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Does the U.S. Chip Ban on China Amount to a Declaration of War in the Computer Age?

Teaser: Sanctions can at best slow China from taking the global lead in chip manufacturing. At their worst, they will raise the chances of chip wars spilling into a physical or economic sphere.

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The United States has gambled big in its latest across-the-board sanctions on Chinese companies in the semiconductor industry, believing [it can kneecap China](#) and retain its global dominance. From the slogans of globalization and “free trade” of the neoliberal 1990s, Washington has reverted to good old technology denial regimes that the U.S. and its allies followed during the Cold War. While it might work in the short run in slowing down the Chinese advances, the cost to the U.S. semiconductor industry of losing China—its biggest market—will have [significant consequences](#) in the long run. In the process, the semiconductor industries of Taiwan and South Korea and equipment manufacturers in Japan and the European Union are likely to [become](#) collateral damage. It reminds us again of what former U.S. Secretary of State Henry Kissinger once said: “It may be dangerous to be America’s enemy, but to be America’s friend is fatal.”

The purpose of the U.S. sanctions, the second generation of sanctions after the [earlier one in August 2021](#), is to [restrict China’s ability](#) to import advanced computing chips, develop and maintain supercomputers, and manufacture advanced semiconductors. Though the U.S. sanctions are cloaked in military terms—denying China access to technology and products that can [help](#) China’s military—in reality, these sanctions target almost all leading semiconductor players in China and, therefore, its civilian sector as well. The fiction of ‘barring military use’ is only to provide the fig leaf of a cover under the World Trade Organization (WTO) exceptions on having to provide market access to all WTO members. Most military applications use older-generation chips and not the latest versions.

The [specific sanctions](#) imposed by the United States include:

- Advanced logic chips required for artificial intelligence and high-performance computing
- Equipment for 16nm logic and other advanced chips such as FinFET and Gate-All-Around
- The latest generations of memory chips: NAND with 128 layers or more and DRAM with 18nm half-pitch

Specific equipment bans in the rules go even further, including many older technologies as well. For example, [one commentator pointed out](#) that the prohibition of tools is so broad that it includes technologies used by IBM in the late 1990s.

The sanctions also [encompass](#) any company that uses U.S. technology or products in its supply chain. This is a provision in the U.S. laws: any company that ‘touches’ the United States while manufacturing its products is automatically brought under the U.S. sanctions regime. It is a unilateral extension of the United States’ national legal jurisdiction and can be used to punish and crush any entity—a company or any other institution—that is directly or indirectly linked to the United States. These sanctions are designed to *completely decouple the supply chain* of the United States and its allies—the European Union and East Asian countries—from China.

In addition to the latest U.S. sanctions against companies that are already on the list of sanctioned Chinese companies, a further [31 new companies have been added to an “unverified list.”](#) These companies must provide complete information to the U.S. authorities within two months, or else they will be barred as well. Furthermore, no U.S. citizen or anyone domiciled in the United States can work for companies on the sanctioned or unverified lists, not even to maintain or repair equipment supplied earlier.

The global semiconductor industry’s size is currently [more than \\$500 billion](#) and is likely to double its size to [\\$1 trillion](#) by 2030. According to a Semiconductor Industry Association and Boston Consulting Group report of 2020—“[Turning the Tide for Semiconductor Manufacturing in the U.S.](#)”—China is expected to account for [approximately 40 percent](#) of the semiconductor industry growth by 2030, displacing the United States as the global leader. This is the immediate trigger for the U.S. sanctions and its attempt to halt China’s industry from taking over the lead from the United States and its allies.

While the above measures are intended to isolate China and limit its growth, there is a downside for the United States and its allies in sanctioning China.

The problem for the United States—more so for Taiwan and South Korea—is that China is their [biggest trading partner](#). Imposing such sanctions on equipment and chips also means destroying a good part of their market with no prospect of an immediate replacement. This is true not only for China’s East Asian neighbors but also for equipment manufacturers like the Dutch company ASML, the world’s only supplier of extreme ultraviolet (EUV) lithography machines that produces the latest chips. For Taiwan and South Korea, China is not only the [biggest export destination](#) for their semiconductor industry as well as other industries, but also one of their biggest suppliers for a range of products. The forcible separation of China’s supply chain in the semiconductor industry is likely to be accompanied by separation in other sectors as well.

The U.S. companies are also likely to see a big hit to their bottom line—including equipment manufacturers such as Lam Research Corporation, Applied Materials, and KLA Corporation; the electronic design automation (EDA) tools such as Synopsys and Cadence; and advanced chip suppliers like Qualcomm, Nvidia, and AMD. China is the largest destination for all these companies. The problem for the United States is that China is not only the fastest-growing part of the world’s semiconductor industry but also the industry’s biggest market. So the latest sanctions will cripple not only the Chinese companies on the list but also the [U.S.](#)

[semiconductor firms](#), drying up a significant part of their profits and, therefore, their future research and development (R&D) investments in technology. While some of the resources for investments will come from the U.S. government—for example, the [\\$52.7 billion chip manufacturing subsidy](#)—they do not compare to the losses the U.S. semiconductor industry will suffer as a result of the China sanctions. This is why the semiconductor industry had suggested [narrowly targeted sanctions](#) on China’s defense and security industry, not the sweeping sanctions that the United States has now introduced; the scalpel and not the hammer.

The process of separating the sanctions regime and the global supply chain is not a new concept. The United States and its allies had a [similar policy](#) during and after the Cold War with the Soviet Union via the Coordinating Committee for Multilateral Export Controls (COCOM) (in 1996, it was replaced by the [Wassenaar Arrangement](#)), the Nuclear Suppliers Group, the Missile Control Regime, and other such groups. Their purpose is very similar to what the United States has now introduced for the semiconductor industry. In essence, they were technology denial regimes that applied to any country that the United States considered an “enemy,” with its allies following—then as now—what the United States dictated. The targets on the export ban list were not only the specific products but also the tools that could be used to manufacture them. Not only the socialist bloc countries but also countries such as India were barred from accessing advanced technology, including supercomputers, advanced materials, and precision machine tools. Under this policy, critical equipment required for India’s nuclear and space industries was placed under a complete ban. Though the Wassenaar Arrangement still exists, with countries like even Russia and India within the ambit of this arrangement now, it has no real teeth. The real threat comes from falling out with the U.S. sanctions regime and the U.S. [interpretation](#) of its laws superseding international laws, including the WTO rules.

The advantage the United States and its military allies—in the North Atlantic Treaty Organization, the Southeast Asia Treaty Organization, and the Central Treaty Organization—had before was that the United States and its European allies were the biggest manufacturers in the world. The United States also controlled West Asia’s hydrocarbon—oil and gas—a vital resource for all economic activities. The current chip war against China is being waged at a time when China has become the biggest manufacturing hub of the world and the [largest trade partner](#) for 70 percent of countries in the world. With the [Organization of the Petroleum Exporting Countries no longer obeying the U.S. diktats](#), Washington has lost control of the global energy market.

So why has the United States started a chip war against China at a time that its ability to win such a war is limited? It can, at best, postpone China’s rise as a global peer military power and the world’s biggest economy. An explanation lies in what some military historians call the “[Thucydides trap](#)”: when a rising power rivals a dominant military power, most such cases lead to war. According to Athenian historian Thucydides, Athens’ rise led Sparta, the then-dominant military power, to go to war against it, in the process destroying both city-states; therefore, the trap. While such claims [have been disputed](#) by other historians, when a dominant military power confronts a rising one, it does increase the chance of either a physical or economic war. If the Thucydides trap between China and the United States restricts itself to only an economic war—the chip war—we should consider ourselves lucky! With the new series of sanctions by the United States, one issue has been settled: the neoliberal world of free trade is officially over. The sooner other countries understand it, the better it will be for their people. And self-reliance means not simply the [fake self-reliance](#) of supporting local manufacturing, but instead means developing the technology and knowledge to sustain and grow it.