

Navigating Demographic Aging and Macroeconomic Growth in Asia: Lessons from Japan's Experience

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Abstract

Many Asian countries are experiencing or soon will experience rapid demographic shifts, marked by rising life expectancy and declining fertility rates, which elevate the old-age dependency ratio. While longer, healthier lives are positive developments, demographic aging can pose significant macroeconomic and fiscal challenges during the transition. This paper examines the economic implications of aging populations and the complex trade-offs involved in designing social insurance systems that balance fiscal sustainability with old-age security and an effective safety net. Although low fertility reduces the working-age population, labor supply can be sustained if worker productivity increases. Drawing on Japan's experience and lessons from other developed economies, this paper explores strategies that Asian countries might adopt to navigate demographic challenges. It also examines shifts in consumption patterns and potential changes in income inequality as societies age. The paper concludes by highlighting emerging growth opportunities, including a potential "silver demographic dividend," that the demographic trends may offer in the decades ahead.

Keywords: Demographic aging, social security, health insurance, long-term care insurance, fiscal sustainability, Japan

JEL Classification: J11, N15, N35 O11

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1. Introduction

Demographic aging is a global phenomenon, and Asian countries are no exception, though the speed and magnitude of demographic transformation vary across the region. While we can appreciate longer, healthier lives, rapid changes in demographic structure – particularly those driven by declining fertility rates – can pose significant challenges to macroeconomic stability and national well-being.

Growing Asian countries with relatively young populations can gain valuable insights from the experiences and challenges of developed countries that have already undergone decades of demographic aging. In this paper, we take Japan as a notable example – a frontrunner of demographic aging within Asia – and examine the fiscal and macroeconomic challenges the country has encountered, as well as other demographic-related issues it has faced.

Population and demographic structure are shaped by shifts in fertility rates and changes in mortality risks. Figure 1 presents the population data and projections for selected Asian countries from 1980 to 2060. In the plots, each country's 2024 population is normalized to 1 to facilitate the cross-country comparison. Japan's population began declining in the late 2000s already, and other countries, such as South Korea, China, and Thailand, have also recently started experiencing population declines. This downward trend is projected to accelerate toward the mid-century according to the UN population projections. Countries like India, the Philippines, and Indonesia still have growing populations, but they too are expected to enter a period of negative growth by mid-century, likely following the path of other developed nations facing sustained population decreases thereafter.

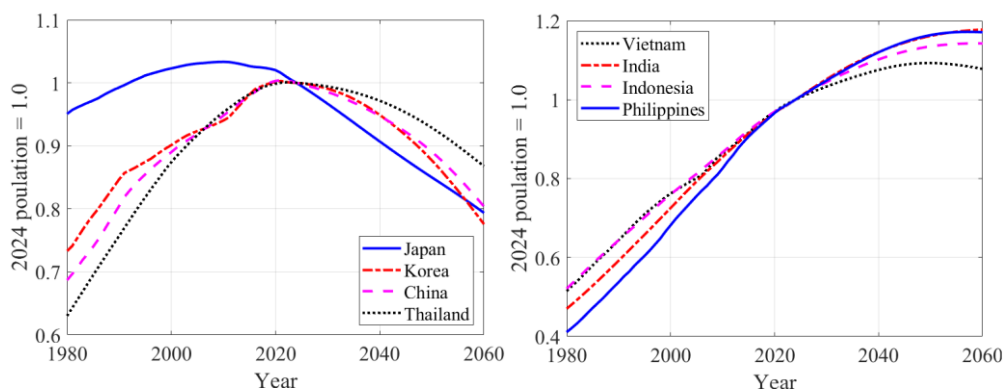


Figure 1. Population Growth in Asian Countries: Data and Projections

Source: United Nations, World Population Prospects 2024. Data for 2024-2080 are based on the medium projections of the UN Population Division. The population levels in each year are normalized by the population of each country in 2024.

The population decline in many countries is primarily driven by a drop in the number of newborns. Figure 2 shows total fertility rates (TFR) over the past five decades. TFR represents the average number

of live births a hypothetical cohort of women would have if they were exposed throughout their lives to the fertility rates of a given period. The rate is expressed as live births per woman, with a replacement rate of 2.1 needed to ensure a stable population, assuming no net migration and unchanged mortality, according to the OECD. The total fertility rates in Japan, Korea, China, and Thailand have remained well below the replacement rate for decades, and only a few countries in Asia today have fertility rates significantly above two.

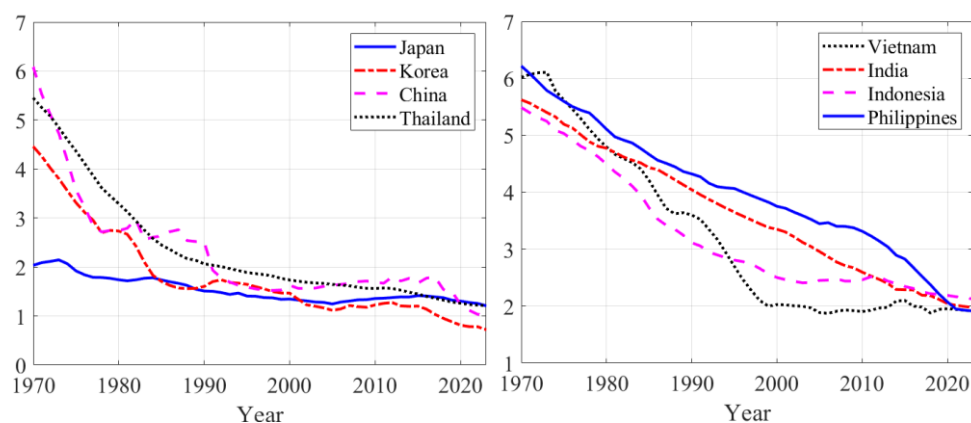


Figure 2. Total Fertility Rates in Asian Countries

Source: United Nations, World Population Prospects 2024.

As fertility rates have declined, mortality risks have also sharply decreased. Figure 3 illustrates the average life expectancy at births, showing an increase in longevity of 10 to 20 years across countries over the past half century.

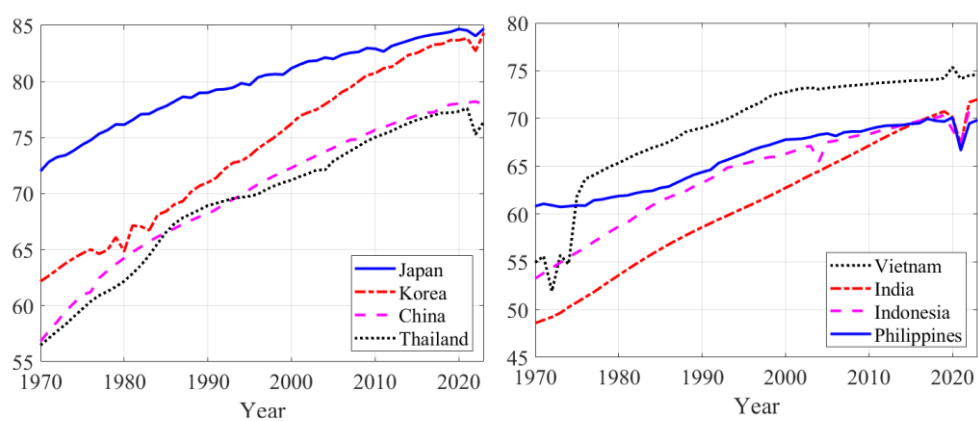


Figure 3. Life Expectancy at Birth in Asian Countries

Source: United Nations, World Population Prospects 2024.

This secular decline in fertility rates, combined with rising longevity, signifies a major shift in demographic structure. Over the last decades, the average age has risen sharply, and the proportion of the older population within the demographic pyramid has expanded considerably. Figure 4 presents the

data and projections of the old-age dependency ratio, defined as the ratio of the population aged 65 and older to the population aged 20 to 64, from 2000 to 2060. This ratio has already risen sharply in Japan, Korea, China, and Thailand and is expected to reach approximately 80% for Japan and Korea by 2050, implying that there will only be 1.25 working-age individuals for each old individual aged 65 and above. While countries in the right-hand panel of Figure 4 are still relatively young, their old-age dependency ratios are also projected to rise steeply in the coming decades.

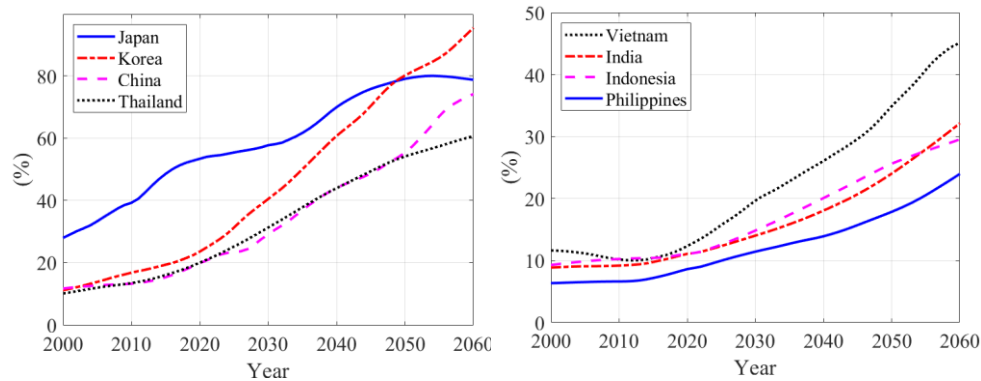


Figure 4. Old-Age Dependency Ratios in Asian Countries: Data and Projections

Source: United Nations, World Population Prospects 2024. Old-Age Dependency Ratio is defined as the ratio of the population aged 65 and above to the population aged between 20 and 64. Data for 2024-2080 are based on the medium projections of the UN Population Division.

This rapid demographic aging could pose various economic challenges during the transition. In countries such as Japan, which had already established a comprehensive social insurance system before the onset of the rapid aging, the government expenditures to support older individuals will rise substantially. A secular stagnation of fertility since the 1970s has already led to severe shortages of labor and skills, hindering growth. Furthermore, the increased tax burden required to finance growing old-age expenditures is a major concern, as it may generate significant economic distortions.

Although there are many challenges, demographic aging is not solely a drag on growth and may bring some positive economic prospects. Generally, households accumulate wealth as they approach retirement, then individuals transition from savers to consumers upon retirement. A rise in the number of retirees can stimulate the production of goods and services that older individuals consume. Household consumption patterns also vary by age, with demand for specific goods, such as medical and care products, increasing significantly with age. Retirees also have more time that they can allocate to leisure activities. Developing products in these areas could serve as a growth driver.

In the following two sections, we discuss various economic challenges driven by demographic aging, also drawing some lessons from Japan's experience. Section 2 focuses on fiscal sustainability issues and Section 3 discusses the problems related to labor and skill shortages. Section 4 covers various topics

related to demographic aging, including consumption trends, inequality and immigration. Section 5 explores growth opportunities presented by the demographic transformation and Section 6 concludes.

2. Social Insurance Systems: Challenges in Fiscal Sustainability

This section will examine the fiscal challenges that demographic aging may pose to Asian countries in the coming decades, while they also face the need to establish comprehensive social insurance system. As an economy grows and matures, demand for a comprehensive safety net also increases. All developed countries, except for the U.S., provide universal health insurance coverage for individuals of all ages. Most countries established public pension systems many years ago. Some countries, including Japan, also provide public long-term care insurance, allowing older individuals to receive both healthcare and long-term care services through government programs.

Older individuals are the primary recipients of benefits from these programs. The fiscal impact of demographic aging depends largely on the types of social insurance programs managed by the government and their generosity. As growing countries in Asia work to establish social insurance systems and expand their social safety nets, careful attention must be paid to avoid excessive burdens that could distort economic activity. As discussed, demographic transitions will likely bring an increase in the elderly population alongside declining fertility rates, leading to a rising old-age dependency ratio. Social insurance systems should therefore be designed to anticipate these demographic shifts, ensuring they can accommodate a growing number of beneficiaries despite a shrinking working-age population and possibly the erosion of the tax base.

If the system is structured on a pay-as-you-go basis – where benefits are funded by taxes collected simultaneously – these systems could impose significant tax burdens, particularly if taxes are imposed on sources of income including earnings and investment returns. It is imprudent to establish a generous system with the intention of adjusting it, if and when the population ages and financing becomes challenging. Once the age distribution shifts toward an older population, implementing reforms to reduce benefits becomes increasingly difficult. It is essential to carefully design the system from the outset, anticipating how the financial health of social insurance programs will evolve over the medium and long term, based on demographic projections.

Japan now has a social insurance system that encompasses universal public pensions, health insurance, and long-term care insurance. The national pension system was established in 1961 and gradually expanded its coverage, increased benefit amounts, and became more and more comprehensive over time. In 1960, the life expectancy at birth was 67.7 on average (65.3 for men and 70.1 for women), and total fertility rate was about 2.0. The old-age dependency ratio was only 10%, and there were 10

working-age individuals for every old person aged 65 and above. The normal retirement age for the national pension, the age at which individuals are eligible to receive a regular and unadjusted amount of benefits, was set at 65, and this has not changed since. Living well beyond age 65 was not usual and supporting the risk of out-living with many more young individuals was not that difficult when the system was introduced.

Now, in 2024, the life expectancy is 84.9, implying the expected benefit duration of 20 years, a significant increase from less than 3 years when the system was first established. As shown in Figure 5, the share of public pension expenditures in GDP has steadily increased, rising from only 1% of GDP in the 1960s to above 10% by 2010.

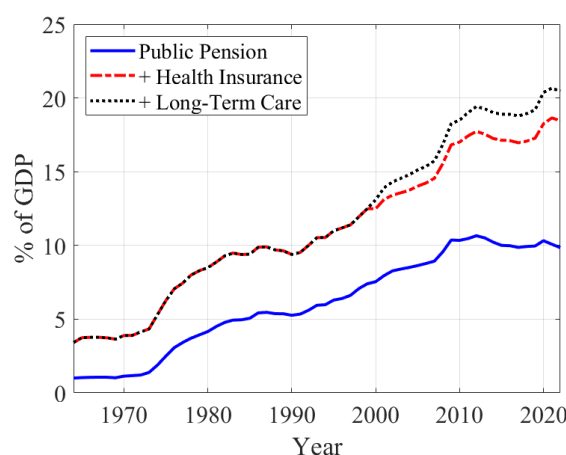


Figure 5. Expenditures on the Social Insurance Programs (as a share of GDP)

Source: Financial Statistics of Social Security in Japan 2022, National Institute of Population and Social Security Research (IPSS).

Japan also has a universal health insurance coverage for all residents. The coverage is highly comprehensive, and the copay rates, which represent the share of patients' out-of-pocket payments as a percentage of total expenditures, decrease with age – from 30% for those under 70 (except for children aged 6 and below) to 10% for those aged 75 and above. There is also a cap on total medical expenditures, which is generously set especially for those with low earnings, including retirees. Per capita gross medical expenditures rise sharply with age, and the generosity of coverage increases with age as well. Not surprisingly, as the population continues to age, health expenditures as a share of total output have soared, as shown in Figure 5, from about 2% of GDP in the mid-1960s to 9% in 2022.

Japan's universal long-term care insurance system was introduced in 2000, which provides care services for older individuals. Traditionally, elder care was undertaken within the household, primarily by daughters or daughters-in-law. One of the expected outcomes of introducing the long-term care system was to shift the burden of elder care from individual families to society as a whole. The copay rate is

only 10% in principle, and expenditures in this area are also rising sharply. As shown in Figure 5, these expenditures are still relatively small compared to public pension and health insurance programs but are expected to increase quickly.

The rising expenditures need to be financed by contributions from households, and under the pay-as-you-go system, they are funded through taxation on income. In Japan, contribution rates to social insurance vary by individuals' employment status, and payroll taxes imposed on employers and employees for the three insurance programs rose dramatically, from around 10% in 1960 to as high as 30% by 2020. Unfortunately, this substantial increase in contributions from insured individuals has still been insufficient to cover rising expenditures. Consequently, the Japanese government has continuously run deficits to cover the imbalance. Figure 6 shows the government expenditures and tax revenue from 1980 to 2023 as a share of GDP.² Throughout, the gap has remained unfilled and has widened significantly since the 1990s.

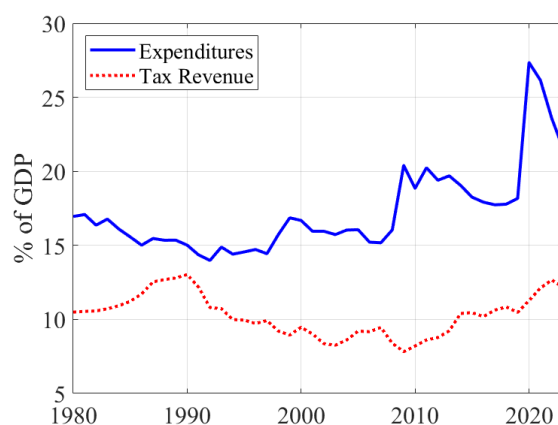


Figure 6. Government Expenditures and Tax Revenues as a Share of GDP

Source: Ministry of Finance in Japan.

Deficits have been financed by the issuance of debt. As shown in the left plot of Figure 7, the gross debt-to-GDP ratio increased from 50% of GDP in 1980 to over 250% in 2020. Net debt, calculated as gross debt minus the government's financial assets, is lower but follows the same pattern as gross debt. A rise in government debt has also been observed in other developed countries, as shown in the right plot of Figure 7, though the magnitude and growth in Japan are unmatched. The large debt would become increasingly costly if interest rates were to rise, as the cost of servicing the debt would also increase. This is a significant risk faced by the Japanese government.

² Note that the tax revenues do not include contributions to the social security system. Figure 6 shows the paths of General Account Tax Revenue (*“ippan kaikei zeishu”*) and General Account Expenditures (*“ippan kaikei saishutsu”*) from the SNA.

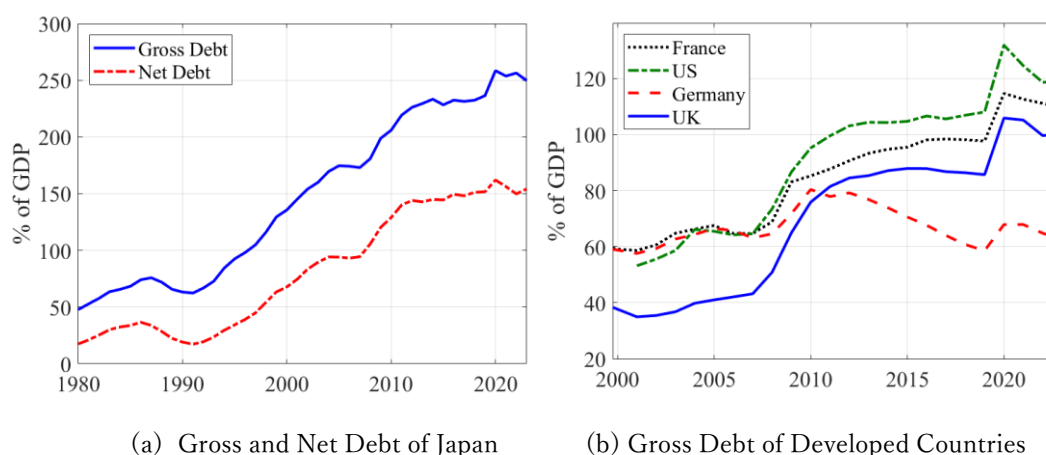


Figure 7. Government Debt as a Share of GDP

Source: World Economic Outlook, IMF. Net debt is computed as gross debt of the general government minus its financial assets in the form of debt instruments. Financial assets include currency and deposits, debt securities, loans, insurance, pension, and standardized guarantee schemes, and other accounts receivable.

How will expenditures and tax burden evolve in the future? Projections indicate that demographic aging and a rising old-age dependency ratio will continue. Various quantitative studies suggest that the tax burden could become prohibitively large without reform. Braun and Joines (2015) and Kitao (2015) estimate that, without reform, the additional tax burden could reach up to 40 percentage points of total consumption at its peak. If the government were to leave tax rates unchanged and finance rising expenditures through borrowing, government debt would become unsustainable, as noted by earlier studies such as Hansen and Imrohoroglu (2016) and Hoshi and Ito (2014). Indeed, government debt has been increasing sharply, as shown in Figure 7.

A substantial tax increase would be challenging both economically and politically. Raising consumption taxes, in particular, is a very unpopular policy option in Japan. Effective tax rates on earnings, including social insurance contributions at employment, are already very high. However, reducing benefits for old individuals would be even more challenging politically, as the majority of voters are either already retired or nearing retirement, counting on pension payments and insurance coverage. It remains uncertain whether and how the government will make the social insurance system sustainable in the future. This uncertainty itself could negatively impact economic activity: firms may hesitate to invest if the tax burden on corporations may rise, and households could reduce spendings in favor of precautionary savings if they anticipate future taxes to rise.

Policymakers often avoid discussing unpopular reforms or even acknowledging the trade-off between increasing (or non-decreasing) benefits and higher taxes, preferring to act as if the problem would

somehow resolve itself if the economy were to grow at an extraordinary rate – perhaps as rapidly as Japan’s remarkable post-WWII growth. However, this is a big ‘if.’

Lessons for Growing Asian Countries

Many Asian countries are eager to establish a comprehensive safety net, which may include universal public pensions, health insurance, and long-term care insurance. However, these systems must be implemented carefully and with a forward-looking approach to ensure the financial health and sustainability of the programs in the long run.

Given evolving demographic structures and unavoidable uncertainty about future demographic variables such as fertility rates, life expectancy, and immigration flows, one option is to embed conditions that automatically adjust benefits and taxes in response to changes in demographic and fiscal conditions. The Japanese government introduced a trigger adjustment mechanism known as “macroeconomic slide” in its public pension program in 2004. This mechanism is expected to automatically reduce pension benefits in response to demographic changes. However, it has not functioned as expected, since the adjustment is not triggered during deflationary periods or when wage growth is insufficient. Adjustments have occurred only four times over the past twenty years: in 2015, 2019, 2020 and 2023.

Studies have also shown that an earnings test – which reduces social insurance benefits if individuals remain in the labor market and earn above a certain threshold – can be distortionary and discourage older individuals from working (French, 2005). As discussed in the next section, the decline in the labor force can be a serious issue in an aging economy with shrinking labor force, making it essential to design a financing scheme that does not distort incentives to work or to accumulate skills.

3. Macroeconomic Growth: Addressing Labor and Skill Shortages

A major challenge that demographic aging poses to the macroeconomy is the decline in the working-age population and the pool of potential workers. A tight labor market with scarce labor resources gives an upward pressure on wages, increasing firms’ cost of production. The prospect of rising production costs may force some firms to downsize or even shut down. Moreover, a simultaneous increase in tax burden due to rising expenditures to finance age-related expenditures, as discussed above, could become a major drag on economic activities and growth.

Global Fertility Trend

While raising fertility rates above replacement levels would gradually alleviate population issues, this solution may take time, even if governments implement policies immediately and they turn out to be

successful. Developed countries have long been aware of population challenges and concerned about low fertility rates. In response, they have introduced a variety of policies, including free or low-cost childcare, subsidized education, cash and in-kind benefits for families with children, legal paternity and maternity leave, and more. However, no policy has proven to be a panacea. Even countries such as France, Sweden, Finland, and other Nordic nations – known for their decades of pro-natal policies and generous education subsidies – are now experiencing rapid declines in fertility rates, as shown in Figure 8.

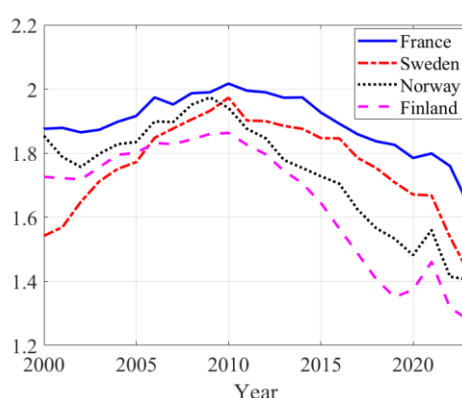


Figure 8. Total Fertility Rates in Developed Nations

Source: United Nations World Population Prospects 2024.

Thus, while governments in Asian countries should pay close attention to fertility issues and work to remove any obstacles to childbirths, they should also recognize that this global trend is challenging to reverse entirely in a short period of time. Setting ambitious fertility rate targets and allocating substantial budgets and human resources to achieve them may not be fruitful. Furthermore, future planning for labor supply and macroeconomic variables should rely on realistic projections of demographic variables, including fertility rates, rather than on overly optimistic targets.

Raising Labor Supply under Declining Fertility: Participation Rates and Productivity

Although declining fertility rates appear to be a global trend that is difficult for any government to reverse quickly, there is some good news. A decline in the working-age population does not necessarily mean a proportional decline in a country's labor supply or output. Increases in participation rates among working-age individuals, higher participation rates among older individuals, and productivity gains can all contribute to a more effective labor supply as an input to production.

In Japan, while the population aged 20 to 64 began to decline already in the late 1990s and the total population started falling in the late 2000s, the number of workers did not follow suit. In fact, the labor force increased from 67.7 million in 2000 to 69.3 million in 2023. This was due to rising participation

rates among groups that had not been as active in the labor market.

Figure 9 shows participation rates by age and gender since 2000. The data is based on the Labour Force Survey conducted by the Ministry of Internal Affairs and Communications, which is one of the Fundamental Statistics used in the policy making. Participation rates of prime-age men are high above 90% and they have not changed much over the last two decades. However, participation rates among other groups, women of all ages and men aged 55 and above, have increased sharply, offsetting the decline in the number of workers due to a shrinking working-age population.

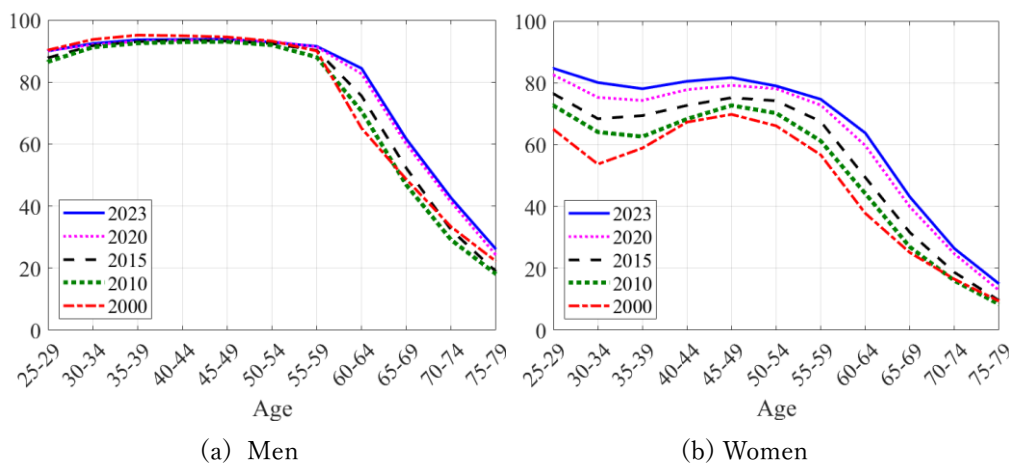


Figure 9. Participation Rates by Age in Japan

Source: Labour Force Survey, Ministry of Internal Affairs and Communications.

Multiple factors are likely to have contributed to the rise in participation rates in Japan. First, changes to public pension rules have lowered expected benefit payments, addressing concerns over the sustainability of the social insurance system. These reductions may have incentivized people to stay in the labor force longer. In 2004, the Japanese government introduced the ‘macroeconomic slide,’ which adjusts pension benefits based on shifts in the number of insured individuals contributing to the system and changes in life expectancy. Additionally, while the normal retirement age for basic pensions has remained at 65 since the 1960s, the eligibility age for the second-tier of the pension which is based on contribution of employees and employers (*kosei nenkin*) has gradually increased since 2000 from 60, and it will reach 65 by 2025 for men and by 2030 for women. Lower pension benefits give individuals more incentives to work and save for retirement. Those with limited savings may have no choice but to delay retirement as the retirement age rises, unless they are eligible for other forms of support. These positive effects on work incentives are likely to be further strengthened by a rise in longevity, inducing people to remain in the labor force longer.

Second, rising life expectancy and improved health conditions have enhanced the work capacity of older individuals. Kitao and Takeda (2024) demonstrate that participation rates increase with better health status, as reported by individuals in surveys of Japanese workers. A 2024 special issue of *Asian Development Review* includes a regional comparative study on the health conditions and untapped work potential of older individuals across several Asian countries. As reviewed by Kikkawa et al (2024), improved health status has generally raised the work capacity of older men, though there is significant variation across countries and genders. Over the past 15 years, work capacity has risen in countries such as Japan and Vietnam, but has declined in Indonesia. Their study reveals that in some countries, many old individuals are physically capable of working but are not engaged in the labor force. This potential pool of healthy workers could contribute significantly to economic growth and an efficient allocation of workers will be increasingly important as an economy goes under demographic aging and worker shortage. Oshio et al (2024), also in the special issue, focus on older Japanese individuals and demonstrate that there remains substantial work capacity, particularly among those with higher education.

Third, there has been a long-run shift of the industrial structure, with rising demand for workers in service sectors, particularly in health and care services. Jobs in the service sector tend to require less physical strength than those in other sectors such as manufacturing and construction, which contributed to increased work opportunities for older individuals.

Table 1 presents the distribution of workers across industries, age groups, and genders over time, based on Labour Force Survey data. The share of workers in agriculture has declined sharply over the past two decades, especially among older workers. In contrast, the share of service sector employment has increased. Additionally, there are differences in trends between men and women. The share of workers in the medical sector (including medical, health care, and welfare) has risen significantly for both young and old female workers.

Table 1. Employment Shares by Industry (%)

| | Agriculture | Manufacture | Services | Medical | Transport | Wholesale | Others | Total |
|------------|-------------|-------------|----------|---------|-----------|-----------|--------|-------|
| Men ≥ 65 | | | | | | | | |
| 2003 | 25.3 | 23.3 | 25.7 | 3.7 | 4.7 | 15.5 | 1.4 | 100.0 |
| 2013 | 16.5 | 23.4 | 30.6 | 4.6 | 7.2 | 14.4 | 2.6 | 100.0 |
| 2023 | 12.2 | 23.4 | 33.7 | 6.7 | 7.5 | 12.4 | 3.9 | 100.0 |
| Men ≤ 64 | | | | | | | | |
| 2003 | 2.7 | 36.1 | 24.7 | 3.1 | 11.2 | 15.3 | 6.9 | 100.0 |
| 2013 | 2.4 | 33.2 | 25.5 | 5.0 | 12.1 | 14.3 | 7.4 | 100.0 |
| 2023 | 1.9 | 31.9 | 25.4 | 6.1 | 13.5 | 13.5 | 7.5 | 100.0 |
| Women ≥ 65 | | | | | | | | |
| 2003 | 30.0 | 14.4 | 28.3 | 5.0 | 0.6 | 20.0 | 1.1 | 100.0 |
| 2013 | 16.6 | 13.0 | 38.1 | 10.5 | 1.6 | 18.2 | 2.0 | 100.0 |
| 2023 | 10.3 | 11.6 | 36.6 | 18.7 | 2.1 | 17.4 | 3.4 | 100.0 |
| Women ≤ 64 | | | | | | | | |
| 2003 | 3.0 | 18.9 | 33.6 | 15.6 | 4.0 | 21.8 | 3.1 | 100.0 |
| 2013 | 2.0 | 14.1 | 33.6 | 21.6 | 4.4 | 20.1 | 4.0 | 100.0 |

| | | | | | | | | |
|------|-----|------|------|------|-----|------|-----|-------|
| 2023 | 1.3 | 13.6 | 33.6 | 22.8 | 5.7 | 18.0 | 5.0 | 100.0 |
|------|-----|------|------|------|-----|------|-----|-------|

Source: Labour Force Survey, Ministry of Internal Affairs and Communications. The JSIC industries are consolidated into 7 groups: agriculture (agriculture, forestry and fisheries), manufacturing (mining and quarrying of stone and gravel, construction, and manufacturing), services (finance and insurance, real estate and goods rental and leasing, scientific research, professional and technical services, accommodations, eating and drinking services, living-related and personal services and amusement services, education, learning support, compound services, and services, N.E.C.), medical (medical, health care and welfare), transport (transport and postal activities, and information and communications), wholesale (wholesale and retail trade), and others (electricity, gas, heat supply and water, government, and industries unable to classify).

Lastly, regulations regarding the mandatory retirement age have changed. Japan's traditional employment system is characterized by life-time employment and a seniority-based wage system. Companies are allowed to set their own retirement age, with oversight from the Act on Stabilization of Employment of Elderly Persons. Since 1998, the Act has prohibited companies from setting a retirement age below 60. However, as the retirement age for employment-based pensions increased, regulations evolved as well. Although the minimum retirement age of 60 remains unchanged, a 2006 amendment requires companies to provide job security for employees up to age 65 by implementing one of the three measures: raising the mandatory retirement age, introducing a continued employment system, or abolishing the mandatory retirement age altogether. The 2021 amendment further encourages companies to make efforts to extend employment opportunities until age 70. These changes have expanded work opportunities for many older individuals.

Regarding labor supply decisions of older individuals, Kitao and Takeda (2024) build a quantitative life-cycle model to examine the strength of various interacting factors. They show that a decline in expected public pension benefits can increase participation rates among older individuals, whether by raising the normal retirement age or reducing the pension replacement rate. They also demonstrate that general increases in productivity and wages observed over recent decades tend to reduce participation rates due to income effects, while higher wages for older workers relative to younger ones encourage continued participation. A shift in industrial structure and rising demand for workers in service sectors contributed to this effect. Going forward, policies that support skill updating and reaccumulation of human capital for older workers to meet the demand in growing sectors will be beneficial.

Gender Wage Gap: Raising Productivity of an Underrepresented Workforce

Another underutilized workforce in Japan and other Asian countries is women. While women's participation rates in Japan are in relatively high compared to other developed countries, there remains a significant gender wage gap. Women's average earnings are substantially lower than men's, despite similar levels of educational attainment.

The earnings gap is pronounced not only between men and women but also between single and married women, as noted by Kitao and Mikoshiba (2024a). Advances in home production technology have alleviated some domestic burdens, reducing work hours women spend on housework over recent decades (Greenwood et al, 2023; Kitao and Nakakuni 2024). However, many women experience a significant drop in earnings after marriage and having children, and this effect is highly persistent. Fukai and Kondo (2025) show that women's income drops by 60-80% immediately after childbirth and remains at half of pre-childbirth levels even four years later. See also Kleven et al (2024) for empirical demonstration of child penalty across 134 countries.

One key factor behind this large and persistent earnings gap observed in Japan between married and single women is work disincentives embedded in the fiscal system. Kitao and Mikoshiba (2024b) show that policies such as spousal tax deductions, social insurance premium exemptions, and survivor pension benefits for low-income spouses, discourage participation and skill accumulation of married women. Removing these disincentives would likely increase their labor supply, and enhance wage growth.

These policies supporting low-income dependent spouses and providing income insurance for them were effective when there was a significant gap in education and skills between men and women, and when men were primarily expected to work in the market while women managed the home. However, these policies now create strong disincentives for secondary earners to participate fully in the labor, resulting in reduced labor supply and significantly lower life-cycle earnings. In the context of the U.S. economy, Borella et al (2023) show that joint income taxation and survivor benefits strongly discourage married women's work incentives and that their life-time earnings would be significantly higher if these policies were removed.

Given the changing economic environment, it is essential to continually assess fiscal policies and determine whether they are outdated, as they may create considerable distortions. It is also well known that labor supply elasticity is higher for women and for older individuals (i.e. their labor supply is more responsive to changes in wages or income taxes) than for prime-age men. Designing a tax system that minimizes distortions to work and growth incentives for those groups is crucial.

Increased Participation of Women

While there is considerable room for improvement in addressing the gender wage gap and boosting women's productivity, women's participation rates have, in fact, risen significantly in recent decades in Japan, as shown in Figure 9. Much of this increase has been in the health and care sectors, as reflected

in Table 1.³ As discussed in Section 2, the introduction of long-term care insurance in 2000 aimed, in part, to shift the burden of elder care from households to the market. This transition has driven the increase in women's labor market participation and the higher share of employment in health and care services.

Earnings for care workers are low compared to other jobs on average and wages tend to be flat over the life-cycle. Consequently, although more women are joining the labor market, a rise in participation rates does not necessarily boost their average earnings. Most care services are provided through the public long-term care insurance and wages are regulated. It is also one of the sectors that have the highest job-to-applicant ratio with many unfilled vacancies.

Productivity Enhancement: Key to Long-Run Growth

A sustained increase in labor supply amid a secular decline in the working-age population requires continuous growth in labor productivity. Encouraging more participation or longer work helps, but participation rates or work hours naturally have an upper limit. Closing the gender gap by raising women's wages can boost growth, but long-term growth ultimately hinges on productivity improvements of all workers – men and women, young and old alike.

Investing in labor-saving technology within labor-intensive sectors to enhance productivity or automating routine tasks is essential. This is particularly important in health and long-term care sectors, which currently absorb a large number of female and older workers. Without such technological advancements, demographic aging will increasingly demand more workers, potentially poaching scarce and valuable labor resources into sectors with limited wage growth and skill accumulation.

Aging does not necessarily reduce productivity. Older workers can continue developing their human capital after formal education and remain productive by adapting to new technologies. Lee et al. (2022) demonstrate that ICT skills and job training have significant positive effects on the productivity of older workers, using individual worker data in Korea.

In Japan's case, it is crucial to reassess outdated policies that hinder efficient resource allocation and growth potential. Reforming the social insurance system and addressing rising fiscal burdens are also important, so as not to discourage productive investment. While raising fertility is an important policy

³ See also Kawaguchi et al (2021) for more comprehensive investigation of employment dynamics during the Abenomics period in the 2010s.

agenda, increasing the overall productivity of each individual is equally, if not more, important. Investing more extensively in universal, foundational education and promoting lifelong reskilling are key steps in this direction.

Lessons for Growing Asian Countries

The primary macroeconomic challenge posed by demographic aging is the rapid decline in the working-age population and the erosion of the pool of potential workers. Declining fertility rates are a global phenomenon, and while it is important to remove obstacles that prevent households from having their desired number of children, governments should be cautious about excessive spending solely aimed at boosting fertility rates. Labor supply is influenced not only by the number of workers but, more crucially, by the productivity of individuals throughout their careers. At the macro level, it is equally important to allocate labor resources to sectors where they can be most productive. Policies must be designed to avoid distorting work incentives, discouraging skill accumulation, or interfering efficient use and allocation of skills. Economic growth hinges on the quality of each worker's contribution to productive activities.

Some countries in Asia lag behind in closing the gender gap, leaving significant room for women to contribute more to the labor force. For example, in India and Bangladesh, women have experienced a rapid rise in educational attainment over the past decades, and fertility rates have declined as in other Asian countries including Japan and Korea. However, their labor force participation rates have not increased and remain low. In fact, women's participation in India has declined since the early 2000s. The factors driving these different transitional patterns in the gender gap need to be examined for each country.

While the discussion in this section focused on the efficient use of resources from the perspectives of households supplying labor, empirical studies also indicate that aging can drive technological innovations of firms and automation of manual production tasks (Acemoglu and Restrepo, 2022). Encouraging investment in these technologies could enhance the productivity of the existing workforce and help alleviate labor shortages associated with demographic aging.

Moreover, empirical studies show diverse effects of employment and retirement on the health status of older workers. Kwak and Lee (2024), for example, use Korean longitudinal data to demonstrate the negative effects of retirement on health and life satisfaction, while re-employment has the opposite effect. Poor health can lead to greater medical needs and potentially increase the fiscal burden. Good health is a key component of human capital, enhancing employment probability of older individuals, but understanding factors that contribute to health improvement is crucial.

4. Broader Impacts: Consumption Trends, Inequality, and Immigration

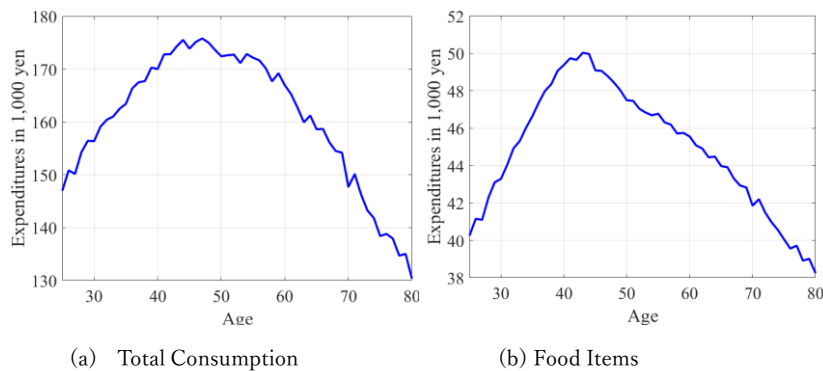
This section discusses additional dimensions of economic changes that demographic aging may generate, focusing on the effects on consumption patterns, impact on inequality, and the role of immigration.

Consumption and Demographic Aging

As the population declines, the number of consumers decreases, and aggregate consumption tends to follow suit. However, consumption patterns differ significantly across age groups, and aggregate consumption may not move proportionately with population changes.

Empirical research using micro data has shown that household consumption typically follows a hump-shaped pattern over the life-cycle. For example, Aguiar and Hurst (2013), using U.S. household data, demonstrate that non-durable household consumption initially rises with age and then declines later in life. They also analyze the subcomponents of household consumption and find that the life-cycle pattern is largely explained by shifts in consumption items related to work and home production.

Kitao and Yamada (2024a) use Japanese household data to investigate trends in consumption patterns and inequality across households over time. They apply the estimation methods of Aguiar and Hurst (2013) to extract age profiles of different consumption items from time-series microdata, finding that total household consumption follows a hump-shaped pattern over the life-cycle, though the shapes vary significantly across consumption items. Figure 10 shows the life-cycle profiles of total consumption and selected consumption items. While some items, such as clothing and footwear, decline with age, other items, including medical care and fuel, light and water charges, increase with age. Food consumption follows a hump-shaped curve similarly to total consumption, but further breakdown reveals that spending on food outside the home declines sharply after their late 30s, while spending on food at home peaks in their mid-40s and declines more gradually.



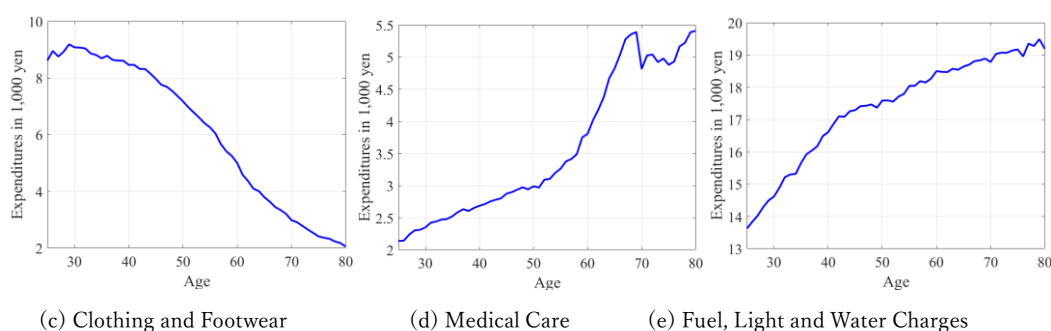


Figure 10. Life-cycle Profiles of Consumption: Total and by Item Group

Source: Kitao and Yamada (2024a), Profiles are estimated using the microdata of the Family Income and Expenditure Survey (FIES).

As a result of the heterogeneity of consumption items across age groups, ongoing demographic changes could lead to different consumption trajectories in the coming decades. Using estimated consumption by age and item groups along with official population projections, Kitao and Yamada (2024a) show that aggregate consumption will decline faster than the population over the next few decades, with the magnitude of decline varying significantly across items, as illustrated in Figure 11. Consumptions for items such as health and care services decline relatively mildly, while other items, including clothes and food, are projected to fall more sharply. This age-specific pattern of consumption has implications for the sectoral distribution of demand growth for countries experiencing demographic aging over the coming decades.

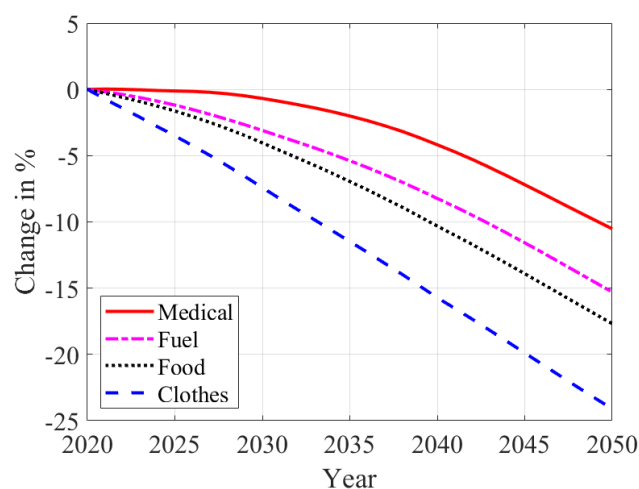


Figure 11. Consumption Projections

Source: Kitao and Yamada (2024a). Projections are computed based on the microdata of the Family Income and Expenditure Survey (FIES) and IPSS population projections.

Inequality and Demographic Aging

As an economy grows, how the benefits of growth are distributed across households is as important as the growth of aggregate variables. When income and wealth gains are concentrated at the top without broader spillover, it is difficult to consider such growth beneficial for the nation as a whole. Close attention should be paid to the inequality dynamics in key areas, including earnings, income, wealth, and consumption, by carefully analyzing microdata. It is essential to analyze inequality not only at the aggregate level but also at more granular levels across various dimensions, such as gender, education, and age groups.

Demographic aging significantly impacts aggregate inequality, particularly in earnings and income. Figure 12 shows the Gini coefficient – a measure of inequality ranging from 0 (perfect equality) to 1 (perfect inequality) – for earnings across households of different ages in Japan, from 1984 to 2014. The upward-sloping profile indicates that earnings inequality increases with age, a general tendency observed in other countries as well. Demographic aging shifts the age distribution toward older individuals, leading to an increase in aggregate inequality due to this compositional effect. This is distinct from the rise in inequality within age groups, also shown in Figure 12, where earnings inequality measured by the Gini coefficients has increased over time among prime-age households, particularly those in their 20s to 50s.

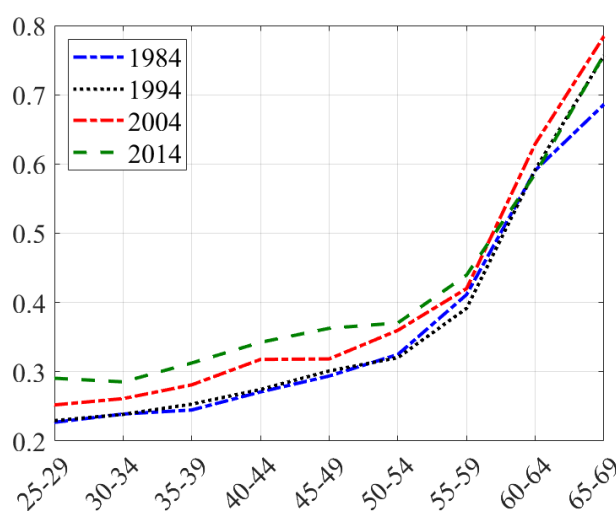


Figure 12. Earnings Inequality by Age: Gini Coefficient

Source: Kitao and Yamada (2024b), Gini coefficients of earnings for 5-year age groups are computed from the micro data of the National Survey of Family Income and Expenditure (NSFIE).

In examining shifts in inequality at the macro level, one can isolate the effects of demographic aging from the overall inequality change. Figure 13 shows the time trend of earnings Gini coefficient at the aggregate level, compared to a hypothetical path assuming the age distribution remained unchanged from the initial period of 1984. A large portion of the increase in the aggregate Gini coefficient is

attributable to demographic aging. However, even after removing the aging effects, there is a visible rise in inequality, which is a separate concern and should not to be confused with demographic effects.

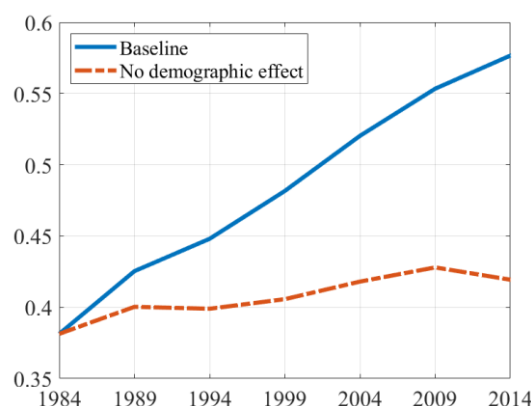


Figure 13. Earnings Inequality Decomposition

Source: Kitao and Yamada (2024b), Gini coefficients computed from the micro data of the National Survey of Family Income and Expenditure (NSFIE).

Rising earnings inequality over the life-cycle may also contribute to greater wealth and consumption inequality in older ages. If individuals are unable to work and must rely on public support beyond public pensions, this would add to the increasing costs of social insurance programs in an aging economy. Rising inequality among younger individuals signals a warning for such trends.

Immigration and Foreign Guest Workers

The issue of immigration and foreign workers has been extensively explored in various studies, so we will not attempt a comprehensive analysis here. However, addressing demographic challenges through immigration or the introduction of more foreign guest workers would not necessarily be a complete solution. As discussed above in Section 1, demographic aging is a common phenomenon across both developed and developing countries, and many countries now face or will soon face similar issues of labor shortage though the timing and magnitude may differ.

As technological advances occur across different countries, there will be rising demand for skilled workers. Highly educated individuals tend to be more mobile across borders, and countries need to offer competitive wages to keep attracting them. Thus, although in countries such as Japan, which have historically limited the influx of foreign workers and immigrants, may temporarily alleviate skill shortages by opening their borders, this approach is unlikely to provide a sustainable long-run solution.

Rising educational attainment in many Asian countries will help alleviate skill shortage, but the simultaneous decrease in low-skilled workers will lead to shortages in manual labor. Relying on foreign workers may offer a temporary solution, but the sustainability of this approach is uncertain given the

anticipated global increase in demand for such workers.

5. Opportunities Amid Demographic Aging

As discussed so far, demographic aging can bring many challenges to a growing economy, including increased government expenditures for age-related transfers, a heavier tax burden distorting economic activities, and a shrinking working-age population. However, there are also new growth opportunities unique to an aging economy.

First, improvement in health conditions can enhance the work capacity of older individuals, creating an opportunity for aging economies in Asia to benefit from a “silver demographic dividend” by mobilizing healthy, productive old people into the workforce (Kikkawa et al 2024). As the market becomes more open to older individuals, those who are willing and able to continue working will now have the opportunity to do so. The government could play an active role by encouraging older individuals to acquire skills, especially in sectors facing rising demand, while not displacing younger individuals who could contribute to economic growth.

Second, older and retired individuals are consumers rather than savers, and their consumption can stimulate the demand, especially in goods and services tailored to older demographics. As discussed in Section 2, demand for health and care services, for instance, increases with age, and these sectors have strong potential for growth relative to other sectors for many years to come. Retirees also have more time for leisure, and service products that are tailored to their needs may stimulate demand from old individuals.

Health and care services are generally more labor-intensive than other sectors. Given the declining labor force, these are areas where investment in labor-saving technology, such as robotics and AI, to support workers could be particularly beneficial. In Japan, the Ministry of Health, Labour and Welfare (MHLW) and the Ministry of Economy, Trade and Industry (METI) jointly run a government program to invest in long-term care technology. This initiative holds promise if it leads to products that benefit older individuals while also helping to reduce the future fiscal costs of health and care services.

6. Conclusion

Asian countries are experiencing rapid demographic aging, which presents both significant economic challenges and unique opportunities. While an aging population typically leads to increased fiscal pressures and labor shortages, it also opens pathways for growth through innovation, and by creating work opportunities to untapped groups of workers. By promoting healthier aging and encouraging older workers to remain in the workforce, economies can partially offset the effects of a shrinking workforce

and even benefit from a “silver demographic dividend.”

It is crucial to make realistic demographic projections, factoring in trends in fertility rates and longevity, without excessive optimism. Based on these projections, Asian countries must carefully design social insurance systems that balance the need for safety nets and old-age security with fiscal sustainability, while avoiding policies that distort labor supply decisions and hinder efficient resource allocation. Labor supply is influenced not only by the size of the working-age population, but also by individual productivity. Policies that were once effective but now impede efficient resource allocation and growth should be removed.

An aging population will increase demand for goods and services tailored to older individuals, who are primarily consumers rather than savers. Consumption in sectors such as healthcare and long-term care, and leisure services, offers substantial growth potential in the coming decades. Strategic investments in technology, particularly in robotics and AI, can enhance productivity while easing the labor intensity of services required for an aging demographic. While efforts to boost fertility are important, equally critical is improving individual productivity. The experiences of countries like Japan, with their ongoing policy experiments, provide valuable lessons on how technology and policy can improve the welfare of aging populations and achieve sustainable growth.

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