

Decoupling in Strategic Technologies: From Satellites to AI

Growing competition between the United States and China for dominance in strategic technologies has sparked calls to use export controls and related trade policies to decouple the two countries' critical technology supply chains. **This report assesses the efficacy of decoupling in Artificial Intelligence (AI)**, using lessons learned from the U.S.-China decoupling of satellite technologies beginning in the late 1990s.

The calls for decoupling are understandable. The strategic dimensions of AI competition suggest that imposing delays in China's technological progress is important. The satellite decoupling case shows **export controls can reshape supply chains and limit rival access to emerging technologies. Yet, this effect is temporary and may be disadvantageous over the long term.** The impacts of decoupling diminish over time as cutting-edge technologies transition to commodified ones.

The satellite case also suggests **decoupling success turns, in large part, on specific characteristics of the technology in question. The characteristics of AI—specifically machine learning (ML)—make decoupling highly ineffectual.**

- Technologies that feature geographically concentrated supply chains appear more amenable to decoupling tactics. The AI/ML supply chain is diffuse.
- Key inputs to AI/ML technologies—namely access to data and algorithms—are widely available and are not conducive to government controls.
- Limiting access to the computational hardware necessary to train AI/ML systems may have some impact, but is a limited and temporary lever. This is due to the limited role that hardware may ultimately play in advancing long-term AI capabilities and in enabling a country to capture the benefits of the technology. It is also vulnerable to algorithmic advances that may significantly reduce the influence of hardware as a key input.

U.S. policymakers should pursue alternative means to slow China's progress and advance U.S. competitiveness, including immigration reform and standard setting.

For more information:

- Download the report: <https://cset.georgetown.edu/publication/decoupling-in-strategic-technologies>
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