U.S. AI Export Controls Can Buy Time

But They Cannot Win the Race

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As the United States expands restrictions aimed at limiting China's access to advanced artificial intelligence technologies, the policy debate has moved beyond cutting-edge chips. Cloud computing, semiconductor-manufacturing equipment, chip smuggling, and even access to advanced AI models are now part of the discussion.

The broader these export controls become, however, the more difficult it is to implement them. Restrictions can make it harder and more expensive for Chinese companies to obtain critical technologies, but they cannot eliminate technological competition. Moreover, expanding controls across the AI technology stack can increase compliance costs, complicate international coordination, and affect U.S. companies and researchers. This raises a larger question about the role export controls should play in maintaining U.S. technological leadership. Rather than serving as a standalone strategy, export controls may be most effective when they slow competitors long enough for the United States and its allies to strengthen their capabilities in computing, talent, research, infrastructure, and innovation.

Washington CORE spoke with Angela Luna, Technology & Innovation Policy Analyst at the American Action Forum, about the changing scope of U.S. AI export controls, the trade-offs involved in expanding them, and what will ultimately determine whether the United States can maintain its lead in AI.

From Controlling Chips to Controlling the AI Stack

U.S. export controls have traditionally focused on dual-use technologies with both commercial and military applications. As generative AI emerged as a strategic technology, advanced semiconductors became a central target because of their importance in training and operating AI systems.

That focus is now broadening. Restrictions on advanced chips have been accompanied by controls on semiconductor-manufacturing equipment, while policymakers are also considering how to address access to advanced computing through cloud services and potentially AI models themselves.

AI capability depends on an entire technology stack. A Chinese company does not need to import an advanced semiconductor if it can remotely access computing resources in another country. Similarly, access to powerful AI models can help developers improve less-capable systems through techniques such as model distillation.

Even as policymakers look beyond physical chips, computing remains an important U.S. advantage. According to the 2026 Stanford AI Index, U.S. companies accounted for approximately 96 percent of global AI computing capacity among the major companies measured in the fourth quarter of 2025, led by NVIDIA, Google, and Amazon. Semiconductor-manufacturing equipment is similarly concentrated among companies in the United States and key allies, including Japan and the Netherlands.[i]

These concentrations give the United States and its allies considerable leverage, but as China improves its own capabilities and finds alternative pathways, that leverage is more a way to slow technological progress than stop it altogether.

Export Controls Can Slow China, Not Stop It

Existing controls are partially effective. They make it harder for Chinese companies to obtain critical inputs and increase the cost of developing advanced AI systems, but they have not prevented Chinese companies from improving their models.

China can respond to limited computing resources by improving algorithmic efficiency, optimizing models, developing domestic alternatives, or finding other ways to access technology. Increasingly capable Chinese models show that computing constraints may shape how companies develop AI without bringing that development to a halt.

The more realistic measure of success, Luna argues, is whether export controls can delay competitors—not whether they can prevent technological progress altogether.

That distinction matters as Congress considers broader restrictions. Chip smuggling, access through intermediaries, inconsistent implementation among allies, and alternative technological pathways remain weaknesses in the current system.[ii]

The practical question is how much export controls can delay progress—and at what economic and administrative cost.

Closing the Cloud Loophole Is Difficult Endeavor

Cloud computing presents perhaps the clearest example of this challenge. A company that cannot legally import an advanced AI chip may still access comparable computing power through a data center outside its home country.

The yet unpassed Remote Access Security Act (RASA) seeks to close that gap by bringing certain remote access to controlled U.S. technology within the export-control system. The RASA passed the House in January 2026, but it is stalled in the Senate Banking, Housing, and Urban Affairs Committee.

Implementation of AI legislation would be considerably more difficult than controlling physical shipments. Cloud infrastructure is globally distributed, customers can operate through subsidiaries and intermediaries, and identifying the ultimate user can be difficult.

In implementing RASA, cloud providers could face new obligations to verify customers, monitor computing usage, and prevent unauthorized access. For companies such as Amazon, Google, and other global providers, those requirements would create additional compliance costs.

This illustrates the central trade-off in export-control policy: controls that are too narrow leave opportunities for circumvention, while broader rules are complex to administer, likely imposing costs on companies and legitimate users that are not the intended targets.

The Cost to U.S. Companies Is Real

Those commercial costs are already visible in the semiconductor industry.

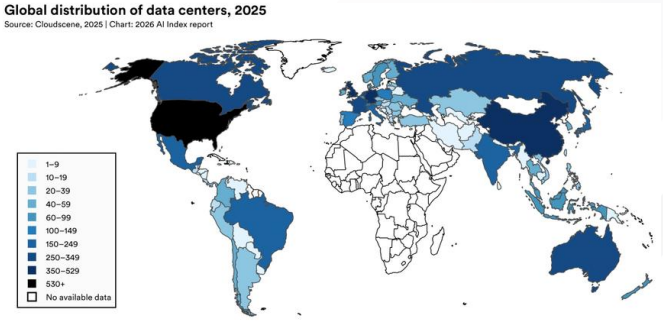
NVIDIA disclosed that a U.S. licensing requirement imposed on its H20 chips in 2025 resulted in a $4.5 billion charge related to excess inventory and purchase obligations. The company has also warned investors that increasingly complex export controls can raise compliance burdens, restrict access to overseas markets, and create opportunities for foreign competitors.[iii]

This does not mean national-security controls should be abandoned. It does mean policymakers should recognize that restricting access to major foreign markets can affect revenue available for future investment while forcing companies to spend more on licensing, legal review, compliance, and product redesign.

The challenge could become greater if controls expand from hardware and computing infrastructure to AI models themselves. Restrictions affecting open models, researchers, academic institutions, or startups could interfere with legitimate innovation alongside their intended national-security objectives.

The goal is therefore to target clearly identified risks without restricting AI technology more broadly than necessary.

Figure 1 Global Data Center Distribution (2025)



Source: HAI[iv]

Congress Is Working to Close the Gaps

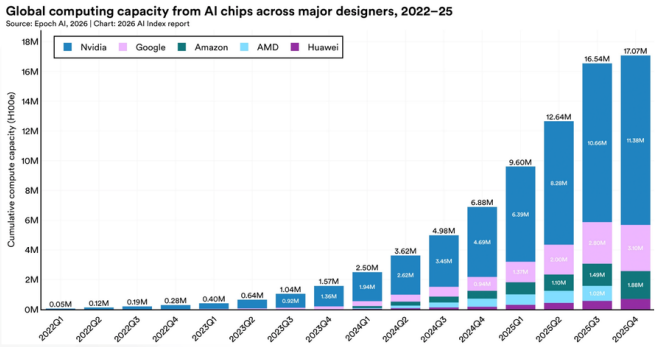
Dozens of legislative proposals related to AI are under consideration in the current Congress, showing how policymakers are targeting different parts of the AI supply chain.

The Chip Security Act focuses on tracking advanced AI chips and detecting unauthorized diversion, while the MATCH Act seeks greater coordination with allies on controls for semiconductor-manufacturing equipment. The AI OVERWATCH Act would add licensing requirements and oversight for exports of certain advanced AI chips to countries of concern.

Together with the Remote Access Security Act, these proposals show how far export-control policy is expanding—from products crossing borders to questions of where chips are located, who accesses computing resources, how transactions are structured, and potentially who can use advanced AI models.

Congress's broader reach may close existing loopholes, but it also makes implementation and enforcement more complex.

Figure 2 Global AI Computing Power by Major Design Firms



Source: HAI[v]

International Coordination Is the Hardest Part

AI and semiconductor supply chains are inherently global. No single country produces every critical component, and U.S. controls can lose effectiveness if companies elsewhere can supply technologies that American firms cannot.

Japan and the Netherlands are particularly important because their companies are major suppliers of semiconductor-manufacturing equipment, alongside U.S. firms such as Applied Materials, Lam Research, and KLA. Together, the United States, Europe, and Japan account for most of the value added in the semiconductor-manufacturing-equipment market.

But cooperation cannot be assumed. Countries have different economic relationships with China, domestic industries to protect, and perceptions of national-security risk. Companies may also resist restrictions if they believe foreign competitors will simply replace the business they lose.

Allied controls should therefore be coordinated and targeted around specific security risks. Otherwise, unilateral restrictions may impose costs on domestic companies without preventing the targeted technology from reaching China.

Export Controls Can Only Buy Time for Domestic Innovation

Ultimately, export controls cannot substitute for a broader competitiveness strategy.

Limiting China's access to chips or cloud computing may slow its development, but long-term technological leadership depends on more than restricting a competitor. Countries must also ensure access to computing power, skilled workers, research and development, semiconductor capacity, energy, and the infrastructure required to deploy AI at scale.

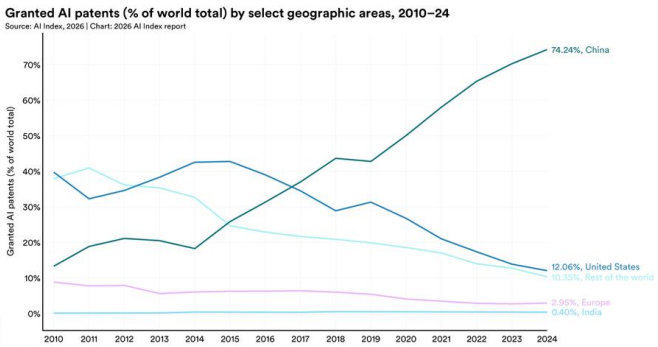
Export controls are most valuable when they buy time for domestic innovation rather than when they are treated as a mechanism capable of stopping technological competition altogether.

For the United States and its allies, the objective should be twofold: use

targeted controls to protect technologies that present clear national-security risks while continuing to build the domestic capabilities needed to compete.

China will continue looking for more efficient models, alternative technologies, and ways around restrictions. The longer-term question is not whether export controls can eliminate that competition, but whether the United States and its allies can use the time those controls provide to remain ahead.

Figure 3 Trends in Global Market Share of AI Patents: China's Rapid Rise and the U.S.'s Decline



Source: HAI[vi]

About the Interviewee

Angela Luna, Technology & Innovation Policy Analyst, American Action Forum

Angela Luna is Technology & Innovation Policy Analyst at the American Action Forum, where her research focuses on AI policy, including copyright, workforce issues, AI openness, privacy, and transparency. Before joining AAF, she was a Google Public Policy Fellow at the Bipartisan Policy Center. She holds a bachelor's degree in economics and a Master of Science in Public Policy and Management from Carnegie Mellon University.

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As a Research Analyst at Washington CORE, she conducts research across a broad range of areas, including infrastructure, decarbonization, and advanced technologies. More recently, her work has focused on economic security and related policy developments. Her research often explores the intersection of policy, technology, and markets, combining expert interviews with in-depth desk research to provide insights that go beyond publicly available information. She also supports clients by attending conferences and organizing research visits across the United States and Europe, gathering and analyzing information to inform corporate strategy and policymaking. She holds a BA in International Affairs from the University of Georgia.

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Endnote

[i] https://hai.stanford.edu/ai-index/2026-ai-index-report/research-and-development
[ii] https://www.americanactionforum.org/insight/beyond-chips-can-expanding-export-controls-slow-chinas-ai-progress/
[iii] https://www.sec.gov/Archives/edgar/data/1045810/000104581026000021/nvda-20260125.htm
[iv] https://hai.stanford.edu/ai-index/2026-ai-index-report/research-and-development
[v] https://hai.stanford.edu/ai-index/2026-ai-index-report/research-and-development
[vi] https://hai.stanford.edu/ai-index/2026-ai-index-report/research-and-development