the listing process cannot be weaponized by companies that hope, for example, to gain from getting their competitors entity listed or sanctioned, perhaps with little justification. Concerns about motivations arise in negotiations over companies based in other countries. Diplomatic efforts to convince other countries to follow suit with their own controls targeting these entities are more likely to bear fruit if foreign partners and firms find the process credibly based on national security.

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25 Section 232 exclusion requests are requests made by US parties to import specific products without paying tariffs imposed under Section 232 of the Trade Expansion Act.

26 *The Department of Commerce Budget in Brief Fiscal Year 2025*, https://www.commerce.gov/sites/default/files/2024-04/FY2025-Budget-in-Brief.pdf.

27 "Public Comments of Kevin Wolf, Emily Kilcrease, and Jasper Helder Regarding Areas and Priorities for US and EU Export Control Cooperation under the US-EU Trade and Technology Council," January 14, 2022, https://www.akingump.com/a/web/da8PXpEZoaPekNsTPUmfmr/011422us-euttcwolfkilcreasehelderfinal.pdf.

The process used for some listings lacks strong evidentiary standards. For example, when Xiaomi, a Chinese consumer technology company, challenged its listing as a military company in court, a US judge struck the listing down as "arbitrary and capricious" after finding that the "required rational connection—or any connection" between the evidence the Defense Department provided and its conclusion that Xiaomi should be designated as a Chinese military company was lacking.[28] Although the courts have been a check on the CMIC List's rigor, it is almost impossible to challenge entity listings in court. The Administrative Procedures Act (APA) allows parties affected by many government actions to challenge them in court if they are "arbitrary and capricious," as Xiaomi did, but the Entity List is exempt from the APA. Hence, even if a listed entity could prove that the listing had been capricious, courts could not overrule the listing (Pagano 2021).

Inevitably, the process is also affected by domestic political pressures, especially as legislators favor more vigorous efforts to disentangle the United States and China. Congress has issued multiple reports calling for tougher controls and stricter enforcement against China. Representative Michael T. McCaul (R-TX), chair of the House Foreign Affairs Committee, has criticized the BIS for approving too many exports to China. He helped write a report recommending blanket denial for all items on US control lists to any entity on the Entity List (McCaul 2023). Congress and BIS have not implemented this recommendation, which would have blocked $335 billion in exports that were approved to listed entities between 2018 and 2023.[29]

Reflecting these concerns, this year the House of Representatives passed H.R. 5613, the "Sanctions Lists Harmonization Act," which would establish an administrative review process to align six federal lists of foreign individuals and entities subject to US sanctions or export controls.[30] Under the proposed review process, when one federal agency adds an individual or entity to one of six lists, it would be required to notify officials who maintain the other five lists.[31] Within 90 days, those notified officials would determine whether the individual or entity meets the requirements to be added to their list. The bill would also require every affected agency to submit a report to Congress within one year of enactment certifying compliance with this process and listing all the instances in which

28 US Court for the District of Columbia, "Xiaomi Corporation v. Department of Defense," March 2021, https://cdn.vox-cdn.com/uploads/chorus_asset/file/22367849/xiaomi_v_us_dept_of_defense.pdf.

29 Department of Commerce, US Bureau of Industry and Security, "Six Years of Enhancing Scrutiny & Expanding Controls: BIS Licensing Policy Toward the People's Republic of China (2018–2023)," July 2024, https://www.bis.gov/sites/default/files/files/7.2.2024_BIS%20SUMMARY%20DOCUMENT%20FINAL.pdf.

30 H.R. 5613 passed the House of Representatives on September 9, 2024, and was introduced to the Senate as S. 5043 on September 12, 2024. The provisions of the bill provide for more discretion by the Executive than do those of H.R. 760, the Chinese Military and Surveillance Company Sanctions Act of 2023, which would have mandated full blocking sanctions on a host of Chinese companies, including Huawei and SMIC.

31 Our four lists plus the Department of Defense's (DoD) list maintained and published under 1260H of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 and the Sectoral Sanctions List of the Office of Foreign Assets Control of the Department of the Treasury. The former initially had no legal ramifications but will restrict DoD procurement from named entities, and the latter is focused on Russia.

notifications under the bill resulted in the inclusion of additional individuals or entities on the specified lists.

Financial sanctions pose similar political challenges. The Treasury Department's OFAC manages the programs, but it is not always up to it to determine who is listed. For example, Congress designated the Department of State as the lead in determining whom to sanction under the Hong Kong Autonomy Act. OFAC listings can be challenged directly by the SDN–listed party and sometimes removed, with a settlement negotiated between the party and OFAC. Courts still generally defer on national security measures like sanctions, but they can reverse listings on the SDN if the evidence underlying a listing is too weak (Chachko 2020).

US government enforcement budgets are being stretched to the limit by these problems, making controls more difficult to enforce. The Commerce BIS' core export control budget has declined in real terms over the past few years while its workload has increased, driven by the steep rise in exports that require a license, increasingly complex rules, and well-resourced workaround attempts by Russia and China (Allen, Benson, and Reinsch 2022).

For example, a key part of enforcement requires an export control officer based outside the United States to visit the ultimate destination for a sensitive licensed US export to ensure that it is being used at the location and for the purpose described in the approved license application, not, for example, diverted to a military facility. But the United States has only around 10 export control officers, 3 of them in China (including 1 in Hong Kong), to handle the increasing volume of these "end-use checks" for exports of sensitive goods.[32] From 2018 to 2023, BIS reviewed nearly 4,000 license applications for exports to entity-listed Chinese firms, rejecting 1,293, worth $545 billion.[33]

Given these enforcement realities, export controls often rely on firms voluntarily reporting violations. In some cases, companies have an incentive to disclose violations they suspect may be discovered later, in the hope that cooperation will reduce the penalties imposed. One way violations are exposed is by competitors reporting them. Competitors are often in a good position to find out who is making which sales in their industry; if a firm's lawyers believe a certain sale violates export controls, they have a strong incentive to get a rival in trouble rather than letting it benefit from the sale. Senate staff investigators may have been tipped off in this way that Seagate was shipping hard drives to Huawei in violation of export controls. The BIS imposed a record $300 million fine on Seagate in 2023—twice their estimated profits from the transactions.[34]

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32 US Bureau of Industry and Security, Department of Commerce, "Export Control Officer Program," 2024, https://www.bis.doc.gov/index.php/enforcement/oea/eco.

33 US Bureau of Industry and Security, Department of Commerce, "Six Years of Enhancing Scrutiny & Expanding Controls: BIS Licensing Policy Toward the People's Republic of China (2018–2023)," July 2024, https://www.bis.gov/sites/default/files/files/7.2.2024_BIS%20SUMMARY%20DOCUMENT%20FINAL.pdf.

34 US Bureau of Industry and Security, Department of Commerce, "Bis Imposes $300 Million Penalty Against Seagate Technology LLC Related to Shipments to Huawei," April 19, 2023, https://www.bis.doc.gov/index.php/documents/about-bis/newsroom/press-releases/3264-2023-04-19-bis-press-release-seagate-settlement/file; US Senate Committee on Commerce, Science, and Transportation, *Huawei's Access to Hard Disk Drives in America: An Investigation into Seagate Technology*, October 2021, https://www.commerce.senate.gov/services/files/2C03C95D-6D36-49FA-8066-52DD1A98A1FE.

Enforcement of controls does not rely only on the BIS. The Department of Justice can criminally investigate sanctions and export control violations. The United States also relies on cooperation from other countries to investigate export control violations involving goods made in those countries with US technology or transshipped through third countries to destinations like Russia and China in order to evade controls.

The United States must balance the pace of adding new export controls with commensurate increases in enforcement capacity. If it does not, workarounds will defang controls as both a deterrent and a punishment, while empowering and enriching smugglers and other criminal networks that are able to help sanctioned entities obtain banned technology.

Governance challenges: Weighing sanctions against alternative objectives

Preventing certain Chinese behaviors is an overriding objective for economic sanctions and export controls. But there is considerable uncertainty about their effectiveness compared with other actions that may be taken to enhance US interests. Greater reliance on unilateral sanctions and export controls may erode two other objectives that are also relevant to American power and position: protecting American and allied firms' ability to maintain technological dominance and reducing conflict and enhancing coordination with friends and allies.

This dilemma was articulated in a 2023 speech at the Brookings Institution by National Security Advisor Jake Sullivan, who embraced the view that the United States must remain ahead of its adversaries in technological discovery and deployment.[35] This mandate poses difficult tradeoffs for policymakers, who do not want to harm the ability of American companies to remain at the technological forefront.

American firms earn revenue through sales to Chinese customers. Export controls reduce these earnings if US firms are not able to find alternative buyers. Such costs should not be viewed as only a private loss for companies, however: Sales revenue is the most important source of funding for research and development (R&D) by US technology companies. According to the EU Industrial R&D Investment Scoreboard,[36] the share of revenue American information technology companies devote to R&D is among the highest of all industrial sectors, with Chinese companies in second place. As US sanctions limit the foreign sales of US technology companies, their effect on the R&D expenditures needed to maintain technology leadership must be recognized.

Determining the innovation cost of export controls is difficult. Measuring sales lost is tricky, because it is challenging to create a counterfactual (what would sales have been in the absence of controls and over what time horizon?). A staff report from the Federal Reserve Bank of New York (Crosignani et al. 2024) suggests that commercial losses from export controls may be substantial and that more attention should be paid to their effect on firm finances. The report

35 White House, "Remarks by National Security Advisor Jake Sullivan on Renewing American Economic Leadership at the Brookings Institution," April 27, 2023, https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/04/27/remarks-by-national-security-advisor-jake-sullivan-on-renewing-american-economic-leadership-at-the-brookings-institution/.

36 *The 2023 EU Industrial R&D Investment Scoreboard*, December 14, 2023, https://iri.jrc.ec.europa.eu/scoreboard/2023-eu-industrial-rd-investment-scoreboard.

is rare in that it empirically investigates the financial impact on US companies of export controls placed on Chinese entities. It estimates that the addition of Chinese customers to the Entity List, the MEU List, and a third list not discussed in this Policy Brief (the Unverified List) eliminated $130 billion in market capitalization.[37] It also finds that US firms cut off from past Chinese customers by control lists do not "onshore" or "friendshore" by forming new supply relationships with companies in the United States or allied countries that would mitigate the impact to their bottom lines.

A survey of US firms in China finds that between 2020 and 2023, restrictions like export controls, sanctions, and investment screening rose from the 20th ranked challenge to the 3rd most important (US-China Business Council 2023). In addition to sales lost to sanctioned firms, 45 percent of US firms in the survey reported having lost customers in China because of uncertainty of continued supply—a sizable increase from 2018, in the middle of the trade war with China, when only 13 percent reported such losses. In a world focused on supply chain resilience, even Chinese firms not on restrictive lists are shunning US suppliers, to avoid the risk that they will suddenly be cut off in the next round of listings because the criteria for listing are vague and many new Chinese entities are added every year. Lost US sales are often diverted to non-US and even Chinese companies, which may then devote more to their own R&D spending.[38]

Many factors dilute the effect of sanctions. For example, Chinese firms can often gain access to foreign noncontrolled substitutes for US goods and technology. They can innovate around controls with domestic production, reducing future US firm revenue even more. The effectiveness of sanctions also depends on the state of each US suppliers' market. While some firms like AI chip producers facing long order backlogs and supply constraints may easily find other buyers to replace some or all of sales limited by export controls, the New York Fed study suggests most firms under normal conditions of supply and demand are not able to replace these sales and thus lose the revenue. The US government and Congress need to conduct research on the potential tradeoff between Chinese access to technology and the United States' ability to maintain a technology lead.

US pressure to join its sanctions can exacerbate conflict with friends and partners, especially in Europe and East Asia (Japan, Korea, and Taiwan), increasing the need for international coordination. Placing a Chinese company, institute, or university on the US Entity List poses interesting strategic questions for exporters in third countries. Firms in third countries may gain advantages over US competitors by making sales their governments do not restrict, but they must grapple with the reputational risk of engaging with customers the United States has designated as "bad actors," a risk that is particularly salient

37 The Unverified List serves as a warning that if the United States is not able to perform end-use checks that verify whether exported goods are being used as reported, the firm will be added to the Entity List. The firm is removed if checks can be completed. It is thus much more fluid and less cumulative than the lists covered in our data analysis.

38 An additional complicating factor is that China has long aimed to increase self-sufficiency in key technologies; even in the absence of controls, therefore, Chinese policies may have limited sales to China in the longer run. Some controls, especially related to semiconductors, are designed to keep China from obtaining the tools it needs to become more self-sufficient and may thus preserve US firms' revenue that otherwise might have been lost.

when Chinese entities are sanctioned for human rights abuses. Some US listings impose extraterritorial restrictions, which limit sales of foreign exports produced with US inputs.[39] When such constraints are included in an individual listing, foreign exporters are unable to sell to the named Chinese customer under the threat of secondary US sanctions on their own activity. If they coordinate with the United States and impose similar controls, they lose revenue and risk retaliation from China.

Failure to coordinate with allies can undermine the sanctions efforts. Most economic sanctions and controls on Chinese entities begin as unilateral actions by the United States. Foreign governments, at least in private, may object to US actions as unwarranted or overreach. Even when they concur on the potential threat of continued commercial engagement with a newly named entity, many foreign governments, including in the European Union, do not have domestic authority to impose export controls on specific importing entities (though in the case of Russia, sanctions authorities in the European Union were able to impose export controls).[40] Failure to coordinate US actions with allies, or acting over their objections, may reduce their effectiveness, reduce partners' willingness to cooperate in other areas, and incentivize the creation of new networks for sanctions circumvention.

RECOMMENDATIONS FOR THE PRESIDENT AND CONGRESS

As it considers how to adapt the its approach to economic sanctions from that of the Biden administration, the incoming Trump administration and new Congress should start with a frank assessment of the current approach. Our recommendations include two ways to evaluate the tradeoffs of the current listings-based sanctions approach dataset that would allow the US government to better target controls where they are likely to be effective and cost-effective. We also recommend continuation of the current approach of separate lists that allows different sanctions to be targeted to the specific threat or US interest, proportional to the issue, and cognizant of unintended consequences of the strictest sanctions.

Develop an explicit framework for assessing the benefits and costs of new export controls

Controls and sanctions affect production levels, profits, innovation, and market leadership through many channels. As economic sanctions are used against targets outside the defense sector, such as consumer technology companies, their economic costs become more salient. They need to be weighed against noneconomic benefits in a more rigorous way. A first step is to develop a framework for such analysis that is comprehensive, impartial, and explicit about

39 Such restrictions have, for example, constrained the sales of chips produced by the Taiwan Semiconductor Manufacturing Corporation made with US technology to Huawei.

40 Kevin, Wolf, Emily Kilcrease, and Jasper Helder," Public Comments of Kevin Wolf, Emily Kilcrease, and Jasper Helder Regarding Areas and Priorities for US and EU Export Control Cooperation under the US-EU Trade and Technology Council," January 14, 2022, https://www.akingump.com/a/web/da8PXpEZoaPekNsTPUmfmr/011422us-euttcwolfkilcreasehelderfinal.pdf.

how a program balances uncertain national security outcomes with uncertain revenue loss, innovation, and costs for allies.

The criteria by which costs and benefits are weighed should be explicit, although they will differ across the sanctions' objectives and be influenced by events. Lost revenue may be deemed of little or no concern in decisions about sanctions that seek to isolate Chinese entities engaged in human rights abuses, based on the belief that profits obtained in this way are illegitimately earned. Conversely, losses to US firms of significant revenue may override controls that promise minor advances to national security.

To perform these analyses, the government needs expertise, data, and the technological capability to analyze them for both post-control evaluations of effectiveness and pre-control projections. The Treasury Department has recognized this need and is building out a unit to evaluate the effectiveness and costs of sanctions. In 2024, it asked Congress for $2.1 million for fiscal year 2025 to hire seven full-time staff with "technical excellence in financial market dynamics, balance sheet, and economic policy analysis, skills for which OFAC does not presently recruit" to perform "firm- and industry-specific analysis of potential collateral effects of proposed sanctions and identify issues that may be appropriate to mitigate," among other roles.[41] The BIS requested $4 million to add technical expertise; earlier in 2024 a bill was introduced in the House of Representatives that would add $25 million to improve BIS's IT systems for the next few years, to enable better analytics.[42] Funding each of these measures would help better inform economic sanctions policy. The BIS should also add economic expertise to allow it to perform a role similar to Treasury's new unit.

Recognize the market implications of export controls used to further nonmarket objectives

List-based economic sanctions are used to address a variety of noneconomic objectives. These actions change the incentives and legal environment for market actors inside and outside the United States. Their impact in both a security and economic sense depends on how firms adapt to these changes, which could include cutting China off but could also involve expanding productive capacity or R&D outside the United States, in order to avoid the compliance hassle of dealing with US companies.

The "weaponization" of US technologies, goods, or payment networks could diminish or amplify US power over time.[43] Constraints on US commerce could cede the field to competitors from third countries and/or intensify China's drive for self-reliance. China could pursue counterstrategies to offset the impact of US

41 US Department of the Treasury, Office of Terrorism and Financial Intelligence, *Congressional Budget Justification and Annual Performance Plan and Report FY 2025*, https://home.treasury.gov/system/files/266/06.-TFI-FY-2025-CJ.pdf.

42 "H.R.9247, BIS IT Modernization Act," https://www.congress.gov/bill/118th-congress/house-bill/9247/text.

43 Drezner (2021) defines the term *weaponized interdependence* as "a condition under which an actor can exploit its position in an embedded network to gain a bargaining advantage over others in a contained system." In an influential and timely analysis, Farrell and Newman (2019) argue that it is asymmetric network structures that create the potential for weaponized interdependence.

actions and/or challenge the status quo by amassing and weaponizing its own positions of power.

Another consideration in any evaluation of new controls should be their effect on black market activities and the advancement of underground networks used to evade sanctions. More extensive prohibitions on commercial endeavors increases the rewards for such activity and may increase illegal activity.

Maintain multiple sanctions lists to limit collateral damage

Each program has its own criteria for determining whether an entity merits listing. In particular, the rationale for adding names to the Entity List is often quite different from the rationale for adding names to the SDN List. The SDN List is a powerful sanction that cuts off actors that pose systemic law enforcement and national security risks, and many Chinese entities are added to the SDN list under programs targeting other countries if they are playing a backdoor or "black knight" role, potentially undermining those other sanctions, rather than under China-specific issues. Both the first Trump administration and the Biden administration determined that SDN listing for large Chinese technology companies that were instead placed on the Entity List was not worth the cost and risks.

Recently, some members of Congress proposed reducing or eliminating distinctions across lists, encouraging, for example, OFAC to add entities on other lists like the Entity List to the SDN List as well.[44] But applying the powerful restrictions of the SDN List to the large commercial entities now subject to the more targeted restrictions of the Entity List would impose large and unforeseen costs on US and allied interests. OFAC already has the authority to make additions to the SDN List of entities that merit the harsh penalties of such a listing and for which unintended consequences are manageable. It has already listed many Chinese entities that helped Russia or Iran, and under current law it is free to add more. Its restraint in sanctioning major Chinese technology firms has helped prevent unnecessary escalation and unintended consequences.

Less discriminate use of the SDN List would be problematic for the United States, China, and other countries and firms that transact with potentially targeted firms while relying on the US dollar for cross-border commerce. Putting Huawei on the SDN, for example, would put many US allies that use Huawei technology in their telecommunications networks in an impossible situation, forcing them to choose between paying to keep those networks running and complying with US sanctions, creating chaos and immense diplomatic costs for the United States. Use of the Entity List, as opposed to the SDN List, restricts Chinese firms' access to certain inputs or technology but generally does not force other countries or their firms to abruptly decouple from Chinese commercial partners, thereby avoiding potentially severe but unintended disruptions. Entity listings, unlike the SDN, also do not cascade down automatically to hit all subsidiaries of large conglomerates, when many of those subsidiaries may have no involvement in the activity that led to the listing. When assistance from foreign partners is needed to make US sanctions

44 US Congress, "H.R.760—Chinese Military and Surveillance Company Sanctions Act of 2023," https://www.congress.gov/bill/118th-congress/house-bill/760.

effective through multilateralization, diplomacy and coordination should be the first resort, only weaponizing the US financial system as a last resort. The United States effectively formed such a coalition to restrict exports of semiconductor manufacturing equipment by working with partners that share security concerns.

Overuse of the SDN's financial sanctions would encourage countries to find alternatives to the dollar-based global financial system. If sanctions are overused or ineffectively enforced, they fertilize the ground for black-marketeers, government corruption, and subversion of normal trade relations. When allies do not agree that the punishment fits the crime, they will be less willing to assist the United States in the enforcement and monitoring efforts needed to maintain the integrity of these controls.

APPENDIX

Method Used to Create the Dataset

We created the dataset from the following sources:

- We downloaded the SDN and CMIC Lists from the Treasury's Office of Foreign Assets Control. The SDN List specifies the programs employed to sanction Chinese entities. Entities sanctioned under multiple programs are counted separately for each program to which they are linked. Certain categories represent a collection of programs. For instance, the DPRK (North Korea) category encompasses DPRK, DPRK2, DPRK3, DPRK4, and DPRK-NKSPEA.
- We downloaded the Entity List of Chinese companies from the US International Trade Administration. We maintained the entries in the lists exactly as they were downloaded, retaining any aliases. The count of entities includes all Chinese entities listed under China, Hong Kong, and other overseas countries.
- We retrieved the MEU List from the US International Trade Administration. We identified subsidiaries and recorded them separately from their parent entities, which we noted in a separate column.

Sanctions on Hong Kong–based companies are included in the counts for all lists.

Links between parents and affiliates were identified using one or more of three methods:

- We associated entities with names that included the parent's name to the parent. For example, subsidiaries containing "Huawei" in their name were linked to the parent entity, the Huawei Investment & Holding Co., Ltd. (Huawei Holding).
- We linked related companies through contact information. For instance, the manager's email address at Shenzhen Huayi Loan Small Loan Co., Ltd. uses a Huawei email domain, suggesting a Huawei affiliation despite the absence of Huawei in the company name.
- By searching each entry's name on Google, we obtained details about parent companies from company websites, Bloomberg, and news articles.

To classify entities by sector, we gathered industry information on firm products and services by searching each entity on Google, with data collected from companies' websites, Bloomberg company profiles, Reuters company information, made-in-China.com, Hong Kong Companies Datasets, news articles, IFMAT.org, and, where necessary and possible, through speculation based on company names (e.g., names including "trading," "electronics," "import and export," "shipping"). We grouped 88 industries into 19 broader sectors for our analysis (table A.1). As a result, companies operating in multiple sectors were counted multiple times. For example, Huawei—which operates in cloud computing, artificial intelligence, semiconductors, and electronics—is categorized under both the "new and high-tech and emerging" and the "electronics and electricals" sectors.

Table A.1
Industry classification

Industry	Sector
Infrastructure, transportation, construction, and real estate	Real estate, railway equipment manufacturing, construction, shipbuilding, transportation, automobile
Chemicals (includes plastic materials)	Chemicals
Electronics and electricals	Accelerometers, electrical components, electronics
Agriculture	Fisheries
Telecommunications equipment	Telecommunication, optics, laser, radiofrequency and microwave, cable manufacturing, fiber optics, optoelectronics
Health and medical care	Biomedicine, biotech, pharmaceutical, medical
Logistics services	Supply chain and logistics
Industrial goods and services	Steel, tech hardware, quality inspection, manufacturing, machinery, industrial intermediate prod, informational equipment, engineering
Research	Research, education, nonprofit
Raw materials	Aluminum, mining
Safety and public security	Critical communications, cybersecurity, forensics, criminal technology, surveillance, security services, facial recognition, government
Services	Staffing, consulting, hospitality, lifestyle, leisure products, restaurant
Technology	Information technology (IT), IT solutions, Internet of Things, natural language processing, ecommerce
New and high-tech and emerging industries	Artificial intelligence, unmanned aerial vehicles, radar, nanotechnology, semiconductor, sensor, thermal technology, supercomputing, new materials, quantum computing, cloud computing, remote sensing
Energy (includes oil and renewables)	New energy, energy, power
Trade (includes wholesale, imports, and exports)	Trade
Finance	Asset management, financial services, banking, investment
Consumer products	Timepieces, apparel, jewelry, textile, home appliances, entertainment
Military and defense (includes aviation, space, and aerospace)	Aerospace, defense, defense electronics, satellite, navigation, marine, aviation, geospatial

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