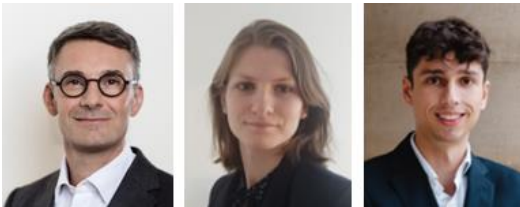


Europe is writing its own AI trade story



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Abstract

- While the prevailing narrative suggests Europe is falling behind the global AI boom, our results indicate that the EU has a significant AI-enabling goods trade, albeit increasingly dependent on Asian suppliers.
- Europe's comparative advantage in AI intermediate goods is significant but highly concentrated: both on the production side, with only two countries making up half of that trade, and on the destination side, with China as the major destination.
- Europe's heavy trade exposure to China, combined with its narrow specialization in AI-enabling intermediates, leaves its tech ecosystem vulnerable to potential trade restrictions and technological shifts.

Disclaimer: This Policy Brief is based on "[The Contrasting Digital Transformation Of The U.S. And European Economies](#)". The views expressed are those of the authors and not necessarily those of the institutions the authors are affiliated with.

Europe is reshaping its role within the AI boom, transitioning from a perceived outsider to a specialized provider of intermediate goods. Contrary to the common perspective that Europe is a bystander in the AI revolution, our analysis reveals a sizable, €572 billion trade footprint that tells a far more complex story.

AI is transforming the global economy, amid a widely accepted narrative in which the U.S. drives investment in AI infrastructure, Asia supplies AI-enabling goods, and Europe watches from the sidelines. Indeed, in a July 2026 interview on the AI boom, economist and Nobel laureate Philippe Aghion commented, “Europe needs to wake up.”

In this report, S&P Global Ratings examines the reality of Europe’s position in the global trade in AI-enabling goods. We test whether the prevailing narrative holds true, or if there are grounds to reconsider Europe’s role in the AI revolution.

To define the perimeter of trade in AI-enabling goods, we use a WTO classification supplemented by European Bank for Reconstruction and Development (EBRD) mapping (see box below for details). On this basis, we estimate Europe’s annual trade in AI-enabling goods with the rest of the world at €572 billion (exports plus imports) and identify an €18 billion trade deficit in 2025 (see chart 1). This accounts for about 11% of Europe’s total global goods trade.

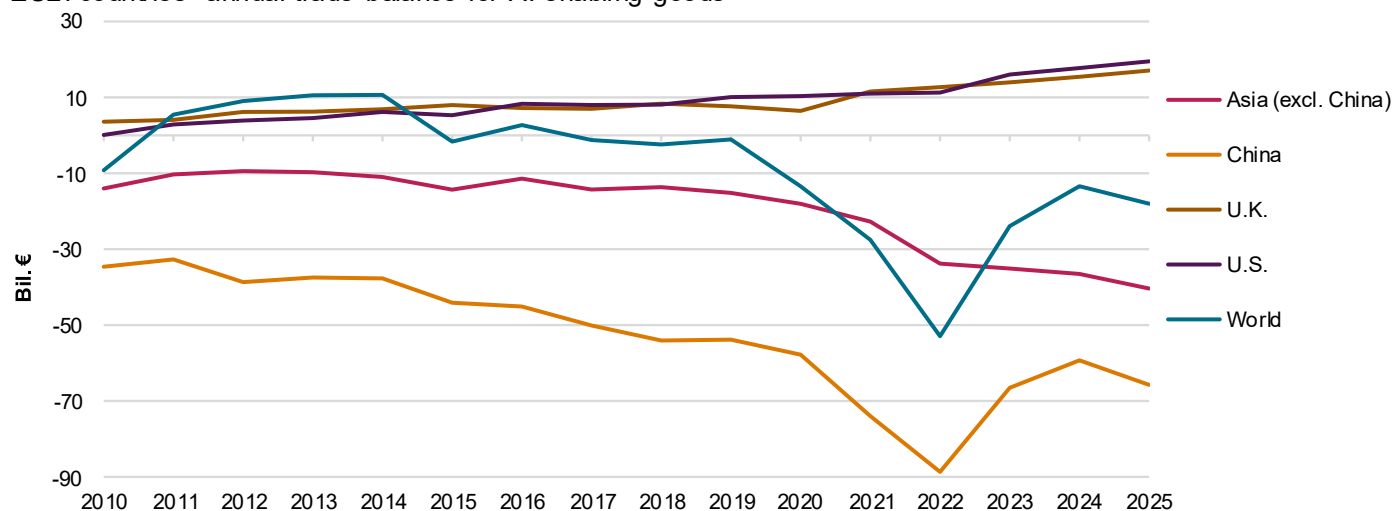
This perimeter is not without caveats: some categories, such as laptops or equipment enabling high-speed data interchange, have broad end-consumer applications and are not exclusively AI-enabling. Including them may therefore overstate the AI-specific component of trade; conversely, excluding them could understate the infrastructure and equipment that effectively supports AI adoption.

Such classification choices also have material implications for the bilateral picture: removing these categories would substantially reduce Europe’s measured trade deficit with Asian economies.

Chart 1.

AI-enabling goods account for about 11% of Europe’s total global goods trade

EU27 countries’ annual trade balance for AI-enabling goods



AI-enabling goods are defined according to the WTO’s AI-enabling products classification based on HS-6 codes, supplemented by the EBRD’s classification of AI-related goods. The chart covers 107 HS-6 categories, including raw materials (such as silicon and certain gases, excluding rare earth elements), processed chemicals used in manufacturing, intermediate inputs (such as machinery for component production, accessories, and components utilized in manufacturing processes), and equipment (including machinery, apparatus, and instruments used for final output production and compliance testing).
Sources: Eurostat, World Trade Organization, European Bank for Reconstruction and Development, S&P Global Ratings.

The WTO Classification For AI-Enabling Goods Trade

The WTO classification offers a comprehensive definition of AI-enabling goods. It covers 104 Harmonized System six-digit (HS-6) product categories linked to the development and production of AI technologies, from raw materials to specialized machinery. This classification is not exhaustive; it excludes some HS-6 categories that may include supply-chain inputs but are primarily used for non-AI purposes.

In addition, we used the EBRD classification of AI-related goods to complement the WTO list. This classification adds three HS-6 categories relevant for AI deployment, notably optical devices enabling computer vision and control instruments that provide inputs to AI-automated systems.

The resulting basket covers 107 HS-6 categories, spanning raw materials (such as silicon and selected industrial gases, excluding rare earths according to the WTO methodology); processed chemicals central to the manufacturing of semiconductors; intermediate inputs (accessories, parts, and machinery used in semiconductors' production); and final equipment (specialized machinery and tools used to develop, deploy, and test AI).

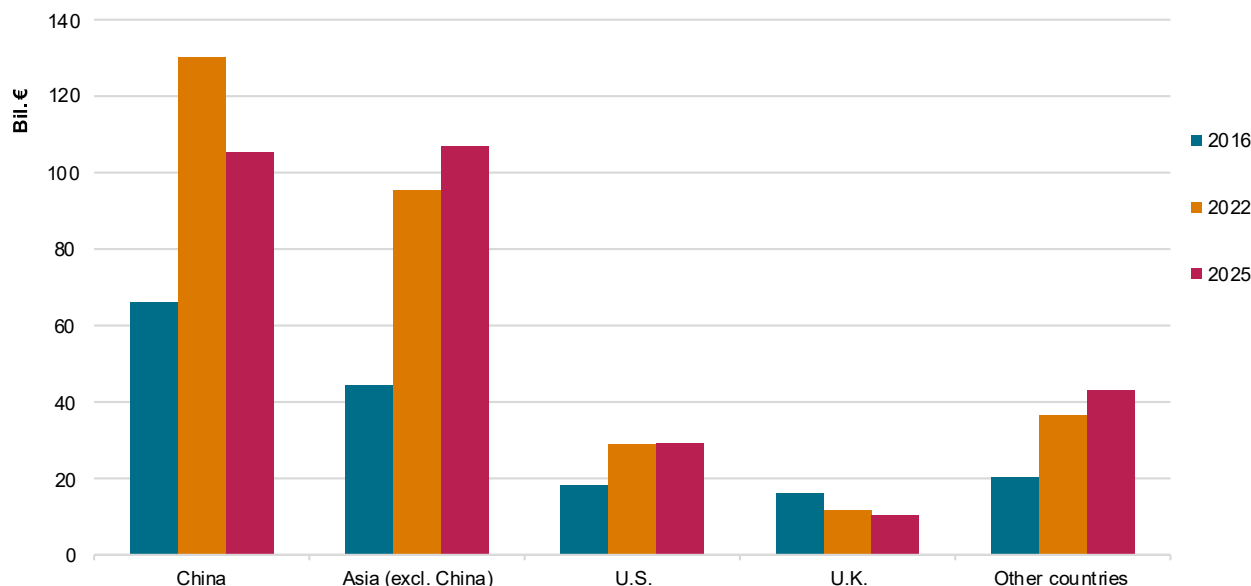
In 2025, European trade in this scope is concentrated. About one-third of exports come from just five HS-6 categories, led by wafer steppers (HS 848620) at €24 billion (8.6%), followed by electronic integrated circuits (HS 854231) at €17.3 billion (6.2%) and servers (HS 847150) at €17 billion (6.2%). On the import side, concentration is even higher: about two-fifths of imports are captured by five HS-6 categories, dominated by machines enabling high speed data exchange (HS 851762) at €33 billion (11.2%) and laptops (HS 847130) at €30.6 billion (10.4%).

Europe's trade links in AI-enabling goods are clearly tilted toward Asia, especially on the import side. Since 2016--often seen as the point when AI "came of age", thanks to the diffusion of voice assistants, the Go breakthrough by Google's DeepMind AI technology, and the creation of OpenAI--European imports from Asia excluding China have risen markedly (note that our Asia aggregate covers 31 countries and excludes China, which we present separately).

This pattern reflects a supply chain centered on memory production in South Korea, AI accelerators from Taiwan, and additional assembly capacity in economies such as Malaysia (see chart 3). While European imports from China have declined since 2022, this does not signal de-risking: the fall reflects lower Chinese export prices rather than a decisive shift away from China-based suppliers. In fact, imports from China have increased by 14% in terms of quantity since 2022. Because Europe's trade deficit with Asia continues to widen, the evidence for a strong de-risking trend away from Chinese suppliers remains weak.

Chart 2.**No de-risking from China: The post-2022 decline in imports from China reflects lower import prices, not lower quantities**

EU27 worldwide gross imports for AI-enabling goods



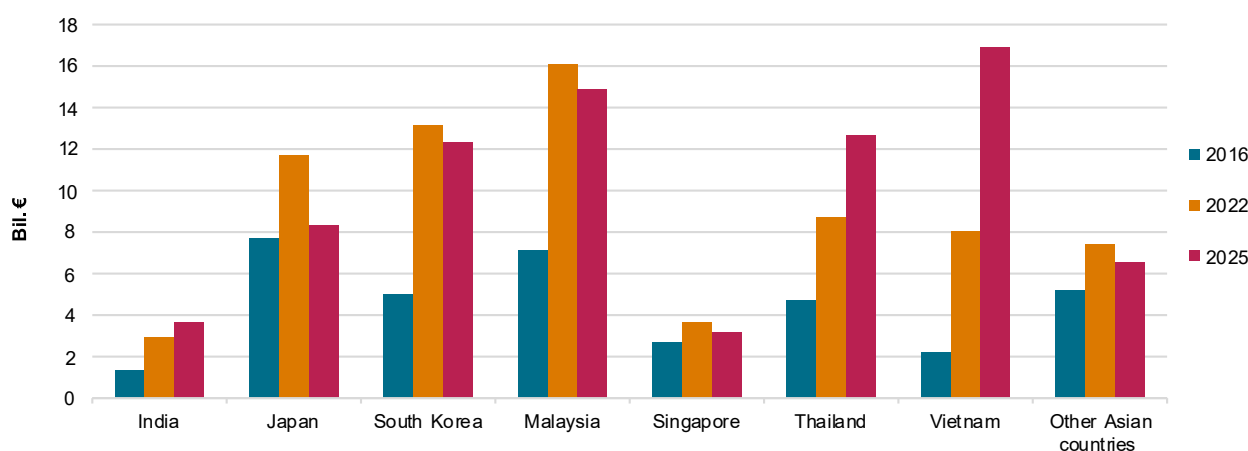
AI-enabling goods are defined according to the WTO's AI-enabling products classification based on HS-6 codes, supplemented by the EBRD's classification of AI-related goods. The chart covers 107 HS-6 categories, including raw materials (such as silicon and certain gases, excluding rare earth elements), processed chemicals used in manufacturing, intermediate inputs (such as machinery for component production, accessories, and components utilized in manufacturing processes), and equipment (including machinery, apparatus, and instruments used for final output production and compliance testing).

Sources: Eurostat, World Trade Organization, European Bank for Reconstruction and Development, S&P Global Ratings.

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Chart 3.**Europe's trade links in AI-enabling goods are tilted toward Asia**

EU27 gross imports for AI-enabling goods to Asian partners (excl. China)



AI-related goods are defined according to the WTO's AI-enabling products classification based on HS-6 codes, supplemented by the EBRD's classification of AI-related goods. The chart covers 107 HS-6 categories, including raw materials (such as silicon and certain gases, excluding rare earth elements), processed chemicals used in manufacturing, intermediate inputs (such as machinery for component production, accessories, and components utilized in manufacturing processes), and equipment (including machinery, apparatus, and instruments used for final output production and compliance testing).

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Most of Europe's dependencies on China and other Asian countries are in the field of AI-enabling equipment, such as laptops, machines enabling high-speed data exchange, servers, and integrated electronic circuits. But Europe's dependencies on the global AI supply chain are not the full story, since it also has some comparative advantages.

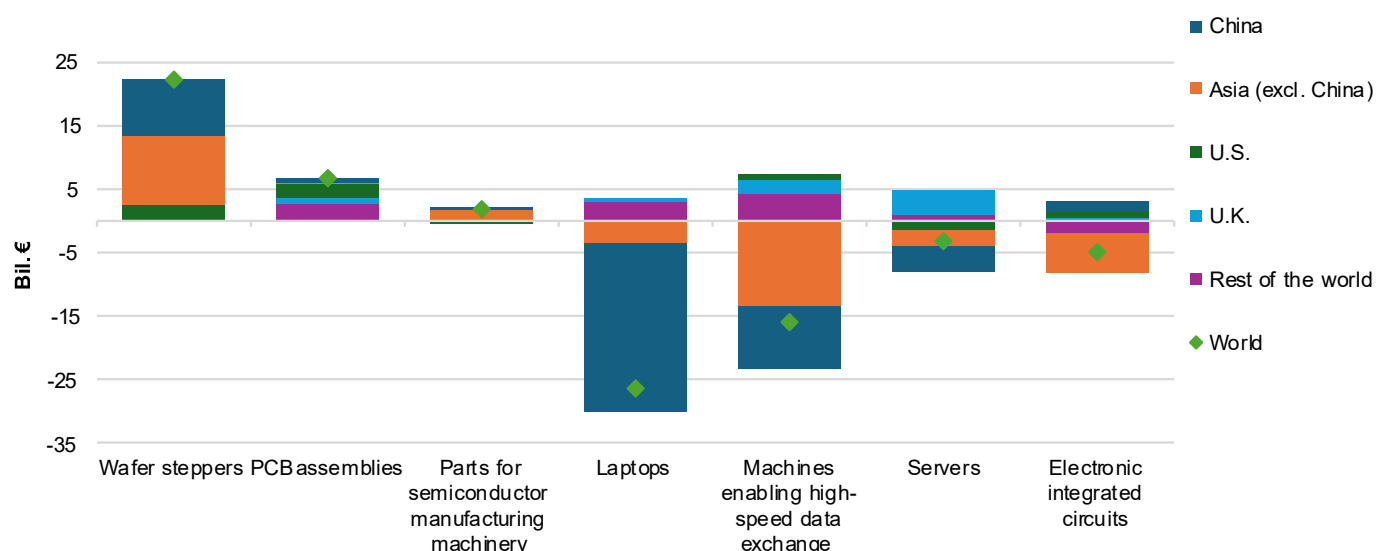
Europe's largest strengths lie in the net trade of wafer steppers (photolithography) and the assembly of printed circuit boards (PCB) and parts for semiconductor manufacturing machines. Wafer steppers are precision tools that pattern silicon wafers during chipmaking, enabling the production of integrated circuits such as CPUs and GPUs. Meanwhile, PCB assemblies provide the platform that mounts and links components, distributing power and data within devices (for example, between the CPU, GPU, and memory). Parts for semiconductor-manufacturing machines cover key components for lithography, wafer fabrication, and etching equipment, supporting both the build and reliable operation of these tools.

The three HS-6 categories for optical devices enabling computer vision that we add to our scope beyond the WTO classification, following the EBRD classification – deliver a trade surplus for Europe, although this is marginal compared with the rest.

Chart 4.

Europe has strengths and dependencies in AI-enabling goods

EU27 annual trade balance with the world, by partner



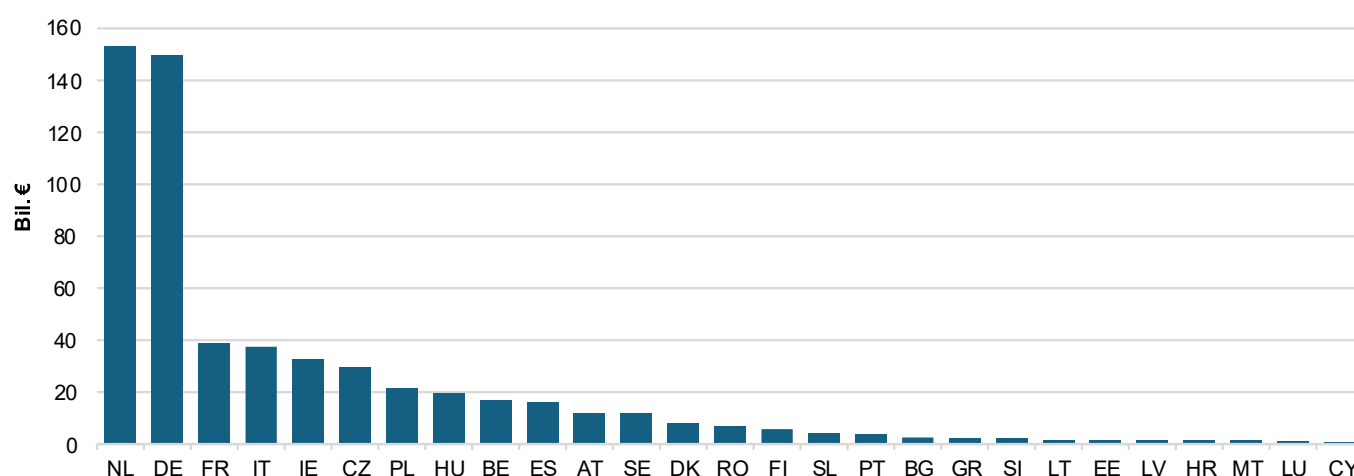
Wafer steppers (Harmonized System or HS code 848620): Machines and apparatus for the manufacture of semiconductor devices or electronic integrated circuits.
 Printed circuit boards (PCB) assemblies (HS 853710): For mounting and connecting various semiconductor components, e.g., control panels.
 Parts for semiconductor manufacturing machinery (HS 848690): e.g., photolithography machine lens assemblies.
 Laptop (HS 847130): Serving as platforms for developing, testing, or running lightweight AI models locally.
 Machine enabling high speed data exchange (HS 851762): For cloud computing and connected devices.
 Servers (HS 847150): To design, test, and run advanced technologies like AI and semiconductor chips.
 Electronic integrated circuits (HS 854231): e.g., microcontrollers, application-specific integrated circuits, CPUs, or GPUs.
 Sources: Eurostat, World Trade Organization, European Bank for Reconstruction and Development, S&P Global Ratings.

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This comparative advantage is highly concentrated geographically. Just seven EU countries account for about 80% of total EU trade in AI related goods, and two of them – the Netherlands and Germany – make up the bulk of that concentration (53%). The Netherlands' role largely reflects ASML Holding N.V.'s dominant position in photolithography. Meanwhile Germany's strengths are concentrated in PCB assembly, supported by a broader regional ecosystem. The regional ecosystem is not restricted to the German industrial giants; many midsize companies, the "Mittelstand", are also involved, and it extends into other European countries, which is usual in the European supply chain.

Chart 5.**The Netherlands and Germany make up over half of Europe's trade in AI-enabling goods**

Value of AI-enabling goods traded by each EU country in 2025



AI-enabling goods are defined according to the WTO's AI-enabling products classification based on HS-6 codes, supplemented by the EBRD's classification of AI-related goods. The chart covers 107 HS-6 categories, including raw materials (such as silicon and certain gases, excluding rare earth elements), processed chemicals used in manufacturing, intermediate inputs (such as machinery for component production, accessories, and components utilized in manufacturing processes), and equipment (including machinery, apparatus, and instruments used for final output production and compliance testing).

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Concentration risk is visible on both the production and destination sides. In terms of production, a small number of firms and ecosystems generate Europe's trade surplus in intermediate AI-enabling goods. Meanwhile, Europe's trade in this segment is strongly tilted toward Asia, with China absorbing about 40% of Europe's wafer-stepper trade surplus. As a result, Europe's exposure to China in AI-related goods is both upstream (imports of AI-enabling equipment) and downstream (exports of critical photolithography equipment). This two-sided dependence leaves parts of Europe's tech sector vulnerable to further trade escalation or tightening restrictions involving China, while the specialization in a narrow set of AI-enabling intermediates leaves it vulnerable to potential shifts in the technological frontier.

Trade in AI-enabling goods captures only one dimension of Europe's digital economy. The broader transformation hinges on technology services and, more generally, the development of the ICT sector as a whole, spanning both manufacturing and a wide range of digital services. We will assess the development of the European ICT sector in an upcoming article.

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