

Comment on Demographic Change and Korea's Growth Prospects by Prof. Jong-Wha Lee

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1. Introduction

1. Prof. Lee provides us with a comprehensive and excellent presentation on demographic change and the strategic role of AI and human capital in Korea.
2. Japan and Korea face the common challenge to the transition to “super-aged society” under the circumstance of technological rivalry between two AI superpowers; namely the US and China. This is very useful material for policy making in Korea and Japan.
3. The Korean government aims at achieving the goal of AI G3 country by accelerating AI transformation in manufacturing, putting emphasis on the comparative advantage of physical AI.

2. Immigration Policy

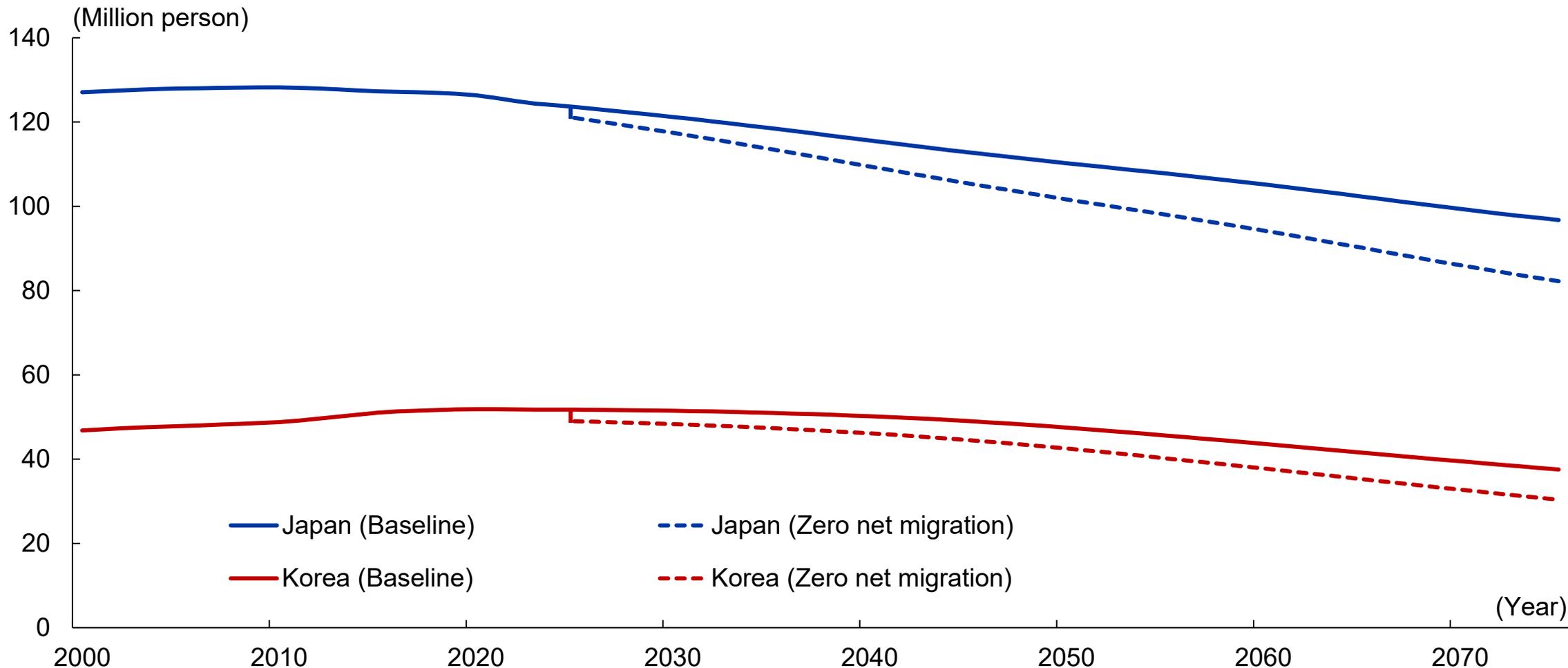
1. My first comment on demographic change is the immigration policy. Both Korea and Japan tend to increase the number of immigrants, given sharply declining working-age population.
2. Foreign workers in Japan amount to 2.57 million, while Korea accepts foreign workers of 1.1 million.
3. The JCER made a long-term forecast on total population and immigrants (Iwata and JCER, 2025a); in the case of Japan the foreign worker's share will rise to about 14%, which is equal to the average share of European countries in 2075 (**Figure 1**).

2. Immigration Policy

4. Given the experience in Europe and the US, there may be a limit in accepting foreign workers. One of the opposition party leaders argues that Japan should explicitly introduce the 6% limit on foreign workers share. Korea advances in accepting foreign workers.
5. Do you find any useful lessons on Korea's immigration policy for Japan?
6. In addition, I am informed that illegal workers amounts to 0.4 million in Korea. Have you prepared any measures to reduce the illegal foreign workers?

Figure 1. Population Decline and Immigration

<Population Projections for Japan and Korea>

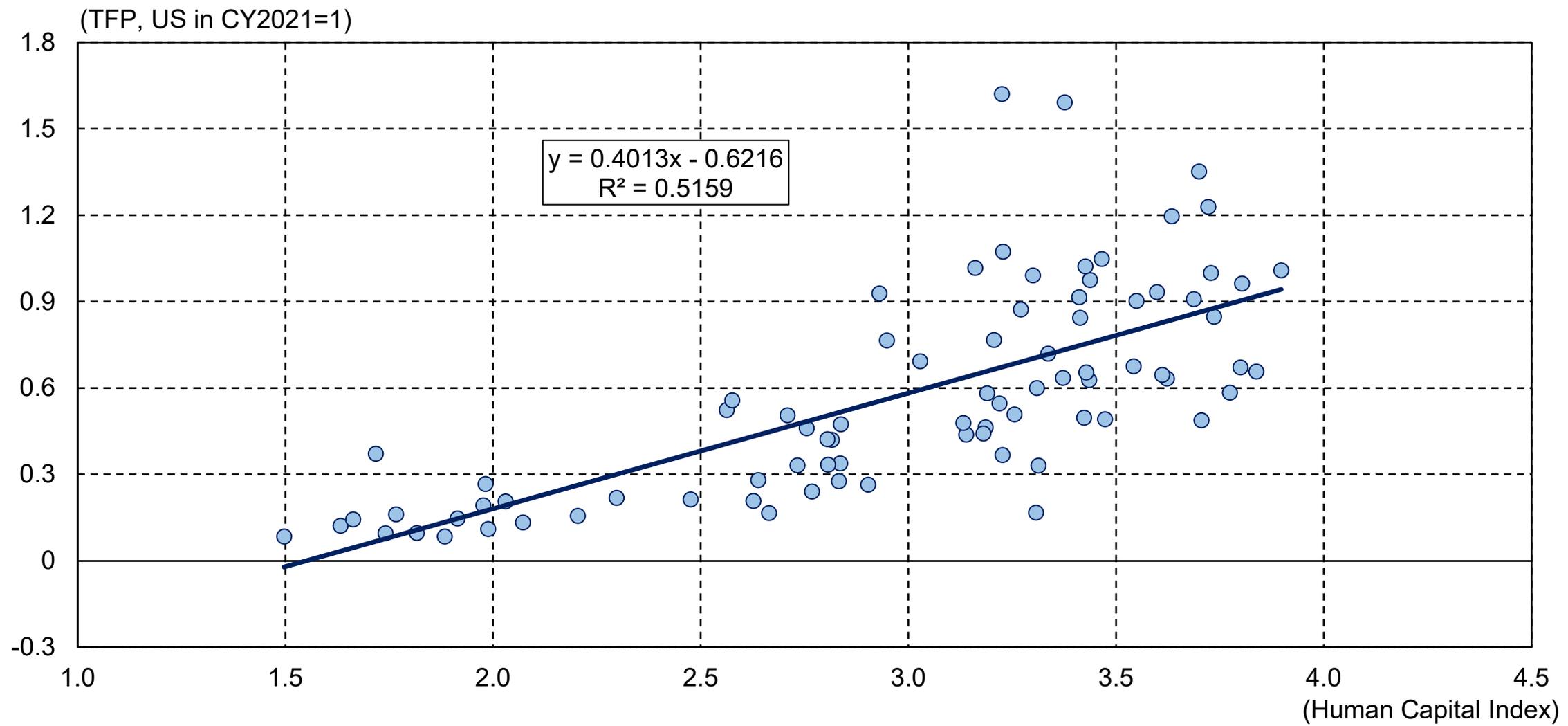


Note: "Zero net migration" assumes zero net migration from 2026 onward.
 Source: JCER estimates based on UN "World Population Prospects 2024"

3. Human Capital

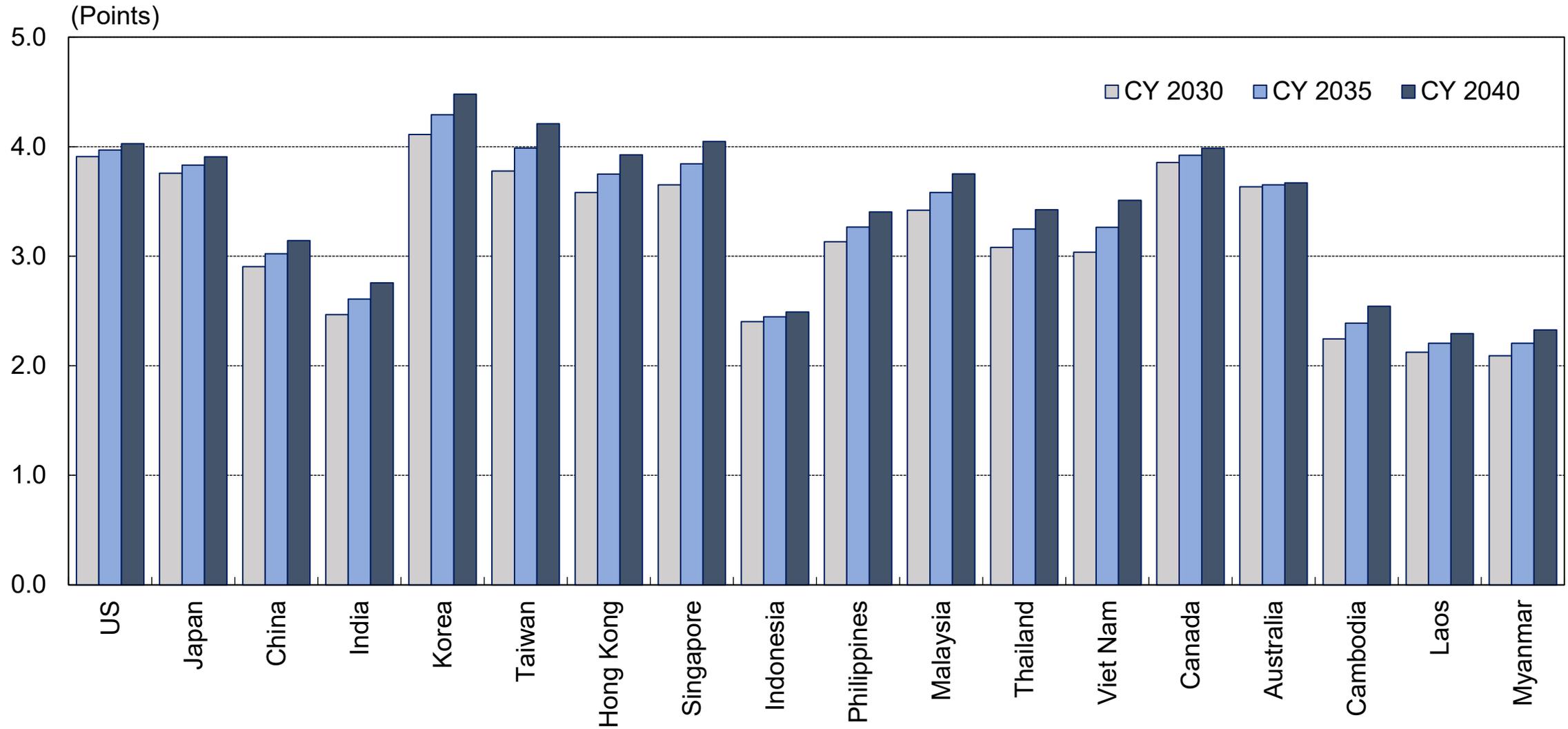
1. My second comment is related to human capital.
2. I fully agree with Prof. Lee on the important role of human capital and the AI adoption which is complementary to workers, including aged workers.
3. We observe a clear positive relation between human capital accumulation and the total factor productivity (**Figure 2**). In the Human Capital Index, Korea is the top country among 83 countries, higher than Taiwan, the US and Singapore (JCER, 2025b) (**Figure 3**). The increase in human capital seems to be sufficient for Korea to achieve about 0.5% contribution to potential growth rate due to the human capital accumulation.
4. Japan's problem is the lower return on female higher education investment. This creates a difficulty to expand the Australian HECS-HELP type loan program in Japan.

Figure 2. Human Capital and TFP



Note: The figure displays 83 countries and regions in CY2021.
 Source: Penn World Table

Figure 3. International Comparison on Human Capital in 2030, 2035 and 2040



Source: Penn World Table, JCER staff estimates

4. AI Revolution and the Total Factor Productivity

1. My third comment is related to the impact of AI on total factor productivity in Korea. Prof. Lee cited the works by Acemoglu (2024) and Aghion and Bunel (2024).
2. In our medium and long-term forecast on Asia and global economy, we estimated the impact of AI revolution including generative AI and AGI (software AGI and physical AGI) on total factor productivity.
3. On the impact of generative AI, Singapore is the top country, followed by the US, Korea and Taiwan (**Figure 4**). We observe that the country equipped with financial center tends to exhibit large AI impact on TFP, due to high exposure and adoption rate in financial sector.

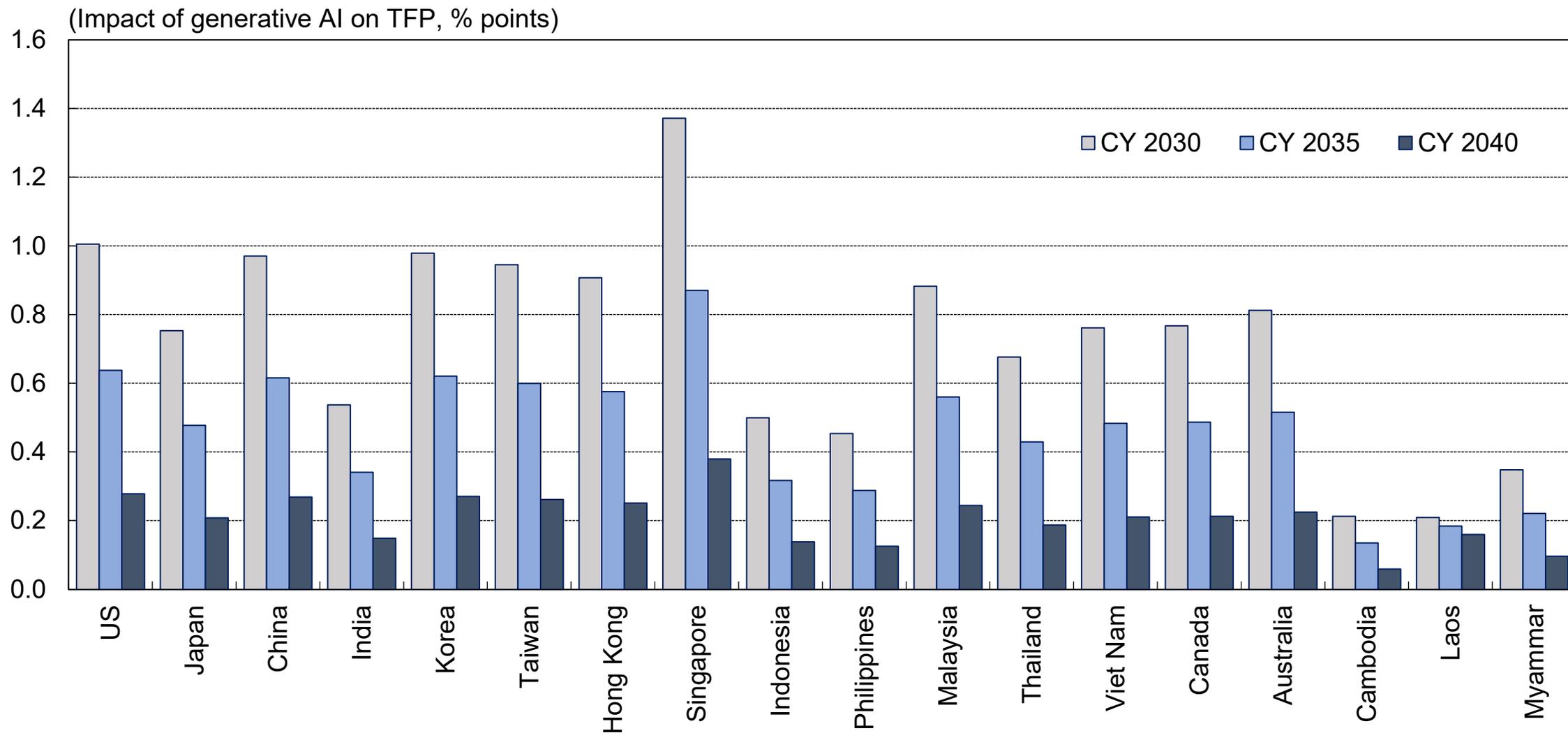
4. AI Revolution and Total Factor Productivity

4. With respect to the impact of AI including AGI (software AGI and physical AGI) on TFP, Korea will rank 4th, while Japan will rank much lower at 30th (**Figure 5**) (Kajita, 2025).
5. Japan lags behind Korea in preparedness index (**Figure 6**) and ranks lower in AI research. China dominates in top AI research institutions. KAIST in Korea ranks 7th, while Japan's universities' ranking is much lower (**Figure 7**).
6. In addition, Japan has made a small amount of AI related investment until now. At the time of announcement on AI strategy basic plan in December last year, the government envisages ¥3 trillion investment by government and private sector over the next several years. This seems too small, as compared with the Son-Altman project in the US amounting to \$500 billion (¥75 trillion).

4. AI Revolution and Total Factor Productivity

7. I find it necessary for Japan to focus on AI related investment among 17 strategically important areas, thereby setting the goal of AI G5 country.
8. China will be remarkably strong on physical AI. Its impact on TFP is likely to exceed that of the US, narrowing the technology gap between China and the US. We observe similar trend with respect to semiconductor industry, despite the stringent export control by the US vis-à-vis China.

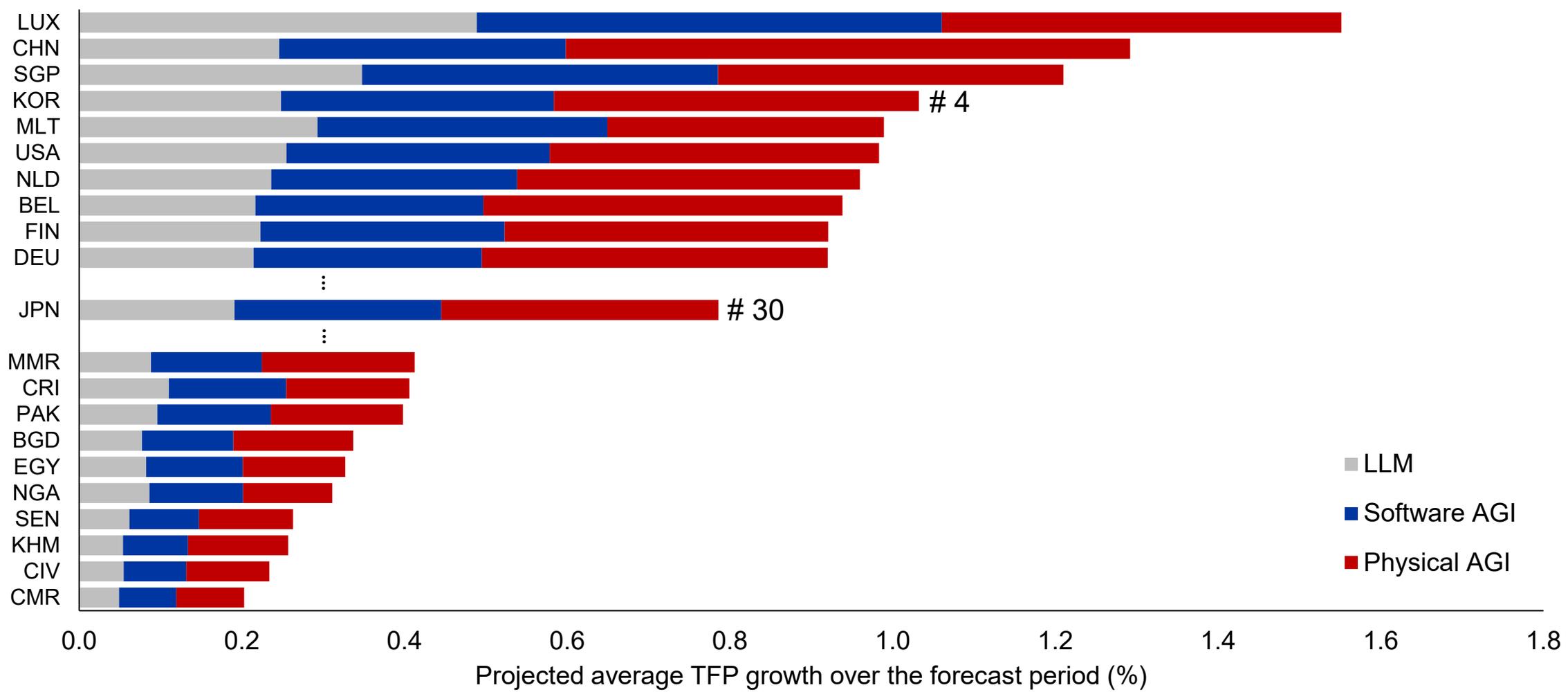
Figure 4. Generative AI and TFP in 2030, 2035 and 2040



Source: JCER staff estimates

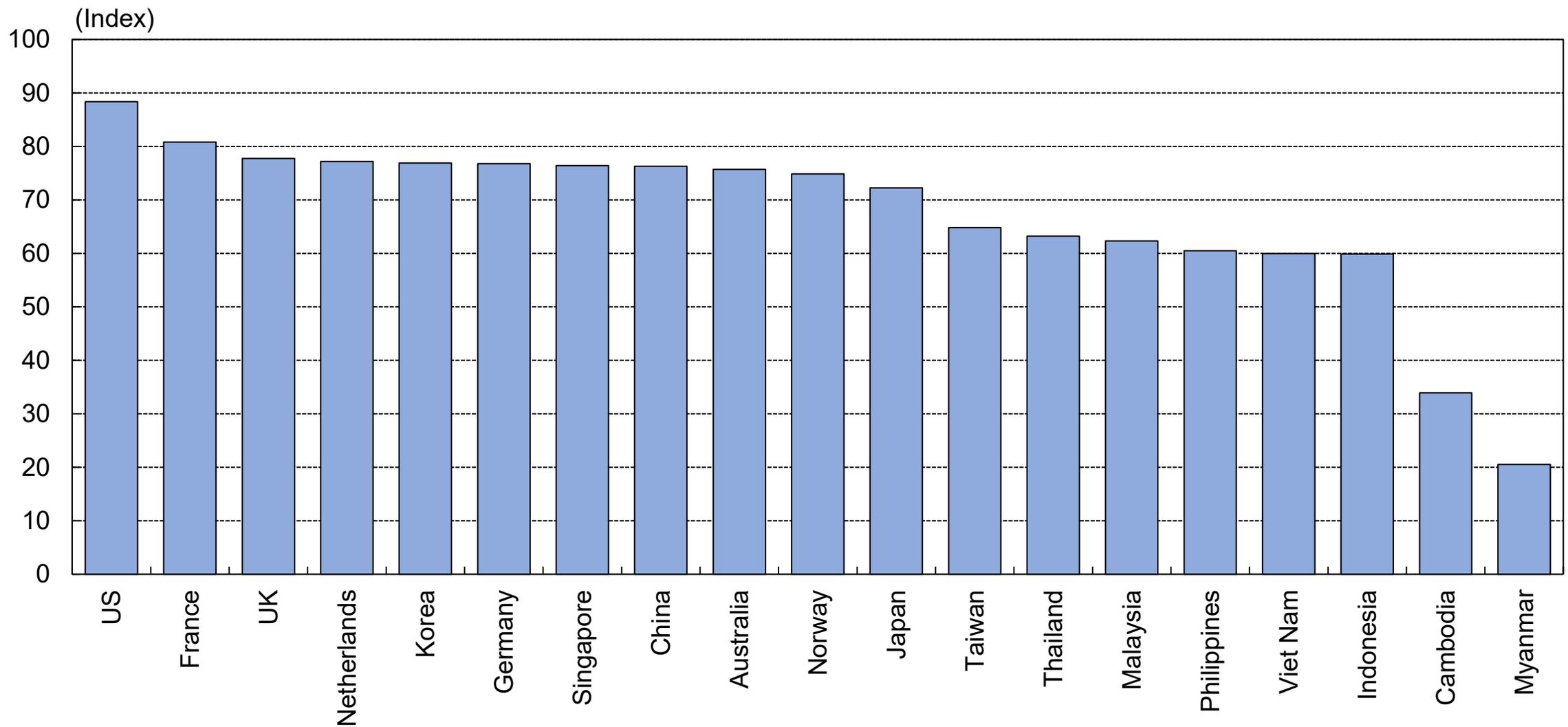
Figure 5. AI-Induced TFP Gains

<Cross-Country Ranking of AI-Induced TFP Gains by Technological Wave>



Source: OECD, U.S. Bureau of Labor Statistics, Oxford Insights, JCER estimates.

Figure 6. Government AI Readiness Index in 2025



Source: Oxford Insights

Figure 7. Top AI Research Institutions

<Top AI Research Institutions (2020–2025)>

Rank	Institution	Country	Count	Faculty
1	Tsinghua University	China	75.3	122
2	Peking University	China	73.9	130
3	Shanghai Jiao Tong University	China	65.1	126
4	Zhejiang University	China	59.4	103
5	Chinese Academy of Sciences	China	55.3	77
6	Carnegie Mellon University	United States	53.5	99
7	KAIST	South Korea	49.6	68
8	Nanyang Technological University	Singapore	48.7	57
9	National University of Singapore	Singapore	42.8	54
10	Harbin Institute of Technology	China	41	81
:	:	:	:	:
18	Seoul National University	South Korea	30.1	67
70	Korea University	South Korea	12.9	36
70	Yonsei University	South Korea	12.9	29
72	POSTECH	South Korea	12.8	25
85	University of Tokyo	Japan	11.1	26
95	Sungkyunkwan University	South Korea	9.8	19

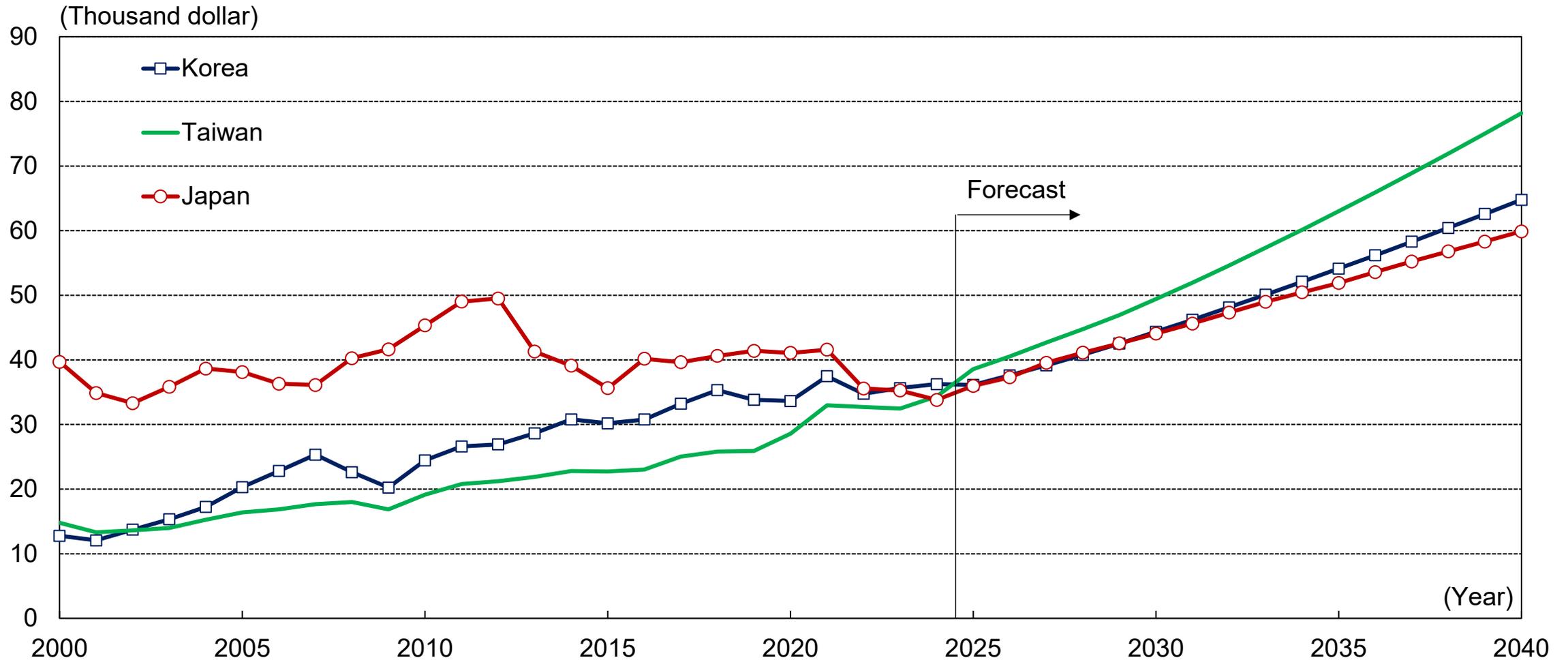
Note: “Count” measures adjusted publication output in top CS venues, crediting each author with 1/N per paper; “Faculty” counts full-time, tenure-track CS faculty eligible to advise PhD students.
Sources: CSRankings

5. Korea's Goal of "AI G3 Country"

1. My fourth comment is on Korea's goal of AI G3 country.
2. Apparently two super-power countries (the US and China) are winners in AI. Singapore and Taiwan may be strong competitors to Korea.
3. In our medium-term forecast on Asia, we predict that Taiwan's per capita nominal GDP will exceed that of Korea (JCER, 2025b). In 2025 it achieved 8% growth similar to the high growth era in Taiwan, reflecting strong international competitiveness of semiconductor industry (TSMC) (**Figure 8**).
4. Another competitor is Singapore. In terms of per capita real GDP (2017 US dollar price), Singapore will exceed the US and maintain higher position, due to its role of the financial center and efficient reskilling and immigration programs under the open and unilateral free trade regime (**Figure 9**).
5. Thus, it seems likely for Korea to attain the goal of AI G5 country. But I am not sure whether Korea will succeed in achieving the goal of AI G3 country.

Figure 8. Per Capita Nominal GDP: Japan, Korea, and Taiwan

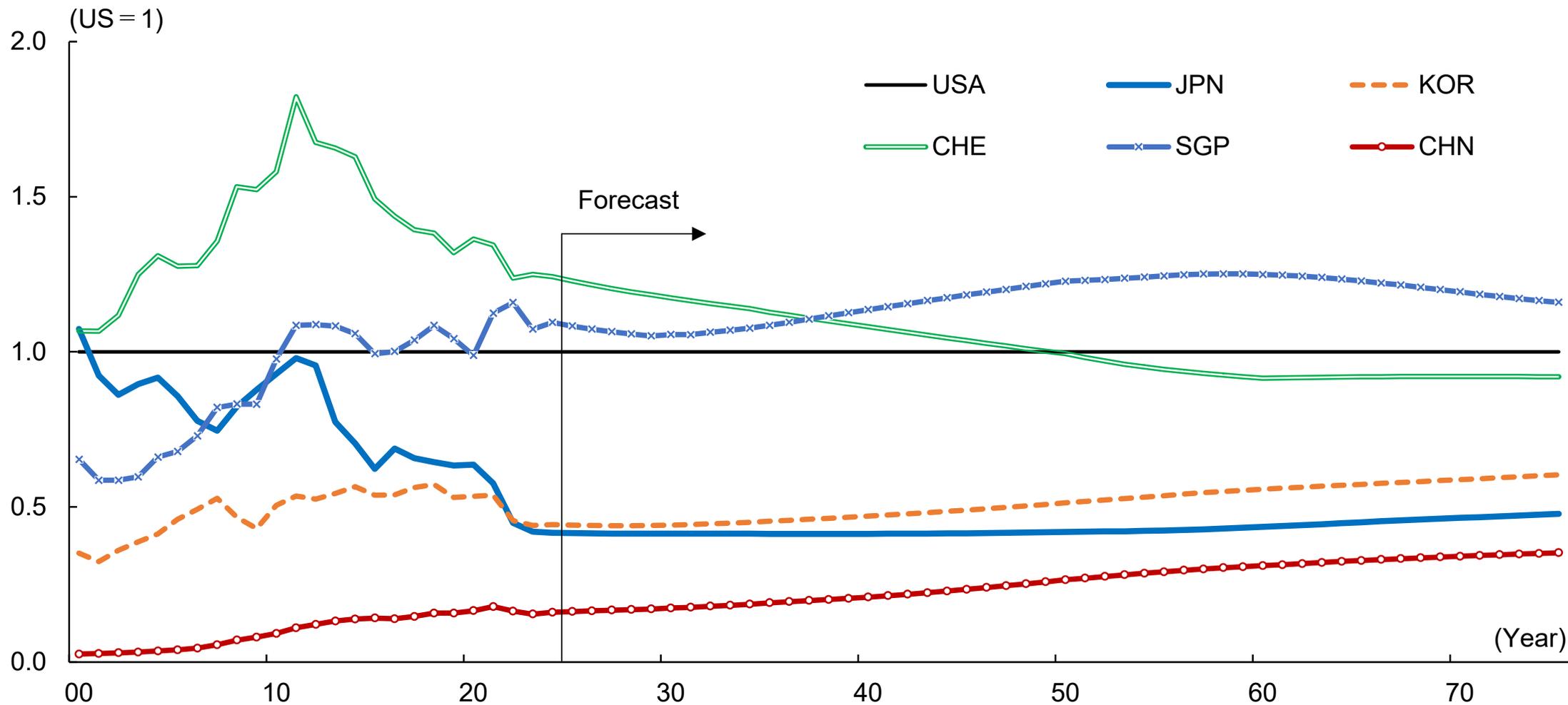
<Nominal GDP per Capita>



Source: IMF, Penn World Table, Cabinet Office "National Accounts of Japan", JCER staff estimates

Figure 9. Per Capita Real GDP in Comparison with US

<Projection on Per Capita GDP in Reform Scenario>



Source: JCER staff estimates

6. Labor Market Reform

1. My final comment relates to labor market reform.
2. There seems to be room for improvement in Korea's female labor participation rate (P.11).
3. In Japan, the majority of women are engaged in the labor market as non-regular workers, although the female participation rate is high. This is partly due to the ¥1.3 million wall of social security system favoring household wife (spouse deduction). Is there any similar problem in Korea?
4. Another common issue is the mandatory retirement system adopted by Japan and Korea. This diminishes the labor supply and work incentives among elderly workers. I believe that start-up businesses in Korea may mitigate the adverse effect arising from mandatory retirement system.

Reference

- [1] Iwata. K., and the JCER (eds.), 2025a. “Reviving Japan by Next Generation AI,” Nihon Keizai Shimbunsha. (in Japanese)
- [2] Japan Center for Economic Research, 2025b. “The Eleventh Medium-term Forecast on Asian Economy (2025-2040),” December 2025. (in Japanese)
- [3] Kajita, Y. 2025. “From LLMs to AGI: Quantifying the Macroeconomic Impact of Successive AI Waves on Global TFP,” JCER Discussion Paper Series No. 159, October 2025.