

Ballooning U.S.-China Tensions

The U.S. needs to put in more effort at home to maintain its technological edge.

By Vaibhav Tandon

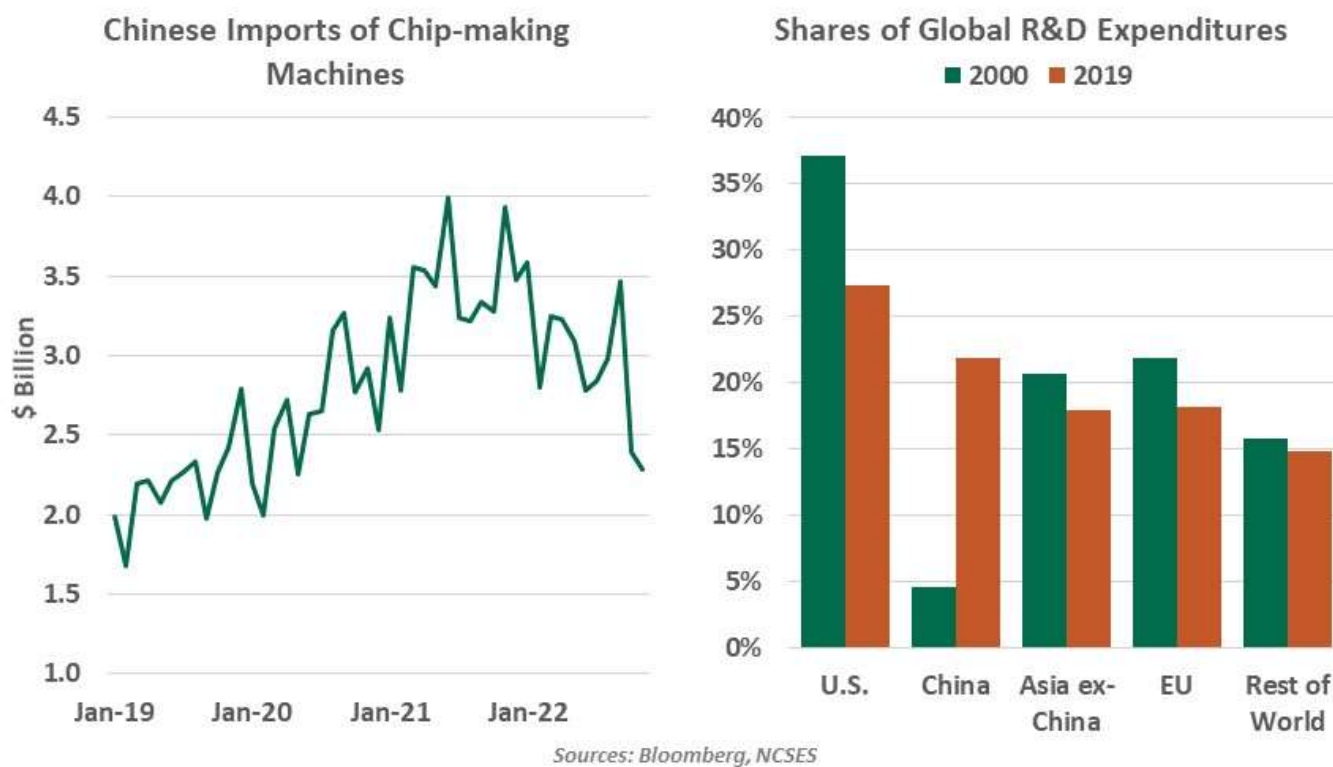


Balloons and other objects entering U.S. airspace have reignited speculation about China's capabilities and intentions. The sightings have prompted another round of trade friction. Technology is the latest in a long list of arenas where tensions have strained relations between the world's two largest economies. Building on measures imposed by the previous administration, the Biden government has steadily restricted Beijing's access to advanced technologies. The bans are keeping cutting-edge components out of China. In December, **36 Chinese** high-tech firms were added to the restricted entity list over security concerns. The roster includes manufacturers of aviation equipment and computer chips. The

administration is **planning** to ban outright some technology investments by American firms in China.

The impact of U.S. measures is becoming more apparent. The latest data shows a significant move of manufacturing to other Asian economies, like Vietnam and the Philippines. Chinese firms imported \$2.3 billion worth of machines used in semiconductor manufacturing in November, the lowest level since May 2020. The U.S. administration is in talks with Japan and the Netherlands to get them to join the sanctions. Such a move will further cripple the advancement of Beijing's semiconductor industry, including in areas of artificial intelligence and self-driving vehicles.

In response, Beijing has launched a trade dispute at the World Trade Organization (WTO); unfortunately for them, the appellate body of the WTO is practically **dysfunctional**. To retaliate, Beijing has come out with its own export control list covering technologies essential to solar energy and rare earth processing. But further options for direct reprisal are limited. China has also **doubled down** on its determination to become a technology powerhouse. But China has already channeled billions into the sector with only mixed results thus far. China consumes 35% of the world's semiconductors, but produces only 7% of them domestically. It therefore imports more than \$300 billion of them annually, with heavy reliance on equipment from America and its partners. This leaves Beijing with no viable alternative to using U.S. technology in the near term.



The United States' stance aims to boost its own competitiveness, enhance national security and address economic dislocations from supply chain fragility. According to the U.S. Department of Commerce, semiconductor shortages shaved \$240 billion off the country's

gross domestic product in 2021. The U.S. is making efforts to reshore chip production through incentives, led by the \$53 billion allocated in the **CHIPS and Science Act**.

That said, production subsidies are just one piece of the puzzle. America needs to invest in research and human capital to maintain its technological edge. The U.S. share of global semiconductor production has dropped to 12% from 37% in 1990. Federally-funded research and development (R&D) has fallen to 0.7% of gross domestic product in 2020, far below the peak of 1.9% seen in mid-1960s, when America faced technology threats from the former Soviet Union. Only a fifth of the CHIPS Act's funding is set aside for research activities.

China has filled this vacuum. Beijing's share of global R&D expenditures has jumped from just 4% in 2000 to 22% in 2019. America remains the largest spender, but now accounts for 27% compared to 37% at the turn of the century. The U.S. also lags in **STEM-focused** (science, technology, engineering, and math) talent needed to make scientific breakthroughs.

The escalating U.S.-China competition will likely be the most important theme of the coming decades for global trade. We hope the current frictions won't develop into a cold war, in which the two sides end up only trading charges and not goods



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