

**The Grey Dragon:  
Population Ageing in Japan and What  
European Policy Makers Can Learn from It.**

**by Landis MacKellar**

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## Introduction

I have taken the rather fanciful title of this lecture, with some liberty of translation, from a passage that Keynes wrote in 1937. In that passage, he wrote of twin demons – I will call them dragons since we are in an Oriental setting. The *Malthusian dragon*, he wrote, is population growth in excess of the job-creating capacity of the economy. The *anti-Malthusian dragon* is demographic stagnation resulting in insufficient demand. While one dragon is being chained up, he wrote, the other escapes and ravages the land.

Fifty years ago, Japan was a poor country with a desperately overcrowded agricultural sector and an industrial sector whose output was confined to cheap consumer goods. The low quality of these products was the subject of jokes; “Made in Japan” was an epithet. Few children went to high school, let alone to university. Today, Japan is an economic powerhouse, a leader in technological innovation, and a key player in the global capital market, both in terms of foreign direct investment (mainly in China and Southeast Asia) and portfolio holdings (mainly U.S. Treasury securities).

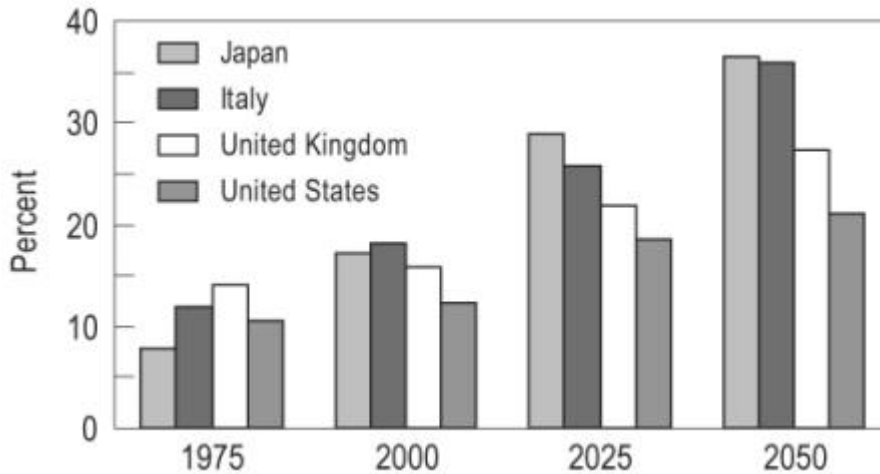
Many explanations, ranging from the total replacement of the capital stock following the devastation of WWII to financial repression – basically, forcing savers to invest in Government-backed projects whether they wanted to or not -- to “traditional” values have been adduced to explain the Japanese economic miracle. But, most economists would argue, at least some of the miracle is due to the tremendously rapid decline in fertility that occurred during the 1950s and 1960s, i.e. the taming of the Malthusian demon.

When a rapidly growing population experiences a sharp fertility decline, a relatively large generation of young working people find themselves with few dependents to support – a relatively small generation of parents because their parents’ fertility was high and a relatively small generation of children because their own fertility is low. There is evidence that during the opening of this demographic window of opportunity, if the policy and institutional environment is enabling and external conditions are benign, a large share of income is saved and devoted to capital formation, including human capital formation. Eventually, however, the window closes. Fertility, being bounded from below, cannot decline at the same proportional rate indefinitely. It is only a matter of time until a generation of workers finds itself supporting an approximately equal-sized generation of children (assuming replacement level fertility) and an equal-sized generation of parents (making the same assumption).

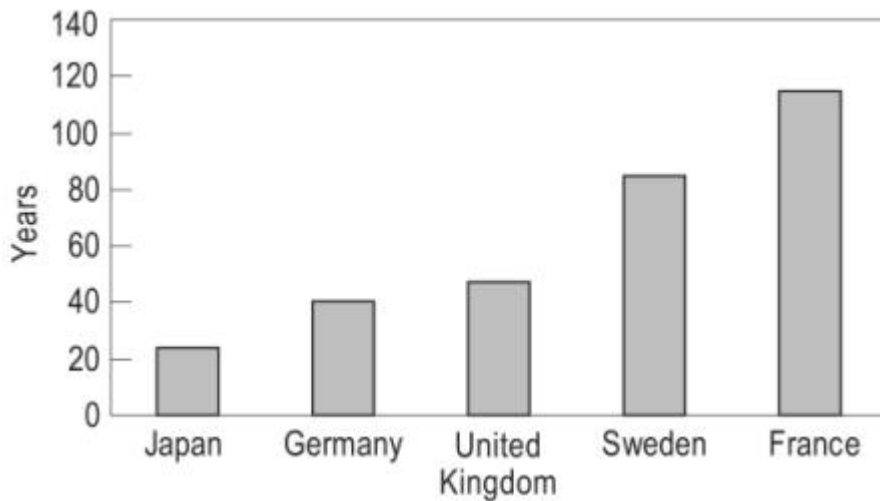
In the second half of the twentieth century, Japan chained up the Malthusian demon. But in doing so, it of necessity let slip the anti-Malthusian dragon, which it must now tame in the first half of the twenty-first century. The difficulties it is confronting, and what other policy makers might learn from Japan’s experience, are the subjects of this lecture.

## Demography

The population of Japan is ageing very rapidly; in fact, it is probably not hyperbole to state that it is ageing more rapidly than any population in history (note, in passing, that the population of China will age more rapidly yet). In **Figure 1**, we see the share of population aged 65 and over and in **Figure 2**, the number of years required for the share of population aged over 65 to double from 7 to 14 percent. Having been the *least* old of the major OECD economies in 1975, Japan will be the *most* old in 2050.



**Figure 1:** Share of population aged 65+

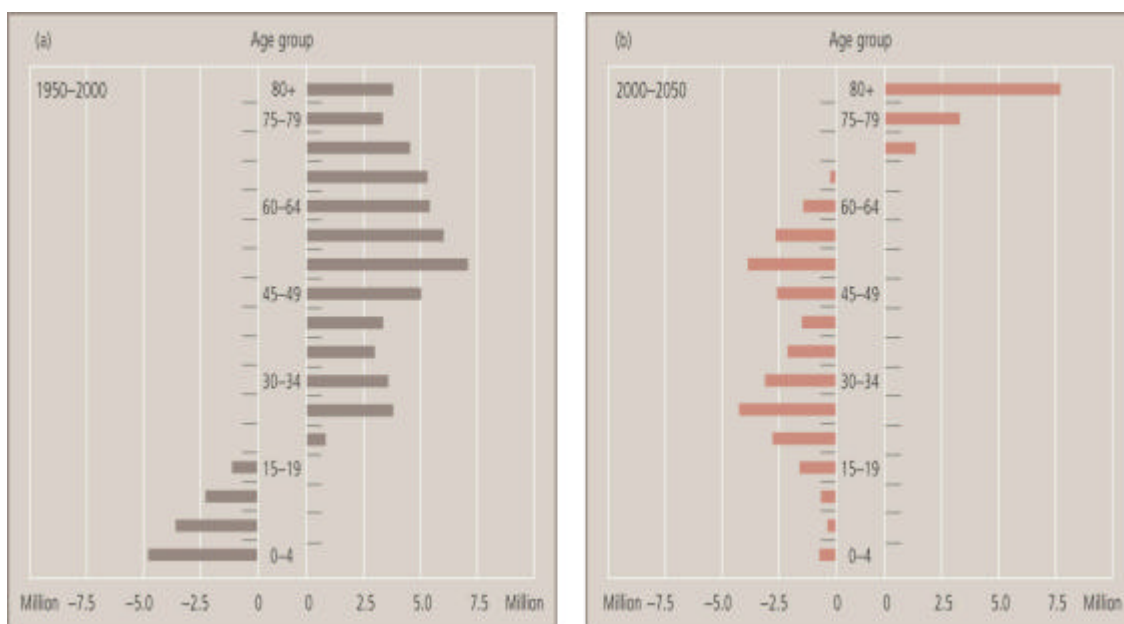


**Figure 2:** Time to double from 7 to 14 percent

### *Lesson 1:*

*The demography could be worse*

It is important not to get bogged down in ratios and demographic calculations. The simplest way of appreciating the demographic predicament is to look simply at past and projected absolute change in population by age group. In **Figure 3**, we show change in total population by age group in 1950-2000 and 2000-2050. In the first period, the number of persons under 20 fell (due to fertility decline) and the number of persons over 20 increased. Increases exceeded decreases, as a result of which the total population grew from about 84 million in 1950 to 127 million in 2000. From 2000-2050, the “twist” observed in the figure moves up the age ladder with a vengeance. Only the population over 70 will increase, with the greatest increase being observed among those over 80.

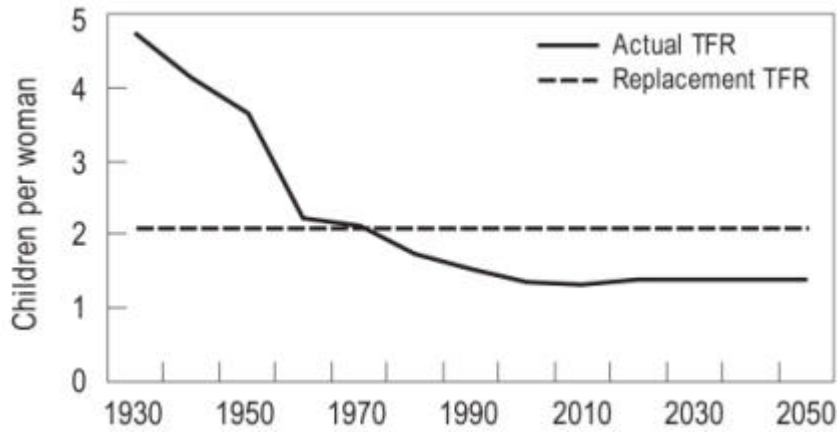


**Figure 3:** The „age twist“ – absolute change in population, by age group, 1950-2000 and 2000-2050

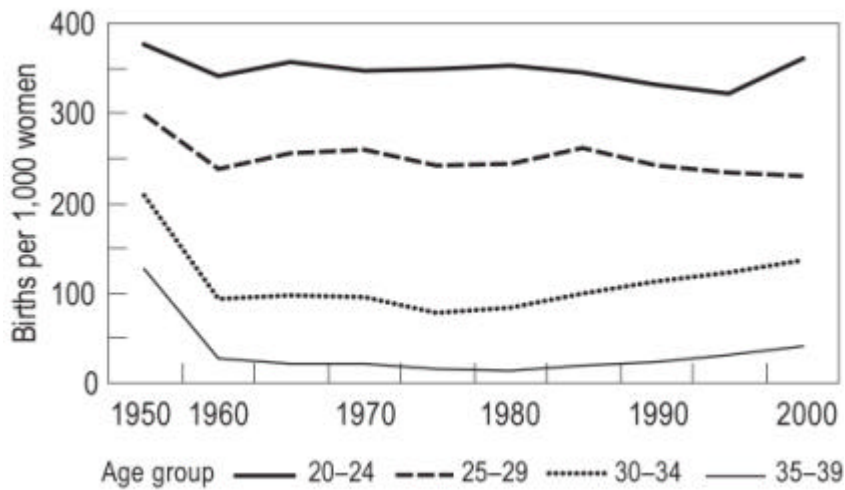
### *Lesson 2:*

*Don't just worry about the increasing number of the elderly ... worry about the increasing number of the “oldest old.”*

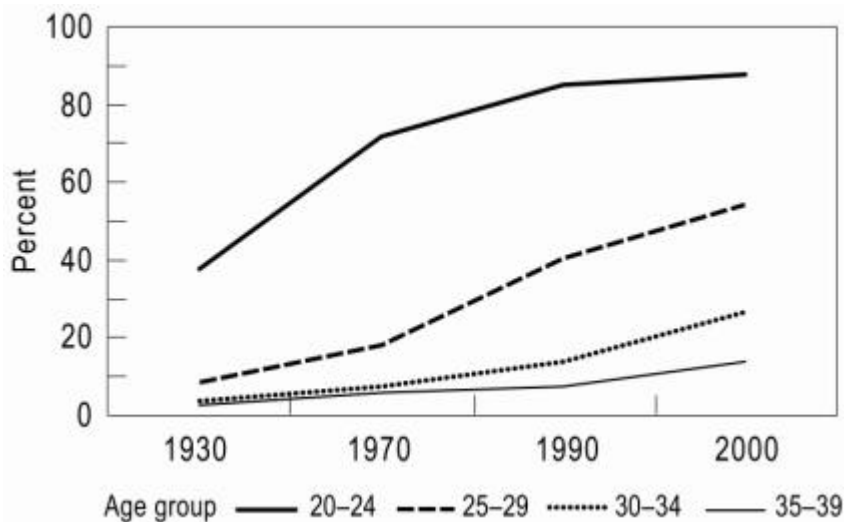
If “population ageing” is taken to consist of the increase in the elderly dependency ratio, then the reason for extreme Japanese ageing, members of this audience will know, is the rapidity of fertility decline in the 1950s and 1960s and the persistence of sub-replacement fertility since the 1970s (see **Figure 4**). Yet, and this cannot be overemphasised, Japan is not suffering from a *fertility* crisis, it is suffering from a *marriage* crisis. As shown in **Figure 5**, age-specific fertility rates for married women have been quite stable since the 1960s. Yet the proportion of Japanese women never married has steadily risen (**Figure 6**).



**Figure 4:** Total fertility rate, 1930-2050



**Figure 5:** Marital fertility rate, by age group, 1950-2000

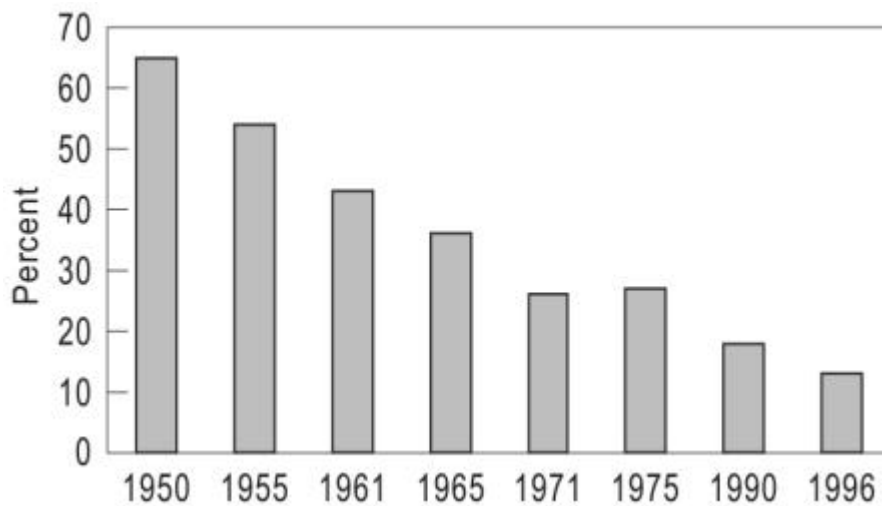


**Figure 6:** Proportion of women never married, by age group, 1930-2000

What to do? Social pressure to marry and have children continues to be strong and 90 percent of women in their twenties say that they plan to marry eventually. The problem, of course, is that many never get there. Part of the reason is the expansion of the enrolment of women in higher education, which both delays marriage because of time demands but also increases the opportunity costs of marriage because it represents an investment of human capital which will be remain idle in a traditional Japanese marriage.

Government has put in place a program to provide day care for children (the “Angel Plan”) as well as a maternity leave policy for female workers. Yet impacts have fallen far short of intended results; perhaps the conclusion to be drawn is simply that to have an impact such programs must be very ambitious indeed. Most discouragingly, attitudes do not appear to have changed much. Few women have taken advantage of a one-year parental leave program because of pressures from peers and supervisors. The social sanction against mothers of young children who work continues to be strong. The social sanction against out-of-wedlock childbearing remains absolute even as sexual mores have become accommodating.

As the perceived costs of having children have risen, the perceived benefits have declined. Barely over 10 percent of women now report that they expect old-age support from their children, as opposed to over 60 percent after the war (**Figure 7**). Perhaps most tellingly, the share of all women with children aged 0-14 who report that they derive pleasure from child rearing was, in the early 1990s, only 9 percent, as opposed to 40-70 percent in other industrial countries.



**Figure 7:** Proportion of women expecting to receive old-age support from their children, 1950-1996

Fertility is not, of course, the beginning and end of the population ageing story. Much of the absolute increase in the number of very aged persons, the “oldest old” in particular, has to do with improvements of health in very old age. The rate of growth of the population aged over 100 in Japan is currently in excess of 10% per year, a fact that has nothing whatever to do with fertility decline. Les Mayhew of City University

has calculated that, if mortality trends since the late 19<sup>th</sup> century continue, by 2020 the life expectancy of a Japanese woman aged 50 will be 40 years.

Traditionally, aged parents resided with their eldest son's household. Fertility decline has, of course, raised the proportion of men who are eldest sons. The proportion of the elderly co-residing with their children is declining, however, married women are still expected to provide substantial amounts of support and care for their husbands' parents. Therefore, in addition to rising opportunity costs and declining benefits associated with childbearing, women considering marriage must confront the costs associated with providing care.

All in all, the traditional life course of marriage and childrearing is no longer attractive to many Japanese women. There are experts in fertility policy in the audience who will have more reliable opinions than my own on what sorts of approaches may address this problem. From the political right, we have generous payments to mothers who stay home and care for children, "Heroine of the Motherland" awards, and the like. From the left, we have programs to provide child care for mothers who work, the public shaming of husbands who make no contribution to home production, generous support systems for out-of-wedlock child bearing and the like.

### ***Lesson 3:***

***Make child bearing attractive for women ...***

***..., but be forewarned that modest programmes may not make much difference in the face of strongly entrenched values***

One of the most striking aspects of Japanese policy is that the possibility of expanded immigration is virtually taboo. Foreigners made up only 1 percent of Japan's labour force in 2000; legal immigration is practically impossible (except for ethnic Japanese highly skilled workers), illegal immigration is ruthlessly suppressed, and popular views of those immigrants who do live and work in Japan is unrelievedly negative. There is a lesson here: it is perfectly possible to confront demographic decline without permitting immigration. The costs are there to be sure – labour market bottlenecks, high wages, etc. – but it strikes me as a pity that in Europe these cannot be discussed in a civil fashion. Nor, to tell you the truth, can they in the United States.

### ***Lesson 4:***

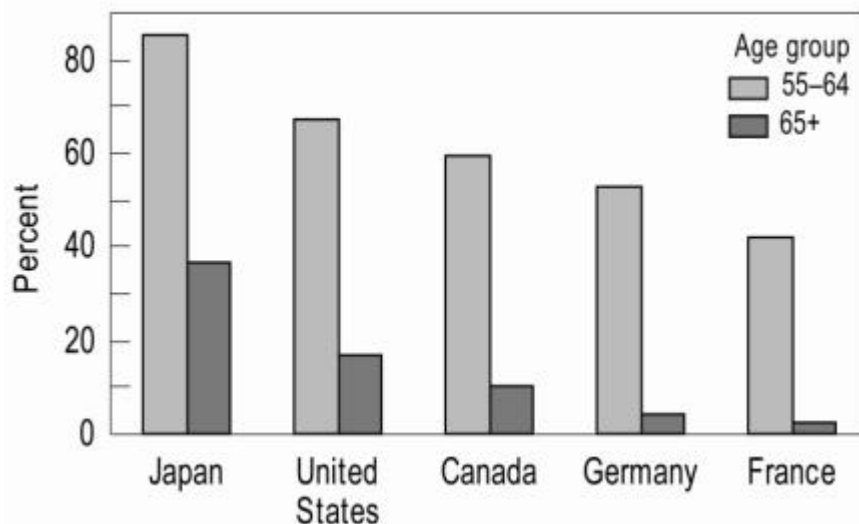
***It is possible to envisage an ageing population with zero immigration.***

## The labour market

Economists have a tendency to lead off their discussions of impacts of population ageing with impacts on saving and investment, yet impacts on the labour market are much more direct and, if truth be told, better understood.

The Japanese labour market is characterised by lifetime employment and a rigid seniority-based wage scale. As elsewhere in the OECD, young workers are paid less than their marginal product and old workers more than their marginal product, an arrangement that encourages high levels of effort and low turnover. Mandatory retirement, virtually universal across firms, is the solution to the problem of how to get rid of high-cost elderly workers. Firms, in effect, offload expensive older workers onto an accommodating public pension and health insurance system.

Public policy makers in every OECD country, not surprisingly, cry out for “active ageing” and denounce the rigidities and moral hazard in retirement schemes that force or encourage workers to retire. None call more loudly for reform than the Japanese. But over 70 percent of firms permit workers past retirement age to carry on in some diminished capacity – perhaps part time, perhaps seasonal, perhaps as an honoured adviser in the case of senior employees etc. In fact, Japanese men work an average of 5 years after mandatory retirement, receiving wages 20-40 percent below their pre-retirement wages. Thus, one of the paradoxes of the Japanese experience is that rigid mandatory retirement co-exists with an extraordinarily high labour force participation rate of the elderly (see **Figure 8**).

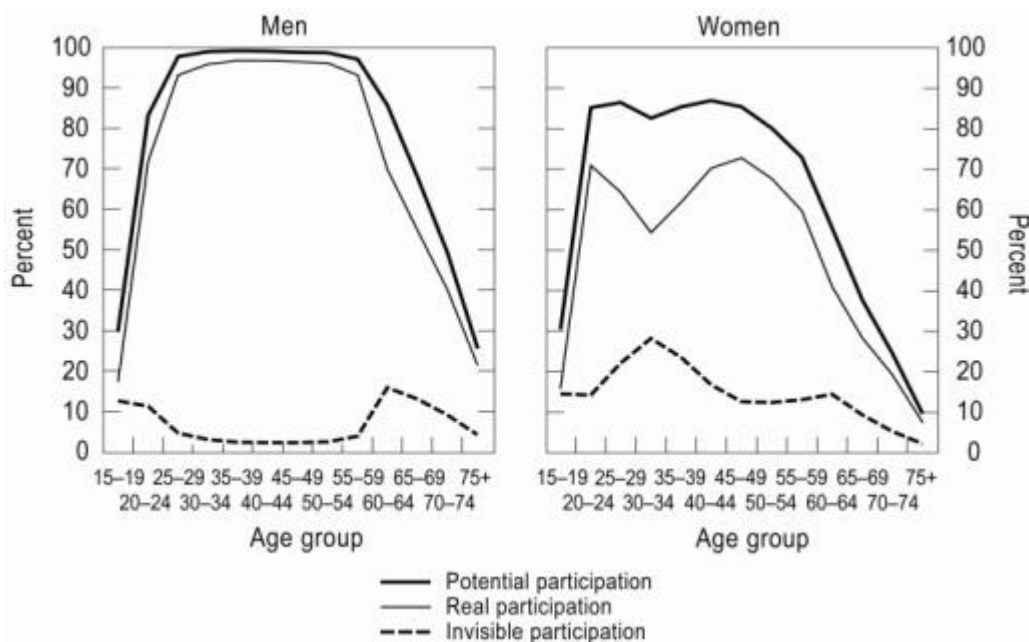


**Figure 8:** Male labour force participation rates, 55-64 and 65+

Japanese labour statisticians have a particular and very interesting statistical category called “invisible workers.” “Invisible” workers are those who respond to labour force surveys by saying that they would like to work but are unable to for reasons ranging from the lack of appropriate job opportunities to a mother-in-law’s disapproval. In **Figure 9**, potential labour force participation rates are sketched as the sum of actual participation rates and the “invisible” participation rate. It is immediately apparent



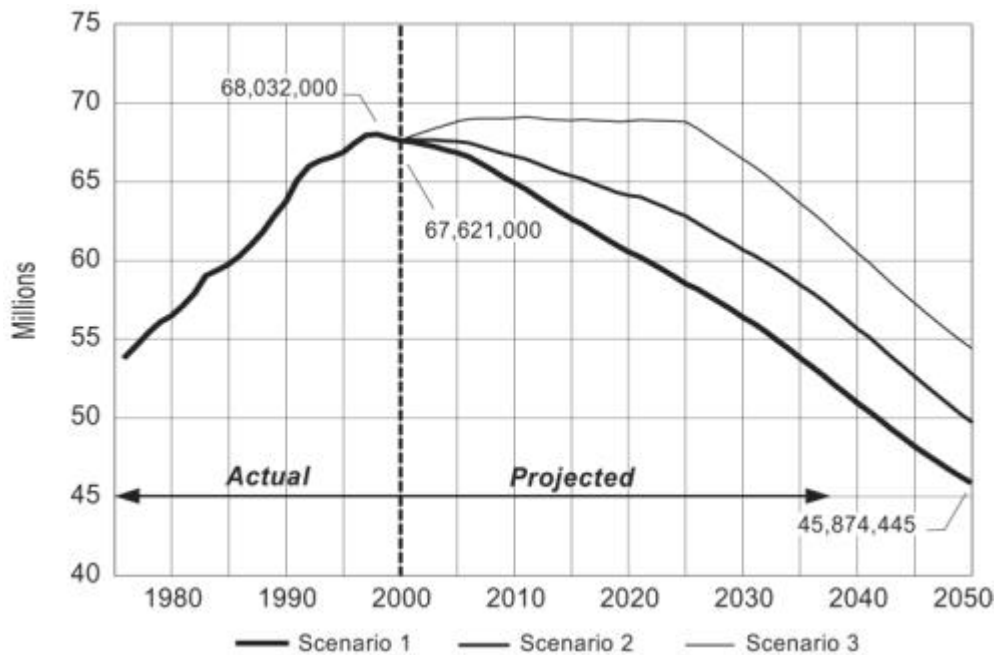
that “invisible” participation is concentrated among women: in fact if “invisible” women workers were brought into the labour force, the striking M-shaped female labour force participation rate curve, with the dip in the mid-twenties to forties caused by child care responsibilities – would largely disappear. The incidence of male “invisible” labour force participation never *exceeds* 10 percent except in the teens and at roughly age 65; the rate of female invisible labour force participation is never *below* 10 percent until over age 60.



**Figure 9:** Real, „invisible,“ and potential labour force participation rates, by age and sex

What keeps Japanese women in their thirties and forties out of the labour market, and what encourages them to take part-time or poorly paid jobs when they are in it? The poor availability of child and elder care has already been mentioned. High marginal taxation, including punitive marginal social security taxation, is another.

A summer student at IIASA did three alternative labour force projections. These are shown in **Figure 10**. One extrapolated current labour force participation rates, in which case, the Japanese labour force is beginning to contract even as I speak. The second assumed that between 2000 and 2050, labour force participation rates above age 60 gradually rise 20 percentage points, which means that by the end of the period virtually all men aged 60-64 would be in the labour force and some 60 percent of men aged 70-74. Note that this takes no account at all of unemployment, which is concentrated among older men. Even under this scenario, the projected, the labour force is beginning to contract. But when “invisible workers” are brought into the labour force (again gradually, between 2000 and 2050) decline in the labour force is forestalled until about 2025. The two lessons to be derived are first, decline in the labour force is inevitable but, second, in order to forestall it, bringing discouraged women into the labour force is more effective than encouraging greater labour force participation of the elderly.



**Figure 10:** Actual and projected labour force, 3 scenarios

How can these striking findings be applied to Europe? Some clearly cannot. Female “invisible” labour force participation is lower than in Japan. Elderly labour force participation in Europe is extremely low and moral hazard no doubt plays a great role in this; this suggests that policies to increase labour force participation would have much greater effect on total labour force size than in Japan. Yet there would appear to be at least two lessons that can be derived. It is that even in an advanced welfare state, labour force participation of the elderly can be high. The price paid for this, however, is that this participation must be under highly flexible conditions and, most importantly, the elderly cannot continue to earn age-inflated wages forever. Second, problems with welfare state finances, especially pensions, can co-exist quite comfortably with high labour force participation of the elderly:

### *Lesson 5:*

*Even in an advanced welfare state, labour force participation of the elderly can be kept high ...*

*... but this can be achieved only so long as this segment of the labour market is highly flexible ...*

*... and do not assume that welfare state finance problems will be solved as a result.*

**Digression on labour productivity.** The great economist Colin Clark commented that no entry in the English dictionary stirred the blood like that magic word “land.” Much the same goes for the word “productivity,” at least in business circles. Much of

this debate revolves around total factor productivity, but some of it revolves around labour productivity as well, and I will mention the subject here. These comments have already been given, by the way, at a recent Austrian National Bank conference.

As I interpret research done at this Institute, age structure raises many interesting questions for productivity without necessarily being important at the “headline” or economy-wide level. Parenthetically, that is also my view on population and economic growth in general.

Age patterns of productivity – let us assume that they are significant and unfavourable to those of us on the wrong side of forty -- combined with the evolving age structure of the labour force probably will not have much impact on average output per worker at the economy-wide level. Let me give an extreme example. In the UK, about one-third of the adult population ca. 2000 was over 50; in 2020, about half will be. Say that the same applies to the labour force. Assume that productivity is flat until 50 and then falls to zero: in other words, workers under 50 shovel and workers over 50 simply lean on their shovels. Then the projected age structure change would reduce the average product of labour by precisely 25% -- that’s over 20 years and assumes no response whatsoever at the level either of government or firms (not to mention individuals). If the productivity of workers over 50 is half that of workers under 50, the reduction would be 10 percent. Add to this that even low-labour productivity countries can exploit their comparative advantage, and the issue is pretty well sliced down to size.

This is not to say, however, that ageing may not be a problem at the sectoral level, and especially in sectors where older and younger workers are very poor substitutes. Does that mean that ageing countries will no longer be able to function well in knowledge-intensive sectors? Actually, I think the problem is likely to be more acute in sectors requiring physical labour, like construction, or acute mental concentration or reaction, like the trading of financial instruments. This is because, in knowledge-intensive sectors, there is training, there is the great value of firm-specific human capital, and there is the importance of “networking,” all of which give the older worker an edge. Some will note that I exclude trading from the knowledge-intensive category; some may remember that Keynes made a fortune in commodities, about which he knew nothing, and lost a fortune in currencies, about which he knew everything that was to be known at the time.

### ***Lesson 6:***

***Do not assume that ageing is a problem for economy-wide labour productivity ...***

***... but do not assume that it is not a problem at the sector level.***

## Savings, capital, and investment

Explanations ranging from measurement issues to the need to rebuild asset positions after the war to the prevalence to earthquakes to the rapid depreciation of the residential housing stock have been used to explain Japan's elevated saving rate. An immediate lesson to European policy makers imposes itself: do not assume that economists understand saving behaviour. A corollary: do not underestimate their propensity to concentrate on this issue despite their lack of comprehension.

Savings consist of public and private savings, the latter of which can be split into household and corporate savings. Let us adopt the convenient assumption that households treat corporate savings as their own; that way, we need not worry about the behaviour of firms apart from the behaviour of their owners. The often-made projection that household savings will decline with ageing comes out of the common life-cycle model in which households build up assets during their working life and then de-cumulate them after retirement. In Japan (as elsewhere) some researchers have questioned the relevance of the life cycle model on the basis of evidence showing that elderly households, even the oldest households, continue to save. But in Japan, this reflects a bias in evidence. Households headed by the elderly consist disproportionately of households whose head is still working or well-to-do households. Non-wealthy households in which the head has retired actually do dis-save. Other households have been absorbed in their children's households and no longer show up in the data as a result. In fact, virtually all studies of household saving behaviour in Japan conclude that the household saving rate will decline as a result of ageing. That said, there is no unanimity on whether the effect will be strong or weak. And the theoretical model that underpins these projections, the lifecycle model, is under continual attack from succeeding generations of graduate students.

Scientific uncertainty about *household* savings should not, however, obscure the fact that there is unanimity that population ageing will place pressure on *public* savings, i.e. government fiscal balances via the pension and health systems. If the government seeks to avoid payroll tax increases, then it must finance social security spending out of general revenue and, if there are not offsets elsewhere in the budget, public savings decline. If government increases social security payroll contributions to avoid deficits, then household disposable income, and along with it household savings, goes down – life cycle model or no life cycle model. Some economists think that private savings are better than public savings because households allocate them across investments better than governments, but that argument aside, it is not clear why one scenario is to be preferred to the other.

Given this trade off between private and public savings, it will not come as a surprise that virtually all studies have concluded that high Japanese aggregate saving rates will come down as a result of ageing. This will come as no surprise to demographers, who think in terms of a rising ratio of net consumers to net producers.

### ***Lesson 7:***

***Population ageing probably reduces private saving rates. It reduces aggregate saving rates (i.e. private plus public) with virtual certainty, which is entirely consistent with the increase in the ratio of net consumers to net producers.***

**Digression on ageing and the globalisation.** And in a closed economy, savings *should* come down because an ageing economy has too much capital. Let me return to the productivity issue. The labour productivity argument misses the broader point. The variable that matters is total factor productivity which, although typically measured as a residual, presumably reflects the effectiveness with which labour and capital are combined. Therefore, in the broader sense, we need to be concerned not only about the labour productivity, but capital productivity as well. Here, the neoclassical argument is that an ageing population will, because of the slow labour force growth (or decline) that goes hand in hand with ageing, be one in which output per unit of capital (I mean physical capital here) is declining.

Those of you in the audience who, like me, work a great deal in developing countries will be accustomed to thinking of situations where labour force grows so fast that saving and investment cannot keep up and labour productivity (and wages) are low as a result – not enough capital to equip the workers. But think of the ageing OECD economies – labour force stagnates, as a result of which there is a glut of savings, leading to investment in unproductive projects and declining productivity of capital (and the rate of return to it). And, as if to add insult to injury, the capital stock, like the labour force, will be older and presumably less productive as a result.

So the neoclassical answer to population ageing is to save less, not more? Then why are we subjected to a daily political drumbeat to save more lest we find ourselves destitute? Some in the audience will be way ahead of me already, because they will have flagged the fact that I stipulated a closed economy. In the real world, it is argued, the answer to both sets of problems is to save more, but to invest in the dynamic, emerging, labour-rich but capital-poor economies of the Third World. This is precisely what Japan has done in Southeast Asia and China; it has also been a major investor in the United States, which is hardly Third World but does have a relatively rapidly growing labour force, in addition to be very dynamic because of its generally pro-growth policy environment. *The Economist* enthused, about 8 years ago, that direct investment in the Third World was the way to “beat demography.”

For what it is worth, I give this argument at best two out of three cheers. Calculations we did with the OECD several years ago (which have been more or less replicated by other researchers) suggest that the enhancement to the risk-adjusted rate of return to OECD portfolios is only a few basis points, very small compared to the amounts of money involved. The OECD beneficiaries of enhanced portfolio allocation are those who have portfolios to allocate in the first place; those who depend on labour income when young and wage-based transfer programmes when old gain nothing and lose something when capital is globalised. The enormous gainers, of course, are members of the Third World middle class and what might be called the “new labour aristocracy” – those workers and managers fortunate enough to work in international firms. This is no trivial gain. And I think it is a Pareto gain; I have hardly any disparaging words to say about globalisation. But the real gains to globalisation are dynamic efficiency gains, gains to economic integration, etc.; population ageing is a weak excuse for it.

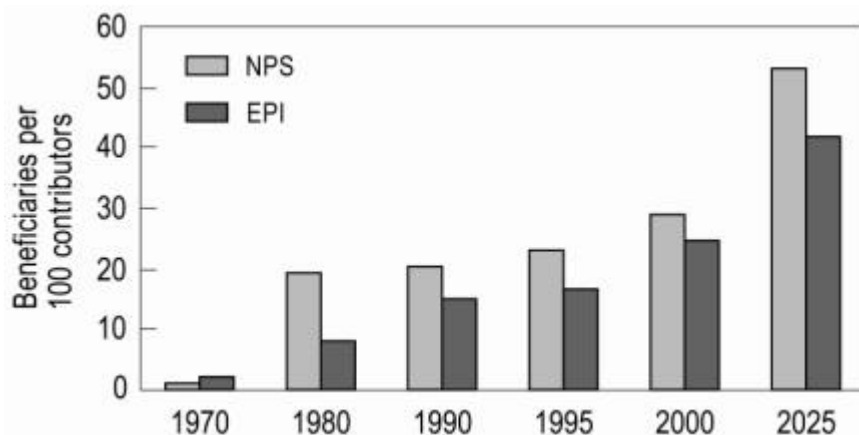
### ***Lesson 8:***

***Globalisation is good, but not because it “beats demography.”***

## Pensions

Japan's pension system is a marvellous example of (i) how *not* to operate a pension system and (ii) how most pension systems *are*, in fact operated. One lesson that is of little interest to European policy makers but of considerable interest to policy makers in regions such as Southeast Asia, is that one should never announce that, having attained a substantial level of economic development, a major expansion of pension (and health) benefits is in order. That is precisely what Japanese policy makers did in the early 1970s, and they have been trying to back off their promises ever since. As in the United States and elsewhere, the Japanese pension system began as fully funded but policy makers very quickly realised the benefits of PAYG financing – namely the opportunity to offload the costs of generous present benefits onto a distant future generation.

The Japanese public pension system is Balkanised, creating a maze of transfers and subsidies which only social security experts can pretend to fully understand. The National Pension Scheme (NPS) provides a basic flat pension to all persons over 65. It is the only plan for farmers and the self-employed, and non-working married women. As the first two groups are significantly older than the rest of the population, it requires heavy subsidy. In point of fact, close to half of NPS pension system is financed out of general revenue. The second major component, the Employees' Pension Insurance (EPI) scheme covers private sector employees but is publicly managed. Its eligibility age is rising gradually from 60 to 65 over the period 2000-2013. There is no direct subsidy, but contributions are tax-deductible and benefits are, in practice if not in theory, untaxed. **Figure 11** illustrates programme dependency ratios for the two main public pension schemes.

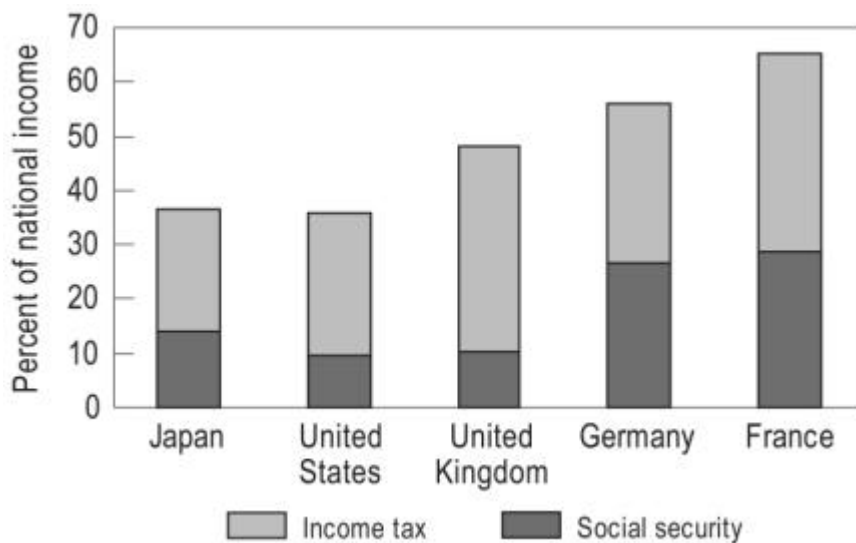


**Figure 11:** Programme dependency ratios, National Pension Scheme and Employees' Pension Insurance, 1970-2025

On the private side, Employees' Pension Funds (EPS) are private corporate pension schemes; these are grossly under-funded, but the mysteries of Japanese accounting are so deep that only an expert could be counted on for an opinion on how serious the problem really is. Consider in passing, the fact that Japan had negative interest rates for a substantial portion of the recent past and that the worst of equity price deflation appears to be behind us. So perhaps the under-funding is not as bad as it looks on paper. Private defined contribution schemes are a new innovation in Japan and will

not provide a significant amount of pension coverage for many years. About half of all firms offer only a lump-sum retirement benefit, typically amounting to about 4 years' salary after thirty years with the firm.

Japan has not been an exceptionally high-tax country (see **Figure 12**) – note that I refer to social security contributions as a tax because I think it is senseless to refer to them otherwise. The NPS requires a flat contribution on the order of Euro 150 per month; in the case of salaried employees, this is taken as part of their EPI contribution. The EPI contribution rate was set at 17 percent of monthly wages in the mid-1990s; as of fiscal 2003, the contribution base was modified to comprise annual earnings, including bonuses – effectively a disguised tax increase. As of the most recent pension reform, in 2000, the EPI contribution rate was scheduled to rise to 25 percent in 2025.



**Figure 12:** income and social security payroll taxation as share of GDP, ca. 2000

The average EPI benefit is about Euro 1000 per month, about 56% of an annual salary (not counting bonuses), and, as a result of the latest reform, lifetime benefits will gradually decline by about 20 percent. EPI plus NPS benefits for a typical retired male salary man amount to about 80% of after-tax salary not including bonuses, 60% if bonuses are included.

Since the major benefit expansion of 1973, Japanese policymakers have engaged in a more or less continuous process of reform, redefinition, renegeing, etc., employing all the stratagems that those in the audience will know well. A few of the more obvious ones, like raising the eligibility age and broadening the contribution base, have already been mentioned. Of all these, by far the most important was switching in 2000 from indexing according to net wages to indexing according to prices. I'll say more about this later.

Public pensions in Japan account for 60% of the income of elderly households and about half of all elderly households receive no other income. Any drastic reforms will raise serious distributional issues. However, having said that, the unreformed system

is also replete with distributional issues. Current public pension beneficiaries have contributed only about half of the amount they will end up receiving, whereas cohorts born after 1965 will receive less than their contributions. However, intergenerational *distribution*, a measurable variable in Japan as elsewhere, must be kept logically separate from intergenerational *equity*, which lies largely in the eye of the beholder. Even if the pension system could be made “intergenerationally equitable” according to some definition, this does not mean that the total economic system would be more equitable. The present imbalance favouring the elderly in Japan may simply offset the sacrifices made by the older generation to equip younger generations with human capital.

**Digression on PAYG versus funding.** The listener may guess, from the rather affectionate tone I have adopted in characterising the tricks and stratagems adopted by social security policy makers to keep their rickety PAYG schemes afloat, that I am favourable to the approach.

In any society, an instrument or set of institutions must be devised that give the non-working elderly – and we will all experience at least some period of enforced idleness prior to death – have a claim on the output of the working young. This claim can be a social security card, a share of stock, or a government engagement to jail children who do not care for their parents, but it must be something. My personal preference is for something largely resembling today’s PAYG-financed pension systems.

I will tell you why, taking the polar extremes of a PAYG pension approach and a *laissez faire* approach in which households simply save in financial markets to provide for their retirement. There is still a widespread delusion that in the latter case, demography has somehow been rendered irrelevant. It has not, because of its impacts on the capital market. In the first case, the political bickering brought on by population ageing will be the familiar one – pensions no longer go far enough, payroll taxes are already too high. This is a familiar debate and, despite the best efforts of social security policy makers to obfuscate at the micro level – incomprehensible benefit calculation formulae, disguised benefit cuts, and the like – the macro-level argument between the generations is straightforward. Far less so will be the discussion when the elderly complain that their assets are no longer sufficient to generate an adequate annuity because their rate of return was lower than expected; that the house which they thought would rise in value until they moved to an apartment has been sold at a price substantially less than hoped for. Young persons may complain when governments tax away their incomes to support the elderly, thus impeding their ability to save and, perhaps, ensure a more prosperous old age for themselves. Will their complaints be any less when government steps in to support asset prices, forcing the young to accumulate at artificially high prices? I have my doubts.

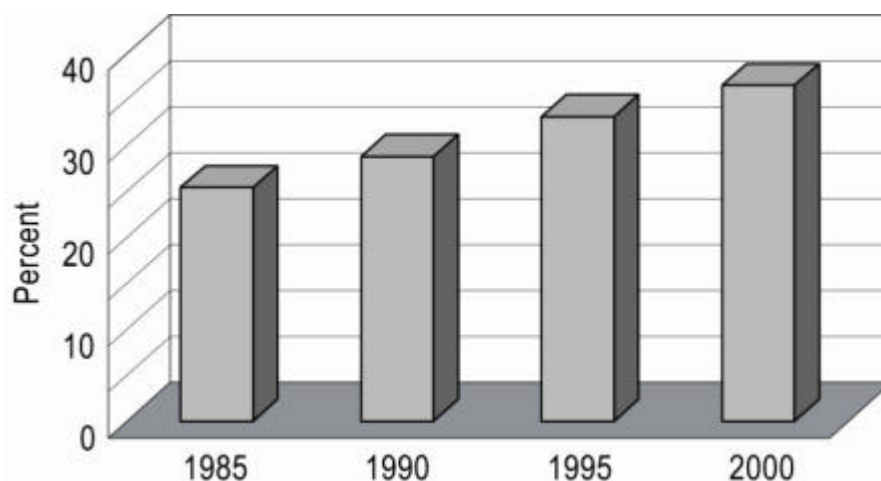


I hasten to add, however, that my view is that

1. PAYG pension benefits should be modest; I present some calculations from Japan that bolster this argument later;
2. moral hazard in the labour market needs to be avoided; social security policy makers are probably up to this; and
3. a reasonable degree of political and institutional maturity is required. PAYG pension systems do not work in Banana Republics or Workers' Paradises, but there are few of either left.

### Health and long-term care

Health care is organised along social insurance lines in Japan, with finance being essentially public and provision being essentially private. As in the pension system, there is considerable Balkanisation and cross-subsidy, with the direction being from salaried employees to farmers and the self-employed. As in the case of pensions, all the standard reform measures are being implemented – increasing co-payments (which currently average anywhere from 10 to 30 percent depending on age and income), etc. The share of the elderly in health care costs has risen from 14% in 1975 (not shown) to about one-third today (see **Figure 13**). Yet standard decomposition analyses, in Japan as elsewhere, show that demographic ageing accounts for a small share of rising health care costs – perhaps one quarter according to one recent study. The remainder has to do with technical progress, the making available of new treatments and diagnostic tests, improving the quality of existing treatments, greater take-up of available treatments, etc. Research by David Cutler and others suggests that, taken as a whole, these technological improvements have been worth every penny.



**Figure 13:** Share of the elderly in health care costs, 1985-2000

Some listeners will be aware of the argument, which receives considerable empirical support, that what is important is not the number of elderly persons, but the number of persons who are within one year of death. That is, most medical expenditure occurs

during the final illness. The most important aspect of this perspective is that there is also evidence that deaths occurring in advanced old age are cheaper than deaths occurring in early old age.

The Japanese health and long-term care system is interesting in the sense that it still contains shocking inefficiencies. The average length of hospital stay is 35 days, as opposed to 6 days in the U.S or the U.K. Much of this is because despite a concerted national programme to provide appropriate long-term care services (the “Golden Plan”) there is still over-reliance on hospitalisation to treat chronic conditions of the elderly, especially the bedridden elderly. Co-payments for hospital care are much less than co-payments for nursing home care. The average hospital stay per episode for persons over 70 was over 70 days in the 1990s, compared to 20 days in Sweden. The height of perversity is attained when medical practitioners routinely check elderly persons into the hospital in order to give the middle-aged caregiver a rest.

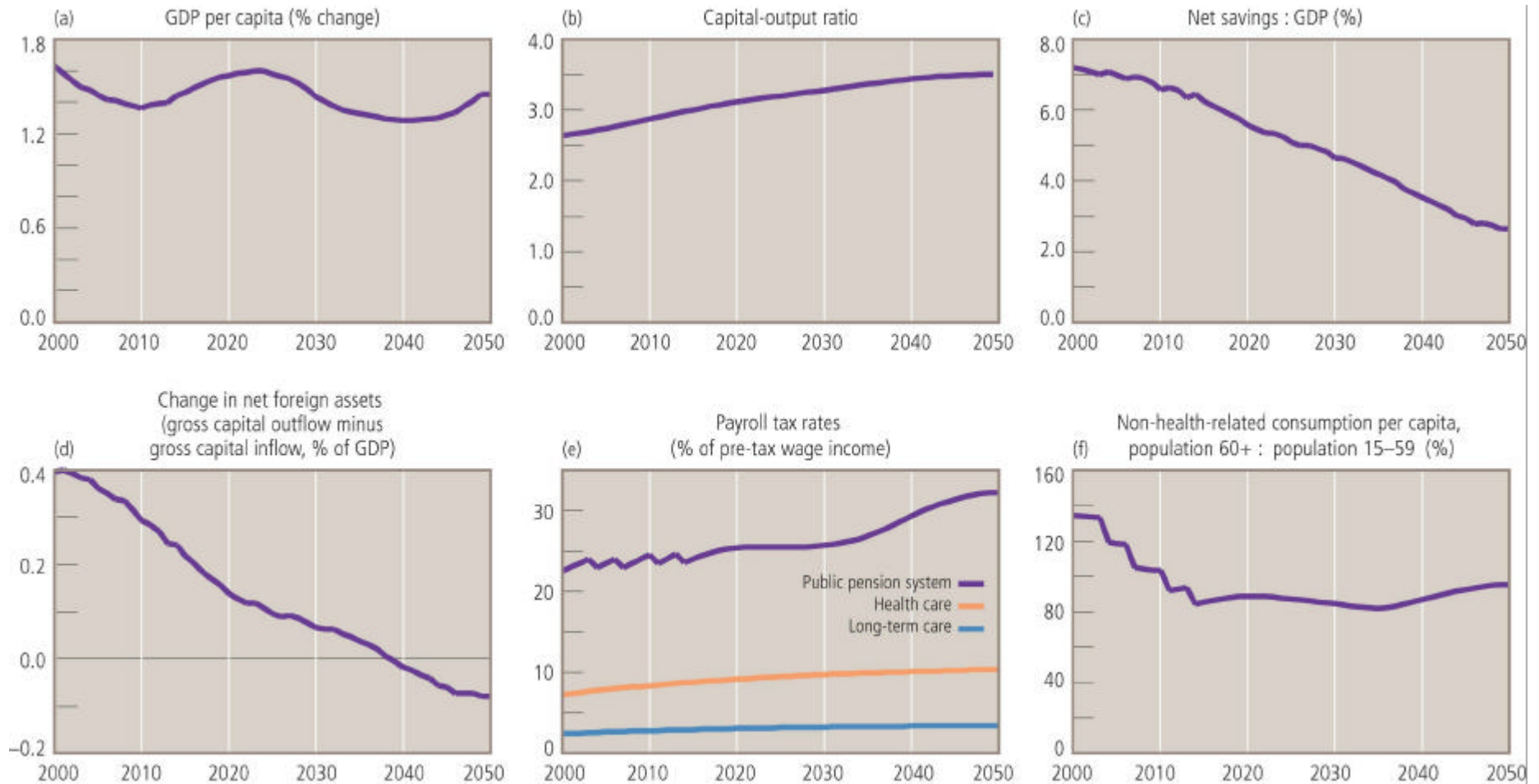
Japan, like Germany, has just instituted compulsory long-term care insurance, and I have no doubt that other countries will follow suit. Going into long-term care is a catastrophic event and, for a variety of reasons, insurance markets for catastrophic events are incomplete. Adverse selection is one, hence the attraction of a mandatory scheme. In the United States, for example, there is an active market in private long-term care insurance – but premiums are so high that this is purely a market only for the upper middle class.

#### Ageing, payroll taxes, and consumption of the elderly

I would like to conclude by illustrating the scenario that we constructed for Japan. I will not discuss the model used except to point you to the documentation of that model and its simulation properties in the Edward Elgar volume. I would point out, however, that we made the assumption that the balancing factor in the ageing equation is increasing payroll tax rates. That is, we ran the model assuming no structural changes in benefit calculation and allowed payroll taxes to rise to the levels necessary to balance the pension, health and long-term care sectors. The one thing we did impose was an increase in the age at which pensions begin to be paid out from 60 to 65, imposed gradually in the opening years of the simulation. This replicates planned measures in place.

The main features (see **Figure 14**) are simply stated and hold no surprises based on the discussion above:

1. Slow GDP growth, but growth nonetheless,
2. A rising capital-output ratio,
3. Declining net savings as a share of GDP,
4. A move from being a net international creditor to being a net debtor; note that the rising capital-output ratio serves as a natural brake on this tendency (when capital is unproductive enough, portfolio investors will cease to hold Japanese assets),
5. Gradually rising payroll tax rates.



**Figure 14:** Some macro-economic aggregates, 2000-2050

What is perhaps worth commenting on is the lower right-hand figure, which shows that after the abrupt changes at the beginning associated with increasing the pension age, the distribution of income (actually, here consumption) between young and old remains relatively constant. That means, given the growth path of the economy, that the living standards of both young and old rise over the long term. Which means, most particularly, that the payroll tax rate increases experienced by the young are offset by the increases in wages which occur as labour becomes scarce and capital becomes abundant.

This is all encouraging, but as our scenario illustrates, payroll taxes must rise to dizzying levels. Can young taxpayers be made to realise that their net wages are rising nonetheless? Will firms permit the gross wages of the young to attain the high levels necessary to enable them to make the required transfers to the elderly?

If not, then it seems to me that there is only one way out. Periodically someone will claim to have rediscovered the following principle, but it goes back at least forty years and probably more. Say there is only one factor of production, labour, that the young transfer a fixed proportion of their product to the old and then consume what is left over, and that the old consume all that they receive in the form of transfers from the young.

If it is desired to guarantee the elderly a fixed real level of consumption, then provided that productivity growth, translated into rising output of the working population, is sufficiently rapid, the ageing of the population need not require a higher proportional transfer to the elderly to finance that fixed level of consumption. To put it differently, in an ageing population where consumption of the elderly is fixed in per capita terms, anything that increases productivity growth will reduce the increase in payroll tax rates necessary to maintain consumption of the elderly. If, however, it is desired to maintain a fixed ratio between consumption of the aged and consumption of the young, then *whatever the rate of productivity growth*, ageing of the population will require an increase in the proportion of product transferred to the elderly, i.e. the payroll tax rate. This is basically the scenario that we have in our Japan projections.

I think this puts the old-age income debate in a nutshell. Say that the proposition “We will guarantee, through intergenerational transfers, a socially accepted consumption basket for the elderly; anything above that must come from their own savings or private intra-family transfers,” is held to meet equity tests. Then old-age support problems associated with population ageing are indistinguishable from the broad set of problems that impinge on economic growth, from bad weather to bad policies. But if intergenerational equity is held to mean that the consumption of the old must be held proportional to the consumption of the young, then population ageing represents a unique challenge and one that can be met only by increasing payroll tax rates. Given reasonable assumptions, the living standards of both young and old can rise, but this requires the social and psychological flexibility necessary to deal with steadily payroll taxes.

***Lesson 9:***

***The standard of living of both young and old can rise ...  
but only at the cost of elevated payroll tax rates.***

***If this is not acceptable, the solution is to freeze the consumption basket of  
the elderly...***

***Lesson 10:***

***... which begs the question of how the health consumption basket of the  
elderly can be frozen ...***

***but that is a subject for a different talk.***