Economic Impacts of Population Aging in Japan

Executive Summary

Landis MacKellar
with
Tatiana Ermolieva
David Horlacher
Leslie Mayhew

Introduction

The population of Japan is now declining, and the ratio of persons in the prime working ages to persons who are elderly will inexorably rise over the next half-century. Thirty years ago, the view was widely held that rapid population growth and the resulting young age structure would prevent developing countries from ever rising above poverty. As that view gave way to a more nuanced interpretation of the effects of population growth, paradoxically, the view took hold that the reverse demographic situation -- population decline and an elderly population -- implied catastrophe for rapidly aging developed countries such as Japan. This report is an attempt to assess the economic impacts of foreseeable demographic trends on Japan.

Report summary

The first chapter of the report, a general synthesis of the economics of population aging, emphasizes that aging does not hit a society as a meteorite hits an inert planet. Even without taking into account institutional and social change, the traditional static neoclassical model of the economy suggests that there is a wealth of possibilities for adapting to the challenge of aging. Just as a neoclassical view would hold that rapid population growth need not mire developing countries in poverty, so does it suggest that population aging need not, as some have suggested, bankrupt the advanced industrial economies of the world. However, shifting factor prices as the working-age population declines and the rising cost of pension and health systems as the ranks of the elderly expand will give rise to intergenerational distributional pressures needing to be worked out through the political process. The evidence suggests that young people in the U.S., Europe and Japan (and eventually in China and the more rapidly aging developing countries) will probably have to pay higher taxes and social contributions (out of higher incomes), old people are going to have to work longer (at better jobs), and retirees are going to have to get by on pensions lower than they expected.

What are policy makers’ degrees of freedom? Based on a general survey of industrial countries,
• Policy makers can reduce the distortionary features of public pension systems that encourage workers to retire early. They often fail to do so because they are reluctant to forego redistribution, meaning that they cannot muster the necessary political support. In Western Europe, some have also fallen prey to the fallacy that excluding older workers from the labour force will increase the employment of younger workers. However, firm retirement provisions are much more important than public pension retirement provisions in determining age of exit from the labour force. And in Japan, account must be taken of the fact that the labour force participation rate of elderly workers, while it has declined over time, is by far the highest among industrialised nations.

• There is relatively little that the state can do to mobilize savings except for engaging in the requisite saving itself. Raising taxes worsens distortions and multiplies deadweight costs, so the only road to greater public savings, short of sustained rapid economic growth, is cutting public expenditure. Voters appear to be unenthusiastic. Perhaps it does not really matter: in an aging world, savings and investment may be overrated because labour force growth will be slow. Others, however, would reply that the "new economy" places a greater premium than ever on investment in new technology.

• While demographic conditions indicate that there would be gains to a transition from Pay as You Go (PAYG) to capital reserve financing, the political chances of this occurring are slim. The best to be hoped for in most countries is the allocation of some small fraction of social security contributions to a capital reserve and modestly increased role of private savings. Moreover, all pension systems are PAYG in the broad sense that goods must be transferred from young producers to elderly consumers. Whatever the precise nature of the claim created for the elderly, it needs to be financed by reduced consumption of the non-elderly. The relevant question is whether the means of financing elderly persons’ claim on output, be this public pension entitlements, personal assets, etc., gives rise to distortions and inefficiencies.

• Superior global allocation of retirement saving portfolios can only add a few basis points to the risk-adjusted rate of return. Moreover, the beneficiaries in industrial countries are those who are relatively well off; the poor who depend on labour income when young and public pensions when old are unambiguous losers when capital is re-allocated from mature to emerging economies.

• Given the pace at which beneficial new tests and treatments emerge, none of the proposed avenues for reducing health care expenditure appears particularly promising. Governments can moderate expenditure growth, but need to keep in mind that, in an aging society, health care is deservedly a priority sector.

The sooner policy makers act to anticipate the adverse effects of aging with the means at their disposal, the better. However, population aging will have pervasive economic impacts regardless of the extent of government support for the elderly. Policy reforms can mitigate the problems associated with population aging, but they are unable to eliminate them entirely. Whatever steps policy makers take, and whatever the degree of government involvement in areas such as pensions and health, population aging will make its presence felt throughout the economy.
The second chapter of the report focuses on Japan, summarizing the demographic outlook and reviewing the results of major studies. The main conclusion from Chapter 2 is that the Japanese demographic prospect is indeed daunting. Among the conclusions that emerge from this chapter, three in particular stand out:

- Although inefficiencies in the labor market can be reduced, labor force decline appears to be inevitable after 2025. Moreover, this is a best-case scenario -- in the absence of policies to encourage additional labor supply, shrinkage in the Japanese workforce is beginning right now, at the turn of the century. In general, the labor force outlook is more sensitive to the participation of persons who would like to work but feel that they cannot because of their circumstances (so-called “invisible workers,” mostly women who do not work because they are caring for young children, etc.) than to participation of the elderly.

- While great uncertainty must be attached to impacts of demographic change on saving rates, there is near unanimity among researchers that the availability of savings will decline, with implications not only for Japan, but for the world economy as well.

- Financing problems in the Japanese public pension system are already beginning to surface, in the form of increasing contribution rates, and will be exacerbated by projected demographic developments in the future. The same holds for the health system. A general impression is that policy makers have coped with controlling health costs more effectively than they have coped with pension-system problems.

What are the demographic sources of these pressures? While rapidly declining mortality at older ages is one important factor, the key factor driving population aging in Japan is the sustained decline in fertility. Available evidence gives no reason to believe that fertility will increase anytime soon, indeed, if experience is a guide, current official forecasts for fertility are probably too high. Reinforcing the problem, current forecasts for longevity are probably too low.

In Chapter 3, we describe an economic-demographic simulation model designed to study macroeconomic trends and the evolution of pension and health care systems. We have chosen to concentrate on demographic detail, accounting consistency, and transparency, even at the expense of making many ad hoc assumptions regarding economic behavior. The model and its marginal simulation properties are described in Chapter 3 and its algebraic structure is presented in detail in Annex 3.1. Initialization assumptions, i.e. the values of model parameters and exogenous variables, are presented in Annex 3.2 and the resulting baseline solution for the period 1995-2050 is described in the main body of the chapter.

Given the demographic outlook and reasonable economic parameters, the general long-term picture painted by the model is one of slowing per capita growth, a declining national saving rate, rising social contribution rates (subject to the assumption of no change in labor force participation rates or the calculation of pension, health, and long-term care benefits), and reduction in net foreign assets (see Figure 1). While disposable income of both the elderly and the working-age population are expected to rise (i.e., living standards will continue to improve), our assumptions translate into an eventual long-term decline in the living standards of the young relative to those of the elderly. This is, of course, subject to our assumption that the main mechanism for adapting to the rising costs of pensions and health is increasing payroll contribution rates. While we do not devote much attention to the
international picture, one striking fact is that this scenario applies, *grosso modo*, to all the developed, rapidly aging regions of the world. Japan may be leading the way, but other countries must surely follow.

Given our focus on demography, we are especially interested in the sensitivity of this scenario to demographic uncertainty. The IIASA population projections used here are based on expert opinion regarding fertility, mortality, and migration rates. The experts concerned were asked to give high-low bounds for the total fertility rate, life expectancy, and net migration so that 5% of the subjective probability mass lay above their high estimate and 5% below lay below their low estimates. The central, baseline values were calculated as the midpoint of the high-low bounds. In Figure 2, we illustrate the central scenario, low fertility scenario, and low mortality (i.e., high longevity) scenario values of selected major indicators. While values naturally fan out towards the end of the 55-year simulation period, the overwhelming impression is that the outlook is not terribly sensitive to demographic uncertainty. A major conclusion of this study is thus that, even given reasonable demographic uncertainty, the scenario of “demographic stagnation” described above is likely to occur. Inevitably, this rather gloomy prediction is conditional upon productivity growth. Technological progress can trump aging, and only highly speculative arguments suggest that aging can stifle technological progress.
Figure 2. Three demographic scenarios: Central Fertility-Central Mortality-Central Migration, Low Fertility-Central Mortality-Central Migration, Central Fertility-Low Mortality-Central Migration

A. GDP per capita (1995 $US)

B. Aggregate saving rate (percent)

C. Assets, DB & DC private pension systems combined (percent of GDP)

D. Disposable income per capita, population aged 60+ : population aged 15-59 (percent)

E. Contribution rate, public pension system (percent)

F. Contribution rate, health and long-term care systems combined (percent)
In Chapter 4, we study alternative scenarios featuring lower fertility, greater longevity, and higher international migration more closely. In order to compare these alternative scenarios to the baseline, we effect a decomposition of the total difference between baseline and alternative scenarios into components attributable to differences in population size holding age structure constant and differences in population age structure holding size constant. In so doing, we illustrate a few propositions -- immigration has little effect on the financing of social insurance because it has limited effect on the age distribution, pension and health systems are more sensitive to mortality than fertility in the near term but more sensitive to fertility than mortality in the long term -- that are familiar from elsewhere.

Conclusion

At least in the West, the myth of a Golden Age in which parents aged gracefully in the bosom of their families, dying with a minimum of inconvenience for all concerned, is a myth in the pejorative sense of the word. Life was never that simple, and death was never that graceful. Just as individual aging presents grave challenges at the personal and household levels, so does population aging pose problems for societies and policy makers. These problems are likely to be particularly acute in Japan because of the demographic outlook in that country is more extreme than elsewhere.

In closing, we evoke John Maynard Keynes’ metaphor of twin demons: the Malthusian demon of population growth in excess of the job-creating capacity of the economy and the anti-Malthusian demon of demographic stagnation resulting in insufficient demand. Just as one demon is being chained up, he wrote, the other one escapes. To translate into Japanese terms, look back half a century -- Japan was a poor country with a dismally overcrowded agricultural sector and an under-capitalized industrial sector producing simple consumer goods whose low quality was the butt of jokes. Japan is now one of the richest, most technologically advanced countries in the world, thanks at least in part to high saving rates associated with the post-war demographic transition. But the reduced youth dependency ratio which facilitated saving is now working its way up the age ladder, translating into a swollen elderly dependency ratio, with exactly the opposite effect. This is the "unwinding" of the demographic component of the Japanese economic miracle. By the time it has run its course, the change of demographic regime will have taken about a century to work its way through the economic system.

Thus, Keynes' vision of twin demographic demons is as apt, and as prescient, as it was three-quarters of a century ago. Japan tamed the Malthusian demon in the second half of the twentieth century. But in doing so, it inevitably let slip the anti-Malthusian demon, which it now must tame in the first half of the twenty-first. In this report, we have provided quantitative estimates of the nature and scope of the challenge.