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Semiconductors: European Views on Four 2029 Tech Transfer Regime Scenarios

POLICY PAPER • SEPTEMBER 2025

INSTITUT Montaigne
CEIAS Central European Institute of Asian Studies
VUB BRUSSELS SCHOOL OF GOVERNANCE CENTRE FOR SECURITY, DIPLOMACY AND STRATEGY
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The Fourth Industrial Revolution, US–China rivalry, and Russia's invasion of Ukraine have led to a proliferation of technology transfer restrictions. These have, to a large extent, been imposed by the US, but China has also imposed a significant number. They go far beyond the multilateral export control list maintained through the Wassenaar Arrangement, which remains the foundation of European export control regimes. It is not surprising that this has strongly affected the business dealings of semiconductor companies and research technology organizations (RTOs), including European players. After all, chips are of immeasurable strategic importance—they form the central nervous system of our defense, medical, and other critical sectors and the wider economy. In addition, advances in semiconductor technology can strengthen military capabilities—or even unlock new ones. Therefore, advances in semiconductors indirectly affect the balance of power in Europe and East Asia.

Where will this all end? This paper seeks to support the European Commission and EU Member States in designing realistic and effective technology transfer regimes that are in the EU's interests. It provides a detailed overview of the preferences and expectations of key players in the European semiconductor ecosystem regarding this topic. In April 2025, the EUISS welcomed thirteen legal counsels, directors, and other representatives responsible for compliance, export controls, sanctions, research security, and related issues from ten leading European semiconductor companies and RTOs. During this Delphi scenario workshop, the participants rated the achievability, effectiveness, and desirability of four scenarios for a post-Wassenaar world, set at the end of the second Trump administration in January 2029 (see Table 1 for the scenario names and Appendix A for the full scenarios). The participants gave their views in anonymous, identical pre-event and post-event surveys, as well as during a three-hour discussion. What follows is a summary of the group's views, with a focus on the experts' definitive judgments in the final survey (see Table 2).

Table 1 • Mini-summaries of 2029 scenarios for a post-Wassenaar world

Scenario 1. An Extraterritorial Patchwork: Rapid Expansion of US Controls

> Trump 2.0 finds bi- and mini-lateral deals too time-consuming. Instead, Washington expands its extraterritorial patchwork throughout 2025, leaning more on unilateral tools to limit EU exports and technology transfers to China. EU industry is forced to continuously adapt to ad hoc US Bureau of Industry and Security (BIS) edicts. By the end of 2027, the US has blocked exports of a wide range of additional advanced and legacy semiconductor technologies, discouraged the EU from accepting Chinese foreign direct investment (FDI), and is taking extraterritorial measures to force EU research institutes to sever ties with Chinese researchers and research institutions.

Scenario 2. Fortress Europe: A Unified EU Technology Transfer Regime

By mid-2027, the EU Member States mandate the Commission to develop a comprehensive EU technology transfer restriction regime. Final decisions on EU semiconductor exports to or investments in this sector from China are made by a new EU body. The EU coordinates restrictions with external partners, but only after reaching agreement internally. By late 2028, the US seeks to extraterritorially ban the servicing of almost all semiconductor manufacturing equipment (SME) already in China and the export of a broad range of advanced and legacy EU semiconductor technologies. The European Commission encourages EU companies to ignore US regulations and prepares a diplomatic response.

Scenario 3. CoCom2.0: An American, European, and East Asian Coalition of the Willing

By late 2027, most EU Member States, the US, and their partners in Asia band together in a new Coordinated Committee on Multilateral Export Controls (CoCom2.0), based on the Cold War regime that curbed technology transfers to the USSR. From that point on, decisions on technology transfer cases are made by a specialized committee established through the G7. By early 2028, CoCom2.0 blocks almost all tech transfers to China of the types that the US, the EU, and other partners included in the sanctions packages against Russia following its invasion of Ukraine.

Scenario 4. A US–China Grand Bargain: Relaxation of Technology Transfer Controls

Above all else, President Trump seeks to reduce the US trade deficit. Throughout the first two years of his second term, he continuously increases import tariffs on Chinese goods. Trump 2.0 also blocks exports of a growing number of high-tech goods. But the China hawks lose. In late 2026, Trump finally gets his much-coveted US–China Phase Two Trade Agreement. Washington rolls back all technology controls that came into place after Biden left office as Xi promises to prioritize purchases of US semiconductors and other products. Meanwhile, the EU does not centralize its own decision-making on technology transfers.

From the perspective of European semiconductor firms and RTOs, the future of technology transfer regimes looks bleak. Of all imaginable futures, participants consider only the *Fortress Europe* scenario to be convincingly in line with EU interests. However, in the participants' assessment, the scenarios they find most opposed to EU interests—an *Extraterritorial Patchwork of Ever-Expanding US Controls* and a *US–China Grand Bargain*—are also the most likely to become reality by January 2029. They expect that the United States—not the EU or its Member States—will shape future technology transfer regimes, including by relying increasingly on unilateral, extraterritorial controls. These US-spearheaded regimes will regulate and curtail even more trade and other forms of technological cooperation between the EU semiconductor ecosystem and China.

The participants question the effectiveness of all four technology transfer regimes to prevent the strengthening of China's armed forces and industrial dominance. EU industry and RTOs expect that even the most stringent future technology transfer regimes—under the *Expanding Extraterritorial Patchwork*, *CoCom2.0*, and *Fortress Europe* scenarios—are likely to be "somewhat effective" at best in achieving these aims. However, they do acknowledge that a *US–China Grand Bargain*, a scenario in which controls are eventually rolled back to January 2025 levels, would be far less effective.

The participants would prefer a predictable technology transfer regime, even if it would block a wider range of exports to and other interactions with China. The competitiveness of the EU's semiconductor industry and RTOs is best served if Europe pushes for a new multilateral technology transfer regime, meaning a *Fortress Europe* or, if needs be, a *CoCom2.0* scenario. Crucially, the participants stress that a more stringent export regime should go hand in hand with protecting European and partner markets against China's below-market price production. As *CoCom2.0* is the broadest coalition, it encompasses the largest market for European semiconductor firms and thus offers the most promising joint market protections. A failure by the EU and its Member States to actively push for a technology transfer regime beyond today's Wassenaar Arrangement will result in technology transfer regimes that pose greater risks to the EU's semiconductor competitiveness—that is, such a failure is likely to lead to the *Expanding Extraterritorial Patchwork* or *US–China Grand Bargain* scenarios.

Table 2 • EU industry and RTO views on four 2029 technology transfer regimes: Post-workshop survey outcomes

Survey Question	Scale	Scenario 1. Expanding Extraterritorial Patchwork	Scenario 2. Fortress Europe	Scenario 3. CoCom2.0	Scenario 4. US–China Grand Bargain
Q1. Achievability, meaning likelihood that regime is a reality by January 2029	0 = Extremely unlikely 10 = Extremely likely	**7.89**	**3.22**	**3.44**	**4.89**
Q1a. Support of NATO allies & EU partners around the world for regime	0 = No support 10 = Complete support	**4.00**	**3.67**	**5.11**	**3.22**
Q2a. Effectiveness(i), meaning likelihood that regime prevents strengthening China's armed forces	0 = Extremely ineffective 10 = Extremely effective	**4.44**	**4.00**	**5.00**	**2.55**
Q2b. Effectiveness(ii), meaning likelihood regime prevents strengthening China's industrial dominance	0 = Extremely ineffective 10 = Extremely effective	**5.11**	**5.00**	**5.11**	**2.78**
Q3. Desirability, meaning whether the regime is in the EU's interest	0 = Entirely in opposition to EU interests 10 = Entirely in line with EU interests	**2.78**	**6.44**	**5.55**	**3.00**
Q3a. Level of threat to EU industry and RTO competitiveness	0 = Poses severe threats to competitiveness 10 = Poses no threats	**2.89**	**5.22**	**4.00**	**3.44**

Survey Question	Scale	Scenario 1. Expanding Extraterritorial Patchwork	Scenario 2. Fortress Europe	Scenario 3. CoCom2.0	Scenario 4. US–China Grand Bargain
Q3b. Vulnerability of EU and EU Member States to retaliation by China	0 = Extremely vulnerable 10 = Not at all vulnerable	**4.22**	**5.00**	**4.44**	**4.67**
Q3c. Leverage that regime provides in negotiations with the US on future technology transfer restrictions	0 = No leverage whatsoever 10 = Far greater leverage	**2.11**	**4.89**	**3.67**	**2.56**

The color with which each cell is filled—gold, silver, bronze, or white—indicates the rank of the scenario on each of the three indicators. For example, Scenario 1 is ranked first (gold-colored) in terms of overall 1. *Achievability* but only second (silver) in terms of 2. *Effectiveness* and fourth (white) in terms of 3c. *Leverage vis-à-vis the United States*. Scenario 2 is ranked third (bronze) in 2. *Effectiveness*. Nine directors, legal counsels, and other representatives responsible for compliance, export controls, sanctions, research security, or related issues from nine different leading EU semiconductor companies and RTOs filled out the post-event survey.

The participants stress that in all scenarios, the EU and its semiconductor ecosystem remain "somewhat" vulnerable to retaliation by China. All participants acknowledge that China has many tools it can use to retaliate against EU firms and countries. These include limiting the use of EU semiconductors in China-manufactured products and reducing supplies of critical raw materials. For most EU semiconductor firms, China has become a "must have" rather than a "nice to have" market. Yet several participants argue that European companies have already missed out for years on more and more sales on China's market, because of Beijing's state-led policies to indigenize the semiconductor value chain. Finally, the participants expect that establishing a new multilateral technology transfer restriction regime—under the *Fortress Europe* or, to a lesser extent, the *CoCom2.0* scenarios—would provide European governments with more, albeit still limited, leverage in negotiations with the United States.

Introduction

The confluence of a new wave of disruptive technologies, strategic competition between the US and China, and Russia's invasion of Ukraine has triggered a sharp increase in technology transfer restrictions. The US has introduced the most extensive measures, but China has also expanded controls. These restrictions extend well beyond the scope of the Wassenaar Arrangement, which remains the reference point for European export control regimes.

Unsurprisingly, this shift has had a significant impact on the operations of semiconductor companies and research technology organizations (RTOs), including those based in Europe. Chips are of enormous strategic relevance—they serve as the backbone of defense systems, healthcare, critical infrastructure, and the broader economy. Moreover, advances in semiconductor technology can enhance military capabilities or make new ones possible. Improved battlefield sensors and greater autonomy in unmanned systems are just two examples. For this reason, developments in semiconductor markets influence the balance of power, particularly in Europe and East Asia.

Washington has been the initiator of most new restrictions. The US has continuously expanded its entity list and applied the Foreign Direct Product Rule (FDPR) to a growing number of products. Washington has also pushed EU Member States to restrict high-tech exports to China, including a growing range of semiconductor manufacturing equipment (SME). EU Member States know that whenever they do not rapidly align themselves, the US may bypass their governments altogether and regulate EU industries directly using extraterritorial controls.

US controls go beyond China. In the twilight of his administration, President Biden announced the imposition of an Artificial Intelligence (AI) Diffusion Framework on the world, dividing countries into three tiers that determine the quantities of US-designed AI chips they can import. The Trump administration may have rescinded the rule, but it has retained the ban on exports of leading AI chips to tier-three countries such as Russia, China, and North Korea. Under President Trump, bilateral deals to export key technologies such as leading AI chips—including to non-rival autocracies such as Saudi Arabia and the UAE—will shape the diffusion of US technologies.[1] In short, the United States has continuously asserted "its role as the de facto regulator of the global semiconductor industry."[2]

China has not sat idly by. Over the last twenty years, Beijing has continuously expanded state support and preferential treatment for local companies with a view to indigenizing the semiconductor value chain.[3] Xi Jinping is actively building a fortress economy, expanding purchases of everything from cobalt and semiconductors to lithography systems.[4] His ambition goes beyond self-reliance: Xi has instructed Chinese officials to "tighten international production chains' dependence on China [...] against foreigners who would artificially cut off supply to China."[5] Beijing has also imposed export restrictions on a growing number of key semiconductor manufacturing materials, such as gallium, germanium, and heavy rare earths, among other retaliatory measures. In addition, China has introduced its own extraterritorial legal tools for the purpose of geopolitical competition, including the "unreliable entity list."[6]

The EU has also introduced its own technology transfer restrictions. Following its 2022 invasion of Ukraine, EU Member States adopted eighteen sanctions packages against Russia.[7] This comprehensive attempt to cut Moscow off from semiconductors and other technologies has also affected EU semiconductor sales. Sanctions evasion and circumvention have presented EU companies with new compliance challenges. In addition, the Commission continues to champion its own "country-agnostic" initiatives. It aims to refine (inbound) foreign direct investment (FDI)-screening frameworks between 2024 and 2029, kickstarting "a genuine coordinated approach to export controls," addressing "risks from outbound investments," and pushing for the development of "economic security standards" at the G7 level.[8] Finally, some EU Member States have introduced research security policies, including new checks on hiring Chinese researchers in sensitive high-tech fields.

[1] Jeffrey D. Bean, "Trump's Reversal on AI Diffusion Controls Raises New Questions," ORF America, June 11, 2025, https://orfamerica.org/orf-america-comments/trumps-reversal-ai-diffusion.

[2] Reva Goujon and Jan-Peter Kleinhans, All In: US Places a Big Bet with October 17 Controls, Rhodium Group, 2023, 1, https://www.jpkleinhans.de/home/All-In-US-Places-a-Big-Bet-with-October-17-Controls.pdf.

[3] Jacob Gunter, Alexander Brown, François Chimits, Antonia Hmaidi, Abigaël Vasselier, and Max J. Zenglein, Beyond Overcapacity: Chinese-Style Modernization and the Clash of Economic Models, MERICS, 2025, https://merics.org/en/report/beyond-overcapacity-chinese-style-modernization-and-clash-economic-models.

[4] Xi aims to make China ready for "extreme situations" caused by "external attempts to blackmail, contain, blockade, and exert maximum pressure [on China] [that] may escalate at any time" – Full Text of the Report to the 20th National Congress of the Communist Party of China, 2022, https://www.idcpc.org.cn/english2023/tjzl/cpcjj/20thPartyCongrssReport/.

[5] Certain Major Issues for Our National Medium- to Long-Term Economic and Social Development Strategy: Hearing at Central Financial and Economic Affairs Commission, 2020, https://cset.georgetown.edu/publication/xi-jinping-certain-major-issues-for-our-national-medium-to-long-term-economic-and-social-development-strategy/.

[6] Mathieu Duchâtel and Georgina Wright, China's Extraterritoriality: A New Stage of Lawfare, Institut Montaigne, 2024, https://www.institutmontaigne.org/en/publications/chinas-extraterritoriality-new-stage-lawfare.

[7] Commission President von der Leyen claimed that these had forced "the Russian military [to take] chips from dishwashers and refrigerators to fix their military hardware." European Commission, "State of the Union 2022 - Sanctions," Twitter (now X), September 18, 2022, https://x.com/EU_Commission/status/1571454007683428352.

[8] Ursula von der Leyen, Europe's Choice: Political Guidelines for the next European Commission (2024–2029), European Commission, 2024, 27, https://commission.europa.eu/document/download/e6cd4328-673c-4e7a-8683-f63ffb2cf648_en?filename=Political%20Guidelines%202024-2029_EN.pdf.

Where will this all end? With President Trump back in office, Europe's semiconductor ecosystem once again faces uncertainty. Will the US continue to expand its patchwork of extraterritorial controls? Will EU Member States mandate the EU to design its own technology transfer regime to present the US with a united front? Will the West and its allies in East Asia again impose comprehensive technology transfer bans against rivals, as they did against the Soviet Union through the Coordinating Committee on Multilateral Export Controls (CoCom)? Will the US and China strike a trade bargain that gives US chip producers preferential access to China's market? Or will technology transfer regimes look entirely different?

How might major geopolitical events, such as a blockade or invasion of Taiwan or US abandonment of Ukraine and NATO, affect the course of events? What effect might a new Sputnik moment such as a Chinese breakthrough in integrating military AI into advanced robotics have?

Workshop Setup

This policy paper seeks to support the European Commission and EU Member States in designing realistic and effective technology transfer regimes that are in the EU's interest. It provides a detailed overview of the preferences and expectations of key players in the European semiconductor ecosystem regarding this topic.

On behalf of CHIPDIPLO, the EUISS welcomed thirteen legal counsels, directors, and other representatives responsible for compliance, export controls, sanctions, research security, and related issues from ten leading European semiconductor companies and RTOs.[9] During a Delphi scenario workshop on April 9, 2025, these representatives engaged in a structured discussion of four scenarios for a post-Wassenaar world (see Table 3 for a scenario summary and Appendix A for the full scenarios).[10] All scenarios are set in January 2029, at the end of President Trump's second term. The participants rated the achievability, effectiveness, and desirability of each scenario (see Textbox 1).[11] After reading an EUISS scenario paper, they filled out two anonymous surveys, one before and one immediately after the event, answering the same eight questions for each scenario (see Appendix B for the survey questions and Appendix F for additional information on the workshop methodology).

[9] "A Delphi study relies on the idea that collective group responses are superior to individual responses. […] The Delphi method is a process used to arrive at a group opinion or decision by surveying a panel of experts. During a Delphi study, selected experts respond to several rounds of questionnaires, and the responses are aggregated and shared with the group after each round." Tenley Sablatzky, "The Delphi Method," *Hypothesis: Research Journal for Health Information Professionals* 34, no. 1 (2022): 1–6, https://doi.org/10.18060/26224.

[10] The author thanks his fellow analysts at EUISS, Tim Rühlig, Clotilde Bômont, and Giuseppe Spatafora, and Pierre Sel, and Mathieu Duchâtel of Institut Montaigne, for their expert review of an early draft of the discussion paper that served as an input to the workshop. My gratitude also goes to Mathieu Duchâtel of Institute Montaigne and again to Clotilde Bômont of EUISS for carefully reviewing this policy report. Finally, credit goes to the EU semiconductor ecosystem representatives who kindly shared their insights during the Delphi workshop and filled out both iterations of the survey and to Marlene Marx of EUISS who helped prepare the workshop.

[11] The methodology—including the definitions of achievability, effectiveness, and desirability—and three out of the four scenarios presented in this report build on an earlier exercise that Joris Teer developed while still working at The Hague Centre for Strategic Studies (HCSS). HCSS published this more rudimentary scenario exercise in a Netherlands Ministry of Defence-commissioned report: Sofia Romansky, Joris Teer, and A. Plantenga, *Protecting European AI-Related Innovations: Preventing Their Use in China's Military Advancements* (The Hague Center for Strategic Studies and Datenna, 2025), 18–23, https://hcss.nl/wp-content/uploads/2025/01/Final-Formatted-Version-Datenna-HCSS-200125.pdf. This CHIPDIPLO-report presents the views of EU semiconductor company and RTO representatives that emerged from a refined version of that scenario exercise.

EUISS kicked off the workshop with a presentation on the pre-event survey results. This was followed by a three-hour discussion of the scenarios, after which the participants gave their definitive judgment in the final survey. What follows is a summary of the group's views, with a focus on the experts' definitive judgment in the final survey (see Table 4 for the results).

Textbox 1: The *Achievability*, *Effectiveness*, and *Desirability* of Future Technology Restriction Regimes

1. The level of *Achievability* is determined by the likelihood that this technology restriction regime will have become a reality by January 2029. Achievability is partially determined by the following:
   a. The level of support among NATO allies and EU partners around the world for this technology restriction regime.

2. The level of *Effectiveness* is determined by the likelihood that the new technology restriction regime will successfully prevent technologies developed in the West and other technologically advanced democracies from strengthening the following:
   a. China's armed forces, including its development of military-use AI, and
   b. China's industrial dominance in critical industries, such as front-end semiconductor manufacturing (as even greater Chinese industrial dominance can lead to more EU strategic dependencies on China).

3. The level of *Desirability* is determined by the extent to which the technology restriction regime is in the EU's interest. *Desirability* is partially determined by the following:
   a. Whether the regime threatens the competitiveness of the EU's semiconductor industry and RTOs. (What is the effect on sales to China? Will this be compensated for by growth in demand for semiconductors and semiconductor technology in other markets, for example in the US, Korea, Taiwan, and Europe?)
   b. Whether the regime makes the EU or individual EU Member States vulnerable to retaliation by China.
   c. Whether the regime provides the EU with leverage in negotiations with the United States on future technology transfer restrictions.

Table 3. Four 2029 scenarios for a post-Wassenaar world

Scenario 1. An Extraterritorial Patchwork: Rapid Expansion of US Controls

The US grows increasingly frustrated with its allies' reluctance to curtail tech transfers to China. Trump 2.0 finds bi- and mini-lateral deals too time-consuming and expands its extraterritorial patchwork throughout 2025, leaning more on entity listings, use of the Foreign Direct Product Rule (FDPR), and other unilateral means to limit EU exports and technology transfers to China. These cover older generations of semiconductor manufacturing equipment (SME) and the servicing and supply of spare parts of all immersion deep ultraviolet (DUV) lithography systems already in China. In early 2027, the US blocks exports of older AI chip designs, specialized lenses, chemicals, lasers, wafers, and high-end radar and infrared chips.[12] Likewise, the US blocks the export of EU emerging and disruptive technologies (EDTs), including photonics, quantum technologies, and cryptography, to China.

EU industry is forced to continuously adapt to ad hoc US edicts. Beyond curbing China's progress in advanced semiconductors, Washington seeks to reduce China's semiconductor manufacturing capacity altogether. Trump 2.0 hopes that maintaining a technological edge in military AI and keeping China dependent will make Chinese military misadventures—for example around Taiwan—less likely. In 2025, Washington pushes Europe to end scientific collaboration with China in STEM fields and to reject PRC nationals for research positions. Likewise, the US discourages European governments from accepting Chinese foreign direct investment (FDI) in high-tech industries. By 2027, the US government confronts European research technology organizations (RTOs), universities, and high-tech industries with a stark choice: Forfeit connections to Chinese actors or Washington will sever your connections to US organizations and block your access to the US market.

Scenario 2. Fortress Europe: A Unified EU Technology Transfer Regime

EU leaders are troubled by Trump 2.0's stated goal of annexing Greenland, rapprochement with Russia, and imposition of tariffs. China becomes more belligerent toward its neighbors, especially Taiwan. In response, by mid-2027, EU Member States mandate the Commission to develop a comprehensive EU technology restriction regime. The Commission hires hundreds of technology, trade, legal, and geopolitical experts. These officials engage in structured dialogues with EU industry to understand which technologies could strengthen China's military and industrial dominance. Final decisions on EU semiconductor exports to or investments from China in the sector are made by a new EU body.

[12] By "wafers," the authors mean materials such as gallium-arsenide wafers that serve as inputs for front-end manufacturing.

Europe seeks to maintain a technological edge vis-à-vis China and remain technologically indispensable to the US.[13] The Commission decides that "attempted takeovers in photonics, quantum technology, [cryptography and radar technologies by Chinese and American parties] are automatically blocked by the EU's new conjoined foreign direct investment (FDI) screening regime [...]. All European governments obtain the right to reject PRC researchers in STEM fields. [...] Researchers rejected by one EU Member State are automatically rejected at universities [and research technology organizations (RTOs)] in others."[14] The EU seeks to coordinate restrictions with external partners, but only after agreeing internally.

However, in late 2028, the US seeks to ban the servicing of almost all semiconductor manufacturing equipment (SME) already in China. Washington also attempts to block the supply of specialized chemicals, lenses and lasers, leading-edge wafers, and high-end infrared and radar chips to Chinese companies. The Commission encourages EU companies to ignore US regulations and prepares a diplomatic response.

[13] Ursula von der Leyen, Europe's Choice, 26; Sofia Romansky, Joris Teer, and A. Plantenga, *Protecting European AI-Related Innovations: Preventing Their Use in China's Military Advancements*, The Hague Center for Strategic Studies, 2025, 18–23, https://hcss.nl/wp-content/uploads/2025/01/Final-Formatted-Version-Datenna-HCSS-200125.pdf.

[14] Romansky et al., *Protecting European AI-Related Innovations*, 18–23.

Scenario 3. CoCom2.0: An American, European, and East Asian Coalition of the Willing

The world's democracies are shocked—by early 2027, China has successfully integrated AI into its armed forces and completed a vast expansion of its navy, missiles, and nuclear weapons stockpile. Xi intensifies aggression vis-à-vis China's neighbors. By late 2027, most EU Member States, the US, and partners in Asia band together in a new Coordinated Committee on Multilateral Export Controls (CoCom). They base this on the regime that curbed technology transfer to the USSR.

The goal: jointly choking off the transfer to China of those technologies that could help Beijing close the military–technological gap or result in new strategic dependencies on China. This should make Chinese military misadventures, such as a Taiwan invasion, less likely. By early 2028, *CoCom2.0* blocks almost all tech transfers to China of the types that the US, EU, and other partners included in the sanctions packages against Russia following its invasion of Ukraine.[15] This includes bans on the export of semiconductor manufacturing equipment (SME), including "dry" deep ultraviolet (DUV) systems, and on the servicing of immersion DUV systems already in China. In addition, chip designs, AI chips, wafers, specialized chemicals, lenses and lasers, and high-end radar and infrared chips

[15] Even more so, the new regime looks like the anti-Soviet CoCom, the coalition that sought to prevent the transfer of key technologies to the USSR and its allies from 1949 onwards. James Libbey, *CoCom, Comecon, and the Economic Cold War* (Brill, 2010), 133–52, https://doi.org/10.1163/187633110X494661; Romansky et al., Protecting European AI-Related Innovations, 18–23.

can no longer be exported to China. Chinese investment in *CoCom2.0* countries is almost always rejected.

Decisions on technology transfer cases are made by a specialized committee backed by a strong bureaucracy, established through the G7. This *CoCom2.0* board runs a specialized bureaucracy consisting of technology, trade, legal, and geopolitical experts. The practical consequences are that "export controls and foreign direct investment (FDI) screening are largely harmonized [among *CoCom2.0* members]. [...] EU governments [...] increasingly often use their [new] mandate to ban specific PRC (PhD level and above) [researchers] from completing degrees or taking positions in strategically relevant fields." [16]

Scenario 4. A US–China Grand Bargain: Relaxation of Technology Transfer Controls

Above all else, President Trump seeks to reduce the US trade deficit, especially vis-à-vis China. Throughout the first two years of his second term, he continuously increases import tariffs on Chinese goods. To increase leverage, Trump 2.0 also blocks exports of a growing number of high-tech goods, including the servicing and supply of semiconductor manufacturing equipment (SME) and spare parts and a variety of chip designs. [17] This also covers ASML's "immersion" deep ultraviolet (DUV) systems.

But the China hawks lose. In late 2026, the US finally gets Xi to sign Trump's much-coveted US–China Phase Two Trade Agreement. Beijing promises to rapidly expand its purchases of US products. [18] The result: Chinese companies prioritize purchases of US semiconductors over European ones. However, Beijing continues to provide muted state support for domestic producers and local content requirements.

At the deal's signing, Trump 2.0 rolls back all technology controls that came into place after Biden left office (Trump 2.0 did not introduce additional controls on specialized lenses, chemicals, and lasers, wafers, and radar and infrared semiconductors in the first place). Independent of the US, the EU pursues "a genuine coordinated approach to export controls" and seeks to "address risks from outbound investments." [19] But the EU does not centralize decisions on technology transfer. Neither the EU nor its Member States meaningfully strengthen their bureaucratic or economic intelligence capacity. Technology transfer policies continue to vary widely among EU Member States.

[16] Romansky et al., *Protecting European AI-Related Innovations*, 22.

[17] The President's 2025 Trade Policy Agenda, US Trade Representative, 2025, https://ustr.gov/sites/default/files/files/reports/2025/President%20Trump's%202025%20Trade%20Policy%20Agenda.pdf.

[18] "Trump for one seemed less interested in technological competition than in closing the U.S. trade deficit with China by boosting sales of American soybeans and other farm goods – an obsession he maintained throughout his time in office." Edward Fishman, *Chokepoints: American Power in the Age of Economic Warfare* (Penguin Random House, 2025), 232, https://www.penguinrandomhouse.com/books/726149/chokepoints-by-edward-fishman.

[19] Von der Leyen, *Europe's Choice*, 27.

The Desirability, Achievability, And Effectiveness Of Four 2029 Technology Transfer Regimes (Scenario Workshop Outcomes)

Conclusion 1: The future of technology transfer regimes looks bleak from the perspective of European semiconductor firms and RTOs. Of all imaginable futures, only *Fortress Europe* (6.44) is regarded as convincingly in line with EU interests (see Table 4). *CoCom2.0* (5.55) barely has a net positive desirability rating, while participants consider the *US–China Grand Bargain* (3.00) and *Expanding Extraterritorial Patchwork* (2.78) scenarios to be strongly opposed to European interests. The participants did not propose any additional scenarios, showing that they expect that the EU will face one of these four technology transfer regimes by 2029.

Conclusion 2: The United States—not the EU or its Member States—will shape future technology transfer regimes, including by relying increasingly on unilateral extraterritorial controls. These US-designed regimes will regulate even more trade and other forms of technological cooperation between the EU semiconductor ecosystem and China. The scenarios that participants deem most opposed to EU interests are also those they deem most likely to become reality by January 2029. The *Extraterritorial Patchwork of Ever-Expanding US Controls* scenario stands out as the only very likely scenario (7.89), despite its deep undesirability (2.78). A *US–China Grand Bargain* is still somewhat likely (4.89) but is equally undesirable (3.00) according to the participants. The scenarios that participants consider to be most in the EU's interests by far—*Fortress Europe* and *CoCom2.0*—are also the ones they assess as being unlikely to become a reality by January 2029, with respective achievability scores of 3.22 and 3.44.

In short, the participants expect that the EU and its Member States will have little power to shape technology transfer regimes. Even though these regimes will impact the competitiveness of European companies and RTOs, Washington is likely to remain in the driver's seat. Whether Washington decides to tighten or relax regulations will determine whether European industry and RTOs will have to deal with an *Expanding Extraterritorial Patchwork* or a *US–China Grand Bargain* scenario.

Why do the participants consider *Fortress Europe*—the most desirable scenario—unachievable? The future of technology transfer regimes may be an important issue for the EU semiconductor industry and the US government, but EU Member States do not seem to regard it with the same urgency. The participants view the EU as reactive. They assert that there is only a very small number (in some Member States, just "a handful") of policymakers in European capitals working on export controls, foreign direct investment (FDI) screening, and knowledge security. The participants point out that even the European Forum, a yearly European Commission–organized gathering to discuss export controls, has been discontinued. Compare this to the US Bureau of Industry and Security (BIS), which employs hundreds of specialists and organizes large conferences on technology transfer restrictions, to which it invites industry and government

representatives from around the world. In addition, some participants warn that the EU's stringent privacy regulations, such as the GDPR, would make the information-sharing needed for a *Fortress Europe* scenario difficult.

No unified entity champions EU interests in shaping global technology transfer regimes. Competencies lie partially at the Member State level (export controls and research security policies) and in-between the Member State and EU levels (FDI screening). The participants regard this as unlikely to change in the absence of a geopolitical crisis. At present, EU Member States voice very limited support for a far-reaching harmonization of technology transfer controls at the EU level. Several participants expect this will change if a combination of geopolitical events with far-reaching consequences for Europe occur, such as a blockade of Taiwan and US abandonment of NATO.

Participants expect that if a major crisis in East Asia (e.g., around Taiwan) occurs, but the US continues to guarantee European security, then *CoCom2.0* may be the result. However, they warn that even under these geopolitical circumstances, a proliferation of unilateral extraterritorial controls and US-led minilateral regimes is still a more likely outcome. The reason: Europe, Japan, and especially Korea have a lot to lose if China retaliates. Washington may decide that achieving their full alignment against China requires more "stick" than "carrot."

The participants identified no way for EU industry and RTOs to escape US extraterritorial controls and US-led minilateral regimes. Neither the EU Commission and Member States advocating that companies must ignore US regulations (as in the *Fortress Europe* scenario) nor using the blocking statute is deemed effective.[20] To Washington, technology transfer restrictions are an issue of top-level strategic importance, as maintaining a military and industrial technological edge vis-à-vis China has long been a core policy objective. For this reason, it has developed an arsenal of legal tools, such as the entity list, the end-use list, the FDPR, secondary sanctions, and other tools, to block the sharing of key technologies—including from EU industries—with China.

Likewise, the participants are skeptical about the effectiveness of two other tactics to seek export control relief from Washington—that is, trying to change US policies by either threatening to halt semiconductor technology transfers to the US or holding out the prospect of the EU becoming diplomatically closer to China. The participants expect that even under those circumstances, the cost of EU industry noncompliance with US laws is simply too high.

The participants identify various points of US leverage. EU semiconductor companies rely on sales on the US market, technology or IP from US suppliers, and trade in dollars. Even if these dependencies did not exist, European companies would still risk hefty fines or criminal prosecution if they failed to comply with US laws. As a result, it is nearly impossible for EU companies to ignore US extraterritorial controls. The participants highlight the importance of continued semiconductor innovation in Europe to expand Europe's leverage vis-à-vis the US.

[20] European Commission, *Extraterritoriality (Blocking Statute): Protecting EU Operators, Reinforcing European Strategic Autonomy*, n.d., accessed 25 July 2025, https://finance.ec.europa.eu/eu-and-world/open-strategic-autonomy/extraterritoriality-blocking-statute_en.

Table 4 • EU industry and RTO views on four 2029 technology transfer regimes: Post-workshop survey outcomes

Survey Question	Scale	Scenario 1. Expanding Extraterritorial Patchwork	Scenario 2. Fortress Europe	Scenario 3. CoCom2.0	Scenario 4. US–China Grand Bargain
Q1. Achievability, meaning likelihood that regime is a reality by January 2029	0 = Extremely unlikely 10 = Extremely likely	**7.89**	**3.22**	**3.44**	**4.89**
Q1a. Support of NATO allies & EU partners around the world for regime	0 = No support 10 = Complete support	**4.00**	**3.67**	**5.11**	**3.22**
Q2a. Effectiveness(i), meaning likelihood that regime prevents strengthening China's armed forces	0 = Extremely ineffective 10 = Extremely effective	**4.44**	**4.00**	**5.00**	**2.55**
Q2b. Effectiveness(ii), meaning likelihood regime prevents strengthening China's industrial dominance	0 = Extremely ineffective 10 = Extremely effective	**5.11**	**5.00**	**5.11**	**2.78**
Q3. Desirability, meaning whether the regime is in the EU's interest	0 = Entirely in opposition to EU interests 10 = Entirely in line with EU interests	**2.78**	**6.44**	**5.55**	**3.00**
Q3a. Level of threat to EU industry and RTO competitiveness	0 = Poses severe threats to competitiveness 10 = Poses no threats	**2.89**	**5.22**	**4.00**	**3.44**
Q3b. Vulnerability of EU and EU Member States to retaliation by China	0 = Extremely vulnerable 10 = Not at all vulnerable	**4.22**	**5.00**	**4.44**	**4.67**
Q3c. Leverage that regime provides in negotiations with the US on future technology transfer restrictions	0 = No leverage whatsoever 10 = Far greater leverage	**2.11**	**4.89**	**3.67**	**2.56**

The color with which each cell is filled—gold, silver, bronze, or white—indicates the rank of the scenario on each of the three indicators. For example, Scenario 1 is ranked first (gold-colored) in terms of overall 1. *Achievability* but only in second place (silver) in 2. *Effectiveness* and in fourth place (white) in 3c. *Leverage vis-à-vis the United States*. Scenario 2 is ranked third (bronze) in 2. *Effectiveness*. Nine directors, legal counsels, or other representatives responsible for compliance, export controls, sanctions, research security, or related issues from nine different leading EU semiconductor companies and RTOs filled out the post-event survey.

Conclusion 3: EU industry and RTOs question the effectiveness of all four technology transfer regimes to prevent the strengthening of China's armed forces and industrial dominance. They expect even the most stringent future technology transfer regimes to be only "somewhat effective" in achieving these goals. However, they do acknowledge that a *US–China Grand Bargain*, a scenario in which controls are eventually rolled back to January 2025 levels, would be far less effective. The participants have little faith in the ability of the US and its allies and partners to curb China's military rise and industrial dominance via tech transfer restrictions. Even the most stringent future technology transfer regimes—*CoCom2.0*, *An*

Expanding, *Extraterritorial Patchwork*, and *Fortress Europe*—will only somewhat impede China's military rise (rated 5.11, 5.11, and 5.00, respectively) and industrial dominance (rated 5.00, 4.44, and 4.00, respectively).

The participants point to China's unprecedented success in expanding manufacturing inside its borders over the last twenty to thirty years, as well as its ability to produce a wide range of powerful semiconductors domestically. One participant stresses that Beijing has already moved from "copy culture" to "innovation culture." Another suggests that with five to ten years, China will have surpassed us in everything.

The reasons given for Beijing's progress are as follows: China further accelerates its indigenization drive through on-and-offline economic espionage, mass state support, preferential treatment for domestic industries in private and public sector procurement, hiring specialist staff from EU and other semiconductor companies, its quantitative advantage in total number of STEM graduates, and other means. Participants warn that, as a result, Chinese firms capture more market share in semiconductors (especially legacy technologies) each year in their home and foreign markets. This often comes at the cost of European players. This revenue growth provides Chinese industries with more means to sustain the industry's high pace of innovation.

Some participants assert that in the short term, technology transfer curbs may slow China down. Yet in the longer term, China will have a greater ability to close the gap anyway because blocking Chinese firms from purchasing foreign technologies—such as advanced lithography tools—will drive China's state funding to domestic firms to develop these technologies. Because of Chinese strengths in STEM, the country's researchers have become very important to European RTOs. One participant warns that banning Chinese researchers from RTOs will backfire, as it would result in vacancies going unfilled altogether. This would hurt the competitiveness of EU RTOs, while the consequent influx of researchers into Chinese RTOs may strengthen Chinese competitors instead.

The participants also outline practical challenges in making export controls, FDI, and research security policies effective. One participant cites Huawei's continued success in advancing its chip production, despite US efforts in the late 2010s to cut off its access to international tech supply chains. In addition, one participant argues that DeepSeek shows that Chinese companies will find other ways to innovate in AI—including in the military domain—even when their access to compute is limited. Even if EU Member States and partners adopt the most stringent technology transfer regime against China *(CoCom2.0)*, there is still the problem of circumvention of semiconductor technology controls via third countries (e.g., in Southeast Asia). Tracking the success of existing technology transfer regimes is difficult; participants admit that trustworthy information on China's semiconductor progress remains scarce.

Some participants note that even cutting off the servicing and supply of spare parts for DUV lithography systems would not be an effective way to reverse China's progress. After all, they expect China to eventually be able to run these less advanced systems without the help of ASML. Finally, one participant expects that China will be able to produce extreme ultraviolet lithography (EUV) systems within ten years. Indeed, by copying technologies of EU, US, and other companies, Chinese companies are likely to have a steeper learning curve.

The participants note that Chinese firms will have the benefit of learning from the experiences and mistakes of firms outside of China.

Does this mean that technology transfer restrictions are of no use at all? No, say the participants. After all, they consider the *US–China Grand Bargain* scenario, in which controls are eventually rolled back to January 2025 levels, far less effective even (2.55 and 2.78). The EU still has things to offer, as Chinese parties continue to reach out to EU RTOs to collaborate. EU companies still face attempts at economic espionage. Some participants warn that Chinese researchers often work on semiconductor projects at European RTOs and then leave without warning. This shows that there is still expertise in Europe of interest to Chinese parties. For this reason, research security policies could still prevent important unwanted technology transfers. However, two participants warn that so far, these policies have mostly come from the RTOs and universities themselves, with a lack of clear guidance from governments.

Conclusion 4: The participants prefer a predictable technology transfer regime, even if this blocks a wider range of exports to and other cooperation with China. Crucially, the participants stress that a more stringent export regime should go hand in hand with protecting European and partner markets against China's below-market price production. The participants find that the competitiveness of the EU semiconductor industry and RTOs is best protected by a predictable *Fortress Europe*, even though they still believe this scenario poses some threats to European competitiveness (5.22).

CoCom2.0 poses greater threats to the EU semiconductor ecosystem (4.00) because, among other things, this regime severely limits European sales to China. Much is at stake. China has become a "must have" instead of a "nice to have" market for most EU semiconductor firms. In general, the R&D investments required to remain competitive in segments of the semiconductor value chain, particularly design and SME, are high. As a result, European companies need to sustain strong positions on markets outside of Europe, including in China.

However, even *CoCom2.0*, the most stringent technology transfer regime, is deemed to pose only some threats to EU semiconductor competitiveness (4.00) and to the EU's overall interests (5.55). The *CoCom2.0* coalition, which includes the US, most EU Member States, Japan, Korea, India, Philippines, and others, comprises a very large market on which to sell European semiconductor technologies. Prioritizing the use of trusted country products, including semiconductors, within the coalition creates a sizable and necessary alternative to China's market. Creating a joint *CoCom2.0* market can therefore protect the EU semiconductor ecosystem against Beijing's below-market prices and state-supported products. If no new protections are enacted, Chinese firms will use the revenues they generate on their protected domestic market—including through preferential treatment for Chinese chips in public- and private-sector procurement—to continue to win market share from European companies on the European market and other markets.

In addition, participants expect that both *Fortress Europe* and *CoCom2.0* would offer greater predictability, as they are harmonized, rules-based multilateral arrangements. In both scenarios, hundreds of specialized staff are hired to reflect on individual export, FDI, and knowledge security cases. This offers companies the chance to make the case for why their technologies would be unlikely to advance China's military

modernization and industrial dominance. As a result, the participants expect companies to receive a fairer hearing under this scenario than under the *Expanding Extraterritorial Patchwork* one. The participants hope that these regimes would generate more regulatory predictability in the long term, as opposed to unilateral American edicts or minilaterally negotiated deals. Another virtue of the *CoCom2.0* and *Fortress Europe* scenarios is the harmonization of regulations across members. At present, EU semiconductor companies struggle to process many different national control lists, leading to bureaucracy and compliance challenges. Several participants complained of the lack of logic behind intra-EU transfer rules.

Conclusion 5: The competitiveness of the EU's semiconductor industry and RTOs is best served if Europe pushes for a new multilateral technology transfer regime, meaning a *Fortress Europe* or, if need be, a *CoCom2.0* scenario. EU inaction will result in technology transfer regimes—namely, the *Expanding Extraterritorial Patchwork* or *US–China Grand Bargain* scenarios—that pose greater risks to the EU's semiconductor competitiveness.

Paradoxically, the US reducing its restrictions on semiconductor sales to China—the *US–China Grand Bargain* scenario—is deemed a greater threat to EU industry and RTO competitiveness (3.44) than *CoCom2.0* (4.00). The reason is as follows: Through vast state support, discrimination against foreign firms, smart infrastructure developments, educational initiatives, and other policies, China is already rapidly gaining market share in value chain segments in which European companies are strong. Doing nothing could result in a "let-us-die-in-peace (LUDIP)" scenario for players in the EU semiconductor industry because of further EU losses in market share.

In the case of a *US–China Grand Bargain* scenario, China's preferential purchases of US semiconductors would aggravate the woes of EU industry. The perceived large threat to EU semiconductor competitiveness under this scenario (2.56) reflects the current lack of self-confidence in the EU's semiconductor industry, says one participant.

The participants deem an *Expanding Extraterritorial Patchwork*—another scenario in which the US calls the shots unilaterally—the greatest threat to the competitiveness of the EU semiconductor industry and RTOs. The goal of the *Expanding Extraterritorial Patchwork* is the same as that of *CoCom2.0*, namely, to impede China's rise to military and industrial dominance. But in the non-rules-based tightening of technology transfer restrictions in the *Expanding Extraterritorial Patchwork*, the Trump administration may impose stricter controls on exports of EU technologies than US exports to China, unevenly hurting revenues in Europe. Likewise, an *Expanding Extraterritorial Patchwork* would force EU companies and RTOs to constantly adapt their products and processes to fit with new regulations. This would cause problems in product design and production lines, hence raising costs.

On top of these US obstacles, China's ongoing unfair competition will aggravate the EU's woes, especially under the *Expanding Extraterritorial Patchwork* and *US–China Grand Bargain* scenarios. These scenarios do not offer an alternative sizable market made up of "trusted countries" for European semiconductor sales. Therefore, they leave European players unprotected from Beijing's industrial policies aimed at indigenizing semiconductor technologies as fast as possible and their externalities, such as below-market price sales of Chinese products abroad.

Conclusion 6: The EU and its semiconductor ecosystem will remain "somewhat" vulnerable to retaliation by China, regardless of which scenario becomes a reality. All participants acknowledge that China has many tools that it can use to retaliate against EU firms and countries. Chief among them are deprioritizing EU semiconductors in Chinese-manufactured products, halting licenses to sell semiconductors in China, and other measures that push European firms out of China's markets. Other measures are listing EU semiconductor companies and purchasers of EU semiconductors such as defense industry producers in third countries as "unreliable entities" to cut them off from components and materials produced in China. Finally, China can seek to disrupt semiconductor production and end-industries by halting the exports of critical raw materials to entire countries or groups of countries.

Conclusion 7: The participants expect that establishing a new multilateral technology transfer restriction regime—that is, under the *Fortress Europe* or, to a lesser extent, the *CoCom2.0* scenario—would provide European governments with more—albeit still limited—leverage in technology transfer negotiations with the United States. The EU has at least some leverage vis-à-vis the US under the *Fortress Europe* scenario (4.89), according to the participants. Likewise, European governments can exert some influence under the *CoCom2.0* scenario (3.67).

A *Fortress Europe* regime would allow Europe to impose diplomatic pressure on the US as a group. But participants still expect companies to largely comply with US regulations, even if the EU as a bloc opposes US extraterritorial controls and encourages its companies to ignore US extraterritorial regulations. The consequences of breaking US rules, including fines or even criminal prosecution, are simply too severe. Even if encouraged by the Commission, it would be difficult to organize European companies to collectively disobey. The US has many means of retaliation: EU semiconductor firms depend on US IP, software, parts, and other innovations. Beyond semiconductors, Europe still depends on US military protection through NATO and on US-supplied weapon systems. Even if dependencies on the US are reduced, Washington can still impose extraterritorial controls on EU technologies, even if these contain no US technology or components at all.

The participants expect the *CoCom2.0* scenario (3.67) to provide more leverage vis-à-vis the US than the *US–China Grand Bargain* (2.56) or the *Expanding Extraterritorial Patchwork* (2.11) too. After all, both European governments with leading semiconductor industries and the United States would be part of *CoCom2.0*. This means that European industries and governments could make the case for which parts of their portfolio should (not) be controlled within a larger group and formalized setting.

The US has the greatest ability to shape European technology and trade ties with China under the *Expanding Extraterritorial Patchwork* scenario, the participants find (2.78). After all, the US can engage in bilateral or minilateral negotiations with EU Member States to adopt new restrictions, with the threat of exterritorial US restrictions constantly hanging over this. Whenever the US is convinced that its EU partners are not moving fast enough, Washington can simply bypass their governments altogether and impose extraterritorial restrictions on EU companies unilaterally. Alternatively, the US could simply impose these controls without dialogue altogether.

Conclusion

The confluence of the rapid development of a new wave of disruptive technologies, the strategic rivalry between the United States and China, and Russia's invasion of Ukraine has catalyzed a notable expansion in technology transfer restrictions. These measures, primarily instigated by the United States but increasingly mirrored by China, have impacted semiconductor firms and RTOs, including those based in Europe. Given the foundational role of semiconductors in defense systems, medical technologies, critical infrastructure, and broader economic processes—as well as their potential to revolutionize military capabilities—their regulation bears substantial strategic weight. Advances in semiconductor technologies can even affect the balance of power in both the European and East Asian theaters.

This paper is intended to assist the European Commission and EU Member States in the (co-)development of pragmatic technology transfer regimes that are in the European interest. To this end, it presents insights derived from a Delphi scenario workshop held in April 2025, which convened thirteen senior compliance, legal, and strategic affairs representatives from ten leading European semiconductor companies and RTOs. Over the course of the exercise, the participants examined and assessed four prospective scenarios set in 2029 at the conclusion of the second Trump administration: 1) *An Expanding Patchwork*, 2) *Fortress Europe*, 3) *CoCom2.0*, and 4) *A US–China Grand Bargain*.

From the standpoint of the European semiconductor sector, the outlook for global technology governance is pessimistic. Among the scenarios presented, only *Fortress Europe* is considered broadly consonant with EU interests. However, the participants regard the two scenarios that are most adverse to European strategic and economic positioning—namely, *An Extraterritorial Patchwork: Rapid Expansion of US Controls* and a *US–China Grand Bargain*—as the scenarios most probable to become reality by January 2029. The participants share the expectation that the future direction of technology transfer regimes will be determined by the United States. Washington will likely continue to expand unilateral and extraterritorial measures, further constraining Europe's engagements with China on key technologies.

Notably, the participants express doubts regarding the overall efficacy of any of the proposed regimes in significantly impeding China's military development or industrial ascendance. Even the most robust frameworks—such as *Fortress Europe*, *CoCom2.0*, and the *Expanding Extraterritorial Patchwork*—were deemed, at best, "somewhat effective." The *US–China Grand Bargain*, envisaged as a tech control reversion to the January 2025 status quo, was deemed far less effective.

A consensus emerged around the desirability of a more predictable and stable regulatory framework, even if such a regime entails stricter controls on exports to and technological cooperation with China. To safeguard its industrial competitiveness, the participants encourage the EU to initiate or actively co-design a new multilateral regime—preferably *Fortress Europe*, or, alternatively, *CoCom2.0*. Such a regime should be underpinned by robust trade defensive measures against market distortions arising from China's state support for its own producers. Owing to its broader coalition, *CoCom2.0* is viewed as offering the most promising platform for joint market protections.

The participants warn that should the European Union and its Member States fail to assert a proactive role in shaping a successor to the Wassenaar Arrangement, they risk being subsumed into regulatory systems—specifically the *US–China Grand Bargain* or the *Expanding Extraterritorial Patchwork*—that are antithetical to the competitiveness of the EU semiconductor ecosystem. The participants additionally caution that, irrespective of the chosen scenario, the EU semiconductor ecosystem will remain exposed to retaliatory measures from China, including additional restrictions on market access and the supply of critical raw materials. Some industry voices note that access to the Chinese market has already diminished due to Beijing's state-led high-tech indigenization policies. However, the establishment of a multilateral regime—particularly *Fortress Europe* and, to a lesser extent, *CoCom2.0*—could afford European actors limited but meaningful negotiating leverage in transatlantic discussions.

Appendix A. Four Scenarios for a Post-Wassenaar World (in Full)

Scenario 1. An Extraterritorial Patchwork: Rapid Expansion of US Controls

The US grows increasingly frustrated with its allies' reluctance to curb tech transfers to China. The US accelerates the expansion of its extraterritorial patchwork throughout 2025. Washington leans even more heavily on entity listings and use of the Foreign Direct Product Rule (FDPR). This is Trump 2.0's tool of choice for stopping the transfer of a whole range of technologies to China.

Increasingly, these restrictions cover older generations of semiconductor manufacturing equipment (SME), including even "dry" deep ultraviolet (DUV) systems. Washington also imposes bans on the servicing and supply of SME spare parts already in China, including all "immersion" DUV systems. In early 2027, the US blocks the exports of older AI chip designs, specialized lenses, chemicals, lasers, sophisticated materials (meaning wafers), and high-end radar and infrared chips. Likewise, the US broadens restrictions to block the export of more emerging disruptive technologies, including photonics, quantum technologies, and cryptography, from the EU to China.

Unlike the Biden administration, Trump 2.0 deems minilateral deals with partner governments too time-consuming. As a result, EU industry is forced to adapt continuously—without consultation—to

rules issued ad hoc by the US Bureau of Industry and Security (BIS). US goals become more ambitious too: Washington seeks to rapidly reduce China's semiconductor manufacturing capacity altogether.

The logic is as follows: These new controls, including on servicing of SME already in China, combined with other measures, can prevent future EU and US dependence on Chinese chip manufacturing. Effectively, Trump 2.0 aims to keep China dependent on Western technology. In addition, the measures are meant to ensure that the US maintains a military–technological edge, especially in AI. Trump 2.0 hopes that this will make Chinese military misadventures, such as an invasion or blockade of Taiwan, less likely.

The US imposes extraterritorial restrictions beyond export controls. Already in 2025, Washington dials up the pressure on Europe to end scientific collaboration in STEM fields with China. This includes pressure to reject PRC nationals for European jobs, both at RTOs and universities. Likewise, it discourages EU Member State governments from accepting Chinese foreign direct investment (FDI) in high-tech industries. By 2027, the US government confronts European RTOs, universities, and high-tech industries with the same choice that European semiconductor companies already face: Either you forfeit your connections to Chinese actors or the US government will block your use of the US dollar, sever your connections to US organizations, and block your access to the US market.

Scenario 2. Fortress Europe: A Unified EU Technology Transfer Regime

EU leaders are deeply troubled by Trump 2.0's early actions, including its stated goal of annexing Greenland. China becomes more belligerent toward its neighbors, especially Taiwan. EU irritation about Trump's rapprochement with Russia and imposition of tariffs grows. In response, the EU moves far beyond its current pledge to "better coordinate export controls" and "expand foreign direct investment (FDI) screening."[21] Instead, the Commission completes the development of a comprehensive EU technology restriction regime by mid-2027. It wins broad support from Member States.

The Commission's new regime covers export controls, FDI screening, and research security. In line with this, the Commission heavily expands its bureaucratic capacity to deal with detailed questions of export approvals for specific technologies. Brussels aims to match the technical expertise and economic intelligence capacity of the US Bureau of Industry and Security (BIS) and the US Treasury's sanctions department. The European Commission and EU Member State governments hire hundreds of officials specializing in technology ecosystems, trade and compliance, and relations with the US and China.

The Commission tasks these officials with setting up structured dialogues with EU industry to gain a deep understanding of which semiconductor technologies can and cannot be exported to China. Likewise, these dialogues inform the EU's setup of its FDI screening and research security policies. The final approval for export or

[21] Von der Leyen, *Europe's Choice*, 27.

investment is given or denied by a new EU body, the EU Agency for Foreign Technology Transfer (EUAFTT). Furthermore, Member States hire hundreds of additional customs staff to ensure that controls are actually enforced.

The EU is fully aware of the need to maintain a technological edge vis-à-vis China and remain technologically indispensable to the United States.[22] In practical terms, this has the following implications:

- "Attempted takeovers in photonics, quantum technology, [cryptography and radar technologies by Chinese and American parties] are automatically blocked by the EU's new conjoined FDI screening regime. Individual Member States automatically and immediately share details on why a takeover was rejected in one Member State with all others.

- All European governments obtain the right to reject PRC nationals applying for PhD-level positions or above in specific STEM-fields. Researchers rejected by one EU Member State are automatically rejected at universities [and RTOs] in other EU Member States too. They can appeal this decision in the second EU Member State, but the burden of proof is on the researcher to show that the researcher's work will not advance China's military rise [or contribute to new EU strategic dependencies on China.]"[23]

[22] Ministry of Economic Affairs, *European Countries Start Collaboration to Strengthen Semiconductor Industry ('Europese landen starten samenwerking versterken halfgeleiderindustrie')*, Ministerie van Algemene Zaken, March 12, 2025, https://www.rijksoverheid.nl/actueel/nieuws/2025/03/12/europese-landen-starten-samenwerking-versterken-halfgeleiderindustrie.
[23] Romansky et al., *Protecting European AI-Related Innovations*, 18–23.

The EU still seeks to coordinate export restrictions with partners such as Japan, the United Kingdom, South Korea, and, to a lesser extent, the United States. However, it only does so after new regulations have been agreed upon within the EU. This leads to transatlantic friction. After all, the US continues to impose extraterritorial controls to block high-tech exports from individual EU Member States to China.

In late 2028, the US seeks to ban the servicing of almost all SME, including lithography systems, in China. Washington also attempts to block the supply of European specialized chemicals, lenses and lasers, leading-edge materials (meaning wafers), and high-end infrared and radar chips to all Chinese companies. The European Commission encourages EU companies to ignore US regulations while it prepares a forceful diplomatic response to Washington.

Scenario 3. CoCom2.0: An American, European, and East Asian Coalition of the Willing

Technologically advanced democracies are in a collective state of shock. By early 2027, China has successfully integrated AI into most parts of its armed forces and completed a vast expansion of its navy, missiles, and nuclear weapons stockpile. Beijing can accomplish this at a relatively low cost because of its control over global industrial production: It is on a trajectory to account for 45 percent of global manufacturing value-added by 2030.[24] In his late third term,

[24] *The Future of Industrialization: Building Future-Ready Industries to Turn Challenges into Sustainable Solutions*, United Nations Industrial Development Organization (UNIDO), 2024, 17, https://www.unido.org/sites/default/files/unido-publications/2024-11/The%20Future%20of%20Industrialization%20-%20Building%20Future-ready%20Industries%20to%20Turn%20Challenges%20into%20Sustainable%20Solutions.pdf.

Xi intensifies aggression vis-à-vis China's neighbors: the People's Liberation Army increasingly often completes military exercises around Taiwan, Japan, the Philippines, and throughout the rest of Southeast Asia without warning.

By late 2027, the majority of EU Member States, the US, and their partners in Asia band together in a new coalition of the willing. They form a second Coordinated Committee on Multilateral Export Controls (CoCom), based on the regime that the West introduced against the Soviet Union during the Cold War.

The goal of CoCom2.0 is as follows: to jointly choke off the transfer to China of those technologies that could help Beijing close the military–technological gap with the West or establish new EU strategic dependencies on China. CoCom2.0 members hope that this will make Chinese military misadventures, such as an invasion or blockade of Taiwan, less likely. Within the EU, the founding of CoCom2.0 is most enthusiastically supported by Central, Eastern, and Northern European states. After all, they continue to depend heavily on US protection against Russia.

By early 2028, CoCom2.0 blocks almost all of technology transfers to China of the types that the US, the EU, and other partners included in the sanctions regime against Russia following its invasion of Ukraine in 2022.[25] This includes bans on the exports of SME, including "dry" DUV systems, and on the servicing of immersion DUV systems already in China. In addition, chip designs, AI chips, sophisticated materials (meaning wafers), specialized chemicals, lenses and lasers, and high-end radar and infrared chips can no longer be exported to China. Investments by Chinese parties in high-tech industries in CoCom2.0 countries are almost always rejected.

The regime is managed by a specialized committee established through the G7. At the newly established CoCom2.0 board, high-tech industries can make an appeal to allow exports to China or investment by Chinese parties. The board runs a specialized bureaucracy consisting of hundreds of experts from CoCom2.0 countries who specialize in technology ecosystems, trade and compliance, and geopolitics. The practical consequences are as follows:

- "Export controls and FDI screening are largely harmonized [across CoCom2.0 members]. A rejection of an export license or a takeover is automatically shared with [all other members]."

- "Knowledge security measures for universities reach a whole new level: EU governments [...] increasingly often use their [new] mandate to ban specific PRC (PhD level and above) [researchers] from completing degrees or taking positions in strategically relevant fields. Researchers rejected by one CoCom2.0 state are very unlikely to be employed in other CoCom2.0 Member States. They can appeal this decision in the second CoCom2.0 Member State. [...] The burden of proof is on the researcher to show that the researcher's work will not advance China's military [or lead to new dependencies on China]."[26]

[25] Even more so, the new regime looks like the anti-Soviet CoCom, the coalition that sought to prevent the transfer of key technologies to the USSR and its allies from 1949 onwards. See Libbey, *CoCom, Comecon, and the Economic Cold War*, 133–52; Romansky et al., *Protecting European AI-Related Innovations: Preventing Their Use in China's Military Advancements*, 133–52.

[26] Romansky et al., *Protecting European AI-Related Innovations: Preventing Their Use in China's Military Advancements*, 22.

Scenario 4. A US–China Grand Bargain: Relaxation of Technology Transfer Controls

Above all else, President Trump seeks to reduce the US trade deficit, especially vis-à-vis China. Throughout the first two years, his second administration continuously increases import tariffs on Chinese goods. To increase US leverage, Trump 2.0 also blocks exports of a growing number of high-tech goods, including the servicing and supply of SME spare parts and a variety of chip designs.[27] Through the Foreign Direct Product Rule (FDPR), this also covers high-tech goods produced by US partners in Europe and Asia, such as "immersion" DUV systems.

But the China hawks lose in Trump 2.0. In late 2026, the US finally gets Xi to sign Trump's much-coveted US–China Phase Two Trade Agreement. Beijing promises to rapidly expand purchases of US products such as liquefied natural gas (LNG), soybeans, and high-tech, including US-manufactured semiconductors.[28] The result is as follows: Chinese companies give preferential treatment to US producers over European, Taiwanese, South Korean, and Japanese manufacturers. Yet much has changed since the Phase One deal in 2020: By 2026, China has made great strides in developing its domestic semiconductor ecosystem. Despite its promises, Beijing continues muted state support for domestic producers and local content requirements. This does not prevent Trump from marketing the deal as a huge win.

[27] *The President's 2025 Trade Policy Agenda*.

[28] "Trump for one seemed less interested in technological competition than in closing the U.S. trade deficit with China by boosting sales of American soybeans and other farm goods – an obsession he maintained throughout his time in office." Fishman, *Chokepoints*, 232.

At the signing of the deal, Trump 2.0 rolls back all technology controls that came into place after Biden left office, including on export, servicing, and supply of SME spare parts to China (Trump 2.0 did not introduce additional controls on specialized lenses, chemicals, and lasers, wafers, and radar and infrared semiconductors in the first place).

Independent of the US, the EU follows through on its commitment to achieve "a genuine coordinated approach to export controls" and seeks to "address risks from outbound investments."[29] But unlike in the *Fortress Europe* scenario, the EU does not centralize decisions on technology transfer. Neither the EU nor its Member States meaningfully strengthen their bureaucratic or its economic intelligence capacity.

In January 2029, industry still has to apply for export licenses at the Member State level. Likewise, individual Member States continue to take the final decisions on whether to allow a specific Chinese investment in EU high-tech firms, including in the semiconductor ecosystem. Finally, the Member States, not the European Commission, decide whether new research security policies on Chinese researchers are introduced. As a result, technology transfer policies continue to vary widely between EU Member States.

[29] Von der Leyen, *Europe's Choice*, 27.

Appendix B. Survey Questions for Each Scenario

Question	Scale	Score
1. To what extent is the regime/coalition (in Scenario X) achievable? Meaning, how likely is Scenario 1 to be a reality in January 2029?	Please insert score on a scale (from 0 to 10): 0 = Totally unachievable/Extremely unlikely; 10 = Entirely achievable/extremely likely	
1a. Do our (most important) NATO allies and EU partners around the world support the regime/coalition presented in Scenario X?	Please insert score on a scale (from 0 to 10): 0 = No support among partners; 10 = Complete support among partners	
2. How Effective is the regime/coalition (in Scenario X) in preventing that technologies developed in the West and other technologically advanced democracies strengthen China's armed forces, including its development of military-use AI?	Please insert score on a scale (from 0-to-10): 0 = Extremely ineffective; 10 = Extremely effective	
2b. How Effective is the regime/coalition (in Scenario X) in preventing that these technologies strengthen China's industrial dominance in critical industries, such as front-end semiconductor manufacturing? (Even greater Chinese industrial dominance can lead to more EU strategic dependencies on China)	Please insert score on a scale (from 0-to-10): 0 = Extremely ineffective; 10 = Extremely effective	
3. How Desirable is the regime/coalition presented in Scenario X? (Meaning, to what extent is Scenario 1 in the European interest?)	Please insert score on a scale (from 0-to-10): 0 = Entirely in opposition to EU interests; 10 = Entirely in line with EU interests	
3a. Does the regime/coalition presented in Scenario X threaten competitiveness of the EU's semiconductor industry and RTOs? (What is the effect on sales to China? Will this be compensated for by demand growth for semiconductors and semiconductor technology in other markets, for example in the US, Korea, Taiwan, Europe, etc?)	Please insert score on a scale (from 0-to-10): 0 = Poses severe threats to high-tech companies and universities; 10 = Poses no threats to high-tech companies and universities	
3b. Does the regime/coalition presented in Scenario X make the EU or individual EU Member States vulnerable to retaliation by China?	Please insert score on a scale (from 0-to-10): 0 = Extremely vulnerable to retaliation by China; 10 = Not at all vulnerable to retaliation by China	
3c. Does the regime/coalition presented in Scenario X provide the EU with leverage in negotiations with the United States on future technology transfer restrictions?	Please insert score on a scale (from 1-to-10): 0 = No leverage whatsoever; 10 = Far greater leverage	

Optional: please insert any remaining comments you may have about Scenario X; or any explanation you wish to provide on the scores inserted above

Appendix C. Pre-Workshop Survey Outcomes

The participants filled out the pre-event survey after reading an EUISS discussion paper. This included background information on the proliferation of US, China, and European-imposed technology transfer over the past decade and a detailed description of each scenario (see Appendix A). The pre-event survey received ten responses between 9:32 p.m. on March 19, 2025, and 6:00 p.m. on April 8, 2025. At the start of the workshop, EUISS presented the outcomes of the pre-event survey.

Survey Question	Scale	Scenario 1. Expanding Extraterritorial Patchwork	Scenario 2. Fortress Europe	Scenario 3. CoCom2.0	Scenario 4. US–China Grand Bargain
Q1. Achievability, meaning likelihood that regime is a reality by January 2029	0 = Extremely unlikely 10 = Extremely likely	7.8	3.9	3.8	5.6
Q1a. Support of NATO allies & EU partners around the world for regime	0 = No support 10 = Complete support	4.9	4.7	5.5	4.1
Q2a. Effectiveness(i), meaning likelihood that regime prevents strengthening China's armed forces	0 = Extremely ineffective 10 = Extremely effective	5.9	4.7	4.8	3
Q2b. Effectiveness(ii), meaning likelihood regime prevents strengthening China's industrial dominance	0 = Extremely ineffective 10 = Extremely effective	6.1	5.3	4.9	3
Q3. Desirability, meaning whether the regime is in the EU's interest	0 = Entirely in opposition to EU interests 10 = Entirely in line with EU interests	3.8	6.5	6.0	3.7
Q3a. Level of threat to EU industry and RTO competitiveness	0 = Poses severe threats to competitiveness 10 = Poses no threats	3.5	5.3	4.4	3.8
Q3b. Vulnerability of EU and EU Member States to retaliation by China	0 = Extremely vulnerable 10 = Not at all vulnerable	3.8	4.8	4.0	4.9
Q3c. Leverage that regime provides in negotiations with the US on future technology transfer restrictions	0 = No leverage whatsoever 10 = Far greater leverage	2.2	5.3	5	3.1

The color with which each cell if filled—gold, silver, bronze, or white—indicates the rank of the scenario on each of the three indicators. For example, Scenario 1 is ranked first (gold-colored) in terms of *overall* 1. *Achievability* but only second (silver) in *1a Partner/Ally Support*, and fourth (white) in 3c. *Leverage vis-à-vis the United States*. Scenario 2 is ranked third (bronze) in 2. *Effectiveness*. Ten directors, legal counsels, or other representatives responsible for compliance, export controls, sanctions, research security, or related issues from nine different leading EU semiconductor companies and RTOs filled out the pre-event survey.

Appendix D. Pre- and Post-Event Survey Outcomes per Participant

Answers to phase 1 and phase 2 quantitative questions.

Scenario 1: *An Expanding Extraterritorial Patchwork*

Pre-event survey	Res 1.	Res 2.	Res 3.	Res 4.	Res 5.	Res 6.	Res 7.	Res 8.	Res 9.	Res 10.	Total	Ave-rage	Standard Deviation
Q1	8	6	9	9	6	8	8	7	9	8	78	**7.8**	1.14
Q1a	3	6	6	5	4	9	8	2	3	3	49	**4.9**	2.3
Q2	9	7	5	7	4	7	5	4	5	6	59	**5.9**	1.60
Q2b	9	6	5	7	4	8	5	4	5	8	61	**6.1**	1.79
Q3	0	6	4	5	4	6	7	2	2	2	38	**3.8**	2.25
Q3a	1	8	4	2	5	5	6	1	2	1	35	**3.5**	2.46
Q3b	0	5	5	4	5	3	7	2	4	3	38	**3.8**	1.93
Q3c	0	4	6	2	3	2	4	0	1	0	22	**2.2**	2.04

Post-event	Res 1.	Res 2.	Res 3.	Res 4.	Res 5.	Res 6.	Res 7.	Res 8.	Res 9.	Total	Average	Standard Deviation
Q1	8	8	7	7	9	8	8	8	8	71	**7.89**	0.60
Q1a	3	3	4	3	4	4	5	3	7	36	**4,00**	1.32
Q2	6	4	5	3	3	6	5	4	4	40	**4.44**	1.13
Q2b	6	5	5	3	5	6	7	4	5	46	**5.11**	1.17
Q3	1	2	4	2	4	2	3	3	4	25	**2.78**	1.09
Q3a	3	3	3	2	4	2	4	2	3	26	**2.89**	0.78
Q3b	5	3	4	3	5	5	5	2	6	38	**4.22**	1.30
Q3c	0	2	2	2	3	2	2	1	5	19	**2.11**	1.36

Scenario 2: *Fortress Europe*

Pre-event survey	Res 1.	Res 2.	Res 3.	Res 4.	Res 5.	Res 6.	Res 7.	Res 8.	Res 9.	Res 10.	Total	Ave-rage	Standard Deviation
Q1	1	7	5	2	6	4	0	5	6	3	39	**3.9**	2.3
Q1a	2	7	8	2	5	6	2	5	6	4	47	**4.7**	2.2
Q2	5	7	5	5	4	4	8	3	3	3	47	**4.7**	1.7
Q2b	5	7	5	5	4	5	8	3	6	5	53	**5.3**	1.4
Q3	5	9	9	7	7	6	8	3	5	6	65	**6.5**	1.9
Q3a	5	7	7	5	5	5	7	2	6	4	53	**5.3**	1.6
Q3b	5	7	5	4	7	3	8	2	4	3	48	**4.8**	2.0
Q3c	5	9	7	4	2	8	7	0	5	6	53	**5.3**	2.8

Post-event	Res 1.	Res 2.	Res 3.	Res 4.	Res 5.	Res 6.	Res 7.	Res 8.	Res 9.	Total	Average	Standard Deviation
Q1	0	4	4	3	4	2	4	5	3	29	**3.22**	1.48
Q1a	2	5	5	4	5	2	4	3	3	33	**3.67**	1.22
Q2	5	4	4	3	4	6	3	4	3	36	**4.00**	1.00
Q2b	5	5	6	3	5	6	6	4	5	45	**5.00**	1.00
Q3	5	4	7	5	8	8	7	7	7	58	**6.44**	1.42
Q3a	5	3	5	6	6	4	6	5	7	47	**5.22**	1.20
Q3b	5	5	5	4	6	2	5	5	8	45	**5.00**	1.58
Q3c	5	6	5	2	7	6	4	1	8	44	**4.89**	2.26

Post-event	Res 1.	Res 2.	Res 3.	Res 4.	Res 5.	Res 6.	Res 7.	Res 8.	Res 9.	Total	Average	Standard Deviation
Q1	6	0	4	3	3	3	6	4	2	31	**3.44**	1.88
Q1a	5	2	6	4	7	5	6	6	5	46	**5.11**	1.45
Q2	5	3	5	3	5	7	7	4	6	45	**5.00**	1.50
Q2b	5	4	5	3	5	7	7	4	6	46	**5.11**	1.36
Q3	6	4	6	5	7	5	7	7	3	50	**5.56**	1.42
Q3a	4	6	5	4	5	2	5	2	3	36	**4**	1.41
Q3b	5	5	5	4	6	2	4	2	7	40	**4.44**	1.67
Q3c	3	3	5	5	6	3	2	1	5	33	**3.67**	1.66

Scenario 3: *CoCom2.0*

Pre-event survey	Res 1.	Res 2.	Res 3.	Res 4.	Res 5.	Res 6.	Res 7.	Res 8.	Res 9.	Res 10.	Total	Ave-rage	Standard Deviation
Q1	8	4	3	1	2	6	6	2	5	1	38	**3.8**	2.39
Q1a	7	4	5	7	6	6	9	4	4	3	55	**5.5**	1.84
Q2	7	3	4	0	8	7	8	3	6	2	48	**4.8**	2.78
Q2b	7	3	4	0	8	7	7	3	7	3	49	**4.9**	2.64
Q3	6	2	7	9	7	7	8	7	3	4	60	**6.0**	2.26
Q3a	6	2	7	4	3	6	6	3	1	6	44	**4.4**	2.07
Q3b	5	2	4	0	7	6	6	2	1	7	40	**4.0**	2.58
Q3c	5	2	6	7	7	8	6	0	6	3	50	**5.0**	2.54

Scenario 4: *A US–China Grand Bargain*

Pre-event survey	Res 1.	Res 2.	Res 3.	Res 4.	Res 5.	Res 6.	Res 7.	Res 8.	Res 9.	Res 10.	Total	Ave-rage	Standard Deviation
Q1	5	3	7	3	6	7	4	8	7		50	**5.6**	1.88
Q1a	3	8	7	5	1	5	5	2	2	3	41	**4.1**	2.28
Q2	2	5	4	2	1	4	4	2	3		27	**3.0**	1.32
Q2b	2	5	4	2	1	4	4	2	3		27	**3.0**	1.32
Q3	4	5	8	4	1	2	5	3	1		33	**3.7**	2.24
Q3a	6	5	6	6	2	2	5	4	1	1	38	**3.8**	2.10
Q3b	6	5	6	6	2	7	6	2	7	2	49	**4.9**	2.08
Q3c	2	8	7	4	2	2	5	0	1	0	31	**3.1**	2.81

Post-event	Res 1.	Res 2.	Res 3.	Res 4.	Res 5.	Res 6.	Res 7.	Res 8.	Res 9.	Total	Average	Standard Deviation
Q1	5	3	4	4	7	6	5	8	2	44	**4.89**	1.90
Q1a	2	4	3	4	4	3	5	2	2	29	**3.22**	1.09
Q2	2	2	3	3	3	1	4	4	1	23	**2.56**	1.13
Q2b	2	3	3	3	3	1	5	4	1	25	**2.78**	1.30
Q3	4	1	3	4	7	1	2	2	3	27	**3.00**	1.87
Q3a	3	2	4	4	4	2	3	2	7	31	**3.44**	1.59
Q3b	3	0	5	5	5	5	6	5	8	42	**4.67**	2.18
Q3c	2	1	3	2	3	2	3	1	6	23	**2.56**	1.51

Appendix E. Full EU Semiconductor Industry and RTO Delphi Workshop Methodology (April 9, 2025)

On behalf of CHIPDIPLO, the EU Institute for Security Studies (EUISS) welcomed thirteen legal counsels, directors, and other representatives responsible for compliance, export controls, sanctions, research security, or related issues from ten leading European semiconductor companies and RTOs to a Delphi workshop. EUISS asked the participants to rate the achievability, effectiveness, and desirability of four 2029 scenarios for a post-Wassenaar world on a scale from 0 to 10. In addition, the participants were invited to propose scenarios that were not covered in the original four.

The participants filled out the pre-event survey after reading an EUISS discussion paper. This included background information on the proliferation of US, China, and European-imposed technology transfers over the past decade and a detailed description of each scenario (see Appendix A). At the start of the workshop, EUISS presented the outcomes of the pre-event survey. At the close of the event, participants offered their definitive judgment on the policy package in a post-event survey.

The pre-event survey received ten responses between 9:32 p.m. on March 19, 2025, and 6:00 p.m. on April 8, 2025, despite participation

of thirteen EU semiconductor ecosystem representatives. The reason was as follows: Some representatives from the same organization filled out the survey together. In general, several representatives leveraged the expertise of colleagues within their organization in their responses. Out of the participants that filled out the pre-event survey, nine also filled out the post-event survey.

All respondents to the post-event survey completed their responses directly at the close of the event (between 2:00 p.m. and 2:30 p.m. on April 9). The individual answers to all quantitative questions in both surveys can be found in Appendix D. To ensure full anonymity of all participants, EUISS does not publish the answers of survey respondents to the qualitative questions or the identity of the workshop participants. The Chatham House Rule applied to the entire meeting.

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The Wassenaar Arrangement, the multilateral framework that has shaped technology transfer controls for nearly three decades, is not fit for a world of great power competition. A proliferation of technology transfer restrictions — largely driven by Washington, but increasingly also by Beijing — goes far beyond Wassenaar's lists and practices. These unilateral measures, which strongly affect Europe's semiconductor sector, are responses to waves of disruptive innovation, US-China rivalry, and the geopolitical shock of Russia's invasion of Ukraine.

Where does this all end? What regimes will regulate technology transfers in the future? With President Trump back in office, Europe's semiconductor ecosystem faces even more profound uncertainty. Meanwhile, President Xi expands China's state support and other policies to move semiconductor production within its borders.

This first CHIPDIPLO policy paper seeks to provide strategic clarity at a pivotal moment. The paper aims to support European decision-makers in developing realistic and effective technology transfer regimes that serve Europe's interests and the competitiveness of its semiconductor ecosystem. Structured around four scenarios looking ahead to 2029, it offers detailed insight into the preferences and expectations of key actors across Europe's semiconductor industry and research technology organizations (RTOs). Based on these, Europeans can develop strategies to protect their tech interests in this post-Wassenaar world.

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