

# Why the American technological war against China could backfire

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The [technological war](#) waged by the United States [against China](#) [has the potential to backfire](#), [supercharging China's creation of an independent computer chip industry that would directly compete with American](#)

[manufacturers](#).

U.S. President Joe Biden's administration has employed [increasingly restrictive sanctions](#) to prevent American and allied chip manufacturers from selling their most advanced products to China.

These restrictions are aimed at [preventing China's military from developing more sophisticated weapons](#). However, the People's Liberation Army uses very few high-tech chips. The tech war seems designed to cripple China's overall technological development and, by extension, its [economic growth](#) and prosperity.

## Cautionary tale

Ongoing [American efforts](#) to cripple the Chinese telecom company Huawei may serve as a cautionary tale for the U.S.

American technological sanctions damaged the company and its role as a leading global producer of cellphones, but Huawei has [reinvented itself](#) as a cloud computing network company.

It has also re-entered the cellphone market, introducing its [Mate 60 phone that boasts Chinese-designed and manufactured seven-nanometer](#) computer chips. American tech restrictions were meant to keep China stuck at manufacturing no more than 14-nanometer chips, keeping it at least eight to 10 years behind U.S. technology.

The accomplishment means that China is gaining ground on the U.S.

Recently, Huawei introduced [a computer with five-nanometer chip](#), further closing the gap with the West.

Western observers [have argued that the production of high-end](#)

[microchips](#) requires international co-operation.

[The Netherlands' ASML](#) is the only company with the advanced lithography equipment needed to make three-nanometer chips. ASML built its machine using technologies from about seven other countries and took 20 years to get to market. Therefore, China is unlikely to succeed if it's relying only on itself to create independent capacity.

However, the basic understanding of how lithography works is well-known. China has pushed its existing ASML equipment beyond its original capabilities and is pioneering an [innovative approach to lithography](#) that could see China mass-producing high-end semiconductors in the future.

## Chinese education prowess

Most importantly, [scientific knowledge](#) cannot be contained and China has made extraordinary gains in its educational system.

Chinese high schoolers in four affluent provinces [score the highest in the world in reading, science and mathematics](#). According to Times Higher Education, Chinese universities are "[outperforming institutions in the rest of the world in the vast majority of disciplines](#)."

[The U.S. News & World Report has ranked six of the top 10 \(and 11 of the top 20\) engineering schools in the world](#), and they're in China, with Tsinghua University in Beijing in first place. Only two of the top 10 are American. [China is also projected to produce 77,000 science, technology, engineering and math \(STEM\) graduates by 2025](#), more than double that of the U.S.

China has been saddled with the stereotype that [it cannot innovate](#). But in 2022, [China overtook the U.S. for the first time](#) as the country or

territory publishing the most research articles in prestigious natural science journals.

China closed the gap remarkably quickly, [increasing its share of scientific articles](#) by 21 percent since 2021 and 152 percent since 2016.

According to Japan's National Institute of Science and Technology Policy, [China published the highest number of scientific research papers annually between 2018 and 2020](#), and had 27.2 percent of the world's top one percent of the most frequently cited papers, compared to 24.9 percent for the U.S.

A survey done by the [Australian Strategic Policy Institute](#) determined that China is leading in 37 of 44 cutting-edge technologies, including nanoscale materials and synthetic biology. China is also [using industrial robots at 12 times the rate](#) as the U.S.

## **Cannot be cut off**

This is not a country that [can be contained by cutting it off from technology](#). When it comes to the use and production of knowledge-based industries, China has more advantages than any other country in the world.

American actions will create a new generation of Chinese high-tech firms that will compete directly with the U.S. and western businesses from whom they used to buy their products. These firms will produce more affordable products than their western counterparts, and [could dominate technological infrastructure](#) in the Global South.

Chinese electric vehicles are the [most advanced in the world](#), and [spreading to the rest of the globe](#). Even as direct U.S.-China trade has declined, [China's overall importance to world trade has increased](#).

Over the past year, [numerous pundits have declared that China's economic collapse](#) is imminent. There's no question [China is experiencing economic tailwinds](#) as it deals with deflationary pressures linked to real estate, high local government debt and reduced consumer confidence.

## No collapse imminent

But China's critics have been predicting its collapse for decades. China keeps confounding them, and [it probably will once again](#). [The International Monetary Fund \(IMF\) has adjusted China's predicted GDP growth rate upwards for 2023 to 5.4 percent, and expects 4.6 percent growth in 2024](#).

The IMF expects China's growth to continue slowing in the future, but this forecast doesn't account for the technological potential that the country is unlocking.

China may be using the present debt crisis [to redirect domestic investment](#) away from a volatile property market and towards a productive and sustainable high tech economy.

If so, American efforts to stifle China may have created the conditions needed to ensure its success.

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