World Economy Brief

April 2, 2026 | Vol. 16 No. 09 | ISSN 2233-9140

China's Growth in Transition: Structural Shifts and Medium- to Long-term Prospects

Jiyoung Moon Research Fellow, China Team, Center for East Asian and Advanced Economy Studies (morganmoon@kiep.go.kr)

I. Introduction

Since the initiation of its reform and opening-up period, China's economy has experienced continuous high-speed growth despite multiple cycles of expansion and contraction. While China's economic growth rate steadily declined after peaking at 14.2% in 2007, this deceleration has been stable and predictable, consistently exceeding the Chinese government's target rate. Recently, however, China's economic growth trajectory has reached a critical new turning point. Both external uncertainties—including intensifying U.S.-China strategic competition, persistent geopolitical tensions, and global supply-chain fragmentation—and internal downward pressures, such as delayed real-estate recovery, local government debt issues, and rising youth unemployment, have exposed the limits of the old economic growth structure and fueled the "Peak China" narrative.

Nevertheless, predictions of a sharp economic decline remain tentative. The Chinese government is actively deploying various policy efforts to create a new phase of economic growth. Major economic strategies—such as the "dual circulation strategy," "new quality productive forces," "consumption-led economic growth," and "Chinese-style modernization"—along with strong policy incentives, appear well-directed toward addressing the core challenges of the economic slowdown.

Given that Korea maintains deeply interconnected cooperative relationships with China across multiple sectors, a careful examination of China's economic growth prospects and the recalibration of bilateral cooperation directions is more important than ever. This report comprehensively analyzes the structural changes in China's economy from supply-

side-side perspectives, utilizes rigorous econometric modeling to forecast medium- to long-term growth and derives strategic implications for Korea's economy.

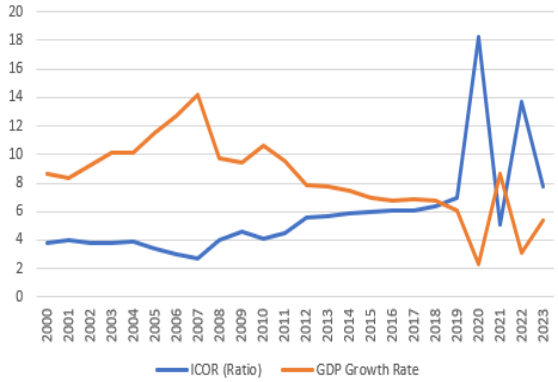
II. Supply-side Growth Factors and Structural Changes

The slowdown of China's economic growth is not a short-term shock, but a long-term structural trend. China's high growth was once powered by abundant labor, rapid total factor productivity (TFP) gains after WTO accession, and high infrastructure investment. However, all three of these supply-side drivers have been declining since 2008, and China's economic slowdown is closely linked to structural transformations in supply-side dynamics. This section evaluates the historical trends, emerging challenges and corresponding government policies across supply-side production factors: capital, labor, and total factor productivity (TFP).

1. Capital

Historically, China's high-speed economic growth relied heavily on massive capital investment. However, this capital-driven growth model became unsustainable since the mid-2000s. Clear indicators of this unsustainability are the steadily declining return on investment capital (ROIC) and a sharply rising incremental capital-output ratio (ICOR). China's ROIC was falling from an average of around 11% in the 2000s to 6% in the 2020s, while its ICOR has increased from the 3–4% range in the early 2000s to 7–18% in the 2020s. This means that more capital is now required to produce the same unit of economic output. This inefficiency stems mainly from overcapacity in traditional industries, distorted capital flows in the real-estate sector, and imbalance between SOEs and the private sectors.

Figure 1. China's ICOR and GDP Growth Rate



Source: World Development Indicators (WDI), Moon et al. (2025)

In response, the Chinese government has turned to structural reform and industrial policy to increase effective capital investment for innovation-driven development and supply chain modernization. SOE reforms have been intensified to create a fairer competitive environment with the private sector and reduce misallocation.

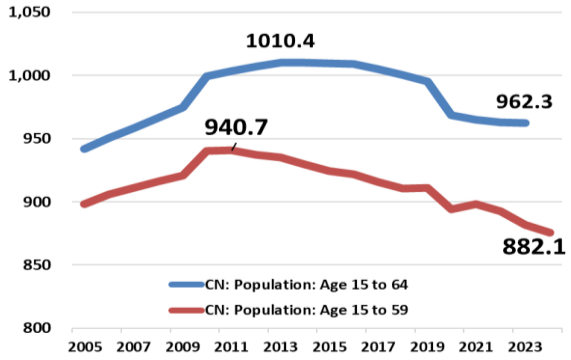
However, these political methods raise several concerns. First, China still uses state-backed capital injection to develop new economic growth engines. Strong policy measures tend to create powerful incentives,

which could lead to further industrial overcapacity, as already seen in the EV, battery and solar panel industries. Second, as China places high priority on enhancing industrial competitiveness, state-owned capital and SOEs play a significant role in the structural shifts. This hinders private sector development and could conflict with the direction of improving capital allocation efficiency. Furthermore, even if capital efficiency increases through China's industrial policy and reforms in the state-owned sector, the recovery of internal and external demand can affect the effectiveness of improvements in the marginal productivity of capital. Therefore, it appears that the contribution of capital to economic growth will be determined by the balance the Chinese economy establishes across its multifaceted goals.

2. Labor

China's demographic dividend, which powered its labor-intensive manufacturing boom for decades, is rapidly fading. The shift is driven by entrenched low fertility and accelerating population aging. The country's population peaked at 1.4 billion in 2021 and declined by roughly 850,000 the following year—the first negative growth in 61 years. The working-age population (aged 16–64) has been shrinking since 2013, with an even steeper drop under the official Chinese definition (aged 16–59). Studies project a further 20% contraction by 2050, pointing to a severe long-term erosion of the labor force.

Figure 2. China's Demographic Trends



Source: CEIC Database, Moon et al. (2025)

Although the pace varies across different regions, the shrinking working-age population and rapid aging are reducing effective labor supply nationwide. This has pushed up wages, especially in labor-intensive industries, prompting greater investment in automation and capital deepening. At the same time, young people's reluctance to enter traditional sectors and rising demand for high-tech skills have produced high youth unemployment and widespread job-major mismatches. As of Q4 2022, 41 of the top 100 "most wanted" occupations were in manufacturing, and the sector's labor shortfall was estimated to reach 30 million by 2023.

Meanwhile, entry into a super-aged society is boosting demand for elderly care, pensions, and senior-friendly technologies, giving rise to the "Silver Economy" as a new growth area. However, this is also placing heavy fiscal pressure on pensions and medical insurance. The old-age dependency ratio has more than doubled, from around 10% in the early 2010s to 20.7% in 2023, sharply increasing the support

burden on each working-age person and threatening long-term fiscal sustainability.

To counter these trends, the government has launched comprehensive policies covering childbirth incentives, delayed retirement, pension reform, and human-capital investment. Fertility policy has shifted from restrictions to subsidies and support for childcare and education costs. The retirement age is being gradually raised starting from 2025, and a "Three-Year Plan for Cultivating Digital Talent (2024–2026)" aims to ease shortages in AI, semiconductors, and big data. An employment-first approach seeks to boost youth jobs and reduce mismatches.

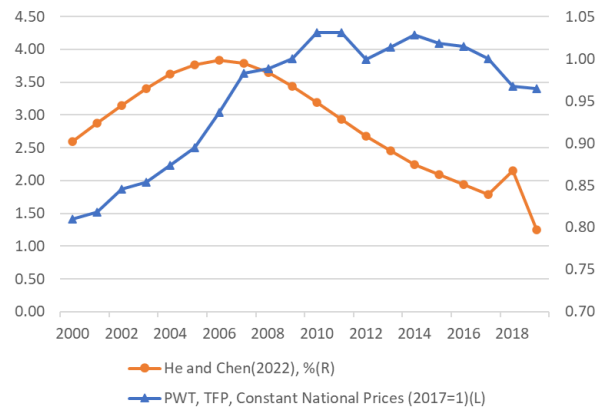
Nevertheless, structural constraints persist: pro-natalist measures are limited by high child-rearing costs and changing youth values; delayed retirement may only offer short-term relief and could worsen youth unemployment; and surging pension and healthcare spending may crowd out future-oriented investments in R&D, talent, and green transition.

3. Total Factor Productivity (TFP)

Another major explanation for China's slowing macroeconomic growth is the decline in total factor productivity (TFP). Although estimates vary by methodology, numerous studies confirm a marked drop since the 2008 global financial crisis. From a theoretical perspective, this persistent decline reflects inefficiencies in resource allocation and a deceleration in technological progress.

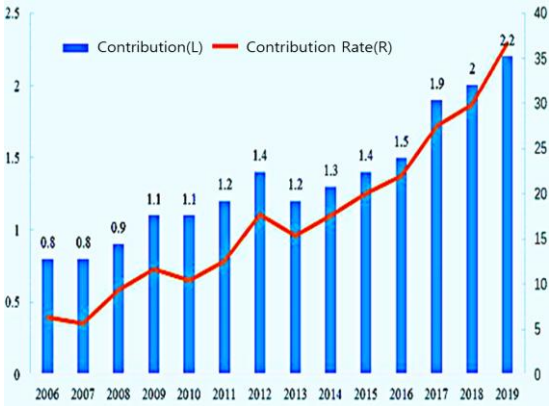
Resource misallocation arises from excessive policy incentives that create over-supply, administrative barriers, local protectionism, and SOE-centered industrial policies. The IMF (2025) estimates that such misallocation has already reduced TFP by approximately 1.2 percentage points. The Chinese government is addressing this through a range of measures to streamline administration and delegate power, establish a unified national market to remove inter-regional barriers, supply-side structural reform, SOE restructuring, and financial system changes.

Figure 3. Trend of China's TFP



Source: He and Chen (2022), Penn World Table, Moon et al. (2025)

Figure 4. Demand-Side Principal Component



Source: PBoC Survey and Statistics Department Research Team (2021), Moon et. al. (2025)

Technological innovation remains a key TFP driver. From 1979 to 2020, TFP contributed 3.4 percentage points to annual growth, accounting for 36.6% of total expansion. China has closed much of the gap with advanced economies: R&D spending reached 2.7% of GDP in 2023 (matching the OECD average); it leads the world in scientific papers (roughly twice the U.S. volume in 2023); and it filed a record 69,000 PCT international patent applications in 2022. However, paradoxically, TFP's contribution to growth has continued to fall since the global financial crisis. Massive innovation investments have not yet fully translated into broad industrial upgrading, partly because private firms—the main R&D engine—have seen weaker profitability since 2020.

While Beijing is actively pursuing reforms and promoting "new quality productive forces" under the 14th Five-Year Plan, these efforts will take time to deliver measurable results. Deeper institutional changes—such as full hukou reform linked to expanded social security—are still needed to realize the full efficiency gains from better resource allocation. China has made impressive strides in innovation outputs, but converting heavy investment in cutting-edge technologies into sustained TFP improvements and tangible economic gains will require more time.

III. Growth Structure Analysis and Medium- to Long-term Prospects

China's economy is widely viewed as having entered a structural transition phase since the early 2010s, marked by a sustained slowdown in growth. The "New Normal" concept, officially proclaimed by the Chinese government in 2012, signaled a policy shift from high-speed to medium-speed growth. Subsequent developments—including the 2016 supply-side structural reform and the escalation of the U.S.-China trade dispute in 2019—along with external shocks, have further shaped the country's growth trajectory. More recently, the ongoing adjustment in the real estate market, rapid population aging, and heightened geopolitical tensions have increased uncertainty surrounding medium- to long-term growth prospects.

These policy shifts and economic uncertainties have underscored the need for fresh research into the dynamics of China's economic growth. This section conducts a multi-layered analysis of the structural characteristics and medium- to long-term outlook for China's real GDP growth rate.

1. Structural Characteristics of China's Economic Growth

This study analyzes China's quarter-on-quarter (QoQ) real GDP growth rates from Q3 1979 to Q1 2025. The data are derived from

seasonally adjusted real GDP figures obtained from the CEIC database, with quarter-on-quarter growth rates calculated accordingly. Spanning a total of 183 quarters, the time-series dataset covers the full growth trajectory of the Chinese economy since the reform and opening-up era, encompassing a wide range of economic phases—from the high-growth period to the recent structural transition phase.

Volatility analysis of China's quarter-on-quarter real GDP growth rates indicates that, since 2012, the economy may have transitioned from a high-growth, high-volatility regime to a medium-growth, low-volatility regime. However, the extreme contraction of –10.50% in Q1 2020 during the COVID-19 pandemic revealed the economy's potential vulnerability to external shocks. Post-2012 patterns show not only a decline in the average growth rate but also a substantial reduction in volatility itself, resulting in more stable movements within a narrow range. This reflects the characteristics of the "New Normal" officially proclaimed by the Chinese government, aligning with its policy shift from quantitative expansion toward qualitative improvement. The sharp decline in Q1 2020 caused by COVID-19 is treated as an exceptional event; when excluded, the low-growth, low-volatility regime is seen to have persisted since 2012.

Table 1 presents the three major structural break points detected and their respective characteristics.

Around the first break point in Q1 2012, the average growth rate declined by 0.98 percentage points, lowering the post-break average to 1.75%. This timing closely coincides with the inauguration of the Xi Jinping administration and the Chinese government's official declaration of the "New Normal" era in 2012. The data clearly reflect the policy transition from high-speed to medium-high-speed growth and from quantitative expansion to qualitative improvement.

The second break point occurred in Q3 2016. Thereafter, the average growth rate fell by an additional 1.01 percentage points to 1.64%. This was the period when China began fully implementing supply-side structural reforms, including capacity cuts in overcapacity sectors such as steel and coal, the disposal of zombie enterprises, and deleveraging measures. These intensive restructuring efforts appear to have contributed to the short-term slowdown in growth.

The third structural break took place in Q3 2019, when the average growth rate declined by a further 1.08 percentage points to 1.26%. This period exactly matches the peak of the U.S.-China trade dispute. The cumulative decline in the average growth rate of approximately 3 percentage points across the three breaks is particularly significant. It suggests that the slowdown is not merely a cyclical downturn but a structural downward adjustment in China's potential growth rate itself.

Table 1. Structural Break Points of China's Real GDP Growth Rate

Break Points	t-Statistics	P-value	Average Change (%)	Average after break point (%)
2012Q1	3.6638	0.0003	-0.98	1.75%
2016Q3	3.2513	0.0014	-1.01	1.64%
2019Q3	2.9256	0.0039	-1.08	1.26%

Source: Moon et al. (2025).

2. Medium- and Long-Term Prospects for the Chinese Economy

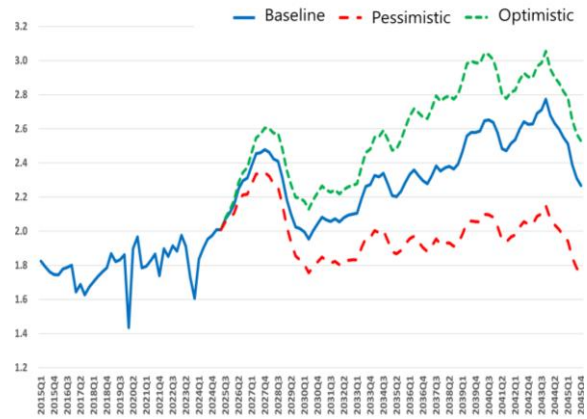
This section employs the Global Vector Autoregressive (GVAR) model developed by Pesaran, Schuermann, and Weiner (2004) to project China's medium- to long-term economic growth path and to analyze the dynamic responses to major economic shocks.

In this study, each country's macroeconomic variables are categorized into supply- and demand-side factors. Principal components are extracted from these groupings and incorporated as domestic variables in the GVAR model, thereby enabling the identification of structural shocks and the analysis of their propagation mechanisms.

To capture changes on both the supply and demand sides as well as the direction of government policy responses, seven supply-side variables were used: capacity utilization rate, capital stock, unemployment rate, labor force participation rate, productivity trend, industrial production index, and producer price index. On the demand side, seven variables were employed: gross fixed capital formation, FDI inflows, retail sales index, private consumption, exports and imports, and the real effective exchange rate.

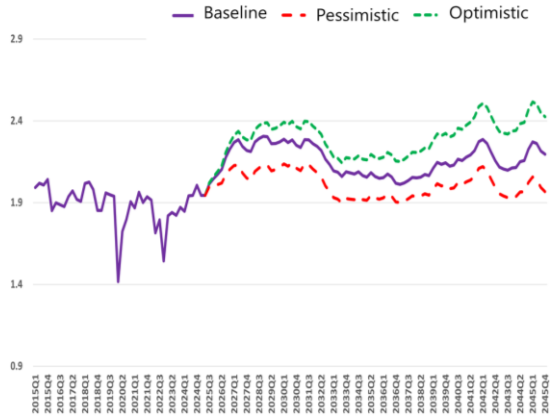
Principal components were extracted only when at least two variables and five or more observations were available at each point in time, thereby mitigating small-sample bias. The study adopts a conditional forecasting approach, imposing the future paths of specific

Figure 5. Supply-Side Principal Component



Source: Moon et al. (2025)

Figure 6. Demand-Side Principal Component



Source: Moon et al. (2025)

variables as constraints and deriving the conditional expectations of the remaining variables. The baseline, optimistic, and pessimistic scenarios assume, respectively, a medium-level realization of policy effects, accelerated technological innovation combined with successful institutional reforms, and intensified structural constraints. These scenarios were generated through 10,000 Monte Carlo simulations.

Under the baseline scenario of the GVAR model, China's projected average annual growth rates by five-year intervals show a clear downward trend: 4.57% for 2025–2030, 2.84% for 2030–2035, 2.06% for 2035–2040, 2.22% for 2040–2045, and 1.01% for 2045–2050.

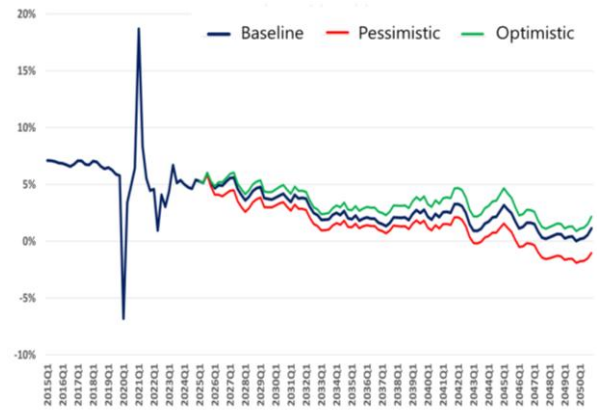
The optimistic scenario starts at 5.43% in 2025, then declines to 4.72% in 2030, 3.30% in 2040, and 1.50% in 2050. Compared with the baseline, it maintains an average annual growth rate 0.7–1.0 percentage points higher throughout the period. Notably, even after 2040, growth remains in the mid-to-high 3% range before falling to the mid-1% range, indicating that successful technological innovation and institutional reforms could enable China to sustain a medium-speed growth trajectory over the medium to long term.

In contrast, the pessimistic scenario begins at 5.28% in 2025, falls sharply to 3.25% in 2030 and 1.18% in 2040, and enters negative growth after 2046, reaching –1.50% by 2050.

This highlights the risk that structural constraints could overwhelm policy responses, pushing the Chinese economy into a contraction phase in the late 2040s.

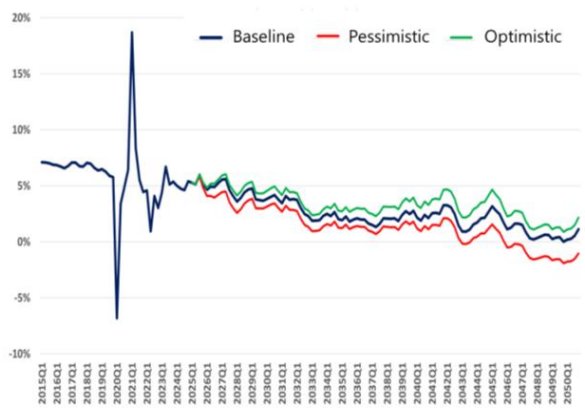
Figure 7. Conditional Forecasting Results for China's Real GDP Growth Rate

A. Quarterly YoY



Source: Moon et al. (2025)

B. Yearly YoY



Source: Moon et al. (2025)

The most important implication of these projections is the decoupling between supply and demand expected after the mid-2030s. The demand-side principal component is assumed to peak around 2030 and then experience long-term stagnation or a mild decline, while the supply-side principal component is projected to continue rising until 2043. This scenario setting assumes that the Chinese economy enters a structural imbalance characterized by simultaneous supply overcapacity and demand deficiency. In an environment where growth is constrained by demand, investments to expand supply capacity may generate short-term demand but could trigger a vicious cycle of deepening overcapacity in the medium to long term.

This decoupling assumption is grounded in the asymmetric nature of China's growth model. On the supply side, government-led investments in technological innovation, state-owned enterprise reform, and strategic industry development can be implemented relatively quickly. However, structural improvements on the demand side—particularly better income distribution, expansion of the social safety net, and a genuine shift toward consumption-driven growth—require fundamental institutional changes that take considerably longer to realize. The early peak of the demand component around 2030 reflects the exhaustion of short-term demand effects from large-scale infrastructure investment, while the subsequent stagnation path assumes structural limits to consumption-led expansion. The accelerated slowdown after the 2040s coincides with the period when the full impact of demographic changes becomes apparent. China's working-age population peaked in the mid-2010s and has been declining since; by the 2040s, aging is expected to intensify, resulting in severe labor constraints. The extent to which productivity gains from technological innovation can offset these demographic pressures will be a key determinant of the long-term growth path. The wide gap between the optimistic and pessimistic scenarios largely stems from this factor.

Overall, these projections are based on two major structural challenges facing the Chinese economy: in the short term, insufficient demand acting as a binding constraint on growth; and in the medium to long term, institutional inefficiencies that undermine the translation of supply-side improvements into sustained productivity gains.

IV. Implications for Korea

China's medium- to long-term economic growth is currently navigating a structural transition aimed at overcoming constraints on both the supply and demand sides while shifting toward qualitative, high-efficiency industrial development. This transformation goes beyond mere cyclical adjustment and entails a comprehensive restructuring of industrial policy, technological strategy, and the institutional environment. Korea finds itself in a

complex position vis-à-vis China, where cooperation and competition coexist. It is therefore essential for Korea to closely monitor and respond to changes in China's growth structure and strategic direction.

1) Responding to Intensified Industrial Competition and Mitigating Restructuring Risks

China's structural economic changes are driving a shift in industrial composition and a new productivity paradigm. Beijing is pursuing aggressive industrial policies centered on advanced sectors to expand "new quality productive forces" and achieve technological self-reliance and strength. These policies exert structural pressure on the Korean economy. Given the policy directions of both countries, competition in high-tech industries is expected to intensify further. In particular, technological rivalry between Korea and China is likely to deepen in overlapping strategic areas such as semiconductors, AI, and secondary batteries.

To address this competition, Korea must expand corporate support for cutting-edge technology development and R&D investment. Beyond capital assistance to enhance innovation capacity, it is necessary to review whether excessive regulation is hindering the industrialization of innovative technologies and to simultaneously promote regulatory sandboxes and the establishment of industrialization platforms.

In response to China's industrial modernization and technological innovation, Korea should also strengthen the refinement of standards, patents, and intellectual property rights (IPR) systems. China's technological advancement is extending beyond industrial competition into global leadership in standards, patents, and IPR regimes. Korea therefore needs to bolster its national response framework, centered on a technology standardization and patent strategy center, and institutionalize systems that incorporate international standards from the early stages of R&D. As the competition for technological self-reliance accelerates, the importance of technology security will grow; accordingly, Korea must upgrade its national technology protection framework and industrial security systems.

Furthermore, China's scaling of strategic industries may trigger excessive domestic investment in Korea, potentially leading to global supply gluts that directly erode the profitability of Korean high-tech sectors. To counter this, Korea should pursue dual strategies of high-value-added upgrading in advanced materials and components and the cultivation of brand loyalty, thereby shifting from price-based competition to a technology-driven export model. In addition, Korea could consider establishing a monitoring system for the impact of Chinese overcapacity on global market prices and responding to intensified in-

dustrial subsidy competition through international cooperation channels grounded in WTO rules.

2) Institutionalizing Growth Opportunities and Upgrading Industrial Cooperation

Alongside industrial upgrading, China is promoting a transition toward consumption-led growth, which is likely to create new markets and expand demand in related industries. The Chinese government's increased fiscal spending on social services such as welfare, healthcare, and education also presents fresh cooperation opportunities for Korea's public-service sectors.

In particular, China's demographic shifts offer significant collaborative potential for Korea. Rapid aging and rising welfare demand are driving explosive growth in China's healthcare and silver-economy markets. Korea can leverage its comparative advantages in medical services, smart medical devices, and health-management data solutions to expand into the Chinese market. Moreover, drawing on its experience with medical insurance and long-term care systems, Korea could pursue public-private partnership (PPP) projects with Chinese local governments and state-owned enterprises to advance integrated medical and elderly-care industries.

Second, China's policies for employment stabilization and rising household incomes are expected to expand the middle class. This structural change in the consumption market opens avenues for cooperation. As consumption upgrading accelerates, demand for premium consumer goods and cultural content is projected to rise. Considering that China's younger generation places high value on "quality, storytelling, and experience," Korea can introduce tailored marketing and export strategies linked to Chinese digital consumption platforms and expand its consumer base through K-culture-based brand premiumization. However, to address risks such as brand IP infringement and design patent violations during market entry, proactive institutional cooperation between the Korean and Chinese governments will be essential.

3) Establishing Buffer Systems against Uncertainty and Macroeconomic Volatility

China's medium- to long-term growth slowdown and policy uncertainty can directly affect the stability of the Korean economy. In particular, the anticipated weakening of growth potential after 2040 and rising fiscal risks at the local-government level may pose tangible risks to Korean firms participating in major projects and PPPs in China. Given that Chinese industrial policies are often implemented at the provincial level, Korean government agencies and overseas business support organizations should conduct comprehensive assessments of province-specific policy developments and use these insights to support Korean companies' entry into the Chinese market.

Furthermore, as China actively promotes its own standards while expanding influence over international norms in areas such as technology standards, IPR, and FTA rules, Korea must strengthen its standard diplomacy capabilities and consider institutionalizing technology-standard consultation channels within multilateral frameworks such as Korea–China–ASEAN cooperation.

Finally, should China's structural slowdown materialize, its repercussions are likely to spread to Korea's exports, investment, and financial markets. Korea therefore needs to develop a medium- to long-term scenario-based policy management system to reduce dependence on China, while simultaneously establishing supply-chain resilience mechanisms and financial risk buffers to cope with greater volatility in the yuan exchange rate. In sum, Korea should adopt a strategic, three-pronged approach—preemptive policy and institutional management, the building of international cooperation safety nets, and the strengthening of domestic industrial resilience—across the policy, market, and institutional domains. KIEP

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