

# Choking Off China's Access to the Future of AI

## *New U.S. Export Controls on AI and Semiconductors Mark a Transformation of U.S. Technology Competition with China*

By Gregory C. Allen

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### *Introduction*

On October 7, 2022, the Biden administration announced a new export controls policy on artificial intelligence (AI) and semiconductor technologies to China. These new controls—a genuine landmark in U.S.-China relations—provide the complete picture after a partial disclosure in early September generated confusion. For weeks the Biden administration has been receiving [criticism](#) in many [quarters](#) for a new round of semiconductor export control restrictions, first [disclosed](#) on September 1. The restrictions block leading U.S. AI computer chip designers, such as Nvidia and AMD, from selling their high-end chips for AI and supercomputing to China. The criticism typically goes like this:

1. China's domestic AI chip design companies could not win customers in China because their chip designs could not compete with Nvidia and AMD on performance.
2. Chinese firms could not catch up to Nvidia and AMD on performance because they did not have enough customers to benefit from economies of scale and network effects.
3. Because of the new export controls, revenues that formerly flowed to U.S. chip companies will now go to Chinese chip companies, offering a viable path to economies of scale and competitive performance.

4. In the short term, this policy will significantly harm Chinese AI data center companies.
5. However, blocking U.S. AI chip designers from selling their world-leading chips is actually good for China in the longer term because it will strengthen China's domestic chip design ecosystem.

While the reasoning in this criticism is sound, it does not imply that the Biden administration's actions are self-defeating. Rather, it shows how the policy as disclosed in September was incomplete. A policy like this would not make sense if that is the only step the administration planned to take. Clearly something was missing, and industry experts have been waiting for the other shoe to drop ever since.

On October 7, the other shoe dropped. The Biden administration announced a massive [policy shift](#) on semiconductor exports to China as well as [revised rules](#) for how the lists of restricted parties are managed. In recent decades, U.S. semiconductor policy has been primarily market driven and laissez faire. With the new policy, which comes on the heels of the CHIPS Act's passage, the United States is firmly focused on retaining control over "[chokepoint](#)" (or, as it is sometimes translated from Chinese, "[stranglehold](#)") technologies in the global semiconductor technology supply chain.

The most important chokepoints in the context of this discussion are AI chip designs, electronic design automation software, semiconductor manufacturing equipment, and equipment components. The Biden administration's latest actions simultaneously exploit U.S. dominance across all four of these chokepoints. In doing so, these actions demonstrate an unprecedented degree of U.S. government intervention to not only preserve chokepoint control but also begin a new U.S. policy of actively strangling large segments of the Chinese technology industry—strangling with an intent to kill.

### *The Biden Administration's Four Semiconductor Policy Chokeholds*

There are four interlocking elements of the new policy targeting different segments of the semiconductor value chain, and all elements must be understood simultaneously to grasp the scope of what the Biden administration plans on achieving. In short, the Biden administration is trying to (1) strangle the Chinese AI industry by choking off access to high-end AI chips; (2) block China from designing AI chips domestically by choking off China's access to U.S.-made chip design software; (3) block China from manufacturing advanced chips by choking off access to U.S.-built semiconductor manufacturing equipment; and (4) block China from domestically producing semiconductor manufacturing equipment by choking off access to U.S.-built components.

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#### **1. STRANGLE THE CHINESE AI AND SUPERCOMPUTING INDUSTRIES BY CHOKING OFF ACCESS TO HIGH-END CHIPS.**

The highest levels of leadership in both the United States and China—including Chinese president Xi Jinping—[believe](#) that leading in AI technology is critical to the future of global military and economic power competition. China is a global leader in AI research, AI commercialization, and AI-enabled military technology. China's strategy of "military-civil fusion" is designed to ensure that the best

Chinese commercial AI technology is always available to the military and that the military's linkages to China's commercial industry are deeply interwoven. As a result of military-civil fusion, U.S. sanctions and export controls cannot effectively target China's military (which the United States has historically been very willing to do) without also targeting Chinese commercial industry (which the United States has historically been more reluctant to do).

To date, targeted U.S. efforts to allow commercial Chinese access to high-end chips while blocking military access have had weak results. For example, in 2015, the Obama administration **blocked** U.S. chipmaker Intel from selling its high-end Xeon chips to Chinese military supercomputer research centers such as the National University of Defense Technology (NUDT). While this policy ended direct sales from U.S. companies to the Chinese military, it was completely ineffective at stopping indirect sales to the shell companies that helped the Chinese military evade export controls. China's NUDT has not only built new globally leading supercomputers after the restrictions went into effect, but those new supercomputers **still use** the latest and greatest (and banned) Intel Xeon chips. More broadly, examinations of Chinese military equipment **of all types** have found them to be extremely reliant on U.S. chips.

For high-end AI and supercomputing chips, the Biden administration has essentially given up on trying to thread the needle between refusing to let U.S. technology help China's military while promoting U.S.-China commercial trade. High-end AI chips can no longer be sold to any entity operating in China, whether that is the Chinese military, a Chinese tech company, or even a U.S. company operating a data center in China. The Biden administration is essentially saying to China: "If your policy is military-civil fusion, then the only realistic way of implementing our policy of no military end use is to end all sales to China, and we are now willing to take that step."

It took a long time for the United States to get here. After decades of ratcheting Chinese government provocations—including state-sponsored corporate espionage, forced technology transfer, market access restrictions, export control violations, human rights atrocities in Xinjiang, undermining democracy in Hong Kong, the deployment of AI-enabled surveillance megaprojects, and the development of AI-enabled lethal autonomous weapons—the Biden administration is saying, "enough is enough." This is not a policy of decoupling (yet), but it is proof of the United States' unwillingness to remain tightly coupled to the Chinese technology sector under previous conditions.

Earlier reporting, **based on** official Department of Commerce letters sent to Nvidia and AMD, assumed that the export control restrictions applied only to those companies and their current model of high-end AI chips. In reality, the rules set a performance threshold for what sorts of chips can be sold to China, and everything above the performance threshold requires the seller to seek an export license from the Department of Commerce. However, policymakers have told all sellers that license applications for sales of such chips to China **will face** "a presumption of denial." Thus, this new policy is de jure a new license requirement but de facto a ban. Because the United States is broadly invoking the **foreign-direct product rule**, this export license requirement applies not only to Nvidia and AMD but to any would-be competitors around the world.

The performance threshold requires two conditions to be met. The chip must be both a very powerful parallel processor (300 tera operations per second or higher) and have a very fast interconnect speed (600 gigabytes per second or higher). By only targeting chips with very high interconnect speeds, the White House is attempting to limit the controls to chips that are designed to be networked together in the data

centers or supercomputing facilities that train and run large AI models. China will still be able to buy massively parallel computer chips that are optimized to work in individual computers, such as those that are included in video game consoles.

At present, Nvidia and AMD are among a small set of chip designers in the world with sufficiently advanced technology to make chips in this category, but there are Chinese firms that are not far off. However, in the case of Nvidia, its competitive dominance is based not only on the performance of its chips but also on the strength of the software ecosystem that is based upon Nvidia standards, particularly Nvidia's CUDA software ecosystem. CUDA **makes it** much easier for programmers to write massively parallelized software (as all modern AI software is) and ensures backward and forward compatibility so that older chips can still run newer software and vice versa. Any customer who seeks to stop using Nvidia chips has to leave the CUDA ecosystem, which requires solving a lot of incredibly hard software problems for which CUDA already provides free answers. Those free answers reflect billions of dollars of investment in the CUDA platform by both Nvidia and its customers.

The strength of the combined offering of CUDA software and Nvidia hardware goes a long way toward explaining why Nvidia accounts for **95 percent** of AI chip sales in China, according to Fubon Securities Investment Services estimates.

This explains, in part, why the AI chip restrictions revealed in early September were so damaging to Nvidia's stock price. Stock markets spent a full month looking only at the first part of the government's actions—blocking Nvidia's sales. Lacking the full policy picture, Nvidia investors saw not only **lost revenue** to China but a **massive incentive** for Chinese AI companies (or any non-U.S. entity looking to sell to China) to band together and build an alternative ecosystem to CUDA, one that potentially could harm Nvidia sales not only in China but around the world.

However, Biden administration officials foresaw this risk in the plan, leading to the second chokehold of the policy.

## **2. BLOCK CHINA FROM DESIGNING AI CHIPS DOMESTICALLY BY CHOKING OFF ITS ACCESS TO U.S.-MADE CHIP DESIGN SOFTWARE AND U.S.-BUILT SEMICONDUCTOR MANUFACTURING EQUIPMENT.**

Nvidia's CUDA is not the only part of the global semiconductor supply chain where the United States enjoys a dominant position based on advantages in software. Modern chips can fit tens of billions of transistors on every square inch of silicon. The software that enables chip designers to create the astonishingly complicated blueprints for such chips is called electronic design automation (EDA). In the case of semiconductor EDA, there are three leading companies in the market: Mentor Graphics, Cadence Design Systems, and Synopsys. All three are headquartered in and have the bulk of their staff in the United States (though Mentor is actually a subsidiary of Europe's Siemens). America's dominance of the EDA software market is another chokepoint being used to strangle China, in this case, to strangle the Chinese chip design industry.

Even before the new policy, any one of the roughly 28 Chinese chip design and supercomputing organizations on the Department of Commerce's Bureau of Industry and Security (BIS) "**parties of concern**" lists was subject to a presumption of denial for the purchase of U.S. semiconductor design software or for the export of any designs that were made using the software. However, the new policy adds powerful new tools to enforce that: in the event that Chinese companies continue to use U.S.-designed software that was either illegally pirated or legally purchased before the ban

went into effect, Chinese chip designers will be unable to have their chip designs manufactured outside of China. That is a significant disadvantage because Chinese semiconductor manufacturing companies are significantly less technologically advanced than others elsewhere in the world.

By invoking the foreign-direct product rule, the United States is prohibiting any semiconductor manufacturing company worldwide from providing services to any Chinese chip design company that is seeking to make high-end chips for AI or supercomputing. The foreign-direct product rule offers two hooks to block Chinese chip design companies from having their chips manufactured: on the EDA software and again on the U.S.-built equipment that is an irreplaceable (at least for now) part of every semiconductor manufacturing operation anywhere in the world. Any chip manufacturing operation—whether Chinese or otherwise—that seeks to build Chinese chip designs will risk losing its own access to U.S. semiconductor manufacturing equipment. With the new rules, no Chinese chip design company will be allowed to outsource manufacturing abroad for advanced AI and supercomputing chips. For those Chinese organizations on the BIS Entity List, they will be blocked from outsourcing the manufacturing of any types of chips at all.

These enforcement hooks are very [similar](#) to those that the United States levied upon Huawei's chip design subsidiary, HiSilicon, which devastated HiSilicon and forced it out of the market for several years. To state it bluntly, these recent actions are designed to put the roughly 28 Chinese chip design and supercomputing firms on the parties of concern lists out of business.

There are, however, very capable Chinese AI chip design companies, such as Cambricon, that are not yet on the Entity List. This is surprising because [Cambricon's customers](#) include [companies blacklisted](#) by the U.S. government that supply supercomputers to the Chinese military. The slow pace of the current process for adding Chinese companies to the blacklist has been a source of intense frustration for both [Congress](#) and the White House. It ought to have been completed in time to include in this policy. Still, do not be surprised if Cambricon and every other Chinese chip design company of any significance is added to the blacklist in the near future. The [revised rules](#) for managing the Entity List, which were released on the same day as the new policy, are designed to help the Department of Commerce manage the list much faster.

Even with these steps in place, there would still be a path for China to escape the United States' semiconductor chokepoints—albeit a complicated, expensive, and risky one. This hypothetical path would be to design the chips in China, pirate older EDA software, and manufacture the chips in China using older manufacturing technology. This “all-Chinese” semiconductor supply chain strategy is in fact a logical extension of the one Huawei [announced](#) that it intends to pursue this year with a resurrected HiSilicon business.

However, the Biden administration has taken steps to stomp out that approach as well, which brings us to the third and fourth chokeholds of the policy.

### **3. BLOCK CHINA FROM MANUFACTURING ADVANCED CHIPS BY CHOKING OFF ACCESS TO U.S.-BUILT SEMICONDUCTOR MANUFACTURING EQUIPMENT.**

As mentioned above, the United States has a dominant position in many categories of semiconductor manufacturing equipment, such that there is no advanced semiconductor fabrication facility in the world that is not critically dependent upon U.S. technology. Moreover, this U.S. equipment dependence is in many cases not only in the form of a one-time purchase but also a constant need for the U.S. equipment provider to be onsite providing advice,

troubleshooting problems, and repairing equipment. The need for this enduring relationship between buyer and seller offers the U.S. government additional points of control and leverage.

With these latest rules, the United States has dramatically restricted the supply of advanced semiconductor manufacturing equipment to all of China. Additionally, the rules also restrict the supply of a much more broadly applicable set of semiconductor manufacturing equipment (e.g., inspection and metrology equipment) to those companies in China that are currently making advanced chips (such as SMIC and YMTC). In doing this, the Biden administration is going beyond the traditional U.S. policy of seeking to keep the United States' two semiconductor technology nodes ahead of China and is now trying to actively degrade China's technological maturity below its current level.

Similar to the restrictions on AI chip sales, the restrictions on chip manufacturing equipment sales are targeted at certain performance thresholds that represent advanced chip manufacturing technology. These thresholds are split by those types of equipment that are specifically useful for making different types of computer chips: logic chips, DRAM (short-term memory) chips, and NAND (long-term memory) chips.

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For logic chips, China will now face licensing requirements with a presumption of denial for any fin field-effect transistor (FinFET) logic manufacturing equipment. In practice this affects nearly all logic chips being produced at the 16 nanometer (nm) or lower (better) technology nodes. For comparison, U.S. chipmaker Intel **first began** mass-producing 14 nm processors in 2014, but the most advanced Chinese logic chip manufacturer, SMIC, only achieved 14 nm FinFET volume production **in late 2019**, a more than five year gap. The United States is blocking the export of advanced semiconductor manufacturing equipment to all of China, but in the case of SMIC's 14 nm production facility, the United States is even blocking the export of older, less advanced equipment. In other words, the United States is attempting to put SMIC's 14 nm production line out of business.

For the more advanced successor to FinFET, called Gate-All-Around Field Effect Transistor (GAAFET), China will also face broad restrictions on purchasing of U.S. manufacturing equipment.

For DRAM, the equipment sale restrictions will apply at the 18 nm process node and more advanced (a lower nm number). For NAND, the restrictions will apply for 128 layers or higher. These restrictions threaten the economic prospects of Chinese memory chip companies such as YMTC, which Apple stated that it had recently been evaluating **as a supplier** for iPhones sold in China—to the **fury** of some U.S. lawmakers. As with logic chips, the new restrictions include a much broader set of equipment sale restrictions for chip factories in China that are already producing at or above the threshold. The U.S. government is attempting to put YMTC's most advanced NAND production facilities out of business.

It will be especially difficult for Chinese companies to evade these equipment export controls. Without access to the support teams and spare parts of U.S. equipment suppliers, these facilities may be forced to slow or halt production. Even if the existing advanced production facilities at SMIC and YMTC somehow manage to continue producing, they are unlikely to be joined by other companies and facilities in China anytime soon. Overall, these new restrictions represent a devastating blow for the makers of advanced chips in China. However, China has been anticipating significantly broadened manufacturing equipment export controls, so it has been [purchasing equipment](#) at a pace far in excess of expected market demand. In essence, China has been buying everything it can from the store before it closes. The full consequences of China's equipment hoarding are not yet clear.

#### **4. BLOCK CHINA FROM DEVELOPING ITS OWN SEMICONDUCTOR MANUFACTURING EQUIPMENT BY CHOKING OFF ACCESS TO U.S.-BUILT COMPONENTS.**

Designing and building the equipment for manufacturing semiconductors is among the most technologically complex, expensive, and difficult undertakings that occur anywhere in the global economy. Of all the semiconductor supply chain chokepoints where the United States has significant leverage over China, this is the one with by far the [most durable](#) competitive advantage. However, just in case China plans to launch a crash program to develop its own equipment to manufacture semiconductors, the Biden administration has added license restrictions intended to block the export of any components or items on the [Commerce Control List](#) that would go toward that purpose. Without U.S. components, China's efforts to develop a domestic semiconductor equipment industry would be starting from scratch and attempting to replicate the cumulative achievements of the U.S. semiconductor industry over the past seven decades. It is an extremely tall mountain to climb.

### *Three Key Takeaways from the Biden Administration's Actions*

In summary, the United States does not want China to have advanced AI computing and supercomputing facilities, so it has blocked them from purchasing the best AI chips, which are all American. It does not want China designing its own AI chips, so it has blocked China from using the best chip design software (which is all American) to design high-end chips, and it has blocked chip manufacturing facilities worldwide from accepting entity-listed Chinese chip design firms (as well as any Chinese chip company building high-end chips) as customers. Finally, the United States does not want China to have its own advanced chip manufacturing facilities, so it has blocked them from purchasing the necessary equipment, much of which is irreplaceably American.

In weaponizing its dominant chokepoint positions in the global semiconductor value chain, the United States is exercising technological and geopolitical power on an incredible scale. The targeted nature of the Biden administration's actions here suggests three important implications about its worldview.

First, the United States believes that China is willing to take extraordinary measures—including but not limited to spending hundreds of billions of dollars, hacking U.S. companies, and creating networks of shell companies—in order to evade export controls and free itself from dependence on U.S. semiconductor supply chains. The four interlocking chokeholds in the U.S. policy are also extraordinary measures. However, the past decade of Chinese technological progress shows that anything less simply will not work. Take, for example, the fact that the new export controls not only block the sales of the items but also effectively prohibit U.S. individuals and corporations from facilitating such exports or transferring any relevant technological know-how. When it comes to China's AI and semiconductor industries, the United States is done with half measures.

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Second, the United States is not wielding its semiconductor supply chain power to force China into an economic recession and inflationary spiral, as this year's U.S.-led technology export controls against **Russia** were intended to do. Rather, the United States is wielding its power forcefully, but at a limited set of Chinese targets, in order to preserve U.S. chip power and leverage over the long term. The Biden administration is signaling that it believes that—despite all the United States' considerable technological advantages in semiconductors—its lead is not so overwhelming that China would never have caught up. The Biden administration clearly believes that government action is and will continue to be required in order to preserve and extend U.S. leadership in semiconductors.

Based on an incomplete picture of the Biden administration's policy, critics have said that the recent export controls are wastefully spending that power prematurely. Now that the policy's fuller dimensions are clear, it would be more accurate and appropriate to say that the Biden administration is spending some of that power in order to invest in its future. In that regard, these actions are fully consistent with the Biden administration's other flagship semiconductor policy, the recently passed CHIPS and Science Act, which commits the U.S. government to **investing** \$52.7 billion for American semiconductor research, development, manufacturing, and workforce development. Perhaps that major investment will partially assuage the concerns of U.S. semiconductor companies about their lost revenue from China.

Third, this policy signals that the Biden administration believes the hype about the transformative potential of AI and its national security implications is real. Right now, the performance benchmarks for the advanced AI chips that China is prohibited from purchasing only apply to a relatively small set of overall market demand. However, the Biden administration intends to hold those benchmarks constant, meaning that the gap in performance will grow over time as the world advances and China remains stuck behind. It is as though the United States is saying to China, "AI technology is the future. We and our allies are going there. You can't come."

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### *Key Challenges and Questions for the Policy Community*

Overall, this policy represents an astutely targeted step forward for U.S. national security and technology leadership in both AI and semiconductors. But there are lingering gaps in the policy that the Biden administration should swiftly seek to address.

1. All Chinese AI chip design organizations need to go on the Entity List, and the Department of Commerce needs the intent and resources to manage the Entity List much more rapidly. It is extremely telling that the department was unable to add leading Chinese AI chip companies such as Cambricon to the Entity List in time for the rollout of this policy. Chinese organizations can change shell companies to evade export controls in a matter of days or weeks. The Department of Commerce



should be empowered to act equally as fast. Fortunately, another set of rule changes announced on the same day changed the handling of the Unverified List (a sort of precursor to the Entity List for cases where the government has not yet been able to verify an organization's bona fides) and suspended the use of export license exemptions for companies on the Unverified List. With this rule change, the Department of Commerce can now effectively block exports to any Chinese organization in 60 days. This provides a much faster and more flexible response to Chinese shell companies and other export evasion tactics.

2. These export restrictions apply to U.S.-owned entities operating in China, but they do not apply to Chinese-owned entities operating in, for example, India. In fact, there are no U.S. export controls that apply specifically to a company's country of ownership. This greatly increases the challenges associated with preventing the international subsidiaries of Chinese corporations from smuggling chips into China in violation of U.S. export controls. Imagine if several Chinese cloud computing giants purchased 10 percent more AI chips than they need at dozens of their hyperscale datacenters outside of China and then worked to smuggle those excess chips back into China.
3. While this policy dramatically raises the obstacles to China's production of an indigenous supply chain, China is not going to give up. The local government of Shenzhen, a key hub of China's tech sector, has already **established** a series of subsidies for organizations that purchase open source or Chinese alternatives to U.S. EDA software and chip intellectual property. Moreover, these most recent policies primarily focus on advanced chips at high technology nodes. China may now focus on gaining market leverage over older semiconductor technologies. Legacy semiconductor designs made with older technology nodes (>28 nm) still play an important role in the global economy. There are two large markets where older chip technologies remain competitive: (1) chips for devices such as washing machines that do not require the latest technologies and (2) chips for safety critical systems such as aerospace, automotive, and infrastructure systems that are reluctant to change designs that have already made it through lengthy integrated system tests.

China's share of global semiconductor manufacturing capacity has grown from 9 percent in 2011 to 16 percent in 2021, making it the **third-largest producer** (including Chinese facilities owned by non-Chinese companies) after South Korea and Taiwan. Since Chinese wafer fabrication facilities or fabs lack the technology required to make modern, advanced chips, their manufacturing capacity is overwhelmingly concentrated in older chip technology nodes. The current global semiconductor supply chain crisis has demonstrated that even shortages of less advanced chips can be economically devastating. The United States needs to examine the full spectrum of possible paths to China gaining an advantageous position of leveraging the semiconductor value chain and assess whether or not these paths deserve a policy response.

4. The United States has a dominant position in many segments of the semiconductor supply chain, but other countries have strong positions in other segments and have been **frustrated** by some aspects of recent U.S. policy. The export controls and sanctions against Russia from earlier this year were successful in large part because they were multilateral and included the participation of every major chip-producing country except China. These most recent Biden administration actions included prior consultation with allies, but they are fundamentally unilateral. The United States needs to ensure that all of its allies are rowing in the same direction when it comes to keeping China's semiconductor industry down. Taiwan's government **signaled** on October 8 that Taiwanese companies would comply with the law, but cooperation from Europe, Japan, and South Korea is also needed. In the case of South Korea, the policy states that semiconductor manufacturing operations owned and operated by

international firms are subject to a license condition, but not a “presumption of denial.” This flexibility will be helpful in getting South Korea, which has invested significantly in Chinese semiconductor manufacturing operations, on board with the overall policy. However, turning these unilateral export controls into multilateral ones will be a major challenge. Expect this to be a key White House diplomatic priority for discussions with Europe, Japan, Taiwan, and South Korea going forward.

5. These actions make clear that the Biden administration’s policy is to both exploit and protect leading U.S. positions in the semiconductor value chain. However, it is not obvious that all U.S. government activities are aligned behind that goal. For example, the Defense Advanced Research Projects Agency (DARPA) is currently funding research and development into open-source technologies that **may compete** with the dominant proprietary solutions offered by U.S. semiconductor companies, thereby offering China a non-export-controlled path to desirable capabilities. If that is indeed the case, those programs will need to be refocused. (The public descriptions do not provide sufficient detail for a definitive answer.) Open-source technology communities often have a charming David vs. Goliath storyline, but in cases where the United States is Goliath and China is David, the Biden administration needs to make sure that all organizations of the U.S. government are taking actions that support the right team.
6. Finally, and perhaps most importantly, the job of the Department of Commerce’s BIS in terms of administering the export licensing process and enforcing these export controls has gotten exponentially more difficult. From the perspective of China and Russia, U.S. export controls are inflicting tens of billions of dollars of economic pain and an even greater amount of lost future economic growth potential. All of these losses represent the opportunity for a huge return on investment for Chinese and Russian organizations that successfully evade these export controls. While there is no realistic way to reliably measure how much Russia and China are increasing their investment in export control evasion activity, there is every reason to suspect that Russia and China are massively increasing. Is Congress preparing to massively increase investment in BIS in response? Unfortunately, the answer thus far is mostly no. BIS’s budget has increased significantly, but the vast majority of that increased spending is for entirely unrelated new missions that Congress and the White House assigned to BIS, such as **policing U.S. imports** of technology from companies such as Huawei and regulating the exports of small firearms (a responsibility recently moved from the Department of State to the Department of Commerce). BIS not only needs additional financial and staffing resources, but it also needs additional support from the intelligence community, and the White House should make clear to intelligence community leadership that supporting BIS’s enforcement of export controls is a mission at which they need to excel. ■

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