



Global Electronics/ICT Outlook

Our Trade Sector Expert

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Living and working in Taiwan I developed an interest in the importance of semiconductors for global trade. Taiwan is a worldwide centre for the semiconductor industry, which in itself is an important driver for the wider ICT and electronics value chains.
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Kyle Kong, Atradius Senior Credit Risk Analyst, Taipei, Taiwan

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Electronics/ICT forecast to become one of the fastest growing manufacturing sectors

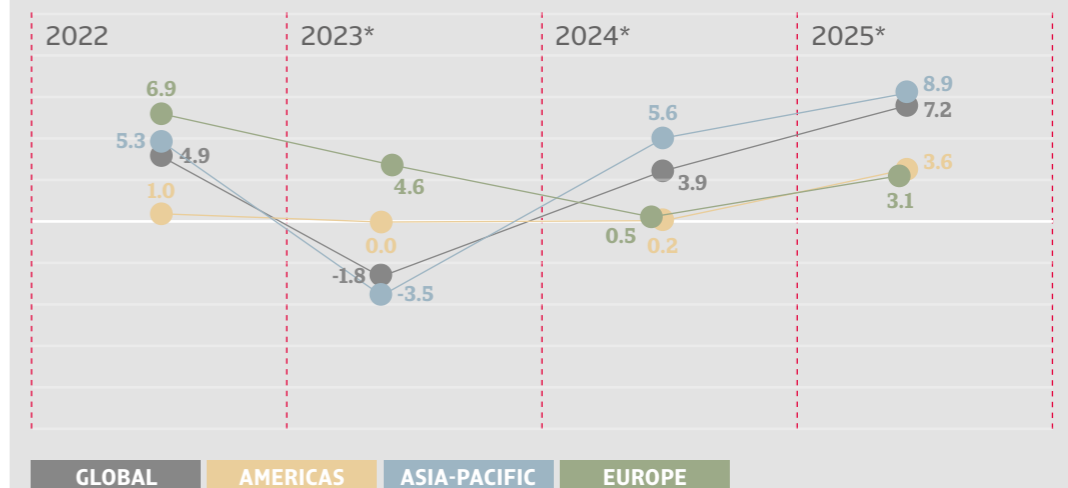
In particular the ICT (Information and Communications Technology) industry is likely to become one of the world’s fastest growing manufacturing sectors in the next few years. Accelerating digitalisation, industrial automation and increased demand for advanced semiconductors, particularly from new growth segments such as artificial intelligence (AI) and electric vehicles (EV), will be the primary drivers of growth.

Although challenging global economic conditions continued to impact the electronics/ICT industry during the first half of this year, the signs are the downturn is now levelling out. Analysts suggest we will see a rebound of up to 4% for high tech goods output as a whole during 2024 and further growth of around 7% is predicted for 2025.

But is this picture as bright as some might suggest? Could geopolitical issues surrounding the production of semiconductors create issues downstream? Are parts of the ICT market nearing saturation and is there a risk of oversupply?

These are important questions, not least because electronics/ICT is a multi-trillion-dollar industry which can arguably be found at the heart of global trade, with some element of technology (from computers to chips) found in almost every other sector. So, what is going on in the industry and are the positive growth forecasts applicable for each of the subsectors across markets?

Electronics & computers output



Year-on-year, % change. (* Forecast) Source: Oxford Economics.

Overview of electronics/ICT primary subsectors

Electronic components and semiconductors: sector poised for rebound

Although some semiconductor segments have done well this year, especially those used in AI and automotive applications, for the most part sales and production have been sluggish. The economic downturn combined with the fact that many buyers have been using up excess inventory stockpiled during the chip shortages of 2021 and 2022 have resulted in weak demand. Global production of electronic components and boards is expected to shrink by 1.9% in 2023, with semiconductors down by as much as 17%.

However, signs suggest the downward trend is now changing direction and sales are beginning to gain momentum. The electronic components segment is forecast to rebound by 4.6% in 2024.



Computers and office equipment: demand should pick up next year

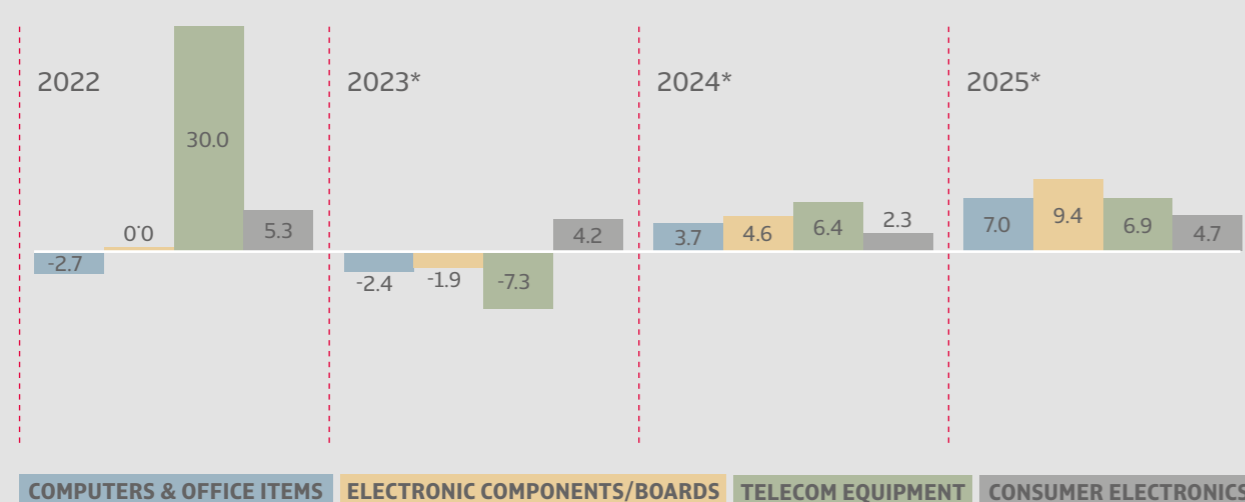
Consumers and businesses across the world have been cutting back on their spending in light of high inflation and high interest rates. This has resulted in weak demand for computers and electronic equipment this year (down 2.4%).

Markets should begin to pick up again next year, although demand is likely to grow fairly cautiously. A 3.7% production rebound is expected for computers in 2024, while consumer electronics should grow by 4.3% this year.

Telecommunication: enjoying a favourable market

Of the three major electronics/ICT subsectors, telecommunication appears to have the best outlook, in the near-term at least. Growth of more than 6% annually is forecast for 2024 and 2025. Although demand for smartphones has slowed in the face of market saturation, the sector is buoyed by growth and upgrades to mobile and broadband infrastructure, especially for 5G.

Global output per subsector



Year-on-year, % change. (* Forecast) Source: Oxford Economics.



“The downward trend in the chips segment is now changing direction and sales are beginning to gain momentum.”

Regional overview of electronics/ICT performance

East Asia – Japan, South Korea, Taiwan

Japan, South Korea and Taiwan have all been hit hard by the downturn in the semiconductor market. Each has experienced a sharp fall in production during Q1 this year, with production rates of high-tech goods falling by 4% in Japan, 10% in South Korea and 16% in Taiwan.

However, there is light on the horizon. The downward trends in production are on the turn and the markets appear poised for growth in 2024. The output for electronics and computers is expected to grow by about 7% in Japan, 5% in South Korea and 6.5% in Taiwan, with further growth predicted for 2025.

The long-term forecast is bright. The region should benefit from increased demand for semiconductors and electronics/ICT products due to global trends towards increased automation and digitalisation, as well as growth in sectors such as electric vehicles.

China

China produces more than half of the world's electronic goods, computers and telecommunications, and the industry's fortunes inevitably reflect global demand. With a relatively slow domestic economy and global demand in decline this year, the industry's output is forecast to grow by just 1.5% in 2023. As with Japan, South Korea and Taiwan, an uptick in growth is expected in 2024, where all high-tech goods production is forecast to rebound by 5.4%. The outlier to this trend is telecommunications. Telecoms output is expected to grow by 9% in 2024, boosted by growth in mobile and broadband infrastructure.

The Chinese government has expressed commitment to investment and nurturing growth in the electronics/ICT industry. The 'Made in China 2025' policy and the 14th Five Year Plan both target semiconductor self-sufficiency of up to 70% by 2030. Investment in the electronic components and boards segment will increase by 7% in 2024 and 9% in 2025.

United States

The largest electronics subsector in the US, precision instruments, is experiencing a downturn. Output in this segment is expected to contract 3.7% in 2024 and 4.7% in 2025. This is partly due to a weaker economic performance overall and partly because of a global downturn in the sector.

In contrast, however, areas such as cloud computing and storage, cybersecurity and automated data processing are growing. Global digitalisation is driving growth in these areas and the sectors needed to support them, such as semiconductors.

The issue of a home-grown semiconductor industry is a hot topic in the US. In a bid to lower the country's dependency on Taiwan and South Korea for cutting-edge, high-tech chips, the government passed the CHIPS and Science Act in 2022. The Act is supported by USD 40 billion in subsidies and a 25% tax credit to promote manufacturing at home,

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Global trends towards increased automation and digitalisation and growing electric vehicles sales will drive ICT in the long-term.
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as well as USD 13 billion of investment in chip research. Output growth of electronic components and boards is expected by 5% in 2024 and 9% in 2025 and several global players, including Samsung, Intel and TSMC (Taiwan Semiconductor Manufacturing Company) have announced investment in the US, despite the fact that capital expenditure on new factories and operating expenses are likely to be higher in Asia.

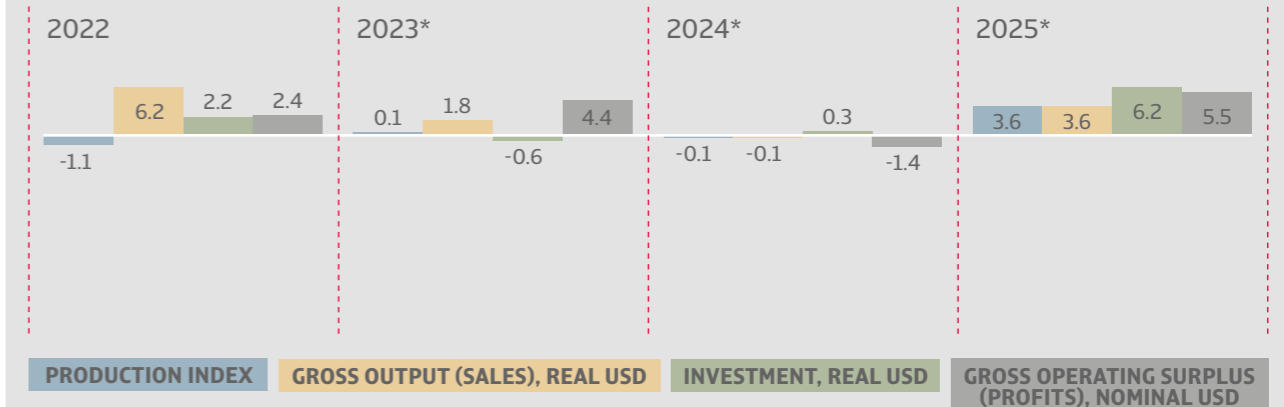
Europe

The electronics/ICT industry in Europe (EU and UK) is experiencing less volatility than other parts of the world. Growth will amount to 4% in 2023, followed by a 1% increase in 2024. This is largely due to the composition of the sector. This features a large proportion of medical and surgical equipment (25%), which tends to be less prone to economic cycles than other subsectors.

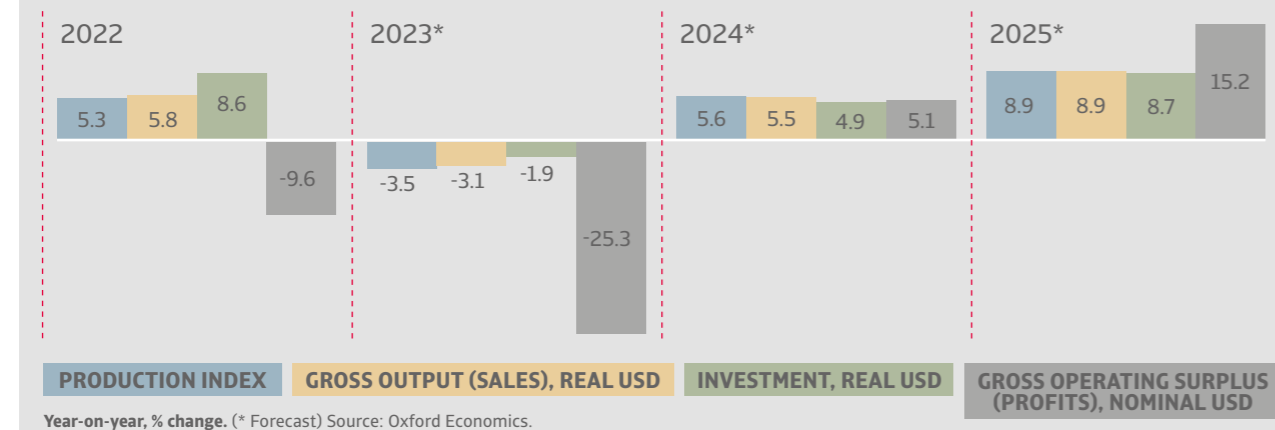
In common with Asia and the US, Europe has passed legislation in support of the local semiconductor industry, in particular the production of automotive chips. The EU Chips Act is set to invest EUR 43 billion in local semiconductor production and research, with the aim of lowering dependence on imports from Asia and achieving a 20% share of global chip production by 2030.

As with the US, large manufacturers are already seeking investment in European plants, including Intel, TSMC, Bosch, Infineon and NXP. However, current estimates suggest the EU's target of 20% of global production by 2030 is likely to be beyond reach, constrained by operating and labour costs and limits on subsidies.

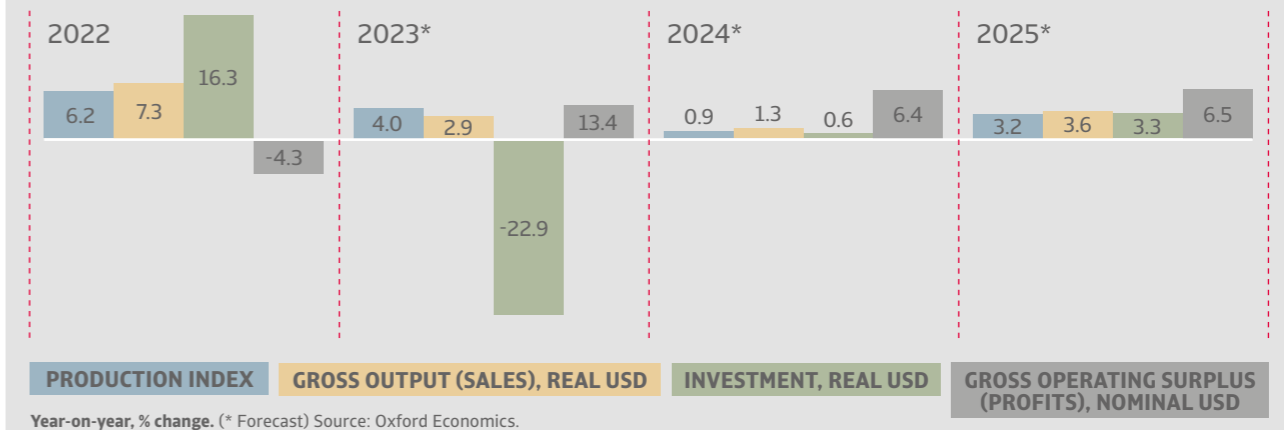
USA: Electronics & computers key figures



Asia-Pacific: Electronics & computers key figures



EU and UK: Electronics & computers key figures



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Growing unilateral approaches
in the chips segment could result
in higher prices for consumers.”

Issues that could impact the industry

Is there a skills shortage in the semiconductor sector and, if so, could this impact production?

Skilled engineers are critical to the innovation, development and operation of the industry. A lack of engineering talent could stifle production growth and there are ongoing challenges around training and retaining skilled engineers. This is particularly true in such a competitive market where skilled engineers are sought after by other industries and countries. What's more, technological advancements are rapid, requiring engineers to continuously learn and adapt in order keep up with the latest developments.

According to the US Semiconductor Industry Association, America's chip sector could face a shortage of 67,000 technicians, computer scientists and engineers by 2030. In fact, TSMC postponed the start of production of two new factories in Arizona until 2025, because it could not find enough workers with the expertise to install equipment at such a high-tech facility.



What effect could chip nationalism have on the industry?

Semiconductor production is a strategic priority for Asia, Europe and the US, with legislation and subsidies used in several countries to support growth and reshoring. This includes: the Made in China 2025 policy, South Korean K-Chips Act, the Taiwan Chips Act, Japanese subsidies for semiconductor joint ventures, the EU Chips Act and the CHIPS and Science Act in the US.

Potential oversupply issues

However, this unilateral approach to semiconductor development could lead to duplicated efforts. If multiple countries invest in similar technologies, this could lead to an inefficient use of resources and oversupply of similar products. When chips of a new generation come to the market, the old one will become obsolete. If not managed carefully, there could be a potential oversupply of older generation chips.

Increased investment in production facilities would boost production capacity. But we should not look at the supply side alone, but also the demand side. AI, machine learning, cloud services and electric vehicles are still in the growing stage. When demand for these advanced technologies rises, the demand for semiconductors will rise as well. It is too early to ascertain which side will grow faster.

Increased costs

Globalisation reduced production costs, as raw materials and manufacturing were often sourced from countries with lowest price. If advanced markets like the EU and the US expand their semiconductor production, it is likely that the higher labour costs and other overheads will result in higher prices for consumers. This could be called a devolution of the economies of scale.

To what extent do US-China relations impact the semiconductor industry?

In addition to chip nationalism (the desire for individual countries to develop their own semiconductor capability), is the issue of geopolitics. This has been seen most keenly in the tariffs, rules and tensions between the US and China under Trump and latterly Biden.

In October 2022 the US imposed licensing requirements on the sale of advanced chips, software, and a wide range of semiconductor manufacturing equipment used to produce advanced chips. The controls also apply to non-US firms that rely on American equipment or software. In August 2023 the US issued an executive order introducing screening for outbound investment, and banning some investment into Chinese quantum computing, artificial-intelligence projects and advanced chips. Japan and the Netherlands have joined the US export ban, potentially hindering Beijing's domestic investment in chipmaking capacity.

The possible impacts of this policy are reflected in growth forecasts which predict China's production of electronic components and boards will grow by only 3% this year, compared to a CAGR of 25% between 2015-2021 and could also lead to a dent of as much as 0.8% in China's GDP levels between 2024 and 2026.

China is poised to respond with financial packages aimed at supporting its domestic industry. However, even with massive spending by China, it will take time to offset the repercussions caused by the US measures. For example, Taiwan has achieved its market-leading position through investing in infrastructures and nurturing experts since 1974. Although there is no doubt about the investment China is able to inject into the industry, they also lack talent and knowhow, which will take a long time to nurture. China is unlikely to catch up in the short to mid-term. By some estimates, China's semiconductor technology is nearly a decade behind the West, and semiconductor expertise is in short supply. It will take time for these investments to come to fruition.

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US-China tensions have created looming uncertainty for East Asian electronics/ICT producers about future sales and profits.
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How do the US-China tensions affect other Asian semiconductor producers?

Growth in emerging economies

One potential consequence of US-China tensions is the possibility of growth in some of the emerging economies in Asia. The US restrictions will impact the production volume of products and industries that require high-end chips, from smartphones, and AI, to EV. With a lack of the necessary components on the market, production may be shifted to other countries, such as Vietnam and India, where production costs tend to be lower.

Squeeze on countries invested in trade with China

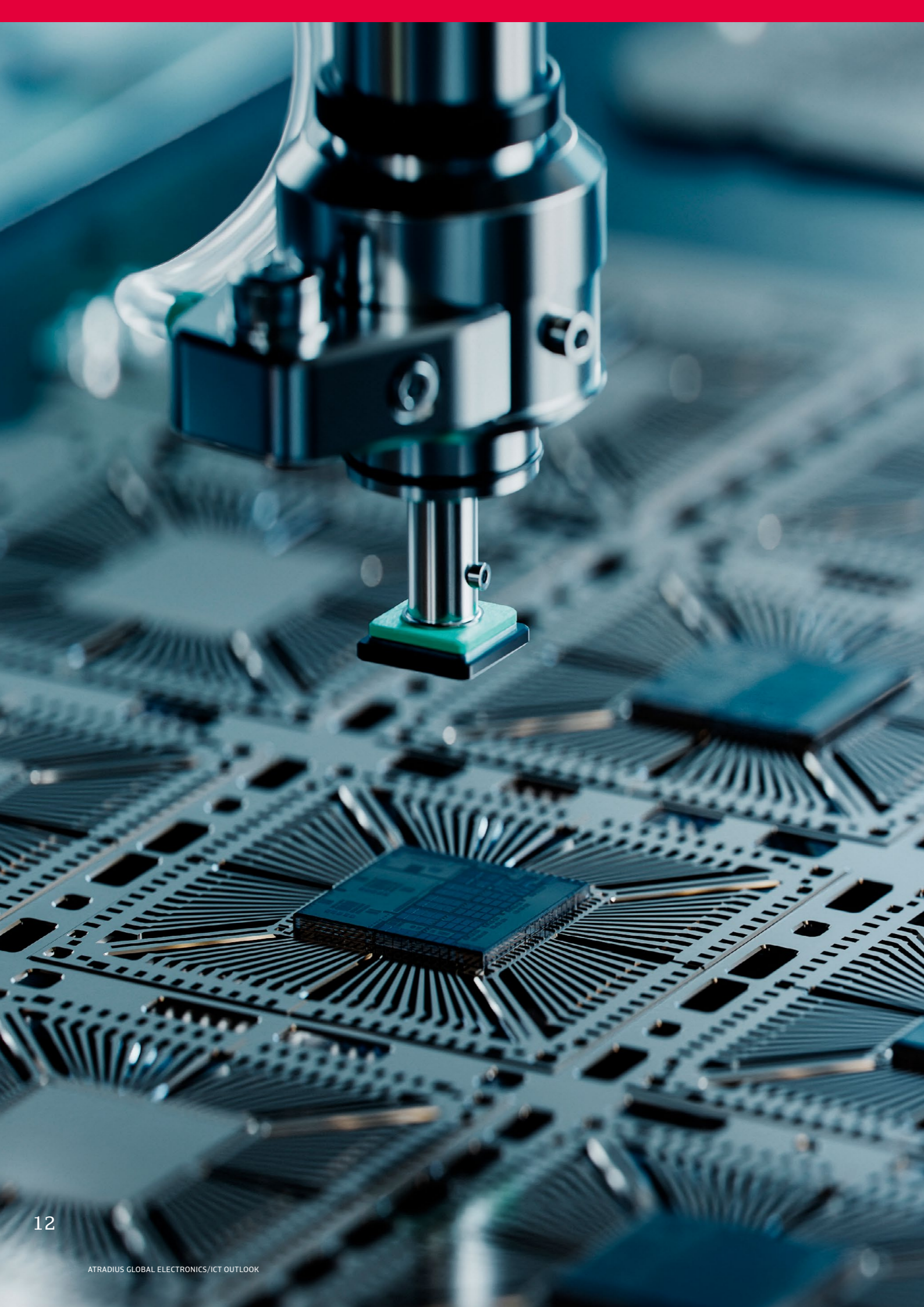
For other Asian countries the US policy is having a negative effect. Japanese semiconductor firms generate 20-30% of their business in China and stand to lose about 70% of it as a result of US curbs. South Korea exports about half of its memory chips to China. Taiwanese and Korean producers are heavily invested in manufacturing facilities in China.

Although the US export restrictions will impact the Asian chip producer sales and profit, the magnitude is hard to predict. Producers like TSMC and SK Hynix, are currently granted a waiver by the US to export to China. This is due to expire in October 2023, but it is likely this will be extended for a considerable period. In the short-term, chip producers can still manufacture in China and have the time to gradually shift their production capacity to other regions. However, there is the long-term threat that US-pressure will curtail deliveries to China. In addition, the US is currently only targeting advanced chip exports to China, so Asian countries can still ship traditional chips to China.

Trade retaliation

Asia's semiconductor producers are also vulnerable to further actions caused by US-China trade tensions. For example, in response to US sanctions, China imposed export controls on gallium and germanium, two critical materials in the chipmaking process. While the Asian producers can source the materials from other countries, it is costly in terms of time and money, as China is a main producer of the materials.





What is the Chip 4 Alliance and could it achieve the US objectives?

Washington has called for a 'Chip 4 Alliance' to co-ordinate chip production and supply chains between the US, Japan, South Korea and Taiwan and counter the growing influence of China in terms of global supply. However, it is a challenge to get the proposals to work. Although all four countries do share a common interest in nurturing a stable supply chain, they are also in competition with each other.

Taiwan and South Korea are major manufacturers of chips, producing the most advanced chips in the world. They are likely to be reluctant to share their sensitive technology and give up their comparative advantage in the area.

The relationship between Japan and South Korea remains strained due to historical tensions. And although both countries may currently feel closer to the US in geopolitical terms, they could change their strategy towards China if the latter feeds them enough benefits or the ruling party shifts. Moreover, China remains a significant trading partner within the region and its neighbours are likely to want to retain trading relationships.

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Any disruption to Taiwan's chip production could cause a catastrophic ripple effect across many industries and countries throughout the world.
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What is the Silicon Shield and what does it mean for the global semiconductor industry?

The strategic importance of Taiwan to the global semiconductor industry is critical. No country can beat its current dominance in the production high-end chips. Global industries, from consumer electronics, automotive to weaponry, all heavily rely on Taiwan for chips.

Any disruption to Taiwan's chip production could cause a catastrophic ripple effect across many industries and countries throughout the world. According to Nikkei Asia, a war across the Taiwan Strait could cost USD 2.6 trillion of world trade. This is a primary reason why many countries would defend the island against the possible threat of Chinese aggression. In effect, its silicon semiconductor industry works as a shield, protecting it from outside threats.

Indeed, many countries throughout the world have started to diversify supply chains in order to reduce dependence on one single source. The US invitation to TSMC to set up a factory in Arizona is one example of such diversification. In addition, competitors are catching up with Taiwan. Samsung has been working on development of advanced chips and is predicting the ability to mass produce 2 nanometer wafers by 2025. If Taiwan loses its global dominance in advanced chips, its Silicon Shield would weaken and the risk of conflict could increase.

Summary

What are the strengths and growth drivers for the ICT industry in the mid and long term?

Political ambition for high-tech expansion

Semiconductor production is a strategic target in the US, EU and Asia. Legislation has been passed recently to support the growth of domestic production in all three areas.

Growth of digitalisation, automation, AI and electric vehicles

Accelerating digitalisation, industrial automation, and increased demand for advanced semiconductors from new growth segments like artificial intelligence and EV will all help the ICT industry become one of the fastest growing sectors in manufacturing.

What are the constraints and downside risks for the ICT industry in the mid and long term?

Market saturation

Some electronics/ICT products (personal computers, tablets and smartphones) is nearing saturation in some markets, negatively affecting growth prospects.

US-China trade tensions

The US has imposed regulations to prevent Chinese companies from acquiring US semiconductor manufacturing technologies and equipment. A further deterioration of the Sino-US relationship could negatively affect global ICT and electronics supply chains and productivity, as well potentially leading to technological divergences (such as in the area of 5G deployment).

Growing chip nationalism

There is a risk that nations seeking to develop their own semiconductor industries could lead to technological divergences, inefficient production processes and increases in production costs. These are likely to impact sector productivity and profitability.

Taiwan geopolitical tensions

An escalation of the current tensions in the Taiwan Strait between Taiwan and China could severely affect the supply of cutting-edge semiconductors for chip-consuming ICT segments and other industries across the world.





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