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Semiconductors: European Views on Four 2029 Tech Transfer Regime Scenarios

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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**
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.

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