Testimony before the US-China Economic and Security Review Commission

Hearing on "Key Economic Strategies for Leveling the US-China Playing Field: Trade, Investment, and Technology"

Panel II: "Measures to Limit the Flow of Key Technologies to China"

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Thank you for asking me to testify again. I am happy to help the Commission with its work and mission however I can. Although I am now a partner in the international trade group at the Akin law firm and a non-resident Senior Fellow at Georgetown University's Center for Security and Emerging Technology, the views I express today are my own. I am not advocating for or against any potential changes to legislation or regulations on behalf of another. My views are influenced by my 31 years of work in the area, which includes my work as a compliance attorney, a Special Compliance Officer, and my service as the Assistant Secretary of Commerce for Export Administration during both terms of the Obama Administration.

I. Incorporation of Previous Testimony and Recommendations

My testimony today builds upon and updates the following other testimony and commentary relevant to your hearing, which I offer to the Commission for its consideration:

- A May 1, 2022 article describing why a new plurilateral export control regime is needed.

- 2023 commentary directed to audiences in Japan and South Korea about the need for the allies to give themselves the legal authorities and resources to enable plurilateral controls to address contemporary common security threats and human rights issues.

- May 11, 2023 testimony before a House Committee on Foreign Affairs subcommittee, which (i) describes the policy objectives for recent export controls; (ii) contains recommendations for how to make export controls more effective and less counterproductive; and (iii) calls for more resources for BIS.

- February 28, 2023 testimony before the Senate Banking Committee, which describes (i) lessons learned from FIRRMA regarding the need for allied outreach; (ii) the policy history of ECRA and the public debate about export control policy; (iii) how export controls are being used for strategic objectives; and (iv) recommendations for how to make export controls more effective and less counterproductive.

- September 8, 2021 testimony before the US-China Economic and Security Review Commission, which describes why a coherent statement of the contemporary national security objectives is needed to make effective export control policy (which has largely occurred since this testimony).

- A January 14, 2022 comment on US-EU control issues, which describes (i) the history of allied, US, and multilateral dual-use export controls; (ii) the scope of EU authorities to create unilateral controls; and (iii) recommendations for better EU-US export control coordination.

In re-reading what I have written before, the summary of my primary public advocacy for the greater good in the area is the following:

- The force multiplying technologies and the national security threats are materially different than they were when the current regime-based export control system was largely created in the 1990s to address primarily non-proliferation objectives. Thus, the national security objectives of export controls should expand accordingly.

- To make such new controls both more effective and not counterproductive, they need to be plurilateral, i.e., imposed by the producer nations in addition to the US. Although short-term and long-term unilateral (i.e., US only) controls are, of course, warranted in some cases, history and basic economics confirm that they eventually become ineffective and counterproductive (at different rates, depending on the technology) because they create a structural regulatory and economic incentive for US companies and their foreign competitors to develop the technologies outside the United States with non-US technology and content.

    - **This means that if ever the justification for a new control is solely to help US industry succeed economically, it will always eventually result in precisely the opposite outcome because no ally is going to agree to a plurilateral control just to help US industry.**

- For the new, non-classical China-specific strategic controls to have a chance at becoming plurilateral, the US needs to devote considerably more time, resources, and political capital to (i) convincing the allies that the new controls are critical to addressing *common security threats* (as opposed to US economic protectionist objectives); and (ii) listening and responding to legitimate allied concerns about the impact on their economies of their imposition of comparable controls.

    - **This means that if the allies are going to impose new types of controls in their systems, they must believe it is in their security interest to do so.**

- For any agreed-upon plurilateral controls to be effective and nimble, the US is going to need to work with the allies to substantially increase (i) their legal authorities to impose list-based, end-use, end-user, and service controls for items and activities outside the scopes of the mandates of the four primary export control regimes; (ii) their resources for their export control licensing, policy, technical, and enforcement agencies; and (iii) inter- and intra-governmental coordination on licensing, emerging technology policy analysis, and enforcement.

- The allies should together use export controls to address traditional and contemporary threats to common human rights objectives.

    - **Because most items used to commit human rights abuses, particularly with respect to mass surveillance, are widely available commercial items, the allies are going to need to agree to create end-use, end-user, and service controls in addition to traditional list-based controls on specific items to have an impact.**

II. Terminology

- The word "effective" in my comments refers to the topic of this panel, which is how to limit the flow to China of key technologies warranting control, from whatever source.

- The word "counterproductive" in my comments refers to the title of this hearing, which is how to make the regulatory playing field level for US industry.

- "Plurilateral" controls are those like-minded countries impose with some degree of coordination together outside or adjacent to the structure of the multilateral export control regimes.

- "Multilateral" controls, in this context, are those that are imposed because of consensus agreements within one of the four primary multilateral export control regimes.

- "Classical controls" is my term for controls imposed to address the non-proliferation-focused definition of national security objectives for export controls created in the 1990s. (These are still important controls, but not adequate to address additional contemporary national security issues created by Russian and Chinese state policies and the force-multiplying nature of emerging technologies.)

- "Unilateral" controls, in this context, are those only the United States imposes.

- "Extraterritorial" controls are those the US imposes over foreign-made items outside the United States because they contain US content or were produced from US technology or software, or with equipment that was produced with such

technology or software. The "de minimis" and the "foreign direct product" rules are the two ways the Export Administration Regulations (EAR) impose extraterritorial jurisdiction over such items.

- "US person" controls are those that are over activities of US companies or citizens when the underlying commodities, software, and technologies involved in the service are not subject to US controls. A "services" control is the same concept, except imposed by other countries over their companies and citizens.

- "List-based" controls are those against identified commodities, software, and technologies on a control list.

- "End-use" controls are those against exports, reexports, and transfers of unlisted items if for specific end uses.

- "End-user" controls are those against specific entities and generally apply to exports of otherwise unlisted or uncontrolled items.

III. General Comment About the Status of the Export Control Policy Discussion

Thirty-one years ago, I started working in export control compliance, enforcement, and policy issues, which was at the end of the Cold War-era's COCOM system. At the time, I worked for subject matter experts who had been working in the area since the middle of the Cold War. I have seen the long arc of the policy's evolution and past failures and successes. For most of that time, few serious policy thinkers focused on or even knew about export controls. I can, therefore, say with authority that the area is going through a policy transformation far more significant than was the case during the collapse of the COCOM system.

The public discussion is largely about what the national security and foreign policy objectives for export controls should and could be regarding exports to China and Chinese companies of commercial items that are enabling and emerging technologies given China's military-civil fusion policies and China's status as the pacing challenge for American and allied militaries. A related discussion is about which commercial items, end uses, and end users warrant controls to address contemporary human rights issues. There are many different views on the solutions to these issues by many people new and old to the area. This is terrific. With all the new attention to the topic by people with a wide range of backgrounds and expertise, the ultimate policy outcomes will likely result in outcomes for the greater good. So, I thank the Commission and others in the policy analysis community for spending so much time on what was once a highly esoteric topic.

After a summary of my recommendations for the Commission to make to Congress, I have structured my written remarks to respond to questions I understand the Commission members and staff have.

IV. Summary of My Recommendations for the Commission to Make to Congress.

My primary recommendations to the Commission for making to others to help make export controls more effective and less counterproductive, particularly with respect to issues involving China and Russia, are the following:

1. Support Administration efforts to work with the allies to develop and articulate together a significantly expanded vision for export controls to address contemporary common strategic security and human rights issues that are outside the scopes of the existing post-Cold-War-era multilateral export control regimes.

2. To ensure that such a vision can be implemented and updated in allied country domestic regulations and policies over the long term, support Administration efforts to create a new, additional multilateral export control regime to identify:

    a. items of classical non-proliferation and conventional military concerns that cannot be addressed by the existing regimes given Russia's membership (which gives it a veto);

    b. items outside the scopes of the existing regimes' mandates that warrant strategic trade controls, particularly with respect to China and Russia;

    c. items used to commit human rights[1] abuses anywhere in the world; and

[1] The Australia Group is the only regime that does not include either Russia or China. It has, as a result, been the only regime to be able to put forward in recent years material changes to controls, including the addition of controls over emerging technologies such as DNA software synthesizers and foundational technologies that impose emerging chemical-biological weapons threats, such as marine toxins, novichoks, and peptide synthesizers. Thus, it is an example of what can happen when only like-minded countries work together on contemporary export control issues. That said, the Australia Group does not have the mandate or authority to identify for participating state control biotechnology items that do not have a WMD-related nexus. Thus, for example, the Australia Group does not identify for participating state control biotech items used in human rights violations, such as DNA sequencers and related accessories and reagents. One of the mandates of the new regime I advocate would be to address such issues that cannot be addressed because of the organizational and subject matter limitations of the WMD- and conventional-weapons focused regimes.

d. unlisted items to, and activities in support of, end uses and end users of concern to enhance the effectiveness of such controls.

3. Support Administration efforts to work with the allies to create and announce in 2024 standards describing the legal authorities and resources necessary for an allied country's export control agencies to (i) control such items and activities; and (ii) effectively enforce such controls.

4. Once such standards are developed, even in draft, support Administration efforts to work with allied legislatures and executive branches to create for their export control agencies such authorities and resources to enable the quick and effective creation of plurilateral controls over items and activities to address contemporary common security and human rights issues.

5. Echo in a regular and bipartisan way that a new regime (even an ad hoc plurilateral regime of Wassenaar member states), the proposed new way of thinking about strategic export controls, and the creation of new legal authorities in allied countries are in the *common security* interests of the allies. To help overcome the current allied skepticism of these ideas, make it clear that the ideas are not part of a mercantilistic plan to advantage US companies to the economic detriment of allied country companies. To enhance this message, create incentives and benefits, such as significant reductions in unnecessary trade barriers and increased market access opportunities, for allied participants in a new regime and plurilateral strategic trade control arrangements.

6. Support Administration efforts to work with the allies and partners to create formal export control-focused and dramatically better-resourced data mining, investigation, and enforcement coordination efforts, with particular attention to global distributor and reseller networks. New rules without robust data analysis and enforcement are wildly less effective.

7. In addition to providing the Administration with all the resources necessary to implement these recommendations, fund and require the Administration to create within the departments of Commerce or State, or in the NSC, a senior position (e.g., a "Special Envoy"), with all the necessary expertise, staff, and resources, to devote their full time and attention to doing the hard, time-consuming work with the allies necessary to help the US export control agencies convert these recommendations into actual allied country regulations and policies.

8. Similar to what the Treasury Department is doing with respect to sanctions, and to better implement section 4811(3) of the Export Control Reform Act of 2018 (ECRA), Congress should fund the creation of a Commerce Department office focused on studying and regularly reporting to Congress on the effectiveness of old and new export controls, and

identifying those that are counterproductive for US industry and national security and foreign policy objectives. (It may surprise the Commission to learn that BIS does not have resources to evaluate properly the effectiveness of most of its controls.)

9. Require the creation and submission of a public report from the export control agencies on the impact of the following laws of China and their impact on (i) the US Government's ability to review diversion risks in export license applications, (ii) the reliability of audit and disclosure findings, and (iii) the ability of companies to comply generally with the export controls and sanctions: the National Intelligence Law, the rules on Counteracting Unjustified Extraterritorial Application of Foreign Legislation and other Measures, the Countering Foreign Sanctions Law, the Cyber Security Law, the Internet Security Supervision and Inspection by Public Security Bodies Law, the Data Security Law, the Counter-Espionage Law, and others described on pages 23 and 24 of the Defense Department's 2023 report on military and security developments involving China. The study should also address whether the State Department's travel warnings have an impact on the ability of companies to ensure compliance with export control regulations.

V. Highly Condensed and Simplified Chronology of the Evolution of the National Security Objectives of Export Controls

To set the stage for my commentary and recommendations, it is important to know the essence of how the national security policy objectives of dual-use export controls have evolved over the decades.[2]

Cold War -- Under COCOM, export controls had broad non-proliferation objectives as well as broad strategic objectives to contain the Soviet Union and its allies. Allies coordinated on individual licensing decisions.

Post-Cold War to Today -- Under the four multilateral regime system, the primary -- "classical" -- national security objective of export controls has been to, in essence, regulate:

(i) weapons of mass destruction (WMD) (nuclear, chemical/biological and missile-related items);

(ii) conventional military items (and items of importance to terrorists); and

[2] Apologies to all the subject matter experts and government officials who can easily identify dozens of other rules and developments along this timeline. This highly generalized chronology is solely for the purpose of setting up my points later, not to give a complete history of all rule changes and their nuances.

(iii) the bespoke and dual-use commodities, software, and technology that have some identifiable relationship to their development, production, or use.

"Catch-all" controls on services involving uncontrolled technologies were limited to those in support of the development, production, or use of WMD.

- Understanding the scope of these "classical" controls is important because the allied country export control laws and systems are largely based on, and limited to, them.

- This system was created in an era when it was easier to tell the difference between which items were of clear benefit to "civil" and, separately, "military" applications and end users.

- Within the "national discretion" concept, each regime member determines whether a license should be granted based on its own assessment of the diversion risk and its own national security considerations.

2017 to 2018 -- Bipartisan and public discussion of what became ECRA. ECRA codifies the authorities for classical export controls. It also requires an "ongoing" assessment and control of the "emerging and foundational technologies" that are "essential to national security" that are not within the scope of classical, regime-based export controls. Neither Congress nor the Administration defines what these terms mean, although many have opinions.

- This ECRA provision and the policy discussion were largely in response to China's (i) military-civil fusion policies to modernize its military capabilities; (ii) technology acquisition policies to strategically subsidize capabilities in critical economic sectors; and (iii) massive human rights abuses using such technologies.

2018 to Today -- Lively discussion within think tanks, the Administration, Congress, the Commission, the media, and industry about which additional technologies should be controlled for which reasons, and whether such controls would be effective and not counterproductive.

August 2020 -- The Bureau of Industry and Security (BIS) expands the extraterritorial application of the Export Administration Regulations (EAR) Foreign Direct Product rules to apply to otherwise uncontrolled foreign-made items produced with US technology or software, or equipment produced with US technology or software, if destined to or involving a Huawei-related company. The concept behind this jurisdictional change becomes the defining characteristic of all the significant follow-on China- and Russia-specific extraterritorial controls.

2021 to Today -- Consensus-based Wassenaar Arrangement starts to break down because Russia and others block progress in identifying new technologies for identification as dual-use items to be controlled.

February 2022 -- US, allies, and partners begin imposing export controls on commercial and industrial items outside the classical dual-use controls to achieve strategic objectives against Russia, namely, to cut off the flow from the US and its allies and partners of the items necessary for Russia's industrial base to continue to function given its relevance to supporting the continued invasion of Ukraine.

September 2022 -- National Security Advisor Jake Sullivan sets out the beginning of what becomes the coherent US national security strategy pertaining to export controls and China -- "Computing-related technologies, biotech, and clean tech are truly 'force multipliers' through the tech ecosystem. And leadership in each of these is a national security imperative." "[W]e have to revisit the longstanding premise of maintaining 'relative' advantages over competitors in certain key technologies. We previously maintained a 'sliding scale' approach that said we need to stay only a couple of generations ahead. That is not the strategic environment we are in today. Given the foundational nature of certain technologies, such as advanced logic and memory chips, we must maintain as large of a lead as possible."

October 2022 -- BIS publishes novel, unilateral, extraterritorial list-based, end-use, end-user, and US person services controls that are the essence of current export control policy against China, which is, to the extent possible, to stop the development and production in China of:

(i) advanced node semiconductors (logic, NAND, and DRAM at specific technology nodes);

(ii) semiconductor manufacturing equipment;

(iii) advanced computing items important to AI applications (e.g., GPUs); and

(iv) supercomputers.

Point: The Biden-Harris Administration determined that the existence of indigenous capabilities to develop and produce these items in China or by Chinese companies is a per se national security threat.

April 27, 2023 -- NSA Sullivan states that "Our export controls will remain narrowly focused on technology that could tilt the military balance. We are simply ensuring that U.S. and allied technology is not used against us. We are not cutting off trade [with China]."

Summer of 2023 -- The governments of Japan and the Netherlands separately impose plurilateral controls over specific semiconductor production equipment important to producing advanced node logic.

- Neither country, however, imposes any controls to track US controls over (i) support by their citizens or companies for advanced node production in China; (ii) end-use controls; or (iii) end-user controls. Thus, the regulatory playing for US industry is significantly unlevel as a result notwithstanding the policy and diplomatic significance of these first plurilateral controls that were not specific to Russia.

October 2023 -- After reviewing the impact of the October 2022 controls for a year, BIS updates them, with the biggest changes being to (i) substantially increase the types of GPUs and other integrated circuits subject to controls; (ii) imposing licensing obligations on shipments to Middle East and other countries of concern for diverting items to China; (iii) imposing controls on exports to any country worldwide if to a company headquartered in China or owned by a company that is; (iv) adding to the Entity List the Chinese companies involved in GPU development; and (v) imposing controls over the use of Chinese-origin GPU designs.

Spring 2024 -- Individual Wassenaar member states begin separately and unilaterally imposing controls on items related to semiconductor production, quantum computing, and additive manufacturing that would have likely been agreed to in earlier years by the Wassenaar Arrangement had it not been for vetoes by Russia and other member states. This is, therefore, the beginning of a new "Wassenaar Minus One [or More]" ad hoc plurilateral coalition, but still within the mandates of the Wassenaar Arrangement charter.

I would encourage you to read the March 2024 keynote speech of Under Secretary Estevez to see a clear summary of the evolution and status of the national security objectives of US export controls.

VI. Is there a coherent US export control policy against China?

Regardless of whether one likes the policy or thinks it is effective, US China-specific export control policy objectives have been relatively coherent and stable since the fall of 2022. To repeat the summary from above, the policy since then has been to use novel, unilateral, extraterritorial list-based, end-use, end-user, and US person service controls to stop or delay the development and production in China (or by Chinese companies) of:

- advanced node semiconductors (logic, NAND, and DRAM at specific technology nodes);

- front-end semiconductor manufacturing equipment;

- advanced computing items important to AI applications (e.g., GPUs); and

- supercomputers.

All the plurilateral efforts, tweaks, proposed legislation, and corrections to the regulations have been in furtherance of these four objectives.

These are the primary "force-multiplying" technologies referred in the Jake Sullivan speeches. Similar controls related to quantum computers are likely to be imposed soon based on the review of the UK and other controls recently imposed. Controls on biotechnology-related items are more uncertain.

Not only are the national security objectives for China-specific export controls relatively coherent, they are echoed in statements of the national security objectives for other adjacent regulations and proposals. For example, one of the more direct statements of the national security objectives and the reasons for the BIS's China-specific export controls is in the Treasury Department's preamble to its August 14, 2023 advanced notice of proposed rulemaking on outbound investment, where Treasury stated the following:

- "Certain advanced semiconductors and microelectronics, quantum information technologies, and artificial intelligence (AI) systems will underpin military innovations that improve the speed and accuracy of military decision-making, planning, and logistics; enable the compromise of encryption and other cybersecurity controls; and advance mass surveillance capabilities."

- "The potential military, intelligence, surveillance, and cyber-enabled applications of these technologies and products pose risks to U.S. national security particularly when developed by a country of concern such as the PRC in which the government seeks to (1) direct entities to obtain technologies to achieve national security objectives; and (2) compel entities to share or transfer these technologies to the government's military, intelligence, surveillance, and security apparatuses."

- "The PRC government explicitly seeks to advance these technologies and to ensure that new innovations simultaneously benefit its military and commercial aims. The PRC government is aggressively pursuing these objectives to confer a decisive advantage to its military, intelligence, surveillance, and cyber- enabled services. The PRC government is also encouraging a growing number of PRC entities to undertake military research and development, including weapons production, which exploit private investments in pursuit of this goal."

The Department of the Treasury, however, has not created regulations to impose sanctions (other than investment controls) against companies in China engaged in military-civil fusion or other activities contrary to US national security interests, such as providing support for the Russian military. This is important to keep in mind because of the inherent limits in trying to address the issues listed above only with the use of export

controls and the eventual new outbound investment screening tools.

VII. What is the reaction of the allies?

I am regularly asked to travel to allied countries to speak at conferences about export control compliance and policy. I participate or listen in to most of the other international export control conferences that are virtual. With the usual caveat about the hazards of sweeping generalizations, most attendees do not really understand why the US Government is imposing its new China-specific controls. Of course, my perspective is defined by the foreign government officials, think tanks, industry representatives, media, and academics who attend the conferences. I am confident US Government officials have much more direct conversations that they cannot report. Nonetheless, the inputs for my blunt observation are quite broad, deep, and consistent. Without understatement, knowing, respecting, and changing these attitudes will be critical to the success of US export control policy. Basically, most attendees do not see the national or common security justification of the controls. "What is the relationship between 128 layer NAND and a nuclear weapon?" "Semiconductor production equipment just make chips and have nothing to do with weapons." "GPUs are for games and datacenters." "North Korea is a threat. China is a market."

Implicit in the questions and comments I hear is the view that an item should only be subject to export controls if it has some identifiable, *direct* and immediately identifiable relationship to the development, production, or use of a weapon. There must be something inherent in the item that makes it usable for a weapon. This is what I refer to as a "classical" export control. Therefore, because all the new China-specific controls are over items and activities that are for civil applications, there is often an assumption that there must be some other motive behind the US Government's actions. There is some "plot," think tank commentators say. The US is imposing the controls as part of its industrial policy to give an economic advantage to specific US companies, most say. (As counsel to many US companies, I can confirm that this is decidedly not true.) The controls are being imposed as "leverage" as part of broader US-China geopolitical objectives, they comment. The controls are "purely political," others mumble.

I politely disagree. National security is the motive of the new controls. To be sure, it is a broader-than-classical view of national security, but national security is still the motive. Given the complex nature of the supply chains and technologies, whether the parameters in the controls are properly calibrated is a separate question. Industry and the US Government need to regularly work together to address inadvertent over- and under-controls. Indeed, I add, the controls are all in the *common security* interest of the US and the allied country I am visiting. It is in the national security interest of *that country's* military that the Chinese military does not have the skills and technical inputs necessary to give, for example, their fighter jets and electronic warfare systems the advantage over the allied country's fighter jets and electronic warfare systems. The difference, I say, is that the new controls are in direct response to two things – (i) China's overt policy of using the civil items at issue to modernize its military to give its

weapons and advantage over allied weapons; and (ii) the enabling or, in NSA Sullivan's words, "force-multiplying" nature of the emerging technologies at issue.

That is, instead of attempting to regulate everything, which would be impossible and counterproductive, the new regulations focus on the types of technologies that are critical to making the things of importance to a military advantage work. Instead, for example, of just regulating the radiation-hardened chip that is necessary for a missile to function (a "classical" control, in my parlance), the US is controlling the inputs for the indigenous development and production of the otherwise uncontrolled supercomputers needed to do the advanced designs to modernize the missile. Then, moving my arm to the left, I say, the regulations control the types of semiconductors that are critical to the computers needed for designing the missile. Then, moving my arm further left, the regulations are controlling the semiconductors that are needed to develop the AI-functionality the weapon will need to have quicker reaction times. Then, still moving my arm to the left, the regulations also control the equipment and the items needed to produce the equipment that are needed to produce the semiconductors that are needed for the AI and computer applications that are needed to improve the weapon. Then, in another arm movement to the left, I say they are then controlling the US person services that are needed to keep the tools running that are needed to produce the chip that is needed for the AI and computer applications that are needed to the do computer modeling to modernize the weapon. Furthermore, BIS is sanctioning the Chinese companies that support the development and production of chips that create the AI-related and computer applications that are needed to modernize the missile.

The difference, I say, is that the common security objectives look to the whole of the Chinese technology ecosystem that is needed for it to support the modernization of its weapons. The US is controlling the thing to make the thing to make the thing to make the thing that will give its military the advantage over ours. These are "strategic" country-specific controls targeted at the country that is the pacing adversary for the US and the allies. These strategic controls are in addition to the long-standing China-specific embargoes against anything, regardless of significance, that is in any way designed or modified for a military- or satellite-related item. These classical controls and embargoes, although critical, are no longer sufficient to achieve the broader national security concerns given China's policies.

Most usually say that they understand better the US motives after I go through my strategically-control-the-thing-to-make-the-thing-to-make-the thing routine. Others clearly understand, but quietly do not object because they see the US unilateral controls as giving advantages to their country's companies over their US company competitors. Others understand but say the policy will never work because no ally is going to buy into the same scope of China-specific controls given the size of the market.[3] Others say that the very public nature of the US policy objectives has just accelerated the rate of

[3] A fair point made during the conferences is that the US discussion of new controls is too focused on addressing China-specific issues. There are many additional issues that warrant more controls and policy discussion where the issue is not unique or specific to China, particularly with respect to human rights issues.

indigenous Chinese development of the same technologies US policy is designed to stop. My broader point is that, except for a small number of officials in close allies, most people overseas I meet do not buy into the policy need for the new US China-specific strategic controls.

VIII. Are the new US controls effective?

With the caveat that I am reporting anecdotes and impressions, my sense is that the plurilateral controls on specific types of items are going to be quite effective at delaying and disrupting the indigenous development and production of advanced node semiconductors in China. They, however, only really kicked in last year given the grace periods allowed to the allies. It will take some time for their full impacts to work their way through the systems. The controls over items directly affected by the various extraterritorial foreign direct product rules are also quite effective at delaying and disrupting the production of items dependent upon semiconductors given that all semiconductors on the planet are made, in part, with the use of equipment that is the direct product of covered US technology or software.[4]

The US controls outside the plurilateral controls that are end-use, end-user, or US person service controls have indeed been disruptive and will be effective for a while, but are quickly becoming ineffective. This is so for a very simple reason that does not require any economic data or evidence to consider. No other country has agreed to impose any of these types of controls. To be more specific:

- No other country has imposed controls over the export from their country of unlisted items if in support of the development or production of advanced node semiconductors, supercomputers, or semiconductor production equipment in China. (The US controls are in EAR section 744.23.)

- No other country has imposed controls on the export from their country over items when an entity on the Entity List would be a party to the transaction. (The entities on the Entity List are in Supp. No. 4 to Part 744.)

- No other country is prohibiting its companies and citizens from providing services in support of the development or production in China of advanced node semiconductors, supercomputers, or semiconductor manufacturing equipment. (The US controls are in EAR section 744.6(c)(2)). Moreover, no other country is willing to do what the US has done, which is to connect such services to activities that ultimately benefit the development of China's WMD development programs.

[4] Indeed, for the sake of radically simplifying compliance, leveling the playing field for US and allied industries, and making enforcement easier, particularly with respect to diversions to Russia, an idea to discuss is whether BIS should simply declare all items containing a semiconductor that are destined to one of the prohibited end uses, end users, or destinations in the now 10 (!) foreign direct product rules are presumptively subject to the EAR rather than the current approach requiring evidence of knowledge.

These differences in the scopes of control between the allies and the US are serious and threaten over time to undermine all the good work the US Government has done at developing a coherent common security and export control policy.

Also, when thinking about effectiveness, one must think about effectiveness over different periods. Given the dominance of US industry in the sectors at issue, unilateral controls are almost always effective in the short term. Even for foreign-made items against which an extraterritorial zero de minimis rule or a foreign direct product rule applies, effectiveness over the medium and long term, however, is fleeting because foreign manufacturers can eventually design out US-origin content and stop using US software and tools so as not to jurisdictionally taint their foreign-produced products. Again, this is why plurilateral controls imposed by the producer nations are ultimately critical to the success of the US policy objectives.

Finally, the complexity of the new regulations runs the risk of reducing their effectiveness. The latest rules are among the most complex and novel export control regulations ever published. I realize the rules need to be more complex so that they are tailored and address more complicated technology and supply chain issues. Nonetheless, the funds for BIS's exporter services outreach and training functions have not been increased to match the need. For the rules to be understood, complied with, and enforced, their details need to be easily known and understood by muggles.

IX. What do we need to do to convince the allies that a new way of thinking about the scope of export controls is in our common interests?

I am not in the government, so I do not know what is being said how often to whom. I do not know what evidence or advocacy is being provided. There is, however, clearly considerable progress in developing some ad hoc plurilateral controls in addition to those against Russia. In 2023, the Dutch and Japanese governments each separately imposed plurilateral controls on equipment specific to the production of advanced node semiconductors. As a result of the October 2023 EAR amendments, the US tool-specific list-based controls mostly aligned with the Dutch and Japanese controls. In March 2024, the UK, France, and Spain separately imposed unilateral controls on various types of items pertaining to quantum computing, semiconductor production, and additive manufacturing. As explained in its White Paper on export controls, the European Commission has emphasized the need for greater coordination at the EU level of national control lists, as well as introducing uniform controls on items not adopted by the Wassenaar Arrangement as a result of Russia and other countries blocking progress on votes. Last month, Japan imposed similar unilateral, now plurilateral, controls. I assume the United States and other allies will publish similar implementing controls soon.

These separate, unilateral actions are informally referred to as being part of the "Wassenaar Minus One" approach. That is, if like-minded Wassenaar member states informally agree during the Experts Group meetings that such controls are warranted and would have been agreed to in previous years but for Russia (and perhaps other

countries), then the like-minded countries are agreeing to create plurilateral controls one by one. That like-minded allies have agreed to begin finding or creating the unilateral authorities to impose controls outside the scope of the traditional regime controls should be considered a victory for BIS and the greater good. It is not a tidy new export control regime with a catchy title and a round table, but it is an ad hoc plurilateral arrangement that flows from an existing regime, which also probably is easier from a legal, policy, and optics perspective for most allies to implement.

Although the ad hoc plurilateral controls do not exactly line up across each country (which creates significant compliance complexity), they basically impose new controls against some or all the following items:

- Additive manufacturing equipment that can produce metal components, and related software and technology;
- technology for coating systems;
- integrated circuits that can be used for machine learning of AI systems;
- quantum processors based on superconducting arrays;
- cryogenic cooling systems and related items;
- a variety of additional types of equipment used to produce advanced node semiconductors, and related software and technology;
- scanning electron microscopes for use with semiconductor imaging;
- cryogenic wafer probing equipment used in quantum computer development;
- materials that are used in the production of semiconductors important to quantum computers;
- software designed to extract semiconductor design data;
- technology to develop or produce advanced node semiconductors generally; and
- quantum computers, components, and related software and technology.

Although excellent progress, an even more extraordinary amount of work is going to be needed to continue the harmonization with other allies and addressing additional items that warrant control in this ad hoc way. The export-control-focused staff at BIS and the other export control agencies is not much larger than it was when I was there, but their missions are dramatically larger. The technology and supply chain issues are also significantly more complicated. You will have to speak to a government witness about what additional resources are needed to even have a chance at future success. Based

on a review of BIS's Fiscal Year 2025 budget request, however, it is clear that a massive increase in resources is needed to do the work necessary to make the new controls more effective and less counterproductive.

In addition to what BIS and the other export control agencies have asked for, my view is that the administration also needs an export control-focused ambassador-at-large or a special envoy who reports to the White House, but who coordinates closely with the departments of Commerce, State, Defense, other relevant agencies, and the Intelligence Community. The sole job of this person would be to work with the allies on all the issues pertaining to making plurilateral controls real, effective, and not counterproductive. Of course, BIS and ISN are ultimately responsible and I am not suggesting a change in their positions of authority. My sense, however, is that the job of going country to country to country to country and back again to hear the concerns of each of the allies, to regularly explain in detail the common security justifications for each of the new controls, and to work through ideas for harmonized controls and enforcement is a full-time job. Because the success of all the new export controls (and a level regulatory playing field for US industry) depends upon the allies agreeing that the controls are in their national security interests, too, plurilateral engagement should be the highest export control priority for the Administration at levels and at a pace beyond the already high current levels and pace.

Ideas for what the mission of this new position could include are:

- Working with all the relevant agencies in the governments of countries that are allies or partners to encourage and facilitate their creation of the additional authorities and resources they need to implement and enforce controls on the export, reexport, or in-country transfer of items, and the provision of specific services, that could pose risks to the national security and foreign policy interests of the United States *and those countries*. Such work should include encouraging such countries to implement legal authorities that would allow for their regulation of exports, reexports, and transfers in-country of:

    - specific items that are outside the scopes of the existing multilateral regimes;

    - listed and unlisted items for specific end uses, such as conventional military end uses, that are in addition current "catch-all" controls that are specific to weapons of mass destruction; and

    - listed and unlisted items involving specific end users of concern to common security and human rights interests.

- Working with such governments to encourage and facilitate their creation of authorities beyond those specific to classical non-proliferation objectives that would allow for the regulation of specific activities of their citizens and companies outside their countries if such regulations would be in furtherance of additional

common security and human rights objectives.

- Providing technical assistance to create such authorities and resources. Such efforts should include a public and regularly updated description of the scopes, and differences in scopes, of United States, allied, and partner countries export control authorities and policies to help with compliance efforts by multinational exporters.

- Communicating the risks and vulnerabilities associated with the export, reexport, and in-country transfer of items, and the provision of specific services, that are contrary to national security and foreign policy interests shared among the allies and partners.

- Working with these countries to establish complementary export licensing policies on specific types of items for specific end uses, end users, and destinations.

- Sharing information with the governments of the countries regarding the administration and enforcement of export control policies and procedures.

- Identifying and explaining critical items that are priorities for addressing the national security, economic security, and foreign policy threats to the United States of China's military modernization and human rights abuses, including mass surveillance.

- Regularly providing descriptions and assessments to Congress and the Administration of:

    - the legal, regulatory, and policy areas of potential alignment and gaps or impediments of the relevant allies and partners in any efforts to coordinate, jointly implement, and unify export controls and licensing policies for critical items;

    - the actions necessary to achieve a unified approach to export controls into broader foreign policies and common security objectives with the relevant allies and partners, including through incentives and disincentives; and

    - the increase in resources, authorities, and political commitments needed for the allies to develop comparable export control licensing, policy, and enforcement systems to those of the United States.

- With the support of the relevant US Government agencies, continue to inform the allies and partners about, and develop a common understanding of, the reasons why the new controls are in the common national security interest of all the countries, particularly with respect to the impact of China's:

- military-civil fusion policies and entities contributing to that effort;
- human rights abuses using commercial technologies; and
- national security laws and regulations.

- Assist in the development of new sanctions authorities to use against Chinese companies engaging in activities contrary to common security interests when export controls would not be an effective tool or using them would be counterproductive.

US embassies in the countries at issue, of course, would be critical to providing support to the new special envoy, but could not replace the work of the position in mind. The position needs to have unique subject matter expertise and the ability to distil and provide cross-cutting recommendations to the Administration regarding the issues and options of all the allies and partners.

X. What can the US do to support allies that agree to new, non-classical plurilateral controls?

My core theme is that allies should want to agree to impose new controls for more than just classical non-proliferation reasons because they believe the controls, if plurilateral, are in their national security and foreign policy interests. The plurilateral controls that are needed cannot be developed solely as a result diplomatic leverage and arm-twisting. As mentioned above, getting this done will require massive amounts of time, resources, listening, advocacy, and evidence. It will also require more engagement with the national security establishments and militaries of the allies in addition to their commercial and foreign ministries to break through the usual government policy silos. The US is somewhat rare among allies in having its department of defense directly involved in export control policymaking. Getting allied militaries more involved in the process is necessary to ensure that the discussion of the issues is not left only those responsible for trade policy given that these are common *security* issues.

Nonetheless, for allied country domestic political reasons and to otherwise help take the economic sting out of such new controls, the US government could consider creating a suite of "economic security" options that could be offered in support of the countries that adopt plurilateral controls over items for more than classical non-proliferation reasons. We should all be sympathetic to the point that the allies are much more exposed to the impact of formal and informal retaliation by China than the US is. Think of this topic as the sweetener to the vinegar that is export controls. Please also appreciate that this section is the least developed idea in my testimony. Indeed, most of these ideas are probably bad ideas for other reasons. By raising this topic, however, I am trying to start a larger discussion of this "economic security sweetener" idea with people more expert in these areas than I am. None of the ideas is mutually exclusive.

Idea 1: Create AUKUS-like export control arrangements with other very close allies.

Congress and the Administration deserve great credit for moving the AUKUS changes through legislation and the export control rules. These changes are the logical and policy extension of the Obama Administration's Export Control Reform efforts, which were themselves the logical extension of the Bush Administration's defense trade treaty efforts. AUKUS though is part of a wider US Government effort to coordinate and strengthen the defense relationship between and among Australia and the UK to support defense and technological ties in the Indo-Pacific through reductions in regulatory burdens for the transfer of defense articles and other sensitive technologies. Pillar II of the effort focuses on partner collaboration efforts on advanced capabilities related, among things, to underseas capabilities, quantum technologies, artificial intelligence, advanced cyber, hypersonic, and counter-hypersonic capabilities, electronic warfare, innovation, and information sharing. The US, Australia, and the UK created AUKUS to respond to China's broader military aspirations in the Indo-Pacific region and to respond to President Xi's stated desire to re-unify Taiwan with the mainland. As described in more detail elsewhere, the US has removed most dual-use controls involving Australia and the UK and is working on substantial defense trade reform. In exchange, Australia and the UK are changing their export control systems to make them comparable to those of the United States.

If other close allies were to agree to the whole suite of new plurilateral controls, an option could be that they could become candidates for AUKUS-like Pillar II treatment if they could meet the same conditions as Australia and the UK are expected to meet. In particular, the candidate country would need to demonstrate that it has created comparable export control licensing, policy, and enforcement resources and systems to those of the United States. Thus, an export from that country would be essentially treated and enforced the same way as if it were exported from the United States.

Idea 2: Create dual-use and defense trade license exceptions short of AUKUS-like treatment.

BIS has already asked for comments on how to liberalize controls for allies and partners with respect to License Exception STA. BIS should continue such work. The State Department's DDTC should consider whether there are comparable options for the ITAR, statutory authority permitting.

Idea 3: Require licenses even for allies until and unless they adopt in their own systems the same plurilateral controls.

As noted above, the governments of the UK, France, Spain, Japan, and the Netherlands have each individually announced different types of controls that result in ad hoc plurilateral controls. I assume the US and other allies will be doing so soon. To create incentives for more allies to adopt these and other plurilateral controls, the US and the countries that have acted could continue to require licenses for such items even

to other close allies until and unless the other ally agrees to adopt the same controls in its export control system.

Idea 4: Create novel Validated End User (VEU) authorizations for companies in participating countries.

The Bush Administration created the Validated End User program that allows for exports without individual licenses to specific end users that satisfy various conditions. BIS could create more validated end users for companies in countries that agree to impose plurilateral controls and otherwise enhance the licensing and enforcement systems. Such VEU authorizations allow for the reduction in burden on exports to the authorized companies. That is, they could receive controlled items without having to wait for their vendors and suppliers to apply for and receive individual licenses.

Idea 5: Expand the G-7 membership.

For like-minded countries that agree to impose new plurilateral controls and otherwise ensure that their export control licensing and enforcement systems are robust, another idea would be to move them to the front of the line for G-7 membership consideration. I would expect that South Korea, Australia, and the Netherlands would be interested in this idea.

Idea 6: Create expanded and bilateral critical minerals agreements with allies to adopt plurilateral controls.

Similar to what was agreed to with Japan last year, the US could enter into bilateral agreements to commit to guarantees on access to unprocessed critical minerals and access to expanded processing capacity. This could also include agreements on stockpiling of key minerals that might be the subject of retaliatory controls imposed by China.

Idea 7: Regardless of MFN obligations, reduce tariff and non-tariff barriers in the same or similar sectors at issue in the agreed-upon plurilateral controls.

I am not advocating for general free trade agreements. Nonetheless, to the extent possible (and to the extent they exist), tariffs on items at issue in any new plurilateral controls could be removed for imports into the US from countries that impose them. The Countering Economic Coercion Act could be a model for providing preferential tariffs. One could use the same economic incentives in the act, but tied to whether a country has agreed to impose complementary export controls in addition to being subject to economic coercion.

Idea 8: Improve access to US Government federal grant opportunities.

2 CFR § 200 creates uniform administrative requirements and principles for

discretionary federal grant awards totaling more than a trillion dollars each year. These regulations require grant recipients to use these federal funds "to the greatest extent practicable . . . for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products)." Another idea to discuss would be for Congress to require federal agencies to modify this requirement to allow federal grant recipients to use federal funds to purchase products manufactured in countries that impose new plurilateral controls in addition to products manufactured in the United States. This expansion of potential companies from the participating countries that could provide products and services to federal grant recipients would enhance competition resulting in lower prices to the US Government award recipients, making each federal grant dollar go further.

Idea 9: Create opportunities for participating countries to receive the benefit of federal subsidies, such as the Inflation Reduction Act.

The Inflation Reduction Act (IRA) has gained the attention of companies around the world that are planning billions of dollars of investments into the US EV supply chain. The recent final rules issued by the Department of Energy and the Internal Revenue Service provide clarity on certain key provisions. There, however, remain concerns about the fate of the IRA, especially considering recent bills seeking to further restrict eligibility for the tax credits. One idea could be that Congress would not restrict access to these tax benefits by companies from countries that participate in new plurilateral export controls. Congress could, for example, direct the USTR to negotiate with participating countries to provide waivers or other preferential terms for the companies from these countries to participate in the IRA-compliant EV supply chain, and ensure that any efforts to exclude China from the supply chain do not inadvertently harm companies in countries that would participate in new plurilateral export controls.

Idea 10: Amend the Buy America Act to permit more participation in federal procurement by countries that agree to plurilateral controls.

The Buy America Act requires federal agencies to procure domestic materials and products if the purchases would be for use in the US and the items are available from the US. Another idea would be to lower the current price preference of 50% at the Department of Defense and 20% at civilian agencies for products from participating countries. A lower price preference would result in more direct contract awards for products manufactured in participating countries. Congress could also expand the use of current reciprocal defense agreements to civilian agencies, allowing products manufactured in participating countries to count as domestic end products for the purpose of calculating the cost of components.

Idea 11: Amend the Jones Act to permit limited activities of participating countries in, for example, domestic river activities.

I am not advocating any significant changes to the Jones Act, but rather just for opening a discussion of a limited carve-out in limited situations for close allies that would agree to new plurilateral controls.

Idea 12: Ease US visa requirements and accessibility of US job market for foreign talent from countries that agree to plurilateral controls.

The Immigration and National Act (INA) limits the number of H-1B visas to 85,000 and the number of employment-based green cards to 140,000 per year for nationals all countries combined. The act could be amended to increase these numbers and create set-asides for nationals from the countries that agree to new plurilateral controls. A related topic could be that deemed export controls for nationals of participating countries would be removed.

Idea 13: Ease the standards for becoming a CFIUS-excepted foreign state.

Designation as an excepted foreign state has two steps. The first is that CFIUS must determine that a country is eligible. Beyond being a Five Eyes member, the criteria for being deemed "eligible" by CFIUS for such designation are opaque, if not simply unknown. Second, the state must meet criteria related to the robustness of its foreign investment review process as set out in CFIUS's regulations. The eligibility criteria for the first step could be relaxed and imposition of new plurilateral controls could be an explicit and significant consideration, which would not preclude CFIUS's ability to determine whether an eligible state's foreign investment review process is sufficiently robust to justify it becoming an "excepted foreign state" under the regulations. In other words, a country could get the benefit of being publicly designated as "eligible" without putting pressure on CFIUS to immediately determine that country has met the criteria under the second step.

Idea 14: Enter into scientific and technology cooperation agreements with participating countries similar to the one with the EU.

A related idea to discuss would be for participating countries to receive priority treatment in education or workforce development agreements. The US-Japan Memorandum of Cooperation in Education signed in May 2023 provides a useful template for how such agreements could be structured. The Memorandum both initiated a new high-level dialogue on education between the two countries. It also, critically, mobilized private investment from firms in both countries to finance quantum computing research and a new workforce development program, known as the "UPWARDS Network." UPWARDS brings together leading US and Japanese semiconductor firms as well as universities from both countries to expand the pipeline for semiconductor talent -- responding to forecasted workforce shortages as countries around the world invest in new semiconductor fabrication capacity. Countries that adopt

new plurilateral export controls could be given priority for future agreements of this type.

Idea 15: Allow participating countries to receive Defense Production Act funding.

The Defense Production Act treats Canadian entities as domestic sources for the purpose of receiving industrial base grants and loans under Title III. An idea to discuss would be whether to amend the statute to give "domestic source" status to countries that impose new plurilateral controls. Doing so would streamline technological and industrial base collaboration as well. Another idea could be to open to participating countries DPA and Industrial Base Analysis and Sustainment funding for those that provide ideas for research or prototype project solutions to benefit the industrial base.

Idea 16: Expand access to the National Technology and Industrial Base program.

The NTIB includes those in engaged in national security and dual-use research in the Five Eyes countries. An idea could be to expand the scope to those countries that adopt comprehensive plurilateral controls and meet the other requirements of the NTIB.

XI. Are the controls counterproductive? In particular, are American jobs being lost as a result of the unilateral controls without any gain to the national security objectives?

Although there is some public reporting on job losses as a result of unilateral US controls, I have limited data on the issue that I can share. My impression, however, of the unilateral controls where the US de minimis and foreign direct product rules cannot have a practical impact is that they already are being counterproductive. By counterproductive, I mean that the unilateral controls are creating economic opportunities for foreign competitors of US companies not subject to same controls (or complying with existing extraterritorial controls) that result in direct job losses for the US companies. As the unilateral controls continue and grow, then this economic advantage to the foreign competitors will continue to grow as well. Because such internal data are generally proprietary, however, I would ask that the Commission think of ways of getting this information directly from US industry in a FOIA-exempt or other setting that could protect business confidential information.

The real issue in this question is that the US Government does not know the answer. In the past, I have advocated that Congress fund the creation of a Commerce Department office focused on studying and regularly reporting to Congress on the effectiveness of old and new export controls, and identifying those that are counterproductive for US industry and national security and foreign policy objectives. It may surprise the Commission to learn that BIS does not have sufficient resources to evaluate properly the effectiveness of most of its controls. Such an office would be similar to what the Treasury Department is doing with respect to sanctions, and to better implement ECRA

section 4811(3). The mandate for such an office could include:

- Developing economic analyses that inform the design and implementation of export control policy and provides for the assessment of potential collateral effects of proposed controls.

- Conducting research and analysis on critical items and industrial sectors and assessing the availability of comparable or substitutable such items and capabilities of such sectors in foreign countries.

- Analyzing the long-term economic implications of existing export controls and evaluating their effectiveness in carrying out the policy of ECRA section 4811(3).

- Assessing whether existing controls and potential new controls are effective in stopping or controlling the item at issue from being provided, whether from the United States or other countries, to the destination, end use, or end user of concern.

- Regularly reporting the results to Congress.

XII. When should unilateral controls be used?

For many years, I have been advocating for more work to be done to implement plurilateral controls when the multilateral regime system fails or is too slow. I disagree with the view that advocacy for plurilateral controls is just an excuse not to act. It is opposite. As Congress noted in ECRA in its opening statement of US policy, as history has shown, and as basic economic incentives prove, unilateral controls are eventually generally ineffective and plurilateral/multilateral controls are generally more effective and less counterproductive. There are, however, times when unilateral controls are warranted. For example, the US should not wait for the creation of a human rights-focused export control regime to impose controls and licensing policies on instruments of torture, mass surveillance items, weapons, and other items used in human rights abuses. Of course, we should work with the allies to adopt similar controls, but there is a moral imperative to act out of principle, even if less effective.

Another reason to impose unilateral controls is if there is a particular technology where the US has a unique advantage and controlling it is necessary for national security reasons. There are many such technologies that have been identified by the departments of Commerce, Defense, and State over the years. Unilateral controls are, of course, warranted in situations where the control is needed to prevent harm to the warfighter or others. In addition, ECRA authorizes the imposition of unilateral controls on emerging and foundational technologies. ECRA, however, also requires that they become multilateral within three years unless there is a good reason to maintain the unilateral control. Thus, if there is an urgent need to publish such controls unilaterally, Administration officials should expect that the odds are good that the relevant allies are

going to adopt comparable controls soon thereafter. Finally, an entirely separate hearing is warranted just on the history, use, and effectiveness of the BIS's primary unilateral end-user tool, which is the Entity List. Given the wide variety of companies on the list and reasons for their being listed, I cannot give a short answer on the topic. The answer depends upon an almost company-by-company analysis and discussion.

XIII. What is BIS's licensing policy and process?

BIS does not have the authority to issue licenses without cooperation of the other export control agencies at the departments of Defense, State, and Energy. That is, BIS administers an interagency licensing process consistent with the requirements and standards in the Export Administration Regulations. It is indeed the case that in a small percentage of the total cases the first layer of staff at each of the agencies disagree, sometimes strongly, on whether types of licenses should be granted. When there is disagreement among the agencies, the regulations authorize an agency to escalate the decision to more senior career staff for review at the Operating Committee. Its purpose is to resolve the interagency disagreements based on a better understanding of the facts at issue, and regulatory standards in the EAR and precedent for when a license should be denied, granted, or conditioned. The escalation process is also important to have in those situations when agency staff do not, for whatever reason, abide by the regulatory standards or the agreed-upon administration policy.

If an agency does not agree with the determination of the Operating Committee Chair, then it has the authority to escalate the case to the Advisory Committee on Export Policy (ACEP), which consists of Assistant Secretary-level (or designees) from the departments of Commerce, State, Energy, and Defense. Each agency has one vote. Even still, an agency has the authority to escalate any licensing decision of the ACEP to a cabinet-level Export Administration Review Board (EARB). Appeals to the EARB are rare. Thus, it is correct to say that all licenses BIS has issued were agreed to, or not escalated, by the departments of Defense, Energy, and State. (EARB decisions can be appealed to the President, but that has not happened for decades, I suspect.)

To put this process and the numbers in context, according to the 2021 annual report, in FY 2021, BIS processed 41,446 licenses. 568 of those applications were escalated to the Operating Committee for review. 80 of those cases were escalated to the ACEP for resolution. Although the data are not public on the process thereafter, I would suspect that only a very small fraction were resolved at the ACEP with interagency difficulty. When I chaired the ACEP from 2010 to 2017, almost all decisions on licenses (to approve or to deny) were unanimous.

In any event, it is healthy for there to be disagreements among the agencies, each of which is staffed with people with diverse backgrounds, expertise, and equities. The interagency review ultimately results in a better understanding of the facts, regulations, and concerns so that final decisions can be consistent with Administration policy, the law, and, of course, national security and foreign policy objectives. Under the current

system set up in the 1990s, if any one agency ever were to be inappropriately influenced by outside pressure, the checks and balances of the other agencies' involvement would prevent any applicable license from being issued. This is yet another reason why the process would be harmed if any one agency had a veto or the authority to issue a license over the objections of the other agencies. It is also vital to ensuring consistency with the law and each administration's policy that there be a process to ensure that senior and political officials within each agency have an opportunity to ultimately decide any and every application.

Also, the EAR contain many different licensing policies for different types of exports. Some policies require denial. Some require case-by-case consideration. Some state that applications are presumptively approved. Some state that applications will be presumptively denied. The EAR's licensing policies contain many other variations depending upon the item, the destination, the end use, and the end user. There are no regulatory definitions of the different standards. In my view, however, a policy of presumptive approval should mean that the license should be approved unless there is negative information to suggest a possible diversion to prohibited end use, end user, or destination. A policy of presumptive denial means that the license will be denied unless the applicant and supporting agencies can demonstrate with confidence that the end use and end user of the item will be acceptable. In a presumptive approval policy, it is up to the government to explain why a license should be denied. In a presumptive denial situation, the burden is on the applicant and the supporting agencies to convince all the agencies of the reasons it should be approved.

These comments show that decisions about whether to approve or deny a license are based on regulatory standards that govern BIS's and the other agency's decisions. If someone does not like that BIS issues, after the interagency review, any particular license, then the attack should not generally be on the bureau's (and its interagency colleagues') individual decision (assuming there was a correct and complete understanding of the facts). Rather, attention should be paid to the licensing policy in the regulations describing which exports to which destinations, end uses, and end users should or should not be approved. If the policy does not properly address a current national security or foreign policy issue, then the applicable licensing policy in the regulations should be changed in a transparent way. Attention should also be daily be given to whether each of the agencies are properly applying the agreed-upon licensing policies.

In addition, license approval percentages will always be high because companies generally do not apply for licenses they suspect will be denied. That is, exporters do not usually apply for licenses they know or suspect will be denied based on a review of the licensing policies in the regulations or statements from BIS. (For business and contractual reasons, exporters will occasionally apply for a license knowing it will be denied so that they are able to demonstrate to the counterparty why it could not perform under a contract.) They generally make such decisions to avoid the cost and burden of preparing applications that are not likely to be granted. This means that the numerator in any approval statistic will be based on applications where the exporter generally

believed that the license would likely be approved based on the licensing policies in the regulations. For example, applicants rarely, if ever, apply for licenses to export to China items that are military-related, satellite-related, would involve a known human-rights abuse, or are for a military end use. Such applications will be denied under long-standing licensing policies and are thus not included in any numerator. This result is not unique to BIS. DDTC has a high approval rate for licenses it issues authorizing the export of defense articles for the same reason. My sense is that when the approval percentages get below 90% (and return without action (RWA) rates increase), then this means that the US government is taking a more restrictive licensing policy than the one described in the regulations.

Another comment I often hear is that the issuance of a license is a "waiver" of controls. This is not correct. The issuance of a license is, to the contrary, evidence that the export is *consistent* with US policy, not an exception to it. The regulations requiring the submission of a license are always, by definition, *broader* than the actual denial policy for the items, end users, and end uses at issue. Otherwise, there would be no need for a licensing regime at all. The government wants to see the proposed export before it happens to assess whether there is a risk of diversion based on judgments and information that would not be available to the exporter. For those situations when there is a complete prohibition on exporting something to a particular end use, end user, or destination, then that is what an embargo or comprehensive economic sanction is for. But for unusual situations involving health, safety, or government interests, there is no need for a licensing regime in such cases.

My main point is that if one does not like a particular license policy, then the focus should be on the standard in the regulations for when such licenses should be issued or denied. That is, of course, fair game for a policy discussion. But the issuance of an individual license is not evidence of a "waiver" from or an exception to a prohibition against exports. To get a license, a company must apply to the government for a license explaining why approval would be consistent with the regulations and Administration policy. The application must describe the items, end uses, end users, destinations, and other facts involved. A license application, and a lawyer's providing advice about how to prepare one, is thus evidence of compliance, not evasion. Indeed, BIS trains people how to submit such applications as part of its formal compliance outreach and education efforts. In addition, BIS trains exporters on (and has online decision trees to explain) which activities are and are not subject to the regulations. Indeed, the regulations themselves contain decisions trees describing when an item is and is not subject to controls. Thus, providing advice on which items and activities are and are not subject to the regulations is also not evidence of evasion. It is literally evidence of compliance with the law (described on the BIS website!) and, thus, US government policy. If a policymaker does not like the answer about whether an item is subject to the EAR, then the policymaker should work to change the law and the regulations. The policymaker should also not criticize the exporter for complying with regulations the government has written.

XIV. How should the US go about regulating and controlling emerging technologies and their related exports, particularly when the potential military applications are not yet evident?

A fair criticism of legacy export control identification and control efforts is that they were mostly focused on identifying and regulating the inputs into established technologies of national security concern, primarily weapons that exist or that were in development. There was not as much of a focus as there should have been at studying the potential evolution of emerging technologies and what threats to national security they could present in the future. This is why I and many others advocated for ECRA and its emerging and technologies provision. The standard in this ECRA provision, Section 1758, for controlling emerging and foundational technologies not otherwise controlled in the regime process is when they are "essential to the national security of the United States." 50 USC § 4817(a)(1)(A). That's the entire standard. Congress did not define the terms. Before imposing any such new controls, ECRA requires the decisionmakers to "take into account (i) the development of emerging and foreign technologies in foreign countries; (ii) the effect export controls . . . may have on the development of such technologies in the United States; and (iii) the effectiveness of export controls . . . on limiting the proliferation of emerging and foundational technologies to foreign countries." 50 USC § 4817(a)(2)(B).

With respect to the China and issues such as those related to emerging technologies such as AI applications and quantum computers, I am an advocate for the standard that has governed this part of export control decision-making since Roman times. Start with each weapon or intelligence system that exists *or that could reasonably be created*, and the critical components for each such system, and work backward from that. What are commercially available commodities, software, and technologies critical to developing, producing, and using that item? In China's case, what are the items and services needed to produce those items? What are the items necessary for China to have indigenous capabilities to produce or develop such items? What are the technologies, from whatever source, that would be material to creating or ending a military or intelligence advantage? Few or none of us in this room know the answers to the questions on a technology-by-technology basis.

Another reason I cannot give a complete answer to this question in a few paragraphs is that the analyses and issues for each the different types of technologies are very different. The semiconductor sector is far more mature than the quantum computing sector. China and the US have a high degree of inter-dependency in the semiconductor sector but no interdependency in the quantum computing sector, regardless of modality. The AI sector is diffuse. There are few US or allied chokepoints in the battery or the biotechnology sectors. Also, one must separate out deemed export analyses in the sectors where US success is, in part, dependent upon non-US person visa holders working in the United States from actual exports of hardware, software, technology, and services to other countries that could enhance indigenous capabilities overseas. The foreign availabilities in each of the sectors are also very different, which affects assessments of how effective any particular control could be.

A key public resource for thinking through the policy justifications for the controls is the Defense Department's annual report on "Military and Security Developments Involving the People's Republic of China." There are certainly detailed classified technical analyses of the same points. This is where the Defense Technology Security Administration (DTSA) takes a leading role for the Defense Department. It is the point agency for the export control system to go each of the services, labs, and other parts of the Defense Department to get the inputs from those directly involved in the development and production of the weapons and intelligence systems to answer these questions. Across the Defense Department are daily efforts to identify how emerging technologies, such as AI- and quantum computer-related applications, will advance military modernization efforts. In addition, with respect to most emerging technologies, the Department of Energy and its labs play a leading role at defining and explaining the technical problems and the issues. The Department of State takes the lead at defining human rights policies and the broader foreign policy implications of any such new controls. Commerce's BIS then, of course, uses its expertise on all such issues to distil the interagency consensus into regulations that are understandable, enforceable, and consistent with the structure of the EAR.

My answer to the question then is focused on ensuring that there is a regular order interagency process involving well-funded agencies staffed with subject matter experts in each of the technologies who also understand the threats, the supply chains, the existing legal authorities, and the limits of export controls (as opposed, e.g., to sanctions or other trade tools). In the end, it is all about the staff, who can only be hired with sufficient Congressional funding for each of the export control agencies.

XV. Where is the list of emerging and foundational technologies?

During my previous USCC testimony I was asked when BIS will publish the list of emerging and foundational technologies. First, ECRA does not require the creation of a one-time list. Rather, ECRA Section 1758 requires Commerce to "lead a regular, **ongoing** interagency process to identify emerging and foundational technologies that are essential to the national security of the United States" and that are not already controlled. 50 USC § 4817(a)(1). Second, BIS has published the first unilateral controls on such items with its October 2022 rule described above, which clearly meets the spirit and purpose of Section 1758, although not the letter of the section. That is, ironically, in its first major effort to publish unilateral controls on emerging and foundational technologies, BIS overtly chose not to do so under ECRA's emerging and foundational technologies authorities. BIS wrote that "due to the urgent need for this rule to counter China's actions, it will not be published as a Section 1758 technology rule, which would include a notice and comment period (50 USC § 4817(a)(2)(C))." 87 Fed. Reg. 62186, 62188 (Oct. 13, 2022). In other words, BIS wanted to publish the new unilateral emerging and foundational technology controls but did not want to wait for the completion of the public comment period that Section 1758(a)(2)(C) requires before doing so. Finally, BIS did not stop its efforts to identify emerging and foundational

technologies. Rather, BIS stated that because ECRA does not define either "emerging" or "foundational" technologies, or what the difference is between them, it made more sense to accomplish the objectives of ECRA Section 1758 by simply referring to such technologies as "Section 1758 Technologies." 87 Fed. Reg. 31195 (May 23, 2022).

XVI. Conclusion

Thank you again for asking me to testify. **I realize that my recommendations about working with the allies to convince them to adopt broader-than-classical export controls are naïvely optimistic. However, all the other alternatives are worse.** I am happy to answer now or later any questions you have on export control issues. I am serious when I say that I have a 3-minute, 30-minute, 3-hour, and 3-day version of each such answer.