

## IOG Economic Intelligence Report

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**U.S. Controls on Semiconductor Exports to China:** Firms, decision makers, and observers continue to try to understand the full implications the new U.S. rules on the export of semiconductors to China announced on October 7. Effectively, the rules prohibit Chinese companies from using U.S. services, equipment, and people to develop advanced semiconductors out of concern that such technology will be used in military applications. Because U.S. firms are the only manufacturers of these goods, the rules amount to cutting off China semiconductor industry from the rest of the world. Firms operating in China have been given a one-year reprieve from these rules, but as of now no foreign firm can produce similar equipment to that produced by U.S. firms. In other words, the goal is to keep both keep high-end chips out of China and to make sure that China also lacks the ability to manufacture these and other leading-edge chips itself.

At the very least, this represents a structural shift toward a comprehensive U.S. policy towards China's technological advancement in these sectors. U.S. National Security Advisor Jake Sullivan has said that it is no longer enough for the United States to maintain a relative advantage in these technologies but that it must "maintain as large of a lead as possible." Rather than trying to keep ahead of China on critical technologies (with the economic and military benefits that come with them), the Biden administration's new goal is to make sure that China stays behind.

The new rules are both focused (intended to restrict the use of these technologies for military applications) and comprehensive (in addition to blocking the export of high-end chips, anyone who wants to export semiconductor manufacturing equipment to China or the parts needed for the production or maintenance of that equipment must obtain the permission of the U.S. government). The reason they can be both focused and comprehensive is because of the scale of China's civil-military fusion policy where China's companies are expected to provide support to China's military – blocking military development means blocking a whole host of other initiatives.

The international repercussions are still developing. While China has not yet retaliated overtly, it can be expected to in the future. If nothing else, the new rules will feed the Xi administration's belief that the United States is seeking to contain China and prevent its growth. In terms of U.S. partners, Japan, South Korea, and Taiwan (as well as many U.S. firms) are all exporters of high-end chips and SMEs to China, draw significant revenue from these sales, and will need to comply with these new rules in order for them to be effective. At an October 27 event, U.S. Undersecretary of Commerce for Industry and Security Alan Estevez said that U.S. allies had been notified about the new rules in advance of their announcement and that he expects a multilateral deal to take shape in the future.

**U.S. Midterm Elections:** The midterm election failed to produce a predicted “red wave” of Republican victories and instead resulted in Democrats retaining control of the Senate, losing fewer seats than expected in the House of Representatives, and securing important victories at the state level. The incoming chair of the House Ways & Means Committee with jurisdiction over trade policy is yet unknown but will be a pro-trade member. It’s still unlikely for any significant trade policy to move through Congress in the next two years. The Biden administration will want to avoid opening up an intraparty split on trade policy while House Republicans will focus on investigations as well as managing their own caucus which is likely to be divided between Trump-oriented Freedom Caucus members and more conventional Republicans, similar to the fights that GOP Speakers John Boehner and Paul Ryan experienced with the Tea Party caucus.

**Analysis:** It will take time before we know the full implications of the Biden administration’s new rules on semiconductor exports. Partly because the multilateral leg is still under development and partly because commercial behavior will need to adjust and evolve. Both are critical to what happens next.

The commentary has often raced ahead of developments on the ground, with breathless assertions of decoupling or technological cold wars or so on. Maybe. There is no doubt that the announced rules are a new level in the U.S. relationship with China, particularly regarding technological competition. But they’re also not completely out of the blue. They represent an evolution in the U.S. response to Chinese firms’ advancement in areas like 5G technology and artificial intelligence, beginning with the Trump administration’s moves regarding ZTE and Huawei. China was always going to advance its technology and the United States was always going to figure out how to prevent those advancements from producing a military edge. The October 7 announcement is the latest step in that process.

It doesn’t necessarily mean a new cold war. If the global economy is going to experience a “fracturing” as many fear and some predict, what’s ultimately going to shape the geoeconomic landscape are commercial decisions. In a supply chain world, economies and companies have based their decisions on which economies provide the most efficiency, access, and innovation. Whether that calculus changes depends on whether shocks to the underlying system are structural or incidental. Incidental shocks (like those from one-off events like natural disasters) may produce readjustment here and there but structural shocks resulting from things like geostrategic tensions or climate change can affect the entire way supply chains operate.

The ongoing recalibration in global supply chains seems to be an incidental shock that’s being sublimated into a structural shock. In short, adjustments to supply chains that followed the response to the covid-19 pandemic have occurred roughly at the same time as heightening geostrategic concerns about the future of China-U.S. competition. For that reason, it’s hard to sort out one from the other – as the pandemic made companies realize that they need to incorporate globally disruptive events into their planning, they also realized that geostrategic competition and China’s zero-covid policy made China a riskier bet than it was before. The basic response so far has been diversification and avoiding overdependence on a single node.

Now national security seems ready to enter the equation. Japanese, South Korean, and Taiwanese firms (and others) all have significant investments in China's semiconductor ecosystem that will likely be cut off in a year. While Japan is already investing in relocating operations domestically and in the United States, these moves cost billions of dollars and take significant time. Full localization is even more expensive – a report by Boston Consulting Group and the Semiconductor Industry Association says that self-sufficiency for the United States would cost \$1 trillion over the next ten years. There are also questions to the ability to access innovation in this new environment. While it's tempting to think that new revenues here and some reallocated funding there can expand innovation it's worth remembering that innovation isn't an easy-bake oven where money goes in and new technologies come out ready for the market. While security may become the order of the day, it's worth asking how firms can continue to access the top innovations as they reshore, friendshore, or so on.

The commercial motivations for supply chains – the ability to access the most efficient production and the best innovation – continues to hold true because the costs of shipping and communication which enabled supply chains in the first place are still extremely low. For government decision makers, the trick is to figure out how to use policy to induce market-based outcomes with minimum unintended consequences. Now decision makers in the United States and firms worldwide are asking for national security to be included in those motivations as well and firms will respond depending on the costs and benefits presented therein. How firms incorporate those calculations will determine what happens next.