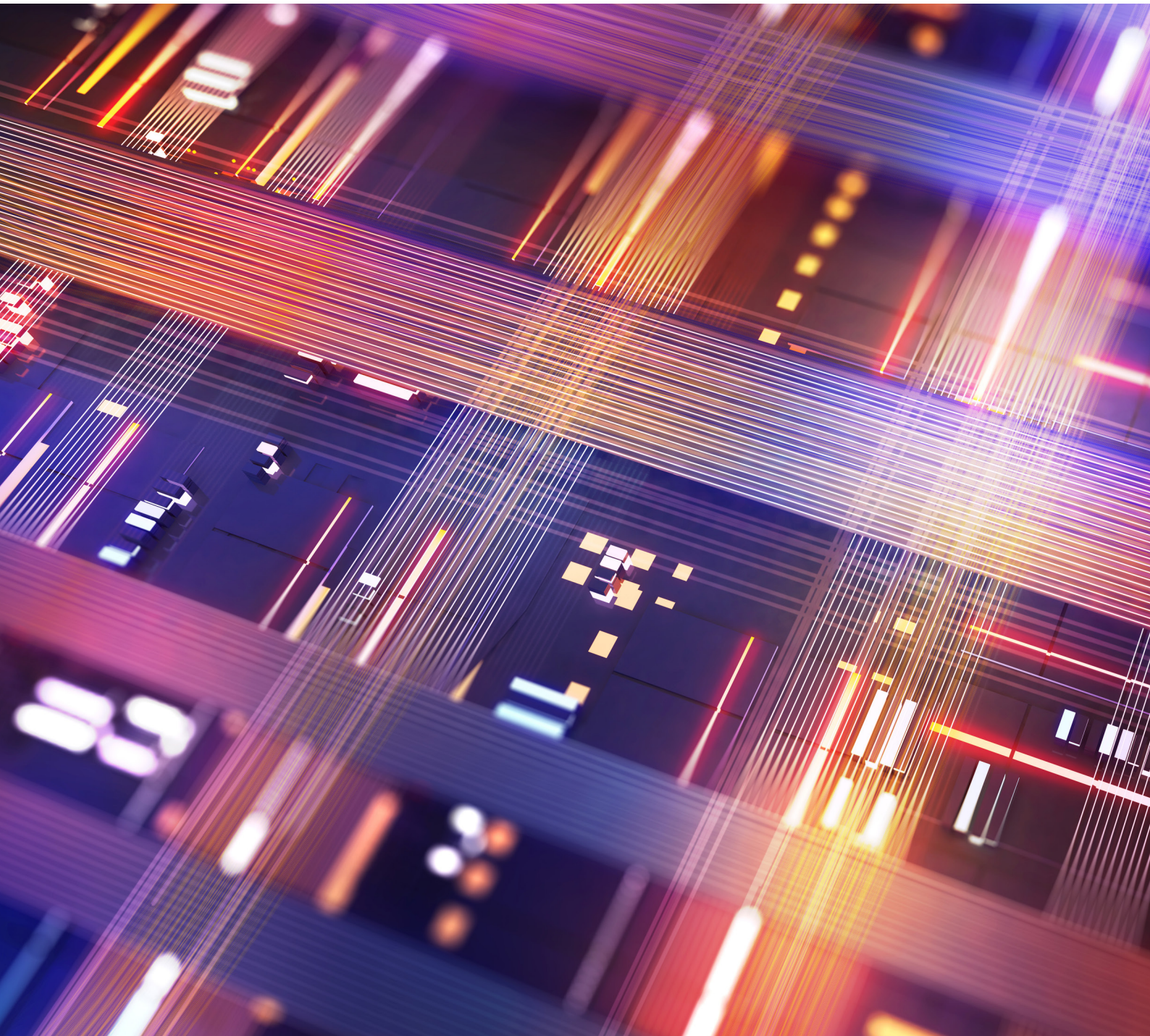
Asia Business Council

Advanced Asian Economies at a Crossroads: Adapting to Aging, AI, and Trade Fragmentation

Berenice Voets, Manvi Yadav, and Janet Pau

September 2025



Executive Summary

Asia Business Council

For decades, advanced Asian economies ("Advanced Asia")—including Japan, South Korea, Hong Kong, Taiwan, China, and Singapore—exemplified strong and sustained growth. Today, these economies confront systemic challenges that outpace policy responses and increasingly compress growth.

Aging has shifted from a source of longstanding tension to a defining force, reshaping productivity dynamics, straining labor markets, and placing new demands on public finance just as governments are shrinking budget allocations.

In parallel, technological acceleration and geopolitical fragmentation are redefining business models, destabilizing supply chains and employment. These pressures are durable shifts in market fundamentals. Traditional growth engines—industrial output, scalable labor, export momentum, and human capital expansion—are losing traction, while artificial intelligence (AI) and automation are redrawing the contours of competitiveness and value creation.

For policymakers, this moment marks a turning point. They must move beyond managing demographic headwinds and technological disruption to rethinking growth fundamentals. This briefing argues that aging societies have an opportunity to pivot toward high-efficiency, low-labor growth models. Redesigning workflows, supply chains, and service delivery can turn demographic and technological pressures into engines of innovation and inclusive growth. Resilience will depend on rethinking work across the lifespan, fostering intergenerational collaboration, reducing exclusion, and promoting lifelong learning.

System-wide change will require bold policy vision and agile fiscal frameworks capable of withstanding the pressures that come with aging and AI, while directing investment toward productivity, equity, and long-term stability.

Introduction

After decades of defying economic gravity through rapid industrialization, export dynamism, and technological ascendancy, Advanced Asia is entering a phase of structural transformation. In this briefing, Advanced Asia refers to a select group of Asian economies with a nominal GDP per capita above $13,600, specifically Japan, South Korea, Hong Kong, Taiwan, China, and Singapore, which have undergone industrialization and global integration and are now at a crossroads.[1]

For these economies, aging populations, fiscal tightening, and stagnating productivity are no longer discrete or distant challenges; they are rapidly converging with technological displacement and trade fragmentation, testing the limits of existing development models.

This briefing examines how post-industrial growth is evolving in Advanced Asia. It explores how shifting pressures are challenging traditional growth models and highlights the need for policymakers and business leaders to chart new pathways for future growth.

It assesses structural risks to employment, public finance, and inequality. It proposes a strategic reform agenda grounded in industrial renewal, labor market redesign, fiscal innovation, and the proactive adoption of technology—not merely as an economic lever, but as a catalyst for social innovation and inclusive growth.

From Structural Strains to Crises

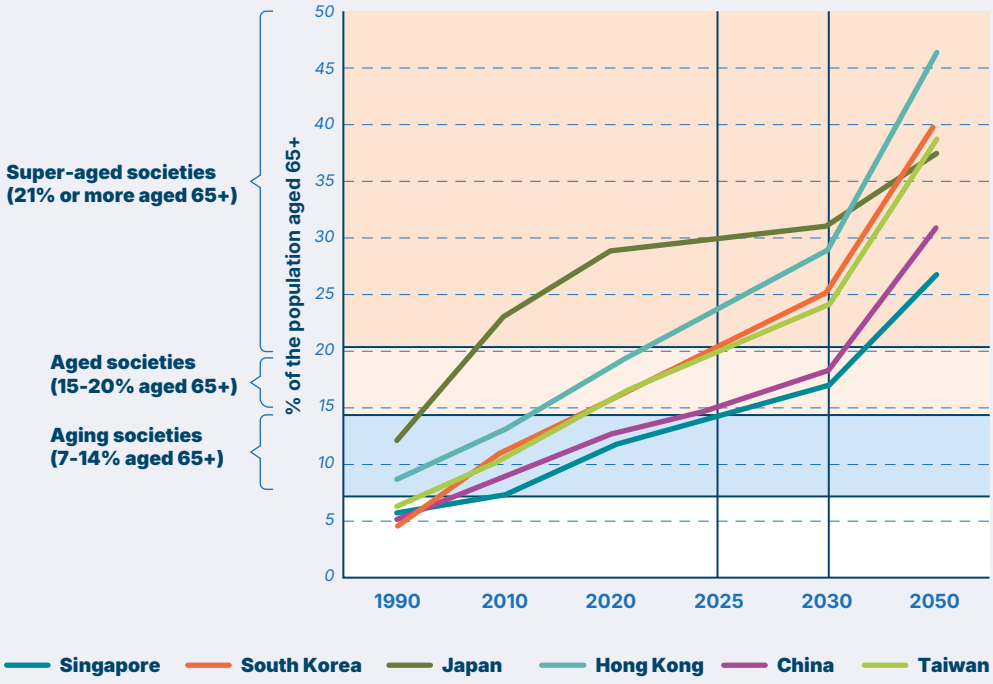
Before COVID-19, Advanced Asia was already contending with aging populations, slowing productivity, trade tensions, and rising fiscal pressures. The pandemic accelerated these trends, exposing vulnerabilities in the labor and welfare system and turning long-term concerns into urgent policy issues. These economies now stand at a critical inflection point, requiring a fundamental reassessment of their growth models. This section explores the recent shifts that require a more adaptive and sustainable development trajectory.

Surging into a Super-Aged Era

Advanced Asia faces a demographic reckoning. In just five years, a gradual trend of population aging has transformed into a rapid, structural challenge. This acceleration is occurring at a pace without historical precedent, driven by sustained low fertility and rising longevity. By 2050, Advanced Asia is expected to decline by 185 million people (11%), with China alone accounting for 156 million (almost 85% of the total decline).[2]

The trend reversal is striking. What took Europe over half a century unfolded in just 20 to 25 years across Advanced Asia (figure 1). In 1990, only Japan and Singapore were considered "aging" (with 7–14% of their population aged 65+), and Japan stood alone with a median age above 40.[3] In the past five years alone, from 2019 to 2024, Singapore and China have become "aged" societies (with 15–20% of their population aged 65+), while Hong Kong, South Korea, and Taiwan have joined Japan as "super-aged" economies (with more than 21% of their population aged 65+). By 2030, Advanced Asia will have crossed the threshold into super-aged status, with the "oldest-old" (aged 80 and above) comprising nearly one-fifth of the older population. The widening gap between life expectancy and healthy life expectancy is intensifying demand for long-term care, adding fiscal and operational strain on already stretched health systems.[4]

Figure 1: Gray Acceleration: Advanced Asia's Race Toward Super-Aged Societies



Sources: Asia Business Council calculations based on United Nations, Department of Economic and Social Affairs, Population Division (2024); World Population Prospects 2024.

The labor force outlook is even more dramatic. By 2050, Advanced Asia will shed 280 million workers (25%)—the largest decline ever recorded.[5,6] During that period, China and Japan are projected to lose nearly a quarter of their working-age populations (approximately 241 million and 18 million, respectively), while South Korea, Taiwan, and Hong Kong face contractions of 35-40%.[7]

Population aging is not a new phenomenon, but its unprecedented speed and scale, compounded by disruptions to migration patterns, supply chains, and shifting geopolitical dynamics, are reshaping the policy landscape in complex ways.

Aging Economies Outgrow Their Revenues

Amid rising demands for healthcare and retirement spending, fiscal expenditure across Advanced Asia has tightened post-COVID, leaving governments with less room to navigate growing economic and demographic challenges. Japan, with gross public debt exceeding 245% of GDP—the highest among advanced economies—is under international pressure to outline a credible fiscal consolidation plan.[8] China's local governments face rising debt and dwindling revenues from land sales, weakening their capacity to finance infrastructure and social programs.[9] In South Korea, a $43 billion tax shortfall in 2023 prompted the government to adopt the smallest budget increase in nearly two decades, signaling a shift toward restraint.[10,11] Hong Kong's six-year deficit streak has slashed its once-substantial reserves by 45% since 2019, leaving them below annual spending in fiscal year 2024-25.[12] Singapore, though more fiscally resilient, tapped $40 billion in reserves during the pandemic and is unlikely to replenish them soon, instead raising taxes and reducing spending.[13] Taiwan has fared better, gradually narrowing its deficit.[14] Together, these developments reflect a transition across the region from emergency stimulus to a more constrained fiscal posture—just as aging, slowing growth, and rising social demands make fiscal resilience more urgent than ever.

Faltering Output Undercuts Resilience

As countries face shrinking workforces and societies aim to do more with less, stagnating productivity makes that goal increasingly elusive, eroding the very economic buffers needed to support aging populations.

Over four decades preceding 2010, Advanced Asia achieved sustained productivity gains driven by sectoral improvements and resource reallocation.[15] Yet, since 2020, productivity trends have been moving in the wrong direction. China's total factor productivity (TFP) growth has slowed from 2.8% in the 10 years before the global financial crisis to just 0.7% during 2009–18, while Japan's TFP growth fell from 0.87% during 1993–2017 to 0.2% or lower since 2018.[16,17,18] South Korea, Taiwan, and Singapore have also seen a marked productivity slowdown, with TFP growth hovering around 0.8%, 1.2% (estimated), and 0.6-0.8%, respectively, since 2020.[19]

While aging plays a role, the decline stems from structural inefficiencies: rigid labor markets, low small and medium-sized enterprise (SME) digitization (especially in Japan), weak service-sector gains, and a shift away from scalable manufacturing-driven growth.

Declining productivity has serious economic implications. In China, the sustained slowdown in productivity and declining workforce are expected to reduce potential growth to 3.8% by 2030 and 2.8% by 2040.[20] Similarly, the Bank of Korea reports that TFP's contribution to the country's economic growth fell from 24% during 1970-2022 to just 7.5% during 2020–2022.[21]

The result is a tightening squeeze: fewer workers to drive output, mounting fiscal pressures in aging societies, and a growing risk of intergenerational inequality and long-term economic slowdown.

Intergenerational Inequality Deepens Divides

Slower growth is driving economic insecurity, particularly for women and retirees, as rising living costs and fiscal constraints are compounding the effects of aging. Older women, who comprise 61% of the 80+ population, face heightened poverty risk due to limited pension access from lower workforce participation.[22]

In Japan, 60% of households reported hardship in 2023, with falling incomes and warnings from the Organization for Economic Co-operation and Development (OECD) about deepening intergenerational inequality.[23] South Korea, with living costs 55% above the OECD average, ranks among the lowest in life satisfaction, especially for older and low-income groups.[24,25] In China, despite increased public investment, weak wage growth and high saving rates—58% of urban households now prioritize saving—reflect widespread insecurity, with aging exacerbating inequality and urban-rural income divides.[26,27] Taiwan's shrinking workforce, stagnant wages, and high housing costs are also eroding household financial security, while Hong Kong faces stagnating real incomes, a 43% increase in elderly poverty between 2019 and 2025, and a widening income gap, with fiscal reserves also down 30% during that same period.[28,29] Even in fiscally strong Singapore, cost of living emerged as the top voter concern in 2024, with inflation, housing, and job security dominating public discourse.[30] Japan's experience with "silver democracy," where older voters dominate policy priorities, may soon echo across the region.[31]

The Great Dislocation: AI and Supply Chain Shifts

The structural headwinds outlined earlier have been anticipated for some time. Policymakers have pursued multi-pronged strategies to counter their effects, built on a core assumption: that a fully employed, educated workforce and rapid digitization would propel a shift toward high-value-added services and knowledge-intensive industries. This, in turn, was expected to drive productivity, sustain growth, raise incomes, and secure a stable tax base to support aging populations and public investments.

That formula is now faltering—undone by accelerated aging, stumbling productivity, and the disruptive effects of digitization, still viewed as a growth engine but increasingly destabilizing the employment landscape. Supply chain realignment in response to trade fragmentation and strategic rivalry over technology are compounding the challenge, undermining export strategies built around advanced digital industries.

Advanced Asia's growth outlook reflects the strain. OECD long-term baseline projections show annual GDP expanding by 1.1% in Japan and 1.4% in South Korea through 2050.[32] China's trajectory is more uncertain: while multilateral bodies forecast 3–3.5% growth through the 2030s, some estimates warn of a drop to 1% by the 2040s if productivity fails to keep pace with the demographic decline.[33,34,35]

This section explores how tech and trade fragmentation are intensifying Advanced Asia's growth strains, exposing the limits of aging-related policies and driving a rethink of existing growth models.

AI is Challenging the Promise of Prolonged Work

Maximizing workforce participation has long been central to sustaining growth in aging societies. But the rise of AI is reshaping labor markets in ways that challenge this model.

Generative AI is accelerating work transformation—automating structured tasks, enhancing decision-making, and redefining roles. Consulting firm McKinsey & Company estimates this could add $13 trillion to global GDP by 2030, a 16% increase over current levels.[36] Advanced Asia—where a larger share of jobs (see below) are exposed to AI and have the potential to be complemented by it—is structurally better positioned to benefit from these productivity gains.[37] Yet the disruption is substantial. Although projections suggest overall employment across Advanced Asia could remain broadly stable through 2030, they mask slowing job creation and deep structural shifts in labor markets.[38] Moreover, as firms rely more on automation and AI to drive output and income, the share of prosperity reaching human workers may become increasingly uncertain.[39]

Across Advanced Asia, 50–60% of jobs are expected to be impacted by AI technologies. Of these, roughly half may be complemented, with AI augmenting human capabilities and enabling workers to focus on higher-value tasks. The remainder—a quarter of existing jobs—face displacement or wage pressure.[40] AI is also reshaping the nature of work itself. Existing roles have already seen a 40% shift in required skills, with projections reaching 70% by 2030.[41]

These changes affect all segments of the workforce in Advanced Asia and are unevenly distributed across economies (figure 2).[42]

- **Blue-collar jobs**—Manual, industrial, logistics, and manufacturing jobs are projected to decline due to robotization and aging workforces. Industrial workers are particularly vulnerable to being displaced by automation and pushed into informal employment.[43]

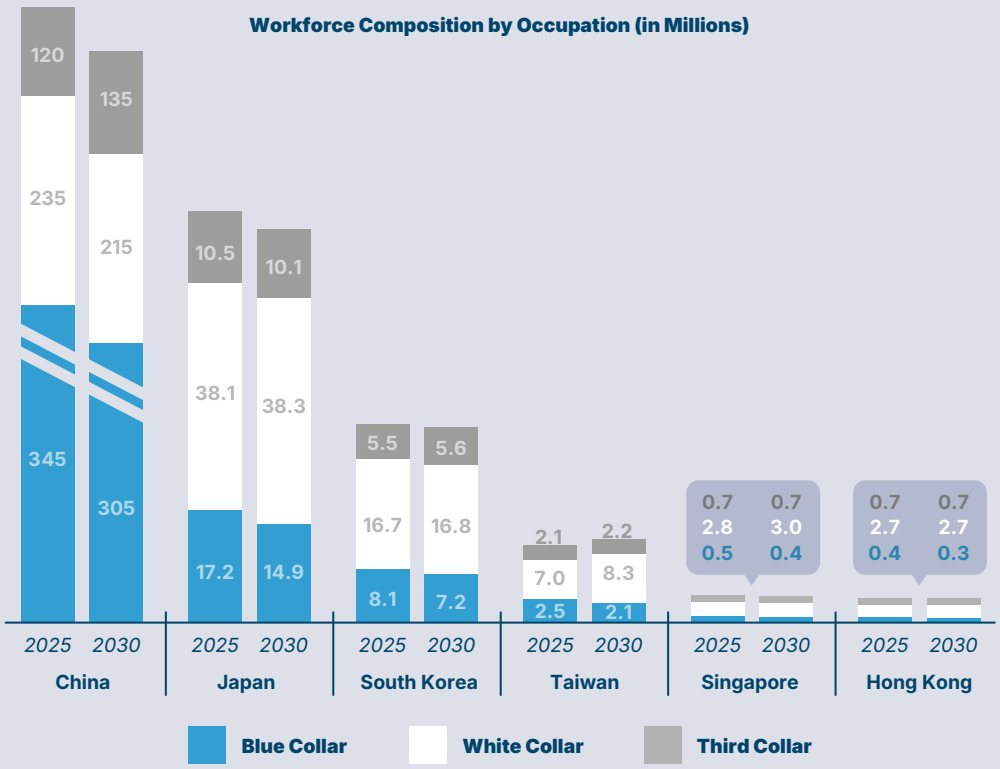
- **White-collar jobs**—The knowledge economy itself, once heralded as the next engine of growth, is undergoing a profound transformation. White collar jobs—managerial, professional, and knowledge-based—are evolving due to rapid AI adoption and automation.[44] Educated youth face rising unemployment as entry-level roles, traditionally stepping stones into the workforce, are increasingly being automated.[45] The World Economic Forum (WEF)'s 2025 *Future of Jobs* it report warns of large-scale displacement in software development, financial services, and engineering.[46] The emergence of agentic AI—systems capable of independent decision-making, planning, and adaptive behavior with minimal human oversight—is expected to intensify labor market disruptions. These technologies are expanding automation into complex cognitive and administrative domains, accelerating displacement even among high-skilled white-collar roles.[47]

- **"Third-collar" jobs** (also known as new- or gray-collar)—These are jobs that blend manual, technical, and intellectual tasks (e.g., technicians, care-centered professionals, and equipment operators). In an employment landscape changed by AI adoption, these jobs prioritize human capabilities and human-machine collaboration. They are projected to see modest growth, supported by digitization and skills upgrading.

While many workers face some degree of displacement risk, women and older workers—especially older women—are disproportionately affected by AI and automation. Up to 79% of working women are in occupations highly susceptible, particularly in administration, customer service, and retail.[48] These roles often offer limited pathways for reskilling or re-entry.

Some groups—such as informal workers and emerging occupations—may be missing from national datasets, leaving a small share of the workforce unclassified in mapping exercises.

Figure 2: Workforce Composition in Advanced Asia by Type of Work



Source: Asia Business Council estimates based on data from Statista, World Bank, WEF Future of Jobs, OECD Employment Outlook, and International Labor Organization.

New roles are emerging in the digital era—particularly in AI oversight, digital services, and human-machine collaboration —but economies face significant talent gaps.[49] A 2023 survey by McKinsey & Company found that only 16% of business leaders felt confident in accessing the tech talent needed for digital transformation, while 60% cited talent shortages as a major barrier.[50]

Every economy in Advanced Asia is experiencing disruption throughout the employment ladder, though the nature and intensity of these shifts vary widely, with labor market structures evolving in distinct ways. China's labor market is slowly moving away from blue-collar roles toward occupations blending service, technical, and intellectual disciplines.[51] By 2030, its 60% of factory workers and 35% of knowledge workers will be at risk of displacement, with estimates ranging from 40 to 100 million jobs.[52,53] In Hong Kong, service sector expansion and digital transformation are projected to drive the continued dominance of white-collar and third-collar employment.[54,55] Singapore's workforce will see an increase in white-collar Professionals, Managers, Executives, and Technicians (PMET) roles, expected to reach two-thirds of the workforce by 2030.[56,57] According to estimates, 770,000 jobs—roughly 21% of the workforce—could be affected by AI by 2028.[58] Japan and South Korea are preparing for a shrinking workforce driven by demographic decline, particularly a reduction in the working-age population. As labor markets evolve, demand is rising for digital skills, AI oversight, and healthcare services, fueling growth in both white-collar and emerging third-collar roles, while traditional blue-collar jobs continue to decline.[59,60] Taiwan's rapid evolution into a knowledge and technology-based economy is reflected in the significant growth of white-collar employment, accompanied by a modest rise in third-collar jobs.

Despite high exposure to AI, workforce readiness across Advanced Asia is low. Only a minority of workers have engaged in AI upskilling, and many find AI tools intimidating. In Singapore,

forward-looking initiatives like SkillsFuture offer robust support for workforce upskilling, especially in emerging fields like AI. However, a 2024 government survey revealed that only about half of the workforce expressed a willingness to pursue upskilling in AI.[61] Across the region, affordability, usability challenges, and digital literacy gaps—especially among older adults, rural communities, and small businesses—also limit access to AI tools.[62] A lack of trust in AI systems, and a shortage of contextually relevant, fit-for-purpose solutions to address local challenges further delay progress in AI adoption.

Navigating this disruption will require more than adaptation—it demands a rethink of how economies prepare, protect, and empower their workforces, and close both digital and talent gaps.

Supply Chain Realignment in Response to Trade Fragmentation Drives Labor Market Adaptation

In addition to AI, Advanced Asia's efforts to move up the value chain, as well as trade and tariff uncertainties, are placing added strain on labor markets. Faced with shrinking workforces and slowing productivity, some economies have accelerated a pivot toward automation and capital- and knowledge-intensive industries. While the transition promises to enhance efficiency and higher-value growth, it is also exposing a growing mismatch between workforce skills and the need to support a more sophisticated industrial base.

Labor-intensive roles are relocating to more cost-competitive economies, while AI and automation are changing the employability of the domestic workforce, forcing more into early retirement. Meanwhile, younger generations, though better educated, face narrowing employment prospects, as emerging sectors require fewer workers, even in advanced roles. At the same time, demand for specialized, high-end skills is outpacing supply, creating talent bottlenecks that threaten competitiveness and long-term growth. High-value employment in intellectual property, R&D, and branding remains concentrated among the highly educated, further limiting access to opportunity and widening socioeconomic divides.

Labor pressures are compounded by rising exposure to supply chain shifts and trade shocks. With economies deeply embedded in increasingly complex, multi-country production networks, Asia as a region faces heightened vulnerability to both tariffs and other trade barriers, as well as to the cascading effects of supply chain disruptions and realignment. A single breakdown—such as in manufacturing in a developing country in the region—can ripple upstream, stalling production and intensifying economic strain. While exposure varies across economies, GDP and employment in these economies are vulnerable to such shocks, particularly given their over-reliance on key export markets and limited domestic demand buffer to guard against export losses (figure 3).

Figure 3: Labor Market Exposure to Global Trade Shocks and to U.S. Tariffs

	Domestic value-added at risk* *(% GDP)*	Employment at risk** *(% employment)*	Risk level	Notes
Taiwan	**12–14%**	**30–35%**	**Very High**	Taiwan shows the highest export-related value-added and employment dependence in Advanced Asia, driven by semiconductors, electronics, and precision manufacturing.
South Korea	**7–8%**	**25–30%**	**High**	South Korea shows high domestic value-added and employment dependence in exports, led by semiconductors, autos, and petrochemicals.
China	**7–8%**	**20–25%**	**High**	China's export manufacturing shows high domestic value-added and strong employment dependence, led by sectors such as electronics, machinery, and chemicals.
Singapore	**6-8%**	**30–35%**	**Med–High**	Singapore's re-export model is vulnerable to external shocks, compounded by its reliance on high domestic value-added from electronics, chemicals, and precision engineering.
Japan	**5–6%**	**15–20%**	**Medium**	Japan's manufacturing value-added and employment dependence in exports are comparatively lower.
Hong Kong	**2–3%**	**20–25%**	**Medium**	Hong Kong's employment is sensitive to external shocks, though the impact is more limited due to low domestic value-added in manufactured exports.

Sources: Estimates based on national accounts data for GDP, OECD Trade in Value Added (TiVA) database 2023 edition, and OECD Trade in Employment (TiM) database 2023.

* The share of domestic value added in gross exports reflects the "value added generated in the domestic economy that is embodied per unit of total gross exports". (OECD TiVA definition). It refers to the portion of export value that is generated domestically—through local labor, capital, and production—rather than stemming from imported components that are re-exported with minimal processing. The domestic value-added at risk is calculated by dividing this share of domestic value-added in gross exports by the economy's nominal GDP, which estimates the share of GDP that could be affected by disruptions to goods trade.

**Employment at risk corresponds to the "domestic employment embodied in foreign final demand" (OEDC TiM definition).

Taiwan and Singapore lead in export-dependent employment (30–35% of jobs), with Singapore's re-export model susceptible to external shocks. Hong Kong also heavily relies on re-exports, but faces relatively lower economic vulnerability due to the limited domestic value-added in these activities. China and South Korea face mounting pressure (20–30% export job share), though China's internal demand offers partial insulation. Japan, by contrast, is more buffered by diverse trade ties and robust domestic consumption.[63]

New U.S. tariffs are amplifying labor market stress, adding to the disruptions already caused by AI and automation, and shifting supply chains. The fallout isn't entirely negative—with economies like the EU and Canada looking to strengthen ties with the region.[64,65] Yet, Advanced Asia faces direct competitive pressure from these tariffs.[66] According to the International Labor Organization (ILO), nearly 15 million manufacturing jobs in East Asia and another 11 million non-manufacturing jobs are tied to final demand from the U.S.[67] Even where bilateral deals exist, the resulting relief often fails to fully offset the trade distortions and reduced access to the U.S. market. Japan's auto sector, despite a recent deal, is still subject to a 15% U.S. tariff—up from 2.5% prior to tariff threats in April 2025 —with 1.4–1.7 million jobs and up to 5% of manufacturing value-added linked to U.S. exports.[68,69] The U.S.'s revised trade deal with South Korea imposes a 15% tariff on South Korean autos, which replaces the zero-tariff benefit under the United States–Korea Free Trade Agreement, impacting auto margins and exports and straining a sector that drives 7% of South Korean jobs and value-added.[70,71] Despite the 90-day tariff truce, renewed in August 2025, China

remains exposed to elevated tariffs on steel, autos, and electronics. Strategic sectors such as semiconductors and pharmaceuticals have received only partial relief, while baseline tariffs and export controls continue to apply. [72] As the source of nearly 30% of global manufacturing value-added, China faces rising indirect risks from contracting trade.[73] Taiwan, which is highly trade-dependent, faces targeted tariffs on lower-margin industries, with limited relief despite ongoing negotiations. Its high-tech exports, especially semiconductors, remain critical to U.S. supply chains but are not fully shielded from future tariff risk.

More broadly, U.S. tariffs, trade restrictions, and Western policies in pursuit of strategic autonomy and economic security are straining Advanced Asia's export-driven growth model that has depended on the West for decades.[74,75] The pressure is intensified by Advanced Asia's growing reliance on tradable services, now the largest contributor to real economic output within GDP, which are increasingly exposed to protectionist measures such as tighter de minimis thresholds and data localization rules.[76,77] At the same time, the region's expansion into strategic sectors such as advanced technologies, clean energy, and critical raw materials has placed it at the center of escalating geopolitical tensions. The International Monetary Fund (IMF) warns trade fragmentation could shave up to 7% off global output, as tariffs and disrupted supply chains drive inflation, slow growth, and erode productivity.[78]

Together, these shifts underscore the urgency for Advanced Asia to reduce its reliance on existing export-oriented sectors that are targeted by protectionist measures in large export markets, open up new trade corridors, and deepen domestic markets as core drivers of growth and employment.

Breaking the Cycle and Rethinking Growth

Advanced Asia's efforts to address the structural challenges outlined above have often lacked the scale and coherence of purpose needed to fully reflect their complexity—or to unlock new sources of skilled labor, productivity, and long-term prosperity.

Despite generous pro-natalist incentives, fertility rates remain stagnant. South Korea, for instance, allocates billions annually to support parental leave, childcare subsidies, and direct cash payments for newborns—yet its fertility rate remains the lowest in the world.[79] Entrepreneurship, while a driver of innovation and job creation, cannot scale sufficiently to offset labor shortages or guarantee inclusive employment. Much of the work remains gig-based and unevenly distributed, particularly among older workers. Meanwhile, workforce transformation efforts tend to overemphasize technical skills vulnerable to rapid obsolescence, such as coding, despite nearly half of these core jobs expected to change within five years.[80] Other proposals face practical constraints: Universal Basic Income, though promising in terms of streamlining welfare and enhancing financial security, raises fiscal concerns in aging, debt-laden societies, and may inadvertently discourage labor participation. Similarly, appeals to altruism, while valuable for social cohesion, cannot replace robust institutional frameworks capable of managing demographic and technological disruption.

To preempt stagnation, Advanced Asia requires a more integrated approach—one that aligns industrial transformation with labor market redesign, adaptive education, AI with social impact, and fiscal resilience. Crucially, this approach must embrace technology not merely as a disruptive force to be managed, but as a catalyst for innovation, inclusion, and long-term growth. This section explores future pathways to unlock such new potential.

From Automation to Systemic Transformation

Addressing aging and productivity decline calls for reimagining production systems and enabling new models of value creation. Aging societies present an opportunity to transition to high-efficiency, low-labor models by purposefully redesigning workflows, supply chains, and service delivery. Governments can steer this transition by targeting innovation incentives toward sectors under demographic strain—such as healthcare, logistics, and eldercare—and by investing in AI infrastructure, standards, and interoperability.

Governments must cultivate enabling ecosystems to drive innovation. Taiwan demonstrates how innovation can scale through strong collaboration between universities, industry, and government. National Taiwan University (NTU) embeds students in frontier research via partnerships with local firms, fueling both talent development and technological breakthroughs. The TSMC–NTU Research Center drives semiconductor R&D, while MediaTek's work in 6G, AI, and quantum computing has produced over 90 patents and trained hundreds of specialists.[81] Public–private cooperation also supports startup incubation and commercialization.[82] Tailored programs like micro-credentials, flexible postgraduate programs, and AI-driven learning in areas such as ethics, data science, and cybersecurity align closely with evolving industry needs—cementing Taiwan's leadership in advanced technology sectors.

Redesigning Labor Markets for Inclusive Adaptation

To sustain employment in aging societies, work must be restructured and rewarded differently across the lifespan. Japan exemplifies this shift: Its employment rate for those 65+ rose from 19.4% in 2006 to 25.2% in 2022, underpinned by its Act on Stabilization of Employment of Elderly Persons and wage reform.[83,84] By 2023, over 80% of firms had adopted retention measures, including flexible contracts and wage system reform.[85] To ease generational tensions, Japan is now phasing out seniority-based pay in favor of productivity-linked compensation.[86]

Extending working lives requires precise calibration. Flexible schedules, performance-based pay, and age-neutral hiring are essential tools, but must be backed by policies to prevent age-based wage disparities and maintain participation. South Korea offers a cautionary tale: Older workers earn 29% less than younger peers, largely due to the "peak wage" system and re-employment programs that funnel retirees into lower-paid, precarious roles, fueling criticism and calls for deeper structural reform.[87] In response, the Seoul Metropolitan Government launched a Digital Literacy Reinforcement Plan, aiming to train 500,000 seniors by 2026 and support workforce reintegration. The initiative includes learning centers and peer-led training that could create new jobs while helping adults aged 55 and above re-enter the digital economy.[88]

Labor protections must also keep pace with a hybrid workforce of full-time, part-time, gig, and AI-assisted jobs. Resilience and equity demand portable benefits, stronger job quality metrics, and algorithmic accountability — ensuring that automated systems influencing hiring and pay are transparent, fair, and free from bias.

Infrastructure is equally critical to maximizing employment: Age-friendly design, digital access, and ergonomic workplaces can extend productive engagement, particularly when integrated into broader spatial and economic planning. Rural revitalization, linked to digital infrastructure and remote work ecosystems, can also enable talent redistribution without economic penalty—helping to mitigate rural-urban labor imbalances. In China's Xi'an, the government's digital countryside policies explicitly target broadband expansion, rural smart health, and remote work ecosystems.[89]

Ultimately, sustaining economic resilience requires policies that promote intergenerational collaboration, combat exclusion, and embed lifelong learning. The goal is not to reverse demographic decline, but to adopt workplace policies and infrastructure to turn it into a driver of innovation and inclusive growth.

Education as an Adaptive, Lifelong Continuum

Besides bridging the gaps in digital literacy and AI fluency, preparing the workforce requires cultivating adaptability, enabling continuous upskilling, and aligning workforce development with industrial transformation.

Institutions must support lifelong learning and deliver targeted, sector-specific training grounded in clear definitions of AI literacy tailored to each field. A layered approach is essential—combining universal AI literacy, guided by ethics, with core human skills like problem-solving, collaboration, and self-directed learning, alongside sector-specific competencies.

In Advanced Asia, AI is being deployed to transform learning. For instance, in South Korea, AI-powered digital textbooks personalize instruction and support teachers with real-time analytics, advancing adaptive learning and improving outcomes.[90] Generative AI is also

reshaping the educational landscape—enabling nimble, industry-aligned institutions that can quickly adapt to workforce shifts, close talent gaps, and accelerate innovation. The Hong Kong University of Science and Technology (Guangzhou) utilizes AI and simulation-based learning in fields such as digital medical imaging to train advanced medical professionals.[91] Its Robot Intelligence and Learning Laboratory (RIL-LAB) explores AI applications in biomedical robotics and autonomous systems.[92]

Agentic AI marks another leap, moving beyond passive tools to systems that actively pursue human-aligned goals. Unlike generative AI, which reacts to prompts, agentic systems can initiate action, adapt in real time, and collaborate with users to solve complex problems—making them uniquely suited to the demands of a dynamic labor market. At the individual level, agentic AI can serve as a lifelong learning companion, curating personalized learning paths, mapping existing capabilities into adjacent domains to fill gaps, and simulating job-relevant scenarios to build adaptability. In Taiwan, Arthur AI reflects this evolution. The platform autonomously supports learners, using behavioral signals and performance data to deliver personalized, continuously evolving learning trajectories.[93]

At the societal level, agentic AI scales capabilities to map workforce strengths and gaps, enabling policymakers to drive data-informed, coordinated workforce transformation. In Singapore, this potential is being harnessed through initiatives that identify skill gaps, recommend tailored training, and integrate older workers into hybrid workflows. This proactive, inclusive approach supports national goals for resilience and productivity.[94]

These examples demonstrate that AI is no longer just a subject to be taught, but a foundational tool embedded across learning systems. By enabling scalable, personalized learning and aligning education with industry needs, agentic AI can help close persistent talent gaps and expand participation in the digital economy.

Unlocking AI's Potential for Social Impact

Technology's potential reaches far beyond productivity and workforce transformation. When deployed strategically—with equitable access and thoughtful design—AI can help address complex societal challenges and support inclusive development.

One example is the Asian Development Bank's "AI and Robotics for Aging Populations" initiative. Designed to mitigate productivity losses and help older adults remain economically active and resilient, the program focuses on five key areas: health, long-term care, social engagement, mobility, and workforce inclusion.[95]

Agentic AI signals a new frontier, defined by proactive, goal-aligned intelligence. It can help societies anticipate, respond to, and recover from systemic shocks such as pandemics, climate disruptions, and economic instability, thereby protecting vulnerable populations. The true value of AI in advancing social progress lies in its ability to support the development of human-led, context-aware solutions. Japan's MemPal system illustrates this approach: This wearable voice-based AI assistant aims to address memory-related challenges such as dementia and cognitive decline by helping users navigate daily tasks, while generating reports for caregivers and physicians. Co-designed with older adults, MemPal reflects their cultural context, privacy needs, and lived experiences—showing how human-centered, locally grounded AI can empower aging populations and ease care burdens through collaboration.[96]

To realize AI's potential for social impact, infrastructure and policy matter. Open platforms and interoperable standards for secure data sharing reduce innovation costs and foster collaborative problem-solving—including citizen science, where individuals contribute

data and insights to collective efforts. Underpinning all of this is trust. Transparency, explainability, and accountability must be built in from the start to foster adoption, while addressing concerns around bias and misuse.

Fiscal Resilience in the Age of Aging and AI

Enabling systemic transformation across production systems, labor markets, and social innovation requires not only bold policy vision but also sustainable fiscal foundations. As demographic and technological shifts reshape economies, a fundamental rethinking of how public resources are generated and deployed is essential. Fiscal systems must adapt to the challenges of aging populations and AI-driven labor changes by going beyond labor-based taxation and redirecting spending toward long-term investments in productivity, inclusion, and economic resilience.

As digital and capital-intensive industries reshape global value creation, labor and physical assets play a diminishing role—making conventional tax bases increasingly obsolete. To remain effective, fiscal policy must evolve to capture value generated by data-driven and intangible asset–based sectors. The OECD's two-pillar global tax reform offers a forward-looking solution: By aligning taxing rights with digital presence, it enables broader, more stable revenue streams.[97]

At the same time, the declining effectiveness of fiscal multipliers, especially in high-debt, aging economies, makes it critical that every fiscal dollar is deployed strategically.[98] Rather than short-term stabilization, fiscal outlays should support structural transformation and economic renewal. Public pension funds can anchor investments in high-growth sectors, such as green technology, health innovation, and digital infrastructure, thereby amplifying their impact and directing private capital. Realizing this potential requires clear regulation, strong data protection, and interoperable systems.

Conclusion

The convergence of aging, fiscal strain, and AI acceleration is fundamentally reshaping economic resilience across advanced Asian economies. Export-oriented legacy growth models are faltering as labor markets contract, productivity stalls, and global trade and supply chains are realigned.

Resilience now depends on the reorientation of growth strategies toward longevity, adaptability, and shared value. This shift requires moving from reactive policymaking to anticipatory systems and integrated transformation—redefining productivity to encompass social cohesion, fiscal sustainability, and tech-readiness. AI offers promise, but it must be deployed inclusively to avoid deepening existing inequalities.

Disruption must be reframed—not as a threat to be managed, but as a catalyst for renewal. Future-proofing growth will require coordinated action among stakeholders and across borders: joint investment in digital and social infrastructure, deeper collaboration in talent development, and expanded dialogue on inclusive innovation. Advanced Asia's experience offers the world both a cautionary example and a testing ground for new models of economic longevity and adaptability.

For businesses, the current uncertainties present opportunities to align with reform agendas and invest in social infrastructure, adaptive talent, and inclusive AI. Capturing this upside will not only require operational agility, but also a grasp of demographic inflection points and technology deployment to improve supply chains and service delivery.

At stake is not just adjustment, but reinvention: a chance to reshape aging societies into engines of resilient, equitable development.

Endnotes

1. IMF, IMF Data Mapper, "World Economic Outlook: GDP per capita, current prices, U.S. dollars per capita," 2025 edition,https://www.imf.org/external/datamapper/NGDPDPC@WEO/OEMDC/ADVEC/WEOWORLD.

2. United Nations, Department of Economic and Social Affairs, Population Division. (n.d.). Population Data Portal," accessed June 24, 2025, https://population.un.org/dataportal/home.

3. Economic and Social Commission for Asia and the Pacific (ESCAP), "2024 ESCAP Population Data Insights", published January 1, 2025, can be downloaded via " https://www.population-trends-asiapacific.org/population-ageing.

4. World Bank, "Unlocking the Power of Healthy Longevity: Demographic Change, Non-communicable Diseases, and Human Capital," 2024, https://www.worldbank.org/en/topic/health/publication/unlocking-power-healthy-longevity.

5. Calculated based on data from United Nations, Department of Economic and Social Affairs, Population Division (2024), World Population Prospects 2024, accessed June 24, 2025, https://www.un.org/development/desa/pd/world-population-prospects-2024.

6. Ibid.

7. Ibid.

8. Organisation for Economic Co-operation and Development (OECD), "Japan Needs to Rebuild Fiscal Space, Address Population Aging and Reinvigorate Productivity Growth," January 2024, https://www.oecd.org/en/about/news/press-releases/2024/01/japan-needs-to-rebuild-fiscal-space-address-population-ageing-and-reinvigorate-productivity-growth.html.

9. Peterson Institute for International Economics, "Chinese Local Governments' Reliance on Land Revenue Drops Amid Property Downturn," 2024, https://www.piie.com/research/piie-charts/2024/chinese-local-governments-reliance-land-revenue-drops-property-downturn.

10. Ministry of Economy and Finance, South Korea, "Fiscal Report," 2024, https://english.moef.go.kr/ec/selectTbEconomicDtl.do?boardCd=E0003&seq=5657.

11. Yonhap News Agency, Oh Seok-min, "South Korea faces daunting task of fiscal normalization while spurring growth", August 27, 2024, https://en.yna.co.kr/view/AEN20240827003000320.

12. Legislative Council of Hong Kong, "Press Release," March 13, 2025, https://www.legco.gov.hk/en/open-legco/press/yr2025/pr20250313-1.html.

13. Channel News Asia, "Discussions on drawing down reserves for COVID-19 pandemic were robust and intense: Halimah Yacob," September 12, 2023, https://www.channelnewsasia.com/singapore/halimah-yacob-president-singapore-reserves-covid19-robust-intense-discussions-3755466.

14. Focus Economics, "Taiwan Public Debt," 2024, https://www.focus-economics.com/country-indicator/taiwan/public-debt/.

15. IMF, "Asia-Pacific's Structural Transformation: The Past and Prospects," October 2024. https://www.imf.org/-/media/Files/Publications/REO/APD/2024/October/English/reoapdnote.ashx.

16. World Bank, Brandt, Loren, John Litwack, Elitza Mileva, Luhang Wang, Yifan Zhang, and Luan Zhao, "China's Productivity Slowdown and Future Growth Potential," Policy Research Working Paper 9298. June 2020. https://documents1.worldbank.org/curated/en/839401593007627879/pdf/Chinas-Productivity-Slowdown-and-Future-Growth-Potential.pdf.

17. National Taiwan University, Lu, S.-S., & Chien, Y.-Y., "Exploring the Sources of Growth and Slowdowns for Growth Successes," December 20, 2020, https://econ.ntu.edu.tw/ter/new/data/new/TER48-4/TER484-2.pdf.

18. OECD, "OECD Data Explorer: OECD Productivity Statistics: Productivity levels and growth rates," 2025, https://data-explorer.oecd.org/.

19. Ibid.

20. IMF, "China's Path to Sustainable and Balanced Growth," accessed 2025, https://www.imf.org/en/Publications/WP/Issues/2024/11/15/Chinas-Path-to-Sustainable-and-Balanced-Growth-557369.

21. Bank of Korea, "Economic Report," accessed 2025, https://www.bok.or.kr/portal/cmmn/file/fileDown.

22. UN-ESCAP, "Population ageing: A human success story (Data section)," January 1, 2025, https://www.population-trends-asiapacific.org/population-ageing.

23. Asahi Shimbun, "Economic and Population Aging Impacts," 2024, https://www.asahi.com/ajw/articles/15340581.

24. Hankyoreh English Edition, "South Korea's Aging Population Challenges," 2024, https://english.hani.co.kr/arti/english_edition/e_national/1129619.html /.

25. BusinessKorea, Jung, S.Y., "Bank of Korea highlights South Korea's cost of living at 55% above OECD average," June 18, 2024, https://www.businesskorea.co.kr/news/articleView.html?idxno=219361.

26. SpringerLink, Zhang, Y. "Analysis of Chinese Savings and Consumption Trends Currently in Place, as well as the Effects It is Having on the Economy—Based on Keynesian Model and Solow Model," 2024, https://link.springer.com/chapter/10.1007/978-981-96-3236-7_15.

27. McKinsey & Company, Zipser, D., Hui, et al., "China consumer report: A time of resilience," 2023, https://www.mckinsey.com/cn/~/media/mckinsey/locations/asia/greater%20china/our%20insights/2023%20mckinsey%20china%20consumer%20report%20a%20time%20of%20resilience/2023%20mckinsey%20china%20consumer%20report%20en.pdf.

28. Global Taiwan Institute, "Taiwan's Graying Economy Challenges Its Growth Prospects," August 2023, https://globaltaiwan.org/2023/08/taiwans-graying-economy-challenges-its-growth-prospects/.

29. DimSum Daily, "Soaring Poverty Rate at 20.2% Affects 1.39 Million in Hong Kong," 2023, https://www.dimsumdaily.hk/soaring-poverty-rate-at-20-2-affects-1-39-million-in-hong-kong-with-over-580000-elderly-particularly-hard-hit/.

30. Blackbox Research. 2025. Sensing Singapore's Mood Ahead of GE2025. Accessed August 12, 2025. https://www.blackbox.com.sg/perspectives/sensing-singapores-mood-ahead-of-ge2025.

31. Channel News Asia, "Japan's Minority Government Faces Setback in Upper House Election as Older Voters Shape Policy," 19 July 2025, https://www.channelnewsasia.com/east-asia/japan-minority-government-ldp-shigeru-ishiba-setback-upper-house-election-5247136.

32 Estimated based on data from OECD Data Indicators, "Real GDP long-term forecast," 2025. https://www.oecd.org/en/data/indicators/real-gdp-long-term-forecast.html?oecdcontrol-eb3e37581e-var1=KOR%7CJPN.

33. ASEAN+3 Macroeconomic Research Office (AMRO), "Macroeconomic Implications of China's Population Aging: A Dynamic OLG General Equilibrium Analysis," 2024. https://amro-asia.org/wp-content/uploads/2024/08/AMRO-WP_Macroeconomic-Implications-of-Population-Aging-in-China_Sept-2024.pdf.

34. IMF, Dirk V. Muir, Natalija Novta, and Anne Oeking, "China's Path to Sustainable and Balanced Growth," IMF Working Papers 2024, no. 238 (2024), accessed July 21, 2025, https://www.imf.org/en/Publications/WP/Issues/2024/11/15/Chinas-Path-to-Sustainable-and-Balanced-Growth-557369 https://www.imf.org/en/Publications/WP/Issues/2024/11/15/Chinas-Path-to-Sustainable-and-Balanced-Growth-557369.

35. The Daily Jagran, Sunil Kumar Singh, "De-Population Will Hit China's Growth Rate, 1.3% Decline Likely Every Year: Alicia García Herrero | Exclusive Interview," February 7, 2024, accessed July 21, 2025, https://www.thedailyjagran.com/world/depopulation-will-hit-chinas-growth-rate-13-decline-likely-every-year-alicia-garca-herrero-exclusive-interview-specials-10132061.

36. McKinsey Global Institute, "Notes from the AI Frontier: Modeling the Impact of AI on the World Economy," 2024, https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-ai-frontier-modeling-the-impact-of-ai-on-the-world-economy.

37. IMF Blog, Hennig, Tristan, and Shujaat Khan. 2025. "How Artificial Intelligence Will Affect Asia's Economies," January 5, 2025, https://www.imf.org/en/Blogs/Articles/2025/01/05/how-artificial-intelligence-will-affect-asias-economies.

38. ILO, "Asia and the Pacific WESO Brief 2025," May 2025, https://www.ilo.org/sites/default/files/2025-05/Asia%20and%20the%20Pacific%20WESO%20Brief%202025.pdf.

39. WEF, "Future of Jobs Report 2025," 2025, WEF_Future_of_Jobs_Report_2025.pdf.

40. IMF Blog, "How Artificial Intelligence Will Affect Asia's Economies," January 5, 2025, How Artificial Intelligence Will Affect Asia's Economies.

41. LinkedIn News, "Future of Work Report 2023," 2023, https://www.linkedin.com/pulse/future-work-report-2023-linkedin-news/.

42. World Bank, Arias, Daisuke Fukuzawa, Duong Trung Le, and Aaditya Mattoo "FUTURE JOBS Robots, Artificial Intelligence, and Digital Platforms in East Asia and Pacific Omar," June 2, 2025, https://www.worldbank.org/en/region/eap/publication/future-jobs.

43. Ibid.

44. Enrique Ide and Eduard Talamas, "Artificial Intelligence in the Knowledge Economy," May 20, 2025, https://arxiv.org/pdf/2312.05481.

45. Fortune, "AI is Breaking Entry-Level Jobs, LinkedIn Exec Warns," accessed 2025, AI is 'breaking' entry-level jobs, LinkedIn exec warns | Fortune.

46. WEF, "Future of Jobs Report," January 2025, WEF_Future_of_Jobs_Report_2025.pdf.

47. World Bank, Arias, Daisuke Fukuzawa, Duong Trung Le, and Aaditya Mattoo "FUTURE JOBS Robots, Artificial Intelligence, and Digital Platforms in East Asia and Pacific Omar," June 2, 2025, https://www.worldbank.org/en/region/eap/publication/future-jobs.

48. OECD, "Who Will Be the Workers Most Affected by AI?" October 2024, https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/10/who-will-be-the-workers-most-affected-by-ai_fb7fcccd/14dc6f89-en.pdf.

49. World Bank, "How New Technologies Are Reshaping Work in East Asia and Pacific," August 5, 2025. https://www.worldbank.org/en/news/feature/2025/08/05/how-new-technologies-are-reshaping-work-in-east-asia-and-pacific.

50. McKinsey & Company, "Tech talent gap: Addressing an ongoing challenge," March 17, 2025, https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/tech-forward/tech-talent-gap-addressing-an-ongoing-challenge.

51. Bridging News, "Gray Collar Workers are most popular in China's Workplace within 20 years," September 14, 2022, https://app.ichongqing.info/mixmedia/a/202209/14/WS632d9e5fe4b09d51144628e1.html.

52. ILO, "The Impact of AI on Employment," accessed 2025, https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_dialogue/@act_emp/documents/publication/wcms_579554.pdf.

53. McKinsey & Company, "Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages," November 28, 2017, https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages.

54. KPMG, "Hong Kong Employment Outlook 2025 - KPMG China," March 19, 2025, https://kpmg.com/cn/en/home/insights/2025/03/hong-kong-employment-outlook-2025.html.

55. Hong Kong Special Administrative Region Government, "An overview of the change in Hong Kong's labour force," August 2024, https://www.hkeconomy.gov.hk/en/pdf/el/el-2024-01.pdf.

56. KPMG, "Singapore Employment Outlook 2025," 2025, https://assets.kpmg.com/content/dam/kpmg/sg/pdf/2025/04/singapore-employment-outlook-2025.pdf.

57. The Independent, "AI and the rise of Singapore's grey-collar workforce," August 12, 2025, https://theindependent.sg/ai-and-the-rise-of-singapores-grey-collar-workforce/.

58. Cisco and Oxford Economics, "Technology and the future of ASEAN jobs," September 2018, https://www.cisco.com/c/dam/global/en_sg/assets/csr/pdf/technology-and-the-future-of-asean-jobs.pdf

59. OECD, "OECD Employment Outlook 2025: Japan," July 9, 2025, https://www.oecd.org/en/publications/2025/07/oecd-employment-outlook-2025-country-notes_5f33b4c5/japan_fa8fbc74.html.

60. 9CV9, "The State of Recruitment and Hiring in South Korea in 2025," April 16, 2025, https://blog.9cv9.com/the-state-of-recruitment-and-hiring-in-south-korea-in-2025/.

61. People Matters, "Are Singaporeans reluctant to upskill in AI," 2025, https://www.peoplemattersglobal.com/news/skilling/is-singapore-falling-behind-in-ai-upskilling-43434.

62. Center for Strategic and International Studies, "Artificial Intelligence and the Future of Singapore's Foreign Workforce," April 17, 2024, https://www.csis.org/blogs/new-perspectives-asia/artificial-intelligence-and-future-singapores-foreign-workforce.

63. United Nations Conference on Trade and Development (UNCTAD), "Global Trade 2025: Resilience Under Pressure," March 2025, https://unctad.org/news/global-trade-2025-resilience-under-pressure.

64. Government of Canada, "Memorandum of Understanding Between the Department of Natural Resources of Canada and the Ministry of Trade, Industry and Energy of the Republic of Korea on Cooperation in Critical Mineral Supply Chains, the Clean Energy Transition and Energy Security," May 16, 2023, https://www.international.gc.ca/country_news-pays_nouvelles/2023-05-16-korea-coree.aspx?lang=eng.

65. The Straits Times, "EU Plans to Engage More with Other Nations Hit by US Tariffs: Sources," July 14, 2025, https://www.straitstimes.com/business/economy/eu-plans-to-engage-more-with-other-nations-hit-by-us-tariffs.

66. UNCTAD, "Evolution of the tariff landscape in the United States", updated August 7, 2025, accessed on August 7, 2025, https://unctad.org/topic/trade-analysis/tariffs/evolution-tariff-landscape-united-states.

67. ILO, "World employment and social outlook 2025: Asia and the Pacific May update," 2025, https://doi.org/10.54394/KQSG9490.

68. Hinrich Foundation, Tatsuya Sugiyama, Brandy Darling, Yuka Hayashi, "Tariffs Hit Some Automakers More Than Others." July 22, 2025. https://www.hinrichfoundation.com/research/article/trade-distortion-and-protectionism/tariffs-hit-some-automakers-more-than-others/.

69. Japan Automobile Manufacturers Association (JAMA), "Motor Industry of Japan 2024," https://www.jama.or.jp/english/reports/docs/MIoJ2024_e.pdf.

70. Korea JoongAng Daily, Kim, S., "Korea, U.S. agree on 15% tariffs, including on auto: Presidential office," 2025, July 31, 2025, https://koreajoongangdaily.joins.com/news/2025-07-31/national/diplomacy/KoreaUS-agreed-on-15-tariffs-including-for-auto-Presidential-office/2365562.

71. Korea Trade-Investment Promotion Agency (KOTRA), "InvestKOREA. (2024). Automotive parts industry overview," https://www.investkorea.org/ik-en/cntnts/i-5008/web.do?clickArea=enmain00009.

72. The White House, "Joint Statement on U.S.-China Economic and Trade Meeting in Stockholm," August 11, 2025, https://www.whitehouse.gov/briefings-statements/2025/08/joint-statement-on-u-s-china-economic-and-trade-meeting-in-stockholm/.

73. Asian Development Bank (ADB), "Asia Development Outlook," 2025, https://adb.org/publications/series/asia-development-outlook.

74. OECD, "Services Trade Restrictiveness Index 2025," February 2025, https://www.oecd.org/en/about/news/announcements/2025/02/oecd-services-trade-restrictiveness-index-2025.html.

75. European Union, "Regulation (EU) 2024/1735 of the European Parliament and of the Council on Establishing a Framework of Measures for Strengthening Europe's Net-Zero Technology Manufacturing Ecosystem," https://eur-lex.europa.eu/EN/legal-content/summary/eu-net-zero-industry-act.html.

76. World Bank, "Services Unbound: Digital Technologies and Policy Reform in East Asia and the Pacific," 2024, https://www.worldbank.org/en/region/eap/publication/services-unbound.

77. IMF, "Asia-Pacific's Structural Transformation: The Past and Prospects," October 2024, https://www.imf.org/-/media/Files/Publications/REO/APD/2024/October/English/reoapdnote.ashx.

78. IMF Blog, "The high cost of global economic fragmentation," August 28, 2023, https://www.imf.org/en/Blogs/Articles/2023/08/28/the-high-cost-of-global-economic-fragmentation.

79. Think Global Health, "South Korea's Plan to Avoid Population Collapse," September 5, 2024, https://www.thinkglobalhealth.org/article/south-koreas-plan-avoid-population-collapse.

80. WEF, "Future of Jobs Report 2025: The Jobs of the Future – and the Skills You Need to Get Them," January 8, 2025, https://www.weforum.org/stories/2025/01/future-of-jobs-report-2025-jobs-of-the-future-and-the-skills-you-need-to-get-them/.

81. National Taiwan University (NTU), "Joint Research Centers with Industry Leaders," NTU Highlights, accessed July 21, 2025, https://ntuhighlights.ntu.edu.tw/News_Content_n_171094_s_218505.html.

82. Tech in Asia, "Taiwan Govt Launches Talent Strategy After Nvidia's New HQ," accessed July 21, 2025, https://www.techinasia.com/news/taiwan-govt-launches-talent-strategy-after-nvidias-new-hq.

83. Nippon.com, "A Third of Japanese People Aged 70 to 74 Still in the Workforce," October 10, 2023, https://www.nippon.com/en/japan-data/h01797/.

84. WEF, Naoko Tochibayashi and Mizuho Ota, "How Companies Are Addressing Workforce Shortages and Employee Satisfaction With Senior Employment in Japan," August 15, 2024, https://www.weforum.org/stories/2024/08/how-companies-are-addressing-workforce-shortages-through-senior-employment-in-japan/.

85. Kajitani Shinya, "Promoting Employment of Older Workers and Adjustment of their Working Conditions at Japanese Firms," Japan Labor Issues, vol. 7, no. 42, April 2023, https://www.jil.go.jp/english/jli/documents/2023/042-02.pdf.

86. Business Upturn Asia, Garima Singla, "Japanese Banks Break from Tradition, Shift to Performance-Based Pay Amid Talent War,", August 24, 2024, https://www.businessupturn.com/asia/east-asia/japan/japanese-banks-break-from-tradition-shift-to-performance-based-pay-amid-talent-war/34223/.

87. Human Rights Watch, "Punished For Getting Older: South Korea's Age-based Policies and Older Workers' Rights," July 8, 2025, https://www.hrw.org/report/2025/07/08/punished-for-getting-older/south-koreas-age-based-policies-and-older-workers.

88. Seoul Metropolitan Government, "Seoul to Boost Digital Literacy Among Older Adults," May 9, 2022, https://english.seoul.go.kr/seoul-to-boost-digital-literacy-among-older-adults/.

89. EWA Direct, "Analysis of Dilemmas Faced by Rural Revitalization in the Context of Digital Governance and the Path of Promotion: Taking Xi'an City as an example," April 24, 2024, https://www.ewadirect.com/journal/jaeps/article/view/12531.

90. World Bank Blogs, Kim, H., "Teachers are leading an AI revolution in Korean classrooms," March 18, 2024, https://blogs.worldbank.org/en/education/teachers-are-leading-an-ai-revolution-in-korean-classrooms.

91. The Hong Kong University of Science and Technology, Fok Ying Tung Graduate School (Guangzhou), "Artificial Intelligence – HKUST," https://fytgs.hkust-gz.edu.cn/programs/artificial-intelligence.

92. The Hong Kong University of Science and Technology (Guangzhou), Nie, Q., "Robot Intelligence and Learning Laboratory (RIL-LAB)," 2024, http://ril-lab.top/en/.

93. AI Future Lab, MindHYVE.ai, "ArthurAI™: Taiwan's Agentic Education Platform," June 2025, https://www.mindhyve.ai/arthurai-taiwan-education-platform.

94. The Straits Times, Lee, Li Ying, "Microsoft Launches AI Accelerator to Help Firms Develop Agentic AI Roadmaps," August 1, 2025, https://www.straitstimes.com/singapore/microsoft-launches-ai-accelerator-to-help-firms-develop-agentic-ai-roadmaps.

95. Asian Development Bank, "AI and Robotics for Aging Population in Asia and the Pacific," accessed August 15, 2025, https://challenges.adb.org/en/challenges/ai4aging.

96. MIT Media Lab, "AI Assistive Technology Offers Potential to Support Older Adults with Independent Living," July 11, 2024, https://www.media.mit.edu/posts/ai-assistive-technology-offers-potential-to-support-older-adults-with-independent-living/.

97. OECD, "Revenue Impact of International Tax Reform Better Than Expected," OECD Press Release, January 18, 2023, https://www.oecd.org/en/about/news/press-releases/2023/01/revenue-impact-of-international-tax-reform-better-than-expected.html.

98. National Bureau of Economic Research, Bianchi, F., Faccini, R., & Melosi, L. "Monetary–fiscal policy interactions and the fiscal theory of the price level", NBER Working Paper No. 27112, 2020, https://doi.org/10.3386/w27112.