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# Europe's Semiconductor Revival: Can Foreign Firms Ensure Success?

by Rajiv Kumar

Europe has set ambitious goals to boost its share of global semiconductor production from 10 to 20 per cent by 2030.[1] In doing so, it aims to reclaim its glorious history of semiconductor manufacturing,[2] which has been overtaken by East Asian manufacturing powerhouses such as South Korea and Taiwan. The question first arose against the backdrop of the massive chip supply shortages during the Covid-19 crisis, which caused the shutdown of many industries in Europe, especially in Germany's car industry.[3] The effort is also part of Europe's broader push for tech sovereignty and economic security, as semiconductors have become one of the most critical technologies in the era of the Fourth Industrial Revolution, with major powers like China, the US and Japan competing for dominance.[4]

To make its semiconductor dream come true, Europe is adopting new strategies, one of the most important being attracting foreign cutting-edge chip manufacturers such as Intel and Taiwan Semiconductor Manufacturing Company (TSMC) to set up factories in Europe. The question remains, though: Can Europe regain its lost glory through

[1] European Parliament, *Chips Act: The EU's Plan to Overcome Semiconductor Shortage*, last updated 11 July 2023, https://www.europarl.europa.eu/topics/en/article/20230210STO74502.

[2] Europe accounted for over 40 per cent of the global semiconductor manufacturing capacity in the 1990s and was one of the major suppliers in the global semiconductor value chain. Pat Gelsinger, "The EU Must Play a Long Game for Semiconductor Success", in *Financial Times*, 28 April 2021, https://www.ft.com/content/34b07427-6bca-431d-8406-62762fc46941.

[3] "Chip Shortage in Germany's Car Industry Will Last for Years: Audi Manager", in *Reuters*, 11 August 2023, https://www.reuters.com/business/autos-transportation/chip-shortage-germanys-car-industry-will-last-years-audi-manager-2023-08-11.

[4] Guillaume Ragonnaud, "The EU Chips Act. Securing Europe's Supply of Semiconductors", in *EPRS Briefings*, February 2022, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)733596.

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foreign companies' investments? Can it compete with the East Asian manufacturing powers, which are not only striving to maintain their current dominance but also aggressively positioning themselves to strengthen their future semiconductor strategies?

## *Intel in Europe: Strategic partner or short-term solution?*

One of the most important pillars of Europe's semiconductor ambitions is Intel's entry into the continent for chip manufacturing. Intel is one of only three companies in the world, along with South Korea's Samsung and Taiwan's TSMC, capable of producing cutting-edge chips. European leaders were excited about Intel's plans to build facilities in Germany. In June 2023, German Chancellor Olaf Scholz and Vice Chancellor and Economy Minister Robert Habeck, during the signing of deals with Intel, emphasised that this represents the largest foreign investment in modern German history, positioning both Germany and Europe to become one of the world's leading semiconductor production hubs.[5]

However, at least two key questions arise about whether Intel can truly help Europe achieve its goals. The first is related to Intel's commitment to the 'America First' strategy. Intel's CEO, Pat Gelsinger, has been one of the most vocal advocates of bringing chip production back to the US. He promoted the idea that the US should lead in semiconductor manufacturing through a zero-sum approach, meaning that the share of production in the US is more important than global growth.[6] This stance aligns with both Democratic and Republican political leaders, who are determined to bring chip production back to America at any cost.[7] Recent remarks by Republican presidential candidate Donald Trump, stating that if he were elected, he would bring manufacturing back to the US from Germany and other parts of the world,[8] cast doubts on Intel's long-term commitment to its Germany plant. It remains unclear how US political leadership will react if an American company significantly aids Europe in building its semiconductor manufacturing base.

The second issue is Intel's own problems. Intel has been lagging behind its competitors, TSMC and Samsung, which are far ahead in producing cutting-edge chips, including AI chips used in systems like ChatGPT, that are fuelling the AI revolution worldwide. Due to its inability to catch up with East Asian competitors, Intel is facing financial crises, raising doubts about

[5] "Intel to Build €30 Billion Chip Plant in Germany", in *Euronews*, 20 June 2023, https://www.euronews.com/2023/06/20/intel-to-build-30-billion-chip-plant-in-germany.

[6] Sara Brown, "Intel CEO: Let's Turn the Rust Belt into Silicon Heartland", in Ideas Made to Matter, 25 April 2023, https://mitsloan.mit.edu/node/45231.

[7] White House, Remarks by President Biden on Rebuilding American Manufacturing through the CHIPS and Science Act, 9 September 2022, https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/09/09/remarks-by-president-biden-on-rebuilding-american-manufacturing-through-the-chips-and-science-act.

[8] Tim Reid and Gram Slattery, "Trump Pledges to Take Jobs and Factories from Allies, China", in Reuters, 25 September 2024, https://www.reuters.com/world/us/trump-set-offer-federal-lands-other-incentives-firms-relocating-us-2024-09-24.


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its future. Thus, there are concerns that Intel may abandon its foreign investment plans and fail to deliver on its promise to build chip facilities in Germany.[9] This also highlights the potential weakness in US companies' long-term commitments to Europe and greater alignment with the 'America First' strategy.

## *Europe's TSMC bet: Can the East Asian model succeed in Europe?*

Europe's second bet is on TSMC, which has announced plans to build its first manufacturing plant, in Germany too, with significant state aid from the German government, amounting to about 11 billion US dollars. This funding has been approved by the European Commission in the hope of reviving Europe's chip ambitions.[10] Optimism is high, especially with German Chancellor Olaf Scholz and European Commission President Ursula von der Leyen attending the groundbreaking ceremony for TSMC's first European factory in the eastern German city of Dresden in August 2024.[11] Nonetheless, the question remains: can TSMC help Europe achieve its political ambitions? Two major issues could hamper Europe's goal of reviving its semiconductor dream with TSMC.

First, just like Intel, TSMC is also fully committed to the 'Taiwan First' strategy. TSMC, which was established as a state-run company with the idea of making Taiwan a dominant power in the semiconductor industry, remains committed to the country's top priority: the 'Silicon Shield'. This means TSMC wants to ensure that the world, especially Western powers, remains dependent on Taiwan for cutting-edge chips, thereby securing global attention for Taiwan's security concerns. This commitment was clearly articulated by TSMC Chairman and President C.C. Wei, who recently stated, "The first priority is Taiwan, the second priority is Taiwan, and the third priority is Taiwan."[12] Hence, although TSMC has expanded its manufacturing facilities in Japan, the US and Europe, its core business will continue to be based in Taiwan. Moreover, the recent announcement by Taiwan's government, led by Lai Ching-te, about its ambition to strengthen Taiwan's leadership in semiconductors amidst rising global competition[13] raises questions about TSMC's long-term commitment to its foreign projects and its ability to help revive the semiconductor industries in other regions.

[9] Michael Acton and Guy Chazan, "Intel Outlines Plans to Cut Costs and Boost Chip Business in Turnaround Push", in *Financial Times*, 16 September 2024, https://www.ft.com/content/91925f08-0e05-4dbc-93e6-ada61af8c8ee.

[10] Hakan Ersen and Toby Sterling, "EU Approves German State Aid for $11 Billion TSMC Chip Plant", in *Reuters*, 20 August 2024, https://www.reuters.com/technology/eu-approves-5-bln-euro-german-aid-esmc-semiconductor-plant-dresden-2024-08-20.

[11] European Commission, *Speech by President von der Leyen at the Groundbreaking Ceremony for the European Semiconductor Manufacturing Company (ESMC) Semiconductor Plant*, 20 August 2024, https://ec.europa.eu/commission/presscorner/detail/en/speech_24_4304.

[12] Economist, "The Semiconductor Choke-point", in *The Economist*, 13 June 2024, https://www.economist.com/asia/2024/06/13/the-semiconductor-choke-point.

[13] Taiwan Presidency, *Inaugural Address of ROC 16th-term President Lai Ching-te*, 20 May 2024, https://english.president.gov.tw/NEWS/6726.

IAI COMMENTARIES 24 | 59 - OCTOBER 2024 ISSN 2532-6570

The second issue are labour-related challenges. As the world faces a severe shortage of skilled workers, any expansion plans for chip production will largely depend on securing a sufficient skilled workforce.[14] Europe too is dealing with a shortage of skilled labour, which could impact TSMC's expansion plans in the region. In a similar vein, TSMC's announced project in the US has faced delays due to workforce shortages. The problem is not just one of long-term shortages but also one of work culture. Recently, a former TSMC executive attributed East Asia's success in chip manufacturing to Confucian culture,[15] suggesting that workers are willing to put in long hours without hesitation to help their company compete on a cost basis.[16] The question is: can such an East Asian work culture exist in the West? This is a significant concern, as TSMC's US operations have faced challenges due to cultural clashes between TSMC's management and US workers.[17] In Europe, where labour laws are strict and there is increasing demand for shorter working hours, it remains to be seen whether an East Asian company like TSMC may succeed in the long run.

## *The path forward: How Europe can lead in the semiconductor industry again*

The cases of Intel's and TSMC's investments in Europe are a testimony to the limits of the current European strategy in the semiconductor sector. Europe may not achieve its targets of increasing its market share in semiconductor production by 2030, or attain the technological sovereignty targeted by European leaders, if current strategies remain too dependent on foreign companies whose long-term commitment to the region remains uncertain.

The question then is what Europe must do now to overcome the limitations inherent in a strategy centred on attracting external producers such as Intel or TSMC. To revive its semiconductor fortunes, Europe should learn from East Asian manufacturing powerhouses, especially South Korea and Taiwan, which have succeeded in gaining market share since the 1990s by outperforming previously dominant players like the US and Japan. There are indeed at least three lessons Europe can learn from them.

First, although foreign investment and external know-how are important to support Europe's chip dream, Europe's chip industry can only be truly revived

[14] Rajiv Kumar, "The Global Battle for Chip Talent: South Korea's Strategic Dilemma", in *The Diplomat*, 5 September 2024, https://thediplomat.com/2024/09/the-global-battle-for-chip-talent-south-koreas-strategic-dilemma.

[15] In the corporate world, Confucian culture refers to East Asian management practices where employees show deep respect for authority, often staying at work until their superiors leave. This leads to long working hours, despite the region's advanced economies. The author personally experienced this culture while working with a South Korean conglomerate, or *chaebol*.

[16] "Former TSMC Executive: Confucian Culture Gives Asia an Edge in Chip Manufacturing" [in Chinese], in *United Daily News*, 28 May 2024, https://money.udn.com/money/story/5612/7993495.

[17] "Talent Shortage and Cultural Conflict Make It Difficult for Semiconductor Companies to Build Wafer Fabs in the United States" [in Chinese], in *TechNews*, 19 August 2024, https://technews.tw/?p=1269578.

IAI COMMENTARIES 24 | 59 - OCTOBER 2024 ISSN 2532-6570

by promoting European capital. History suggests that domestic capital, not foreign investment, has been key to gaining a competitive position in high-tech industries for latecomers. South Korea and Taiwan, as latecomers to the semiconductor manufacturing industry in the 1980s and 1990s, were able to compete with existing players and gain market share from US, European and Japanese companies. This was only possible when they reduced their dependence on foreign capital and promoted domestic capital, which was committed to the industry for the long term, despite various challenges. They made major investments to upgrade the technology necessary to compete with the incumbents, enduring risks and even consistent losses for many years. As Europe is now a latecomer in this sector, it must prioritise European companies that are committed to the industry with long-term strategic goals.

The second key lesson from South Korea and Taiwan is that Europe must promote large business groups to enter this high-tech industry. No country or region can regain its position in such a highly capital-intensive industry by relying solely on startups or entrepreneurship. It was large business groups that helped South Korea and Taiwan achieve their tech ambitions.[18] Therefore, in Europe too, large business groups should take the lead, as they have the capital to invest in innovation and research and development (R&D), which are essential to compete with current East Asian competitors.

Finally, the most important lesson is that European governments must maintain a long-term commitment to this industry, ensuring it is part of a broader strategy. Leaders should adopt a long-term, goal-oriented approach to supporting this sector. In the post-Cold war era, the rise of regulatory states in Europe has led to a decline in the role of the state in the economy.[19] With the rise of the Washington Consensus, this proactive role of the state in the economy has often been viewed negatively. Therefore, Europe needs to rethink its mindset. The state is one of the most important actors in fostering the semiconductor industry. In East Asia, governments treat this sector as a 'national industry' and provide all types of support to ensure its competitiveness. Thus, Europe needs to reconsider its industrial policy by promoting the proactive role of the state in setting goals and targets for semiconductor manufacturing.

In sum, European capital, the involvement of large business groups in the semiconductor industry, and, most importantly, a government-led, long-term, goal-oriented approach may help Europe regain its semiconductor dream and achieve technological sovereignty.

*10 October 2024*

[18] Alice H. Amsden and Wan-wen Chu, *Beyond Late Development. Taiwan's Upgrading Policies*, Cambridge, MIT Press, 2003.

[19] Giandomenico Majone, "The Rise of the Regulatory State in Europe", in *West European Politics*, Vol. 17, No. 3 (1994), p. 77-101.

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