



Silicon Triangle

The United States, Taiwan, China,
and Global Semiconductor Security

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EXECUTIVE SUMMARY

The United States, Taiwan, and China are bound within a “silicon triangle.” Semiconductors link our geopolitics, our ongoing economic prosperity, and our technological competitiveness. The more than two dozen participants in this working group have worked together for eighteen months to better understand this strategic triangle. The questions we considered include these:

- How can the United States mitigate the risks of semiconductor supply chain disruptions and become an even more competitive player in this foundational critical technology?
- How can this be done in a way that preserves Taiwan’s self-governing democracy, underpins its prosperity and our partnership, and promotes stability in the Taiwan Strait?
- How can we work with global partners to respond to new vulnerabilities stemming from China’s state-driven global semiconductor ambitions?

Despite significant policy efforts on these issues to date, we believe more needs to be done. As with other critical technologies where economic and national security interests will increasingly intersect,

ensuring continued semiconductor security will require continuous policy adaptation as the US-China relationship changes.

1. Near-Term Domestic Resilience

We appear to be moving toward a world of intensified trade among like-minded nations and sharply reduced dependence on adversaries for critical supply chains and technologies. The United States should therefore seek to make it attractive for friendly states to participate in this emerging trading network.

The United States should ensure that its imports of finished semiconductors and key inputs in the supply chain come from reliable and broadly ideologically compatible trading partners, such as current foreign industry leaders Taiwan, South Korea, and Japan.

The United States should pursue efficiencies and growth through trade and increased market access within this network, while also investing in a major new effort to revive US domestic production of semiconductors from design to fabrication. Even if this approach succeeds, the United States will still be heavily dependent on international partners for its semiconductor supply chain—but this approach will also leave us less vulnerable to pressure from unreliable suppliers.

To address the vulnerability of our supply chains to disruption or extortion and to strengthen the US industrial base in semiconductors, we recommend that the US government pursue a near-term “insurance policy” that includes the following:

- A realistic degree of onshoring of semiconductor supply chains, incentivized by policy initiatives such as the CHIPS and Science Act of 2022. The onshoring process should be open to foreign firms of partner nations and should not impose additional regulatory requirements.
- Improved semiconductor supply chain information sharing, data analysis, and economic modeling, akin to the Energy Information Administration of the Department of Energy

- Multiyear block buys by the Department of Defense to stockpile semiconductors for critical weapons platforms, and a new tax credit to encourage the private sector to build up its own inventories of chips beyond normal commercial needs
- Trade deals that offer increased market access to US partners that share common values

2. Business Environment

The United States is seeking new capabilities in the semiconductor supply chain, especially in areas where it is no longer cost-competitive with other global trading partners. To attract investment from partners that command significant semiconductor supply chain strengths and expertise, the United States must forge and maintain a welcoming business environment. The federal government subsidies in the CHIPS Act will help here, but investment-friendly incentives should extend beyond the five-year time frame of the Act. Ensuring fair business opportunities and US market access for partner nations' technology firms will not only invigorate the US-based semiconductor industry, but also further incentivize partner governments to align with otherwise costly controls on commerce with China.

To that end, US federal and state governments should take steps to reduce the costs of doing business domestically in this and other critical-technology sectors, including through these measures:

- Federal tax efficiency to encourage the deployment of private capital, at levels well beyond public subsidies, to the semiconductor sector
- Streamlining of federal environmental regulations—such as the National Environmental Policy Act—that could considerably delay and increase the cost of domestic semiconductor projects
- Promotion of business environments, nationally and in individual states, that encourage cost efficiencies through regional industrial clustering, as used in Taiwan

3. Long-Term Technological Competitiveness

The United States should pursue comprehensive, market-oriented industrial policy measures as part of a long-term critical-technology global competitiveness agenda. To achieve strategic autonomy by means of technology and economic leadership, these policies should invest in US research capacity (a traditional US strength) as well as applied engineering and manufacturing activities (a growing US weakness). And they should strengthen the global intellectual property (IP) regime—through domestic reforms and in consultation with allies and partners—to counter China’s systematic theft of the IP and technologies of open societies. We recommend these measures:

- Increasing retention of skilled immigrants educated in the United States through H-1B visas for all foreign STEM (science, technology, engineering, mathematics) graduates of US universities
- Policies to boost take-home pay for US citizens working in the semiconductor industry
- Comprehensive investments in our K–12 educational system to produce the engineers that our country will need to maintain global critical-technology leadership
- More federal funding for applied research and development, not just basic science
- Incorporating national security implications into US federal regulatory agency decision making, to acknowledge that corporate activity in technological fields can advance national security priorities
- Inbound and outbound investment screening in critical technologies that favors partner countries over unreliable competitor countries
- Legal and technology measures to strengthen the US intellectual property system, protect tacit knowledge, and incentivize private sector US innovation

4. Taiwan's Stability

Taiwan is one of Asia's most prosperous and successful liberal democracies, the world's leading innovator in and producer of semiconductors, and a trusted partner in critical supply chains. While Taiwan stands at the center of the global semiconductor economy, its lack of diplomatic recognition and formal alliances contributes to its existential vulnerability to being invaded or otherwise involuntarily absorbed into the People's Republic of China (PRC).

We believe it is in the interest not only of Taiwan's twenty-four million people, but also of the United States and the entire Indo-Pacific region, to deter PRC aggression against the island. We strongly endorse US efforts toward this end, including appropriate arms sales to strengthen Taiwan's defenses in a so-called porcupine strategy, and improving coordination and training among willing defense forces in the Indo-Pacific.

We also endorse a variety of steps to create an environment that fosters deeper business-to-business, research, academic, individual, and civil ties between the United States and Taiwan on the semiconductor front, including these:

- R&D collaboration between Taiwan's semiconductor firms and research organizations and their US peers
- Increased workforce and educational people-to-people exchanges between Taiwan and the United States
- Joint evaluations of mutual semiconductor supply chain vulnerabilities
- Increased statistical and technical collaboration between Taiwan and the US Department of Energy and national labs on energy security and infrastructure resilience
- Broad reduction of US-Taiwan economic frictions through a tax treaty to avoid dual income taxation of expatriate workers and the conclusion of a US-Taiwan free-trade deal
- Establishment of a US-hosted industry and government working group to overcome barriers to US-Taiwan defense industry co-production and codevelopment in Taiwan

5. Dealing with China

US dependence on China for critical components and products in the global semiconductor supply chain puts it at considerable strategic and economic risk. Mitigating this risk must be an urgent priority for US policy. China has its own semiconductor agenda: to reduce its dependence on imports, improve its ability to make a variety of chips, and compete globally with leading semiconductor manufacturers so as to increase other countries' dependence on its own semiconductors. PRC government subsidies to China's semiconductor firms increase the odds that these firms will undercut the pricing of established semiconductor firms in the United States and its trading partners, unfairly harming US or partner producers and, over time, creating new US or partner dependencies on China-based supply chains.

The United States and its allies should also consider how to use their strengths in the semiconductor supply chain—and China's current reliance on them—as a form of economic deterrence against PRC aggression and intimidation in achieving its geopolitical goals. US and allied policy stances to deny China technological supremacy should remain flexible and preserve options for both escalation and deescalation, based upon principles of reciprocity and adherence to a rules-based order. Steps should include these:

- Creating a nimble multilateral export control regime. This regime should include semiconductor-specific efforts and frameworks more appropriate for broader critical technologies—allowing US technology export controls to have greater impact at a lower domestic cost.
- Avoiding future US government or critical-infrastructure dependence on chips, software, or services from state-oriented firms in China
- More funding and technical staffing so the Department of Commerce's Bureau of Industry and Security can effectively enforce its expanded rules
- Expanding export control blacklists to include China's semiconductor equipment-manufacturing firms and subsidiaries

- Considering creative and more proactive trade rules, including import restriction and antidumping measures, to forestall a likely oversupply of below-cost mature chips from China
- Given that the focus of China's semiconductor subsidies likely will be on mature nodes, the US should consider elevating export restrictions of US and partner semiconductor equipment to the 28nm range, in order to restrain China's ability to gain market power and coercive leverage in that important part of the global supply chain.

In sum, if the United States is to retain and strengthen its global leadership in semiconductors, or even to preserve its most vital economic and national security interests in this sector, it will need to revive the competitiveness of its workforce and business environment. It is not enough to simply constrain China. It is not even enough to innovate in design. The United States must run faster, harder, and with longer-term vision.

And in this increasingly globalized world, it cannot run alone. Restoring US leadership requires close cooperation with reliable partner countries. It also requires an international talent pool of scientists and engineers from around the world, with immigration rules that welcome and retain this talent.

To win this race, we will need both vigilance and agility. We will need focus and enhanced information systems to detect important new trend lines, as well as the agility to respond to these changing forces as quickly as possible. And we will need the flexibility and humility to understand that our partners will sometimes hold different views, and that their policies will sometimes evolve at a different pace from our own. The key for the United States will be to deepen and nurture these cooperative relationships while enabling innovation to thrive through multilateral collaboration. In so doing, we can make our supply chains for semiconductors and other critical technologies secure and resilient against actions by adversaries and enable open societies to win the technological competition with dictatorships.



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