



Japan
Japan

Economics

Japan Economic Perspectives

Date
19 August 2026

The AI boom: Why Japan's factories are quiet

Amid a global surge in AI-related demand, attention is turning to East Asia—notably Japan, South Korea, and Taiwan—as a key supply hub for semiconductors and electronic devices. While South Korea and Taiwan are reaping the benefits on both volume and price fronts, rapidly expanding their production, Japan's output remains stagnant. Although rising export prices confirm the existence of demand, sluggish export volume growth points to severe supply constraints.

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This report seeks to unravel the paradox of "demand without production." Our analysis reveals that beyond stagnant capital investment, the more fundamental constraint is labor. This is not merely a problem of a declining population; rather, labor market rigidity and a cautious corporate stance are hindering the reallocation of labor resources to growth sectors. We believe this structural issue is the root cause of Japanese companies' inability to scale up and capitalize on the once-in-a-generation opportunity presented by the AI boom.

Drawing on various data, this report offers a multi-faceted analysis of this structural problem, shedding light on the true challenges facing the Japanese economy.

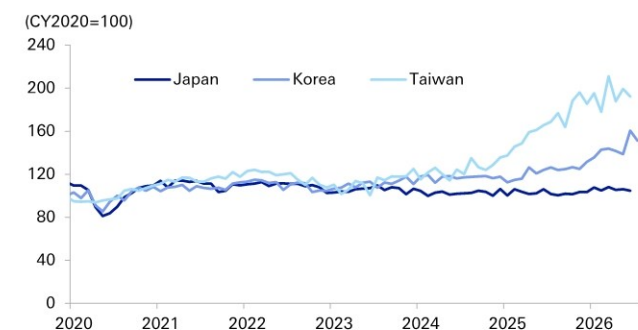


1. A widening gap in the AI boom: Japan vs. South Korea and Taiwan

As AI-related investment accelerates globally, demand for semiconductors and memory essential for data centers is soaring. This has placed Japan, South Korea, and Taiwan, all with strengths in these areas, in the investor spotlight as key supply hubs.

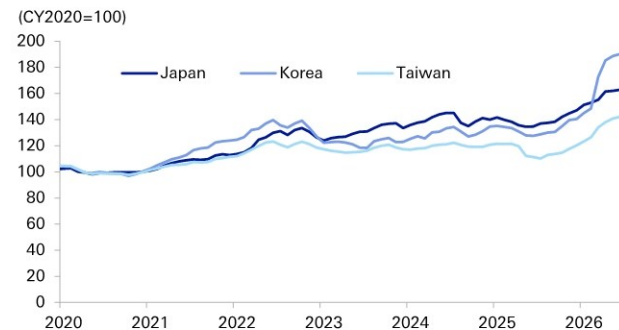
However, a clear divergence is emerging in how these three economies are benefiting from the AI boom. Trade data since 2025 shows a marked increase in export volumes from South Korea and Taiwan, while Japan's have remained largely flat (Figure 1). During this period, all three have seen their export prices rise, indicating robust demand for their products (Figure 2). In the electronic components and devices category, Japan's export price growth has even outpaced Taiwan's (Figure 3). Even for integrated circuits (ICs), where Japan is said to have a comparative advantage, export value has risen sharply while export volume has stagnated (Figure 4).

Figure 1: Export volume



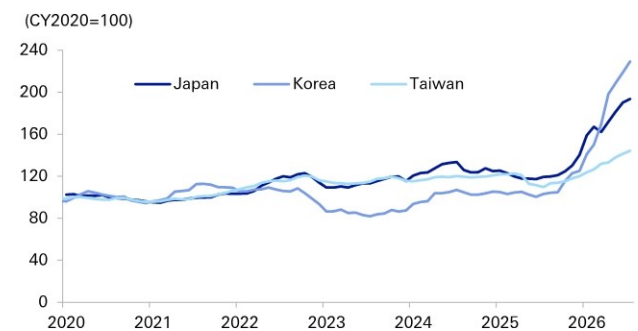
Source: Haver Analytics, Deutsche Securities

Figure 2: Export price index



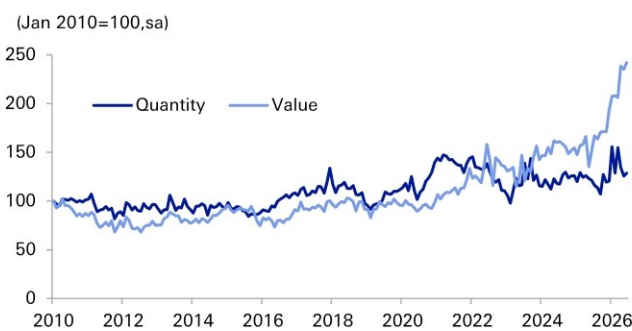
Note: In domestic currency
Source: Haver Analytics, Deutsche Securities

Figure 3: Export price of electronic components & devices



Note: In domestic currency. South Korea: Computers, electronic & optical equipment; Taiwan: Electronic integrated circuits.
Source: Haver Analytics, Deutsche Securities

Figure 4: Japan's exports of integrated circuits



Source: MoF, Deutsche Securities

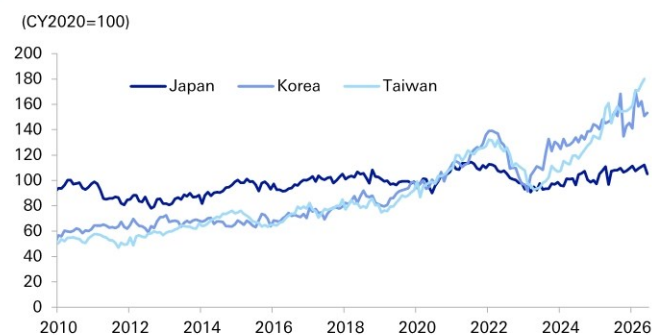
This disparity is also evident in production trends. While production of electronic components and devices in South Korea and Taiwan has surged since 2024, Japan's output remains below its 2021 peak (Figure 5).

The rise in prices is evidence that Japanese products are essential to global supply chains and possess pricing power. The possibility that there is no demand or that the



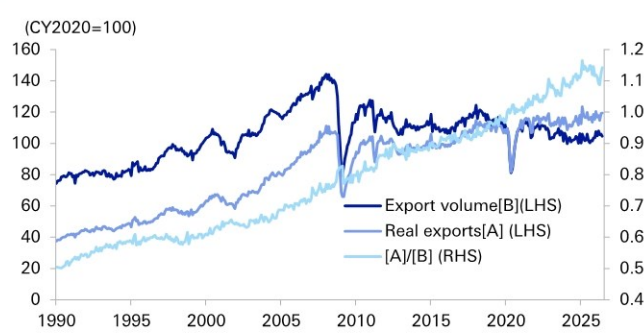
products are outdated is unlikely. Instead, Japanese exporters are shifting their production focus toward higher value-added products. The fact that Japan's real exports, based on value-added, continue to rise despite sluggish export volumes supports this corporate strategy (Figure 6). In other words, Japanese exporters are thoroughly pursuing a low-volume, high-margin strategy, avoiding a high-volume, low-margin approach.

Figure 5: Production of electronic parts & devices



Note: South Korea: Electronic Components, Computer/Visual/Sounding/Communication Equipment;
Taiwan: Electronic Parts and Components.
Source: Haver Analytics, Deutsche Securities

Figure 6: Japan's export volumes and real exports



Source: Haver Analytics, Deutsche Securities

The question this report addresses is: why is Japan not increasing its production (and export volume) amid an unprecedented AI boom? As a result, while South Korea and Taiwan are benefiting from both volume and price, Japan's gains are limited to the price front. South Korea, in particular, is outperforming Japan in terms of both export prices and volumes.

The answer to this question highlights the structural challenges facing the Japanese economy and has significant implications for the growth strategy promoted by the Takachi administration.

2. The bottleneck of production constraints: Capital or labor?

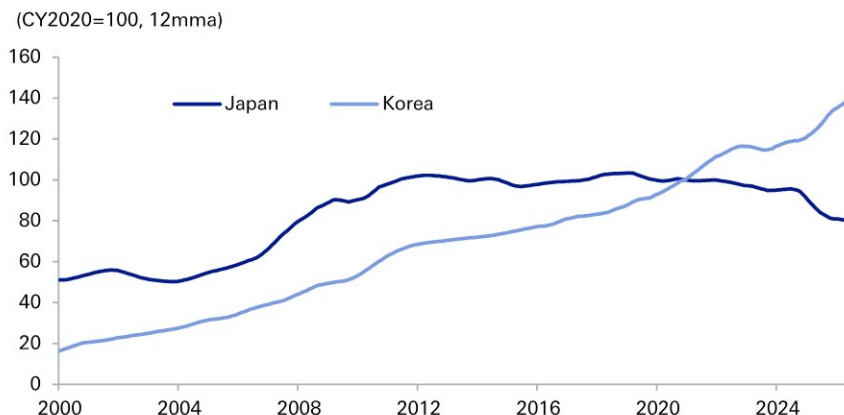
A situation where production fails to increase despite rising demand suggests the presence of supply constraints in either capital (production facilities) or labor, leading to a vertical supply curve.

2.1. Stagnant capital investment and a cautious corporate stance

From a capital stock perspective, Japan's challenge is clear. The production capacity index for the electronic components and devices industry has stalled since the 2008 global financial crisis and has even trended downward in recent years (Figure 7). In contrast, South Korea has consistently expanded its production capacity. While South Korea's aggressive capital investment has enabled it to ride the current AI wave and expand production, Japan's past underinvestment appears to be a handicap, causing it to miss out on the opportunity. This point aligns with the Takachi administration's emphasis on the importance of investment.



Figure 7: Production capacity index for the electronic components and devices industry



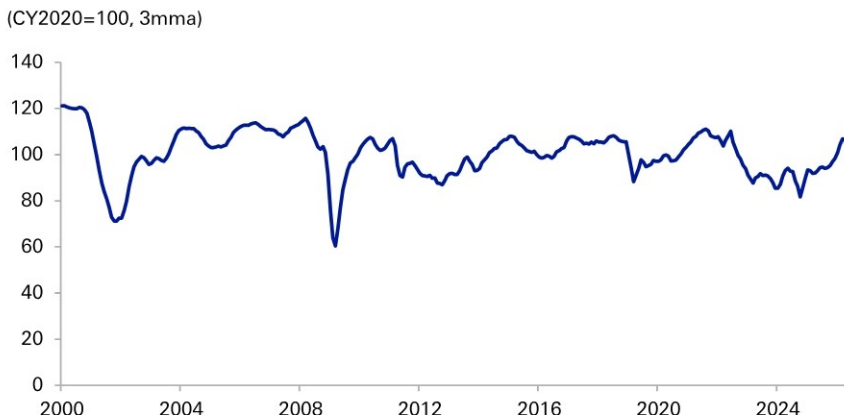
Source : Haver Analytics, Deutsche Securities

This cautious stance toward investment is also rooted in bitter past experiences. We believe that in Japan's semiconductor industry, in particular, the memory of large-scale investments in the 2000s leading to huge losses and excess capacity due to subsequent market downturns and price collapses remains deeply ingrained in management. Coupled with uncertainty about the sustainability of future demand, this serves as a factor discouraging large-scale investments to boost production. This is likely one reason for the persistent adherence to a low-volume, high-margin strategy.

2.2. The real bottleneck: Labor

However, capital is not the entire problem. Even if production capacity were the main constraint, it would be natural to respond by maximizing the utilization of existing facilities. Yet, while the capacity utilization rate for the electronic components and devices industry has been rising since 2025, it remains below its past peaks (Figure 8). This paradox of "having facilities but being unable to run them" suggests a more severe bottleneck: a shortage of labor to operate the equipment.

Figure 8: Japan's capacity utilization index for the electronic components and devices industry

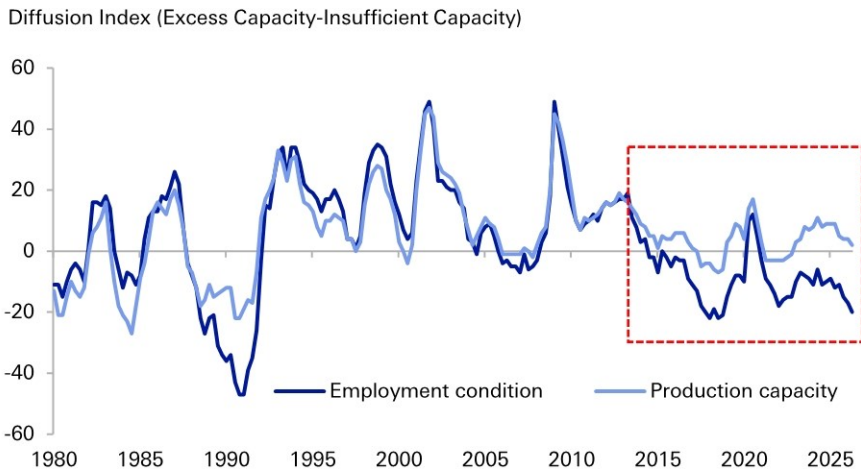


Source : Haver Analytics, Deutsche Securities



This view is supported by the results of the BoJ's Tankan survey. For the electrical machinery industry, the production equipment DI has remained in positive territory (indicating a sense of excess capacity), whereas the employment conditions DI has plunged deep into negative territory (indicating a severe labor shortage) (Figure 9). This gap has become a chronic condition since 2015, when labor shortages began to intensify in Japan. The data overwhelmingly indicates that **"labor" is the primary bottleneck, not equipment.**

Figure 9: Tightness of production capacity and employment in the electrical machinery industry (BOJ Tankan)



Source : BoJ, Deutsche Securities

Underlying this severe supply-demand mismatch is the low substitutability between labor and capital in the electronics industry. According to a BoJ analysis (Box 2 of the [January 2025 Outlook Report](#)), the elasticity of substitution between capital and labor in the electrical machinery industry is among the lowest in the manufacturing sector. This makes it easy to fall into a situation where labor shortages directly constrain production and prevent facilities from being fully utilized. Additionally, work-style reforms implemented since 2019, which have led to a reduction in working hours, may also be capping total output, as productivity gains have not kept pace.

Furthermore, the labor shortage is not confined to individual companies. Labor shortages across the entire supply chain, as well as severe labor scarcity in the construction industry responsible for building factories, are also acting as a brake on corporate production activities through procurement and equipment installation delays.

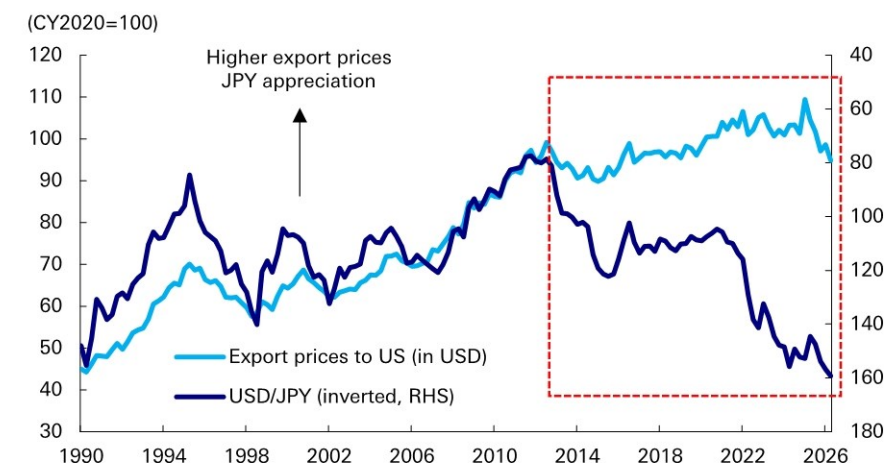
This corporate stance, where labor shortages impede investment, is clearly visible in the Development Bank of Japan's ["Survey on Capex Plan for FY2026."](#) When asked about important factors for increasing domestic investment, "easing of supply constraints such as labor shortages" was the top answer for non-manufacturing firms. Even in manufacturing, it was the third-most cited factor, following "rising growth expectations" and "technological/personnel advantages," and was mentioned more often than the expectation for government support. This highlights a structural problem in the Japanese economy: **rather than promoting labor-saving investment to overcome labor shortages, the shortages themselves are curbing corporate investment appetite.**



3. The immobile Japanese corporation: A structural problem of resource misallocation

Against the backdrop of these severe production-site constraints, we believe Japanese exporters are focusing on margin improvement rather than pursuing scale expansion, even amid the global AI boom. This behavior is consistent with what was observed during the yen's depreciation phase from 2013 onward. At that time, instead of leveraging their price competitiveness to cut export prices in local currency terms and expand their market share, Japanese firms prioritized profit improvement by maintaining local currency prices. This resulted in a situation where "export volumes did not increase despite a weaker yen" (Figure 10).

Figure 10: Export prices to US and USD/JPY rate



Note: Relative prices represents (Japan's export prices to US)/(US overall import prices)
Source: MoF, Haver Analytics, Deutsche Securities

What these two cases have in common is the reality of **Japanese companies not acting—or being unable to act**—when faced with an opportunity to expand their scale and market share. We believe the root cause lies not merely in a labor shortage, but in a more structural "inefficiency in the allocation of labor resources."

From a macroeconomic perspective, even if the total workforce is declining, a shift of labor from low-productivity sectors to high-productivity ones like AI-related industries could increase the economy's overall output. The current AI boom should be a perfect catalyst for such an industrial transformation.

In reality, however, such dynamic labor mobility is limited. This is due to two structural factors: labor market rigidity and short-term-oriented corporate decision-making. The former, characterized by practices premised on lifetime employment, hinders inter-industry labor mobility. The latter makes companies hesitant to take the risk of acquiring talent through significant wage hikes, given the uncertainty of future demand.

As a result, the mechanism for reallocating labor resources to growth sectors is dysfunctional, and the Japanese economy can be said to be missing a major opportunity.

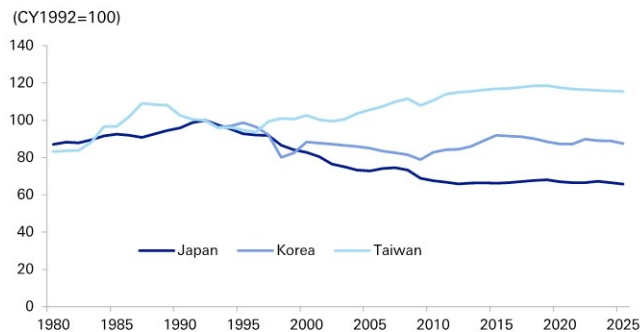


4. The background of the labor shortage: A comparative analysis of Japan, South Korea, and Taiwan

In this section, we further examine how labor shortages are acting as a production bottleneck by comparing labor-related data from Japan, South Korea, and Taiwan.

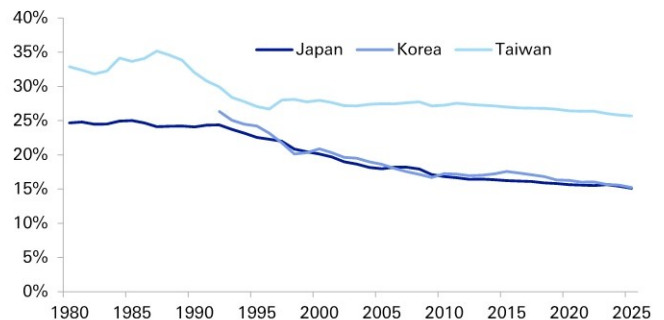
- **Trend in manufacturing employment:** The number of manufacturing workers in Japan peaked in 1992 and has since declined by about 35%, remaining flat in recent years (Figure 11). In contrast, Taiwan has seen an upward trend, while South Korea has largely maintained its level since the 1997 Asian financial crisis. This suggests that securing a manufacturing workforce is more difficult in Japan in absolute terms compared to South Korea and Taiwan.
- **Deindustrialization:** The share of manufacturing employment in total employment has declined similarly in Japan and South Korea, indicating that both are experiencing a similar trend of deindustrialization (a shift to a service economy) in their labor markets (Figure 12). This is generally seen as a natural development, as consumer demand shifts from goods to services with rising national income, and automation in manufacturing pushes labor toward labor-intensive service sectors. Amid this trend, it is noteworthy that Taiwan, which has experienced similar income growth to Japan and South Korea, has maintained a high manufacturing employment rate.

Figure 11: Number of workers in manufacturing



Source : Haver Analytics, Deutsche Securities

Figure 12: Share of manufacturing in total employed persons

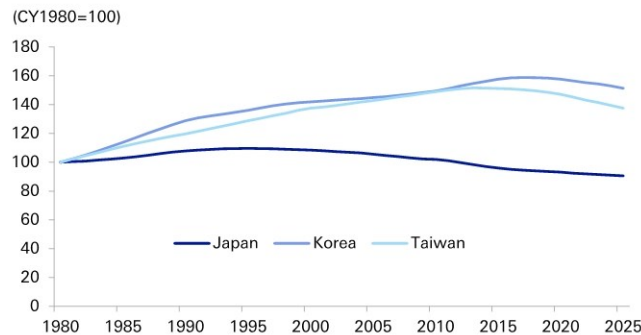


Source: Haver Analytics, Deutsche Securities

- **Demographics:** The reason South Korea's decline in manufacturing employment has been more gradual than Japan's, despite a similar pace of deindustrialization, lies in demographics. Japan's working-age population (15-64) peaked in 1995, whereas South Korea's continued to grow until 2017 (Figure 13). Although South Korea's working-age population ratio has also begun to decline, it is still at a level comparable to Japan's past peak (Figure 14).

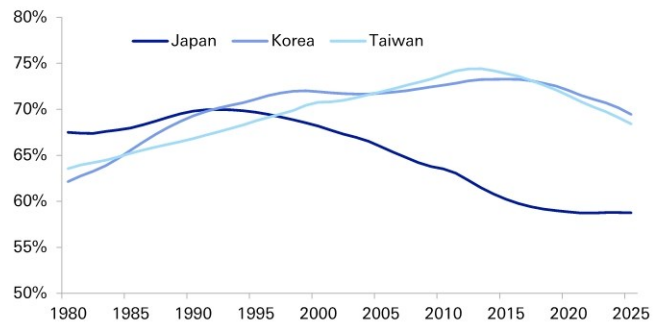


Figure 13: Working-age population



Note: Population aged 15-64
Source: Haver Analytics, Deutsche Securities

Figure 14: Working-age population ratio



Note: Population aged 15-64
Source: Haver Analytics, Deutsche Securities

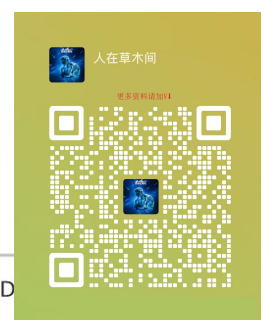
- **Supply of high-skilled talent (STEM education):** There is also a gap in the supply of high-skilled talent that underpins manufacturing's international competitiveness. Among OECD countries, the proportion of tertiary education graduates (bachelor's degree or higher) majoring in STEM fields (Science, Technology, Engineering, and Mathematics) is extremely high in South Korea (2nd), while Japan is below the OECD average (Figure 15). Although data for Taiwan is not included in this database, a survey by the Taiwanese government indicates that 34% of its students are in STEM majors.

Figure 15: Share of tertiary graduates in STEM fields among OECD nations

	2015	2023	Change		2015	2023	Change
Germany	36.8	35.5	-1.29	Lithuania	23.1	23.7	0.59
Korea	28.7	30.9	2.23	Colombia	22.7	23.3	0.60
Austria	29.3	30.5	1.22	New Zealand	21.3	23.1	1.87
Slovenia	25.7	30.0	4.33	United Kingdom	26.1	22.8	-3.32
Finland	28.5	29.2	0.76	Norway	21.0	22.6	1.60
Sweden	26.0	28.7	2.69	Chile	20.1	22.3	2.22
Greece	30.1	27.5	-2.64	Hungary	22.4	21.9	-0.52
Portugal	27.9	27.4	-0.53	Japan	21.0	21.8	0.80
Estonia	26.5	26.5	0.00	United States	17.4	21.8	4.40
Ireland	24.9	26.2	1.35	Spain	25.5	21.3	-4.28
Canada	21.3	26.0	4.65	Slovak Republic	21.1	20.5	-0.61
Switzerland	24.5	25.5	0.91	Netherlands	15.1	20.0	4.85
Denmark	19.6	25.4	5.79	Poland	22.3	19.5	-2.77
France	25.3	24.6	-0.66	Latvia	20.5	19.4	-1.03
Czechia	25.3	24.4	-0.86	Australia	17.6	18.9	1.24
Luxembourg	15.9	24.2	8.34	Türkiye	18.8	18.6	-0.20
OECD	23.2	24.0	0.80	Costa Rica	13.5	17.1	3.69
Mexico	27.9	23.8	-4.12	Iceland	18.0	17.0	-1.07

Note: In descending order of 2023 values.
Source: Haver Analytics, Deutsche Securities

This analysis reveals that the labor shortage facing Japan's manufacturing sector is a deep-rooted problem, stemming not only from macro trends like demographics and deindustrialization but also intertwined with multiple factors, including the education system.





5. Conclusion and outlook for the next report

As this report has shown, the reason Japan is not seeing a production expansion commensurate with AI-related demand lies in a severe labor shortage, which is attributable to a combination of factors, in addition to past underinvestment.

The Takachi administration has set a goal in its new growth strategy to channel huge domestic investments into 17 strategic fields, including manufacturing. However, without addressing the structural labor market problems pointed out in this report, there is a risk that these investments will not translate into a true enhancement of production capacity, and their effects will be limited.

In our next report, we will delve deeper into the investment and personnel challenges facing Japan's manufacturing industry and discuss what is necessary for the growth strategy to achieve its objectives.



Appendix 1

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