

Change and Continuity in US Export Control Policy

The question of instituting new export controls, usually only of interest to specialists, has taken center stage in the current tensions between the United States and China. The Biden administration's new high-technology export controls deliberately blur the boundaries between concerns over military confrontation and economic competition. These rules restrict China's ability to obtain advanced computer chips to promote the dual objectives of securing or enhancing US technological leadership while also making it more difficult for China to use artificial intelligence (AI) and high-performance computers for military purposes.

The administration's technology denial strategy is complemented by the CHIPS and Science Act, which aims to strengthen the US semiconductor industry and build a domestic science and technology base capable of translating federally funded research into commercial applications. The Biden administration's technological protectionism of the semiconductor industry exemplifies a strategy of "economic security": a dual-use industrial policy, first embraced in the Clinton era, that understands domination in the civilian market and global military leadership as two sides of the same coin. Although China has been accused of following a course of "civil-military fusion" by deliberately shifting chip technology between the military and the civilian spheres, clearly this strategy of technological integration is a mirror image of established US industrial policy.

Biden has introduced a suite of export controls in strategic industries in a serious and likely far-reaching attempt to affirm and secure US leadership in the face of the rise of China and other authoritarian regimes. Viewing these recent developments within the long history of export controls offers crucial tools for better understanding the context, effects, prospects, and challenges of the administration's policies.

Past export control policies have faced serious obstacles, which hold lessons for today. In particular, there have been long-standing debates about the efficiency of export controls in slowing down the development of adversaries and their putative negative impact on US national competitiveness. This is not the only issue to consider. History reveals that focusing narrowly on the question of whether export controls work or not oversimplifies the historical functions and effects that these regulations have had on both foreign and domestic politics.

Although much of the response to the Biden initiative rightly stresses that it constitutes a major shift in policy, the underlying strategic attitudes are not really new. In this regard, there are strong continuities from the Trump to the Biden administration. In the White House National Security Strategy of December 2017, President Trump is quoted as saying that "economic security is national security." But the precedents go further back than just a few years. Indeed, the United States has long sought to sustain technological leadership by regulating trade with political rivals—and allies—in the name of national security.

Examining history through the lens of export controls reveals how economic and national security have become so entwined. Many of the features of the current export control system were first articulated in the 1940s. As early as the 1970s, the system's main goal became maintaining at least a one-generation technological gap between the United States and its competitors and enemies for the production, manufacture, and development of militarily significant commodities, technology, and know-how. In the 1980s, the rapid advancement of the Japanese semiconductor industry was a wake-up call: military strength alone could not secure global leadership. To be effective, military capability needed

to be coupled with economic power, and the concept of national security was expanded to embrace economic security in its current meaning.

To compete with Japan, economic security advocates pushed for the integration of the military with the civilian techno-industrial base. If defense contractors had previously prioritized performance over cost, now they had to deliberately lower costs to penetrate global markets, reinvesting profits in advanced research and development to improve performance. As Anita Jones, the Department of Defense's director of research and engineering, put it to a congressional subcommittee in 1994, defense contractors would have to learn to serve "multiple customers, not just one, to market products rather than respond to specifications, and to regard cost" as being "as important as performance." William Reinsch, a senior official in the Department of Commerce, further described the stakes in 1999: "As the line between military and civilian technology becomes increasingly blurred, a second-class commercial satellite industry means a second-class military satellite industry." Market domination in dual-use items became

these efforts requires negotiations with allies. If the Biden administration wishes to keep the playing field level for US firms, it cannot stop them exporting to lucrative markets like China without also impeding foreign competitors from doing so. Controls are only effective if all producers of technology comply with them. And the export control system can only serve US purposes if its allies accept US limitations on the trading practices of their corporations.

Historically, this has been a major source of friction. During the Cold War, Washington's ideas about what was needed to protect national security did not always coincide with the perceptions of the communist threat in London, Bonn, or Paris. In particular, during the Reagan years, resentment grew over the extraterritorial application of US export controls on trade between other allied countries. A 1984 internal memo by the British computer manufacturer ICL spoke of a growing "technological imperialism" in the United States, and suggested that controls invoked in the name of national security were being instrumentalized to maintain the technological lead time of American firms over their Western competitors.

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essential for military strength. And this remains true today.

The Biden initiative pushes this philosophy to its limits. The initiative attempts to leverage export controls to exploit technological dependencies and open the technological gap as wide as possible. However, despite these actions, China will still be able to produce and use chips—and not simply for washing machines. China is already a leader in the use of AI and high-performance computing for applications such as smart cities and self-driving vehicles. The country uses facial recognition technology for everything from grocery shopping and pedestrian control to surveillance of the ethnic minority Uighur population. Even though denying the most sophisticated chips to China will probably open a wide gap between Chinese and US military technological capabilities, no one can predict how important that advantage will be to the development of civilian applications of AI and high-performance computing in China. Equally unclear are the economic consequences for US and other international firms, given that China is the biggest semiconductor market in the world.

The role of nations other than the United States and China further complicates the picture. While the United States is essentially acting unilaterally, the effectiveness of

During the Cold War, such conflicts were managed, although not always successfully, by seeking to align European with American export controls through the Coordinating Committee on Multinational Export Controls (CoCom). CoCom was established in 1949 as an organization of the NATO allies (and later, Japan). It coordinated national policies of economic containment against communist countries and played an important role in the multilateral implementation of the day-to-day licensing of technology exports crossing the Iron Curtain. Yet, in its more than four decades of existence, CoCom was far from being free from conflicts. The low point was an acrimonious fight over the export of Western gas pipeline technology to the Soviet Union in the early 1980s. The Reagan administration implemented unilateral export controls against British, French, and West German firms to force them to break their contracts with the Soviets. The European governments, however, dug in their heels and fought back, and the United States eventually backed down.

By the early 1990s, CoCom was increasingly seen as a relic of the Cold War whose mission had been overtaken by ambitious Western visions of a new historical phase of neoliberal globalization. The organization was disbanded

in 1994 and replaced by the Wassenaar Arrangement. This agreement engaged far more governments (they now number 42, including Russia) whose diverse political and ideological agendas severely limit its powers over national trading policies in conventional arms and dual-use technologies. This poses a problem for US policies vis-à-vis China. Without a strong multilateral agreement, the Biden initiative is heavily reliant on unilateral threats of technological denial to foreign firms that trade with China in defiance of its new export control regime. Thus, foreign firms and states are being forced to comply with US export control regulations intended to secure US market dominance and global military power, and even close allies may again accuse the United States of “technological imperialism.”

Biden’s invocation of the Foreign Direct Product Rule is another reminder of the reach of US power beyond its borders. Crucially, this initiative also applies “controls on US persons providing support to [Chinese] fabrication facilities operating at a more advanced level than the thresholds we identify.” The emphasis on “persons” recognizes the important role played by the transfer not only of technological artifacts but also of technical data, tacit knowledge, and know-how by highly trained scientists and engineers in enhancing the performance of complex manufacturing processes. As we have written, attempts to control this often-intangible knowledge also began as early as the 1940s and became a central tenet of US policy beginning in the 1970s. The extraterritorial effects of these controls are clear: not only Chinese citizens in the United States but also American citizens and permanent residents working in semiconductor firms on Chinese soil are subject to the jurisdiction of the US government. This potentially cuts off the Chinese chip industry’s access to many forms of scientific-

technological exchanges, including access to universities and foreign talent. The extension of export controls over knowledge also puts pressure on the principles of academic freedom and raises thorny questions about the First Amendment rights of researchers in the United States—harkening back to similar debates in the early 1980s.

This relates to the parts of the US strategy that complement such technological denial, such as the “science” part of CHIPS and Science. If the United States wishes to benefit fully from its new export controls in semiconductor and high-performance computing manufacturing and development, it must nurture its own innovation and manufacturing capacities. Along with this growth, there are personnel issues to resolve. The United States must increase the number of US nationals graduating in scientific and technical fields and find new sources of foreign talent. Export controls have long been used by the United States to maintain technological superiority in dual-use items that bolster both competitiveness and national security. While controls are an important tool, they are but one piece of a larger, long-term, and highly complex strategy.

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