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Super Chips and Supply Chains: Why Europe's Chips Act Can't Fix Chokepoint Weaponisation

On 15 October 2025, China announced new export controls on rare earth minerals, over which it holds near-total control across the global value chain.[1] China's decision can be viewed as a response to escalating US trade measures, including increased tariffs and export bans. Europe's dependence on US intermediaries leaves it exposed to China's coercive strategy, which increasingly treats Europe as a strategic target rather than collateral damage.[2] These materials have become critical strategic resources for many states, as they are indispensable for producing semiconductors, the computing backbone of microchips that power both civilian industries and advanced military systems.[3] As Farrell and Newman[4] observe, the US has long weaponised its control over critical economic and technological infrastructure. Yet, as global interconnections deepen, emerging powers like China are gaining strategic leverage of their own, increasingly turning these same mechanisms against the West.[5] This growing strategic agony is most visible in the struggle over the highly fragmented semiconductor supply chains, where different regions have specialised in different segments of production. While the US maintains leadership in chip design,[6] nearly 90% of the world's most advanced fabrication remains in Taiwan's TSMC.[7] This dependence, shaped by the risks surrounding the One-China policy, pushes Europe to build its own chips capacity to avoid strategic entanglement and economic coercion in a Taiwan crisis. When different players control bottlenecks across supply chains, the risk of weaponisation increases substantially.

As the trade and tech war between China and the United States escalates, it risks turning international trade into a race to the bottom. Donald Trump's transactional, and business-oriented approach places growing pressure on long-standing transatlantic economic ties. At the same time, new security and political alignments are taking shape beyond the West. As High Representative Kallas cautioned, an emerging "autocratic alliance"[8] led by China is consolidating through formats such as the Shanghai Cooperation Organisation. For Europe, this evolution underscores a strategic dilemma centred on semiconductors themselves, as their economic and security significance increasingly makes them a source of vulnerability and external pressure in a contested world order.

As the European Commission's (EC) review process for the Chips Act is currently open,[9] this moment offers a timely opportunity to assess and reinforce Europe's semiconductor policy. Anchored in the European Chips Act,[10] it reflects both its vulnerabilities and ambitions in the pursuit of technological sovereignty. Launched in early 2025 by nine EU countries, the Semiconductor Coalition was joined by all 27 member states (MS) on 29 September 2025, through a joint declaration calling for a revised and forward-looking *Chips Act 2.0* to strengthen European competitiveness and strategic resilience.[11] The emerging policy consensus among MS underscores Europe's determination to strengthen its control over critical technologies in the face of intensifying global competition.

From Interdependence to (In)security

Fostered by globalisation, security and economic interests have become increasingly intertwined. While the global economy has proven surprisingly resilient amid the recent shocks,[12] a new wave of industrial policy is unfolding, as states seek to revise, diversify and strengthen key supply chains in pursuit of resilience. This emerging geoeconomic logic underscores the extent to which interdependence has been reframed as a vector of strategic vulnerability. As such, for the EU, the protection of critical infrastructure,[13] intellectual property[14] and the non-proliferation of dual-use technologies[15] has become subsumed under the expanding domain of strategic autonomy, reflecting the ongoing securitisation of economic policy.

The EU is by no means exempt from the geoeconomic dynamic. While the Union continues to adhere to the mechanisms of the liberal order and publicly presents

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itself as "reliable, predictable and open for fair business"[16], it nonetheless acknowledges that it operates in "a world in which dependencies are ruthlessly weaponised"[17]. The EU has demonstrated that it possesses the agency to respond, notably through its economic instruments. Several recent cases highlight how the EU has strategically employed these to advance its geopolitical objectives. These include the establishment of foreign direct investment screening mechanisms,[18] the sanctions-regime against Russia following its invasion of Ukraine, the introduction of tariffs on Chinese electric vehicles[19] and the Carbon Border Adjustment Mechanism.[20]

Inside the Geoeconomics of Chips

During the chip shortage triggered by the Covid-19 pandemic, stakeholders became acutely aware of the fragility of semiconductor supply chains, causing an estimated €100 billion in losses to European carmakers in 2021 and 2022 alone.[21] Russia's war of aggression and the ensuing export controls on semiconductors have further underscored their dual-use nature, revealing that these technologies are no longer civilian commodities but can be integral instruments of geopolitical strategy.

As the backbone of modern technology, semiconductors have become a central arena of strategic rivalry, shaping, among other things, the race for AI supremacy. Leading chipmakers collectively represent more than US$6.5 trillion in market capitalisation.[22] It is a globally interconnected industry, with supply chains spanning more than 50 countries and different regions specialising in distinct stages of production, from chip design to fabrication and assembly.[23] The leading players in the semiconductor ecosystem are the United States, South Korea, Japan, the EU, China and Taiwan. Meanwhile, more countries - including ASEAN members,[24] India[25] and Mexico[26] - are adopting national semiconductor strategies to expand their position in the supply chain. Although the trade war has slightly dampened semiconductor market growth, the industry is still projected to reach €1 trillion in annual revenue over the next years. Recent shortages mainly affected older, less advanced chips, and supply has largely stabilised. Future growth is now driven by data centers, which rely on cutting-edge semiconductors.[27]

European Silicon Governance

The EU Chips Act, adopted in 2023, set out an ambitious goal for Europe to double its global semiconductor market share from around 10% today to 20% by 2030, aiming to enhance technological sovereignty and reduce dependency on external suppliers.[28] Yet, as global competitors scale up their investments,[29] a report by the European Court of Auditors[30] on the Chips Act shows that this target has proven insufficient to address the depth of Europe's structural vulnerabilities in the semiconductor value chain. With the Chips Act, the EU has mirrored Washington's strategy of reindustrialisation, prioritising capacity-building over economic efficiency. This push for reindustrialisation overlooks a simple reality: the continent currently lacks both the design and fabrication capability to produce state of the art chips at advanced nanometer nodes. Instead of pursuing symbolic industrial targets, investment decisions should be grounded in a realistic assessment of demand within the European market.

Although the EC's claims that over €80 billion in investments have been attracted by the Chips Act so far,[31] recent setbacks, including Intel's cancellation of its €30 billion fabs in Germany,[32] have exposed the EU's overreliance on single projects and underscored the urgent need for a diversified, strategically coordinated semiconductor ecosystem. The principal challenge in coordinating multi-level governance between the central EU institutions and MS is achieving coherent and efficient policy alignment. The EU Chips Act lacks a coherent long-term strategy, leaving MS to define and develop their own national policies.[33] This fragmentation is further reflected in the Chips Act's financing model, where EU funds depend on national and private contributions, often fuelling competition among MS over the scale of state support rather than fostering collective capacity. Translating the Chips Act into industrial output has had limited success so far. National legislation and long approval times slow implementation and undermine investor confidence.[34]

The EU has also introduced new instruments under the Chips Act to improve oversight and coordination. The European Semiconductor Board monitors progress and facilitates information exchange but has not yet evolved into a task-specific jurisdiction.[35] The Chips Joint Undertaking is a private-public partnership that coordinates funding, governance and stakeholder engagement to support R&D, innovation and align priorities across industry and MS.[36]

As Europe advances toward a revised Chips Act 2.0, the Semiconductor Coalition has started to shape proposals to strengthen the semiconductor ecosystem. Its declaration outlines five priorities: steering cross-sector collaboration; aligning public and private funding with faster Important Projects of Common European Interest (IPCEI) approvals; investing in talents via a European Chips Skills Programme; advancing industry sustainability through green and circular chip technologies; and deepening international partnerships to secure open and resilient supply chains.[37]

Hidden Champions: Europe's Strength

While Europe is often overlooked in global discussions on semiconductors, its position in the upstream segment of the value chain is stronger than commonly perceived. The region hosts leading companies and specialised hubs that underpin chip production worldwide. The Dutch company ASML holds a quasi-monopoly in EUV advanced lithography, securing Europe a pivotal position in the semiconductor value chain. Furthermore, European firms are also global leaders in subsystems and components, providing essential capabilities that sustain chip production worldwide.[38] Beyond the Netherlands, the continent's industrial strength is distributed across a network of specialised hubs. Germany plays a central role, home to Infineon, one of the world's leading suppliers of power and automotive semiconductors, and Zeiss for optics. France and Italy, who jointly host STMicroelectronics, a global leader in analogue, sensor, and embedded solutions.[39] Emerging semiconductor hubs are gaining traction across Europe, with Ireland advancing its Silicon Island initiative, already exporting €13.5 billion in chips,[40] and Poland developing its Tri-City cluster.[41] According to the EC[42], more than €100 billion in policy-driven investment is expected to be mobilised under the Chips Act by 2030.

When two quarrel, the third rejoices?

China's accelerating efforts toward self-sufficiency remain constrained by Western control over critical chokepoints. US sanctions against Chinese state-backed enterprises like Huawei, along with export controls and technology transfer restrictions, have had only limited success, slowing but not stopping Beijing's progress in cutting-edge chips.[43] The US has extended these export controls to its allies by leveraging its network centrality, restricting European companies' access to the Chinese market and growth opportunities. At the same time, Europe remains dependent on Chinese chips for less advanced technologies, manufacturing and assembly, highlighting its own vulnerabilities.[44] Conversely, China's efforts in advanced chipmaking are hampered by limited access to Europe's EUV lithography machines,[45] a dependency which gives the EU a rare point of strategic leverage. Positioned between the accelerating technological confrontation of the US and China, Europe must balance economic openness with the need to safeguard its industrial base and preserve room for independent action.

Amid growing geoeconomic competition, China is increasingly engaged in hybrid operations, acquiring intellectual property through illicit means, including espionage and theft.[46] At the same time, China supports companies through internationally contested subsidies and non-tariff barriers, and restricts market access for foreign firms.[47] Although China will likely retain its developing-country status at the WTO, its choice not to seek further special treatment, however, signals an effort to bandwagon with the liberal trade order and ease concerns over its state-led model.[48] However, the recent Nexperia incident exemplifies the challenges that may arise.[49] The Dutch government's expropriation of the Chinese-owned semiconductor company highlights the dynamics between economics and security, with repercussions for the EU-China relationship. The policy reflects a geoeconomic step for Europe to defend its sovereignty when international rules are undermined.

Following this, the US has pursued its own approach toward Europe. Against this back-drop, recent foresight work by the EUISS and Institute Montaigne turns to the US, outlining possible scenarios for the European semiconductor sector and assessing how Washington's expanding control regimes could shape the EU's strategic choices by 2029. Industry experts warn that the EU faces growing dangers under the structural power of US-driven export-control regimes, which could negatively impact the EU's market access, competitiveness, and policy independence. The most likely scenario of US controls envisions Washington expanding its export-restriction regime, coercing

European firms to comply even when trading independently. The Fortress Europe framework - where export control decisions are centralised at EU-level - was seen as best protecting European actorness. If the US administration plans for new export controls and tariffs, this could pose serious risks for production networks, constraining R&D and manufacturing, and increasing operational costs across the value chain.

The Way Forward

The challenge for the EU in great power politics is that real power increasingly depends on the ability to coordinate with domestic companies, a capacity that China and the United States already leverage through different forms of state-capitalist models. In an era of geoeconomics, it is no longer possible to keep separate the competencies that matter most. While trade policy remains largely under the EC's authority, foreign policy is the domain of MS. With the switch from geopolitics to geoeconomics, this separation is a structural disadvantage which hinders the Union's ability to coordinate effectively. Since Mario Draghi[52] published his report on the competitiveness of the EU about a year ago, only about 11% of his recommendations have so far been implemented, lagging in crucial areas such as digitalisation and advanced technologies,[53] sectors that are powered by semiconductors. MS need to understand that if they align on a central European level and call for greater collective efforts yet remain unwilling to substantially increase cooperation through an increased Multiannual Financial Framework, they risk undermining the very strategic ambitions they seek to advance. For the semiconductor sector, the EU's fragmented capital system further limits the capacity to raise much needed capital for strategic initiatives.[54]

As leading experts Miller and Allen[55] note, Europe lacks strength in AI, a key driver of semiconductor growth, and faces Chinese subsidies and export controls. To remain competitive, Europe must maintain its technological edge and coordinate with allies. In 2024, generative AI chips made up only 0.2% of global wafer production but were responsible for around 20% of revenue.[56] This is a clear signal that the future trend in semiconductors is qualitative. The EU should pursue a gradual transition based on the input and output needs of its key industries. With increased financial investment into critical and emerging technologies, positive spillovers could strengthen the European semiconductor industry.

Setting aside day-to-day politics, it is likely that Trump and Xi will agree on a pragmatic "deal" to ease tensions through limited recalibrations to Chinese export controls and US tariffs. In the short term, trade disputes will endure, which will continue to cause great uncertainty for European companies. In the long term, the US and Europe must cooperate to counteract the pivot of the semiconductor industry to Asia.

References

1 Kynge, J. (10 October2025). *China's new restrictions on rare earth exports send a stark warning to the West.* *Chatham House.*
2 Gehrke, T., & Oertel, J. (21 October 2025). *Escalate to negotiate: How Europe should respond to Chinese export restrictions. European Council on Foreign Relations.*
3 Baskaran, G. (9 October 2025). *China's new rare earth and magnet re-strictions threaten U.S. defense supply chains. CSIS.*
4 Farrell, H., & Newman, A. L. (2019). *Weaponized interdependence: How global economic networks shape state coercion. International Security, 44(1), 42–79.*
5 Farrell, H., & Newman, A. (19 August 2025). *The weaponized world economy: Surviving the new age of economic coercion. Foreign Affairs.*
6 Tomoshige, H., & Crane, B. (19 January 2024). *RAI Explainer: Strategic Im-portance of Continued U.S. Leadership in Chip Design. Center for Strategic & International Studies.*
7 Gordon, P. H., & Haas, R. (22 September 2025). *Nobody Lost Taiwan: The island remains secure and stable—for now. Foreign Affairs.*
8 European External Action Service. (3 September 2025). *College readout: Press remarks by High Representative/Vice-President Kaja Kallas.*
9 European Commission. (5 September 2025). *Commission launches public consultation and call for evidence on the evaluation and review of the Chips Act.* Retrieved 20 October 2025
10 European Commission. (2025). *European Chips Act. Shaping Europe's Digital Future.* Retrieved 20 October 2025
11 European Commission. (29 September 2025). *Semicon Coalition calls for a reinforced Chips Act. Digital Strategy.*
12 OECD. (2025). *OECD Economic Outlook, Interim Report September 2025: Finding the right balance in uncertain times. OECD Publishing.*
13 European Commission. (11 September 2025). *Critical infrastructure resili-ence at EU level. Directorate-General for Migration and Home Affairs.* Retrieved 18 October 2025.
14 European Commission. (n.d.). *Protecting EU creations, inventions and de-signs. Directorate-General for Trade and Economic Security. Retrieved 18 October 2025.*

15 Szczepański, M. (October 2025). Dual-use export controls as tools of EU economic security (PE 777.960). European Parliamentary Research Service.
16 von der Leyen, U. (20 March 2025). Speech by the President at the European Parliament Plenary debate on the conclusions of the European Council meeting of 20 March 2025. European Commission.
17 von der Leyen, U. (10 September 2025). 2025 State of the Union Address. European Commission.
18 Berg, O., Wienke, T.-M., Kelliher, K., Sensenig, T., & Roussier, L. (27 March 2025). Foreign direct investment reviews 2025: European Union. White & Case LLP.
19 Gehrke, T., & Medunic, F. (27 June 2024). Fortune favours the bold: Upgrading the EU's geoeconomic strategy. European Council on Foreign Relations.
20 Flórez Mendoza, J., Reiter, O., & Stehrer, R. (2024, November 2024). Impacts of the EU carbon border adjustment mechanism (Policy Notes & Reports No. 86). Vienna Institute for International Economic Studies (wiiw).
21 Duthoit, A., & Lemerle, M. (13 September 2022). Missing chips cost EUR 100 bn to the European auto sector. Allianz Research / Allianz Trade.
22 Kusters, J., Bhattacharjee, D., Bish, J., Nicholas, J. T., Stewart, D., & Rama-chandran, K. (4 February 2025). 2025 global semiconductor industry outlook. Deloitte Center for Technology, Media & Telecommunications, Deloitte.
23 German Institute for Security and International Studies. 2025. GI25 Executive Briefing – The Semiconductor Ecosystem and Export Controls. GSIS Hamburg. 21 August.
24 Kennedy, M., Fingar, C., Parameswaran, P., & Larres, K. (1 April 2025). 360° View of How Southeast Asia Can Attract More FDI in Chips and AI. Wilson Center.
25 Bhandari, K. (25 August 2025). India's Semiconductor Mission: The Story So Far. Carnegie Endowment for International Peace.
26 Gonzalez Henrichsen, J. (14 February 2024). The future of semiconductor chip manufacturing: North America's opportunity with Mexico. Forbes Business Council.
27 International Business Strategies, Inc. (2025). CAPEX activities in semicon-ductor industry for support of growth. International Business Strategies, Inc.
28 European Commission. (21 September 2023). European Chips Act.
29 Chang, Y.-H. (25 June 2025). Strategic Silicon: Geopolitics is redirecting semiconductor investment. IDTechEx.
30 European Court of Auditors. (2025). Special report 12/2025: The EU's strategy for microchips — Reasonable progress in its implementation, but the Chips Act is very unlikely to be sufficient to reach the overly ambitious Digital Decade target. Publications Office of the European Union.
31 European Commission. (28 April 2025). European Chips Act – Update on the latest milestones. Retrieved 20 October 2025.
32 Alvares de Souza Soares, P. (25 July 2025). Intel meldet Milliardenverlust und gibt Pläne für Fabrik in Magdeburg auf. Handelsblatt.
33 Kleinhans, J.-P. (30 July 2024). The missing strategy in Europe's chip ambi-tions: Member states must drive the next steps. Interface.
34 Malaponti, C. (30 April 2025). Chips on the menu: How the EU can get its act together on semiconductors. European Council on Foreign Relations.
35 European Commission. (28 March 2025). European Chips Act: Monitoring and crisis response. Retrieved 12 October 2025.
36 European Union. (n.d.). Chips Joint Undertaking. Retrieved 10 October 2025.
37 European Commission. (29 September 2025). Semicon Coalition calls for a reinforced Chips Act. Digital Strategy.
38 West, J., & Eloy, J.-C. (18 April 2024). Underappreciated EU suppliers lead the semiconductor equipment market. Yole Group.
39 industriAll European Trade Union. (3 April 2024). The semiconductor industry in Europe: Between geopolitics and tech race [Policy brief]. industriAll Europe.
40 Government of Ireland, Department of Enterprise, Trade and Employment. (19 May 2025). Silicon Island: Ireland's national semiconductor strategy [Policy Papers/Strategies, Reports].
41 Ministry of Economic Development and Technology of Poland. (22 November 2024). Semiconductors in the Tri-City – A new investment by MEP Solutions. Trade.gov.pl.
42 European Commission. (24 July 2024). Chips Act. Shaping Europe's digital future.
43 Shivakumar, S., Wessner, C., & Howell, T. (14 April 2025). The limits of chip export controls in meeting the China challenge. Center for Strategic and International Studies.
44 Rühlig, T. N. (13 December 2024). Curbing China's legacy chip clout: Reeval-uating EU strategy (Brief No. 21). European Union Institute for Security Studies.
45 Kusters, J., Bhattacharjee, D., Bish, J., Nicholas, J. T., Stewart, D., & Rama-chandran, K. (4 February 2025). 2025 global semiconductor industry outlook. Deloitte Center for Technology, Media & Telecommunications, Deloitte.
46 Lewis, J. A. (17 November 2023). Rethinking technology transfer policy to-ward China. Center for Strategic and International Studies.
47 Boullenois, C., Kratz, A., & Rosen, D. H. (17 March 2025). Far from normal: An augmented assessment of China's state support. Rhodium Group.
48 Xu, X. (1 October 2025). China's status as a developing country remains unchanged. Global Times.
49 Fleming, S., Schipani, A., & Williams, A. (14 October 2025). Dutch seizure of chipmaker followed US ultimatum over Chinese chief. Financial Times.
50 Teer, J. (2025). Semiconductors: European views on four 2029 tech transfer regime scenarios (CHIPDIPLO Policy Paper No. 1). European Union Institute for Security Studies & Institut Montaigne.
51 Kusters, J., Bhattacharjee, D., Bish, J., Nicholas, J. T., Stewart, D., & Rama-chandran, K. (4 February 2025). 2025 global semiconductor industry outlook. Deloitte Center for Technology, Media & Telecommunications, Deloitte.
52 European Commission. (2024). The Draghi report on the future of European competitiveness.
53 European Policy Innovation Council (EPIC). (2 September 2025). Draghi Observatory & Implementation Index: Only 1 in 10 measures implemented. EPIC.
54 Lindner, J., & Mack, S. (11 July 2025). Capital Markets Union: Europe must stop beating around the bush [Policy brief]. Jacques Delors Centre.
55 Miller, C., & Allen, J. (16 October 2025). Europe Is Losing the Chips Race. Foreign Affairs.
56 Deloitte. (4 February 2025). 2025 global semiconductor industry outlook. Deloitte Insights.

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