GROUP OF TEN

THE MACROECONOMIC AND FINANCIAL IMPLICATIONS OF AGEING POPULATIONS

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EXECUTIVE SUMMARY

In response to an initiative at the Denver Summit in June 1997, representatives from the central banks and the ministries of finance of the Group of Ten countries have carried out an assessment of the macroeconomic and financial implications of ageing populations. The initiative was prompted by the recognition that the prospective increase in the share of the elderly in the population could have significant repercussions for economies and financial markets across the world.

The purpose of this work is to distil the principal conclusions from the extensive factual and analytical material provided by national authorities and international organisations such as the OECD and the IMF. The major conclusions of this study are the following:

- Although many G-10 countries have instituted reforms to address some of the issues raised by ageing populations, demographic developments will have adverse effects on material living standards and will significantly widen budget deficits unless further action is taken.

- The need for early action is urgent because the burden of adjustment for governments and individuals increases the longer action is delayed.

- To ease the burden of adjustment and to offset the expected negative effects of ageing on living standards and fiscal balances, reforms should encourage economic growth and the efficient use of resources. Thus reforms should pursue measures that would:

    - increase national saving and investment. Important in this regard will be further reduction of fiscal deficits and debt, including addressing the problems of funding public retirement and health benefits;

    - increase the supply and efficient utilisation of labour. Ensuring greater efficiency in labour markets and eliminating disincentives to continued labour force participation by older workers will help to achieve this;

    - ensure the efficient allocation of savings both within and across borders. Important actions in this area include strengthening the financial infrastructure, encouraging financial transparency, enhancing financial supervision and eliminating barriers to international capital flows.

- An immediate increase in the funding of private and public pensions would help to alleviate the potentially severe demographic pressures on existing pay-as-you-go (PAYG) and underfunded systems. The choice of how retirement income is provided will depend on national circumstances, but a mixed approach based on all three "pillars" of retirement income - public

retirement benefits, private pensions and household saving - has many advantages.

Demographic trends

Because of declining birth rates and increasing longevity, the share of the elderly in the populations of the G-10 countries has been growing for the past 150 years. Although demographic projections are not entirely certain, it is probable that this trend will accelerate sharply as the post-World War II baby boom generation begins to reach retirement age late in the next decade. Currently, there are about two people aged 65 and older for every ten people aged 15-64 in the G-10 countries. By 2040, this ratio is projected to reach four to ten on average and more than five to ten in some countries. The ratio of retirees to workers could rise even faster if recent trends towards earlier retirement continue. Actions to reduce structural unemployment and make labour markets more efficient will help to alleviate these pressures.

Implications for standards of living

As ageing raises the number of consumers relative to producers, the growth of material living standards (i.e. consumption per capita) will fall unless relative declines in the workforce are offset by increases in labour productivity and the effective supply and utilisation of labour. Decreases in labour force participation rates associated with projected demographic trends alone would depress the growth of GDP by as much as ½ to 1 percentage point per year in many of the G-10 countries between 2010 and 2030. Although the recent trend growth in labour productivity generally has been in excess of 1% per year, its future growth will depend on trends in technical progress and capital accumulation, which could be adversely affected by a decline in saving prompted by the retirement of the baby boom generation.

Fiscal consequences

The ageing of populations could have dramatic effects on government finances. Under current policies, government spending in the G-10 countries is projected to rise sharply over the next several decades for several reasons. Per capita expenditure for the elderly is high in the areas of public retirement benefits and, in some countries, welfare support. Public expenditure on medical and health support for the elderly is also high and has been rising. If advances in medical technology come at ever-increasing cost and if the incidence of health expenditure on the elderly continues to rise, the fiscal burden could become substantial in some countries. Projections in this area are, however, quite uncertain.

At the same time, government revenues will be adversely affected as the baby boom generation moves from its high-income-generating years to retirement. Countries whose revenues are tied more to consumption or value added taxes will

tend to experience less of a deterioration in revenues than those that depend more heavily on income or payroll taxes. Although most countries have improved their fiscal balances in recent years, longer-term projections suggest that budget deficits would still reach unsustainable levels under recent policies. This would create a severe drag on national saving at a time when saving will be crucial to fostering the growth of labour productivity.

Population ageing will also raise important distributional questions for fiscal authorities. Governments will face the challenge of distributing the burden of supporting their growing dependent populations both efficiently and equitably. Reform of public pension systems requires a sufficiently long lead time to allow workers to compensate by adjusting their working and saving decisions. Even though the fiscal crunch will not occur for a number of years, reforms should be enacted soon.

Financial market effects

Population ageing can be expected to increase the flow of savings into private retirement accounts. Private pension fund assets have grown in many G-10 countries in recent years, although the size of such assets relative to GDP differs widely across countries. Continued growth of retirement savings, depending on how they are invested, could reduce rates of return and equity premiums. At the same time, greater capital flows should promote the increased breadth and depth of financial markets, allowing greater diversification. Once the baby boom generation retires and its saving rate declines, some of these effects may be reversed unless saving rates of younger people rise above historical levels.

Implications for current accounts

Demographic trends may have implications for current account positions to the extent that these trends differ across countries and to the extent that their effects on saving and investment differ within countries. Among the G-10 countries, those that are currently more advanced in ageing (e.g. Japan and Italy) are running current account surpluses. Looking ahead, the more rapid ageing of the G-10 countries on average relative to the non-G-10 countries could contribute to an improvement in the aggregate current account position of the G-10 countries for at least the next decade. Thereafter, such influences on current accounts might well be reversed if saving rates in the G-10 countries decline as ageing progresses further. Of course, actual outcomes for current accounts will also depend on a variety of other factors influencing both saving and investment across countries.

Higher rates of net and gross investment from industrial countries into faster-growing developing countries should benefit not only the recipient countries but also the investor countries, although the magnitude of these effects is uncertain. Nevertheless, an increased flow of savings to countries where the ageing trend is not

as pronounced is one way to raise productivity and the total supply of goods and services available to consumers in countries where ageing is rapid.

Policy considerations

The best mix of policy reforms in response to population ageing is often country-specific. However, based on the analysis presented in this study, some general guidelines can help determine the shape that successful reforms are likely to take.

One component of a successful policy will be the encouragement of more growth to offset the negative effects of ageing on living standards. This will entail more saving and investment now. The most effective action that governments can take to raise national saving and thereby stimulate investment may be to cut their budget deficits or, even better, to reduce their national debts, in a manner that does not decrease private saving. Pension reform, including increased funding or prefunding of PAYG systems and reversing the trend towards shorter working lives as longevity increases, will play an important part in this process. Governments will also need to consider how best to implement other measures to spur investment and private saving.

It is also important to encourage the efficient allocation of labour. Incentives to retire early or disincentives to working longer should be removed or adjusted to ensure that the decision to retire is actuarially neutral at the official retirement age. Also, steps should be taken to enhance the efficiency of labour markets where needed to better utilise the existing supply of labour.

In view of the important role that financial markets play in coordinating the supply of savings with investment demand, governments should help to ensure that their financial markets function efficiently. Rules that unnecessarily inhibit portfolio diversification and risk management by retirement funds and other similar investors should be eliminated. G-10 countries also have an interest in other countries' financial markets being well developed and well run. The relaxation of investment restrictions, including controls on international capital flows, should be accompanied by measures to enhance the stability of the international financial system, including sound macro-economic policies, effective prudential supervision and regulation, and policies to promote financial transparency and disclosure. Finally, it is essential for governments to recognise that shifts in current and capital account positions may be a natural and transitory consequence of population ageing. The temptation to curtail trade and capital flows should be resisted.

Chapter 1

POPULATION AGEING:
PROSPECTS AND IMPLICATIONS FOR LIVING STANDARDS

Introduction

The number of the elderly in the populations of the G-10 countries is projected to grow substantially during the next several decades. Greater longevity, relatively low fertility rates and the present distribution of the population across age groups will lead to a sharp increase in the elderly, both in absolute terms and as a proportion of the total population, beginning within the next two decades. This prospective dramatic shift in the age composition of industrialised countries - typically referred to as the ageing of the population - will have profound effects on living standards and government budgets. To the extent that ageing is characterised by a rise in the number of consumers relative to producers, the growth of living standards (i.e. consumption per capita) will be adversely affected unless relative declines in the workforce are offset by gains in productivity and an expansion of the effective supply of labour. The size of this effect in turn hinges on the impact of population ageing on national saving and capital accumulation and on technical progress. As population growth in democratic societies - and, hence, the age composition of the population - is largely beyond the control of policy-makers (at least in the short to medium run and abstracting from immigration policies), population ageing increases the urgency of improving policies that influence these factors.

The demographic setting in G-10 countries and the rest of the world

Falling population growth rates and changing age profiles

The populations of industrialised countries have been growing older - although more slowly than they will in the future - almost continuously for the past 150 years, reflecting the secular decline in birth rates and the increase in life expectancy. The percentage of the population aged 65 years or older has risen steadily in virtually all G-10 countries since the beginning of the 20th century (Chart 1.1). The baby boom that occurred during the first 25 years after World War II was a major - and unanticipated - deviation from the long-term downward trend in birth rates.[1] As a result, population growth averaged slightly over 1% per year during the period 1950-70, after which almost all industrialised countries witnessed dramatic and sustained declines in fertility and population growth rates. Another factor

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[1] In population projections prepared during the immediate postwar period it was generally assumed that there would be a brief increase in birth rates subsequent to the restoration of peace, followed by a continuation of the long-term downward trend in fertility.

accelerating the ageing process is that the elderly are living longer. Advances in medical and health care, among other factors, have contributed to a significant increase in the longevity of the elderly in the G-10 countries. In the United States, for example, the life expectancy at age 65 has increased from less than 15 years in 1970 to more than 17 years in 1990.[2] This accounts for over half the increase in life expectancy at birth over this period.

Chart 1.1: Long-term trends in old age dependency rates: 1840-1981

Source: Mitchell (1992).
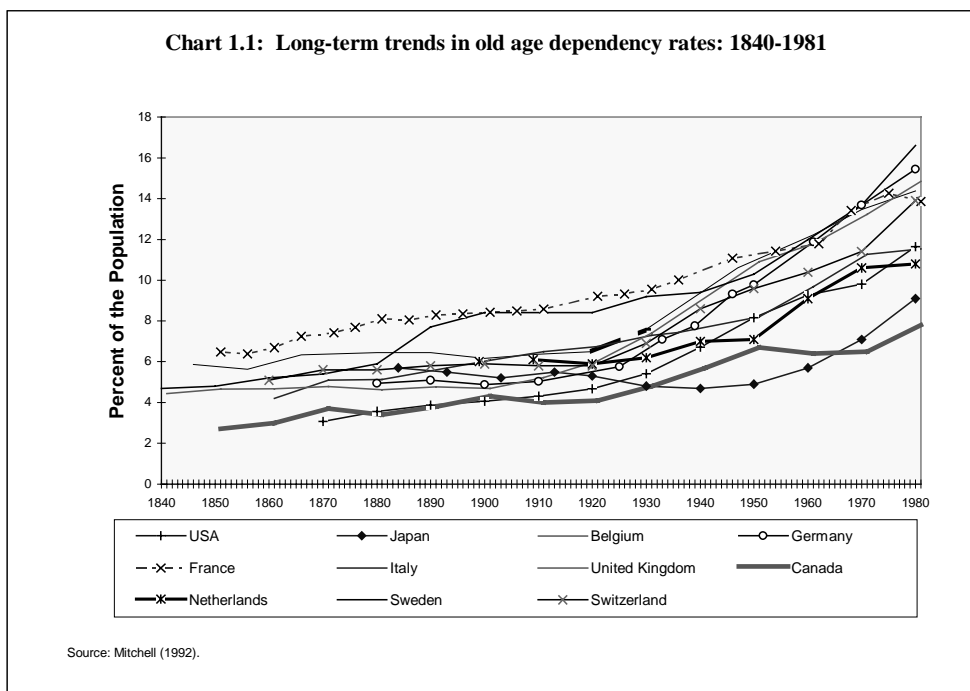
Under the United Nations' medium variant projection to 2050, which assumes only a gradual convergence of fertility rates to replacement levels, population growth rates would generally continue to decline, and eventually turn negative for a while in all G-10 countries except the United States and Sweden. By the middle of the next century, the populations of several G-10 countries would be smaller, in some cases substantially, than in 1990: Italy - minus 26%; Germany - minus 12%; Japan - minus 11%. Concomitant with these falling population growth rates, the number of persons in the age group 15-64, already declining in Japan and Italy, would also begin to fall in most G-10 countries sometime during the first three decades of the next century. By the middle of the second decade, the absolute size of the 15-64 age group would be declining in all G-10 countries except the United States.

These low rates of population growth would result in substantial changes in the age composition of G-10 populations. While the proportion under the age of 15 would fall significantly, the share of the population aged 65 years or older would increase in all countries, and begin to rise rapidly after 2010. The elderly dependency rate (the ratio of persons aged 65 or older to persons aged 15-64) would rise substantially in G-10 countries as a whole, reaching very high levels in some

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[2]   US National Center for Health Statistics.

countries (e.g. 69% in Italy) by 2050. There are, however, considerable differences across G-10 countries in the extent and timing of ageing, particularly between the United States, Japan and several European countries (Table 1.1).

Table 1.1

Elderly dependency rates[1]

	1990	2010	2030	2050	1990	2010	2030	2050
	Population aged 65 and older divided by population aged 15-64				Population aged 65 and older divided by population aged 25-64			
G-10 countries								
United States	18.9	19.2	33.0	35.2	24.1	24.3	41.6	44.2
Japan	17.2	32.3	44.0	56.5	22.0	38.3	53.0	70.1
Germany	21.7	27.7	40.4	51.5	27.1	33.3	47.6	62.1
France	21.3	25.6	40.1	46.8	27.6	31.5	49.0	58.3
Italy	21.0	30.4	47.9	68.8	27.4	35.7	55.8	82.8
United Kingdom	24.1	25.0	36.5	39.3	30.9	31.0	45.0	49.3
Canada	16.5	20.4	38.3	42.3	21.0	25.2	47.2	52.9
Belgium	22.6	25.1	40.2	43.5	28.4	30.5	49.2	54.5
Netherlands	18.6	22.4	41.9	46.1	24.1	27.2	50.3	57.3
Sweden	27.7	27.9	37.9	39.4	35.2	35.0	46.9	49.3
Switzerland	20.9	24.6	44.4	49.7	26.2	29.9	53.4	61.5
Selected non-G-10 countries								
Argentina	14.8	15.8	19.9	28.5	20.2	21.3	25.6	36.1
Brazil	7.1	9.3	18.2	28.9	10.5	12.4	23.2	36.5
Chile	9.6	13.0	22.8	28.6	13.6	17.4	29.1	36.1
China	8.4	10.7	21.5	31.0	12.4	13.8	26.5	38.4
India	7.3	8.7	14.1	23.2	10.8	12.2	18.0	29.0
Indonesia	6.4	8.6	14.2	24.6	9.8	11.6	17.9	31.0
OECD	17.1	21.7	32.3	42.1	22.8	26.9	39.6	52.4
G10	19.8	24.4	37.8	42.6	25.3	30.0	46.5	53.1

[1] Derived from medium variant of UN World Population Prospects.

Source: World Population Prospects, 1950-2050, United Nations (1996).

An ageing world

Although generally most pronounced in the industrial countries, population ageing is a worldwide phenomenon, reflecting both the fall in fertility rates and the long-term uptrend in longevity. While it can hardly be said that the developing countries will witness a dramatic shift from "young" to "elderly" dependency, the share of elderly in the least developed countries is nevertheless projected to double between 1995 and 2050, from 5.6% to 11.2%; in the less developed regions, the rate is forecast to increase from 11.2% to 21%.[3]

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[3] Least developed countries are defined by the United Nations as those with per capita income under $700, in which manufacturing accounts for less than 10% of value added, and in which the literacy rate is under 20%.

Sensitivity of projections

Demographic projections are subject to considerable uncertainty. There are several sources of uncertainty, especially as regards long-term population projections:

  (i)   the volatility of fertility;
  (ii) the difficulty of anticipating changes in life expectancy;[4] and
  (iii) the fluctuations in international migration, which are heavily influenced by political considerations.

Even over relatively short periods, the margin of error can be quite substantial. Nevertheless, under a range of plausible fertility assumptions, population ageing appears to be inevitable, at least for the next half century. For example, if future fertility rates are higher, as assumed under the United Nations' high fertility variant projection, the elderly dependency rate would rise from about 20% in 1990 to 38% in 2050. However, if fertility rates are lower, as under the United Nations' low fertility variant projection, then the elderly dependency rate would rise to 52% in 2050. Moreover, improvements in life expectancy beyond those built into the UN projections would result in yet higher elderly dependency rates (see Annex 1).

Population ageing and its implications for living standards

A crucial question surrounding population ageing is what impact it will have on economic well-being. Will individuals on average have more or fewer goods and services to consume in the future than if the population were not ageing?[5] The answer to this question depends on the impact of population ageing (and related policy responses) on three principal factors affecting the future levels of economic output:

  (i)   the growth of the effective supply of labour and the rate of utilisation of that labour;
  (ii) the accumulation of capital; and
  (iii) the rate of growth of total factor productivity.

Effective labour supply

A decline in the rate of growth of the labour force relative to the population should, other things being equal, reduce the rate of growth of output and, potentially, of per capita output. Although prospects for the growth of the effective supply of

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[4]   For instance, actual life expectancies at birth in 1990 exceeded – considerably in the case of some G-10 counties – the levels that had been assumed might prevail by then in the United Nations' long-term population projections prepared in 1973. Although improvements in life expectancy at birth in industrialised countries during recent decades can be attributed partly to reductions in child mortality, they have been due predominantly to increases in life expectancy in the upper ages. (See Caselli et al. 1995.)

[5]   In focusing on consumption or GDP-based measures of living standards, one should not lose sight of the fact that there are certain benefits to ageing (e.g. longer life spans and potentially more leisure) that are not captured in GDP accounting. Nevertheless, quality of life during those longer life spans presumably will depend importantly on the goods and services one is able to consume.

labour are dominated by demographics, they are also influenced significantly by two opposite socio-economic tendencies observed in many countries during the past several decades. These are, on the one hand, the decreasing labour force participation rates of males, particularly those in the final years of normal working life, and, on the other hand, the increasing participation rates of women.

The general trend towards declining participation rates among men aggravates the adverse effects of ageing on the size of the labour force. Although this downward trend has been attenuated and – in some countries – partly offset by the increasing participation rates of women, only in Sweden have the latter reached levels close to those of men, and a large part of the increase has been in part-time work. In particular, the labour force participation rates of men in the 55-64 age group have declined in all G-10 countries, as indicated in Table 1.2. Some of this decrease has clearly been associated with withdrawals from the labour force induced by high unemployment or increasing demand for leisure. This choice is also widely seen as emanating from government policies and private sector early retirement incentives, as well from disincentives to working past retirement age. These arise in many ways, such as through the lowering of the qualifying age for full pension benefits, the tying of pension benefits to complete withdrawal from the labour force, high implicit marginal tax rates on earned income beyond certain ages, and explicit government efforts to motivate early retirement in the stated interest of increasing the employment prospects of younger workers.

Table 1.2

Labour force participation rates among 55 to 64-year-olds

(1970-96)

	Men			Women		
	1970	**1983**	**1996**[1]	**1970**	**1983**	**1996**[1]
United States	80.7	69.4	67.0	42.2	41.5	49.6
Japan	86.6	84.7	84.9	44.4	46.1	48.8
Germany	80.1	63.1	52.7	28.5	26.3	28.1
France	75.4	53.6	42.3	40.0	32.7	31.3
Italy[2]	.	56.2	44.0	.	15.0	14.4
United Kingdom	.	70.0	62.9	.	36.1	40.2
Canada	84.2	72.4	59.3	29.8	33.5	36.9
Belgium	.	50.6	33.8	.	12.3	12.5
Netherlands	80.6[3]	54.1	42.2	14.9[3]	13.4	20.5
Sweden	85.4	77.0	72.2	44.5	59.7	65.0

. = not available . [1] Combined Germany for 1996. [2] 50 to 64-year-olds. [3] 1971.

Source: OECD Labour Force Statistics.

The implications of these trends for the *economic* dependency rate, defined as the ratio of the number of non-working to employed persons, are substantial. In particular, the ratio of retired to employed persons would be significantly higher than the pure demographic elderly dependency rate in some countries if recent trends in

labour force participation and unemployment rates were to persist in the future (see Annex 1).

The reduced growth of labour supply resulting from reduced population growth could lead to lower unemployment rates, especially in countries where structural unemployment is high, and/or to higher real wages. Whether reductions in the rate of growth of the effective labour supply result in higher real wages (through both cohort size effects and capital deepening) depends in part on whether or not workers already employed exploit the reduced labour supply growth to extract even higher real wage gains than warranted for full employment.[6] If labour markets are not too rigid, employment prospects should improve as the population ages, other things being equal.

Capital accumulation, productivity and technical progress

A rising capital stock can potentially offset the reduced rate of growth of the labour supply by increasing labour productivity, thereby helping to sustain or raise living standards. Although there are significant differences among countries, there has been a trend decline in national saving rates in the G-10 countries since the first oil shock, owing mostly to drops in public sector saving. There has also been a trend decline in capital investment as a share of GDP, although to a lesser extent than in saving. Increases in public sector deficits accounted for about three-quarters of the fall in average national saving rates in the G-10 countries since the late 1960s.[7] Budgetary consolidation in most G-10 countries has reduced public sector dissaving recently, but private saving rates have remained weak in some countries or declined further, notably in the United States. This raises the important question as to whether national saving rates in G-10 countries have risen or can be expected to rise enough to finance the investment required to help offset rising dependency burdens.

The adverse effect on output growth of population ageing could also be offset through technical progress. If technical progress is independent of population growth, a reduction in labour force growth should reduce potential income growth by an equivalent amount. To the extent that labour scarcity might spur innovation, ageing could potentially enhance technical progress. Ongoing research in so-called endogenous growth models suggests that population ageing may increase incentives to invest in human capital, leading to reallocation of investment from physical to human capital which, in turn, would increase the rate of economic growth in the long run.[8] On the other hand, if, as some have suggested, there were a negative relationship between technical progress and reduced – and especially declining –

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[6] See Auerbach and Kotlikoff (1987), Auerbach et al. (1989) and Fougère and Mérette (1997). As labour becomes scarcer due to the declining size of cohorts, wages should increase relative to returns to capital. Furthermore, an accumulation of capital during the period preceding the onset of a rapid rise of the dependency rate would also raise wages.

[7] Group of Ten (1995).

[8] Fougère and Mérette (1997).

population growth, technical progress could be slowed by the anticipated ageing populations.[9]

Overall effect on growth

Assessing the possible quantitative net impacts on future living standards of these various determinants of growth is complex.[10] For present purposes, it is useful to consider how much productivity growth would have to increase (relative to trend) to offset the adverse effects of ageing on output. Chart 1.2 reports rough mechanical estimates of three effects on the average annual rate of per capita output growth:

  (i) a smaller working-age population relative to the total population (the dependency effect);
 (ii) labour supply effects arising from differential labour force participation rates by age (the participation rate effect); and
(iii) an older and, hence, potentially more experienced and more productive population (the age-productivity effect).[11]

The first two effects tend to reduce average annual per capita output, while the third has a favourable impact.[12]

While not depicting a projection, the chart shows the impacts of each effect on output growth relative to trend. Given the assumptions, the net effect on output growth (relative to trend) of these three factors is negative, as indicated by the circles in the chart. The estimated negative effects of ageing on the annual rate of growth of output per capita range from 0.25 to 0.6 percentage points.[13] Thus, given the assumptions, by 2030 the level of output per capita would be 8-20% lower as a result of ageing than would otherwise be the case, unless offsetting productivity growth was achieved, other things being equal. It is important to keep in mind, however, that the estimated impacts shown in the chart are averages over a period of slightly more than three decades. During the early part of this period, demographics (through the age-productivity effect) will continue to have positive effects on growth. But as the baby boom generation begins to retire, the net effect of ageing will turn negative, in some cases by enough to more than offset trend productivity.

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[9]   See Simon (1977, 1986), Wattenberg (1987), and Romer (1990).

[10]   Cutler et al. (1990) assess the impact of ageing on living standards in the United States. Their analysis concludes that per capita consumption opportunities would increase (relative to 1990) up to about 2020, after which they would decline by 4.2-9.4% by 2060 due to the dominating impact of increased dependency.

[11]   Specifically, the simulations assume that: (i) age-specific participation rates remain fixed at rates observed in 1995; and (ii) age-specific productivity approximately doubles between the 15-20 and 40-44 age groups, and declines thereafter.

[12]   It is important to keep in mind that different results would naturally be obtained under different underlying assumptions.

[13]   To the extent that some countries have already adopted policies which can be expected to attenuate the dependency and participation rate effects shown in the chart, the adverse effects emanating from these would be less than simulated here.

Chart 1.2 Ageing: productivity, participation and demography

percent · Effect on average annual growth rate 2030

Source: OECD
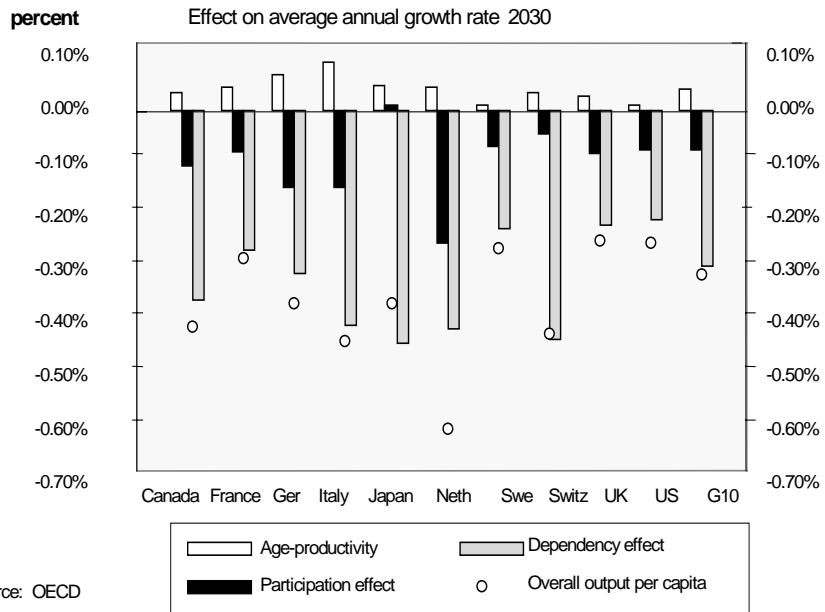
Chapter 2

FISCAL BALANCES

Background

Fiscal positions in G-10 countries, while leaving much to be desired, have improved in recent years. Most of the improvement has been structural, and primary balances in most G-10 countries for which estimates are available are in solid surplus. Recent estimates by IMF and OECD staffs point to further consolidation in the near term. Consolidation is desirable in order to relieve pressures on capital markets and, in the longer term, to reduce the level of public sector debt relative to GDP. Debt levels remain very high by peacetime standards in most G-10 countries, and probably have not yet peaked in some.

One effect of continuing public sector deficits is to keep real interest rates high, crowding out private investment. Recent research shows that a 1 percentage point reduction in public deficits could lower real interest rates by 15-20 basis points or more.[1]

Demography and public sector finances

Ageing affects public expenditures because different age groups depend to different degrees on public services (education, health) and transfers (pension benefits and child allowances). The age-related public expenditure profile is typically two-peaked, the first occurring in the 0-20 age group, and the second in the 60-80 age group. As the second peak usually exceeds the first, ageing of the population eventually tends to increase public expenditure. Expenditure pressures also arise from changes under way in household structure, some of which are associated with population ageing.

Changes in the age distribution of populations will also tend to affect government receipts. The reduction in the size of labour force could lead to lower payroll tax receipts, depending on the impact of ageing on the aggregate wage bill. On the other hand, countries which depend heavily on consumption taxation (e.g. value added tax) could experience less deterioration in the revenue base given the generally higher average propensity to consume of the elderly.[2]

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[1] Orr and Kennedy (1995). See also Group of Ten (1995).

[2] Among the G-10 countries, Japan, Switzerland and the United States all have relatively low consumption-based taxes (less than 20% of all tax receipts). Other European G-10 countries and Canada typically have consumption-based tax receipts equivalent to 25-30% of the total.

In the majority of G-10 countries, public finances are benefiting from low birth rates in the past three decades, which have slowed the growth of expenditures on health care in infancy and education, ceteris paribus.[3] They are also benefiting from the fact that the large baby boom generation is now in its prime earning years, paying taxes on relatively high incomes. These are somewhat offset by the impact of increased longevity on the number and duration of public pension benefits. On balance, demographic developments are at present probably favourable to public finances and are likely to remain favourable in the near term. However, this will change radically in the future.

There has been an approximate doubling of the ratio of public pension expenditures to GDP in G-10 countries in the past two to three decades. Increased longevity, increased eligibility for pensions and earlier retirement have all contributed. Recent and ongoing reforms have put the public pension accounts on a sounder footing for the immediate future. However, extensive analysis undertaken by the OECD, the IMF,[4] the European Commission[5] and national authorities themselves points to the longer-term unsustainability of current fiscal policies in a majority of countries, notably with respect to health care and public pensions.[6] Substantial primary deficits (1-5% of GDP) would emerge and, concomitantly, public debt levels would rise (Figure 2.A). This is because the large baby boom cohort will begin to reach retirement age in about ten years, pushing up the number of pension and health care beneficiaries relative to the number of contributors.

To the extent that older citizens incur above-average health costs, ageing will have fiscal implications especially in those G-10 countries (the majority) where health care is publicly financed for all citizens.[7] The relative increase in the fiscal burden will be all the more severe in countries like the United States where public health expenditures are concentrated on retirees. The likely size of the increase in health care costs is, however, exceptionally difficult to predict. It is known that the cost of providing health care to elderly citizens is higher than the average for all citizens, but there is no clear indication of how this might evolve in the future.

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[3]   In practice, falling birth rates have not led to absolutely lower educational expenditures because periods of compulsory education have lengthened, a higher proportion of young people remain in education beyond the minimum school leaving age, and class sizes have tended to fall.

[4]   Chand and Jaeger (1996).

[5]   "Ageing and Pension Expenditure Prospects in the Western World", European Economy (1996).

[6]   Because of the complexity of actual public pension systems and uncertainties over the future course of productivity, employment and individual retirement decisions, any simulation is subject to considerable error. It is nevertheless significant that all analyses point to the same general conclusions, namely a sustained rise in public pension expenditures relative to the tax base during the next 10-30 years.

[7]   In Germany the public provision of health care is actuarially sound and therefore ageing does not give rise to major concerns.

Figure 2.A General government primary balances

Surplus(+) or deficit(-) as a percentage of GDP
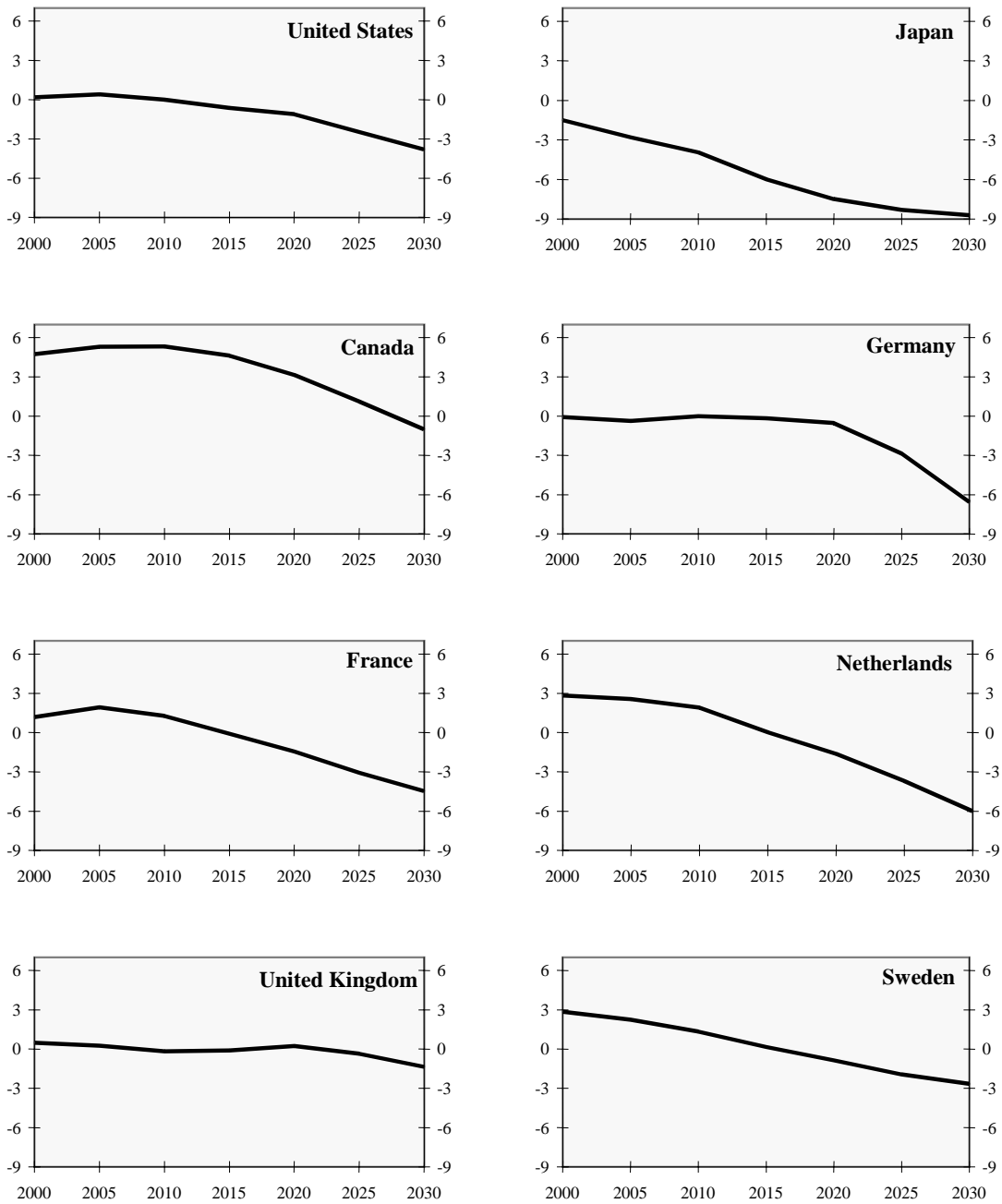
Source: "Ageing Populations, Pension Systems and Government Budgets", OECD
Working Paper No. 168, 1996

Some studies suggest that the bulk of medical expenses for an individual are heavily concentrated in the last one to two years of life, irrespective of the average age at death. In that case, overall health costs would rise only at the same rate as the total population in equilibrium.[8] Other studies find that medical costs are high even for relatively "young" retirees. In that case, as the proportion of older people increases, health costs will rise more quickly than population growth rates. Unfortunately, the body of detailed medical data which would enable this question to be settled unambiguously does not exist. There is the added complication that some advances in medical technology appear to prolong active independent life for individuals, whereas others prolong life but entail continual high medical expenses. Also, some new technologies reduce the cost of delivering a given improvement in health status, whereas others improve health status, but at a high cost.

It is therefore not easy to make accurate predictions of the age-related evolution of health costs in the same way as for public pension systems, and projections of health care costs are subject to wide margins of uncertainty, which will remain in the absence of better information. Illustrative scenarios exist which indicate how much public health costs could increase as a result of demographic changes, and on the basis of different assumptions concerning the way in which health costs might vary with age (Table 2.1). The simulations show that, at worst, the potential rise in public health costs could be even greater (relative to GDP) than the rise in the cost of providing public pension benefits in the absence of further reforms. At best, assuming cost-reducing advances in medical technology, and that medical costs are concentrated in the last period of life, irrespective of longevity, health costs could even fall relative to GDP. Thus, given the present state of knowledge, it is not possible to state with confidence which of the various outcomes is most likely. However, because of the differences in institutions and levels of technology, the evolution of health costs is also likely to differ across countries.

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[8]   Abstracting from any change in the cost per individual of providing this type of age-related concentrated health care, from changes in life expectancy, and from demographic bulges. Of course, as the baby-boom generation moves into the oldest age group, medical costs and death rates will rise temporarily.

Table 2.1

Projected public health care costs in 2030[1]

(as a % of GDP)

	Health treatment cost growth rates[2]	Public health care costs in 1995	Projected public health care costs in 2030 assuming costs depend on:	
			Number of elderly	Number of deaths
United States	1% slower same rate 1% faster	6.4	6.1 8.2 11.0	5.2 6.9 9.3
Japan	1% slower same rate 1% faster	4.9	4.7 6.3 8.4	5.4 7.2 9.7
Germany	1% slower same rate 1% faster	6.2	5.6 7.8 10.1	5.5 7.4 10.0
France	1% slower same rate 1% faster	7.0	6.6 8.9 11.9	6.1 8.3 11.1
Italy	1% slower same rate 1% faster	6.4	6.0 8.1 10.8	5.7 7.7 10.4
United Kingdom	1% slower same rate 1% faster	6.0	5.2 7.0 9.4	4.6 6.2 8.3
Canada	1% slower same rate 1% faster	7.4	7.6 10.3 13.8	6.9 9.3 12.5
Belgium	1% slower same rate 1% faster	7.4	7.0 9.5 12.7	5.8 7.8 10.5
Netherlands	1% slower same rate 1% faster	6.7	7.3 9.8 13.2	5.5 7.4 9.9
Sweden	1% slower same rate 1% faster	6.2	5.9 7.9 10.6	5.0 6.7 9.0

[1] In projecting these public health cost scenarios, the following methods were used. First, the current population and the population projections were split into those aged under 65 years and those 65 years and over. For some countries, the over-65 group was split further into those aged between 65 and 74 years and those 75 years and over. Current per capita public health care costs were calculated for each of these groups using recent data. These per capita health costs, adjusted for alternative growth rates in health treatment costs, were then applied to the population projections. For the scenarios with constant cost profiles, per capita costs were multiplied by the total number of people aged 65 and over. For the scenarios where costs depend on fatality rates, the per capita costs were multiplied by the number of deaths amongst people aged 65 and over. [2] Assuming that per capita health care treatment costs grow by the same rate, 1% slower or 1% faster than real GDP growth.

Source: Roseveare et al. (1996).

Reforming public PAYG pension systems

As a consequence of population ageing, economies will have to devote an increasing share of output to supporting a relatively larger elderly population. Under a pure pay-as-you-go (PAYG) public pension system, indexed to real wages and financed via payroll taxes, the consequences of the baby boom/baby bust fall entirely on the smaller cohorts of the baby bust generation.[9]

Prefunding and fuller funding options

The main demographic – and hence fiscal – pressures begin to emerge quickly once the baby boom generation moves into retirement. If contribution rates were raised only when shortfalls in the pension accounts start to occur, they would have to be raised significantly each year for many years. The distorting effect on the labour supply would be substantial, resulting not only in dead-weight loss of output, but also in wasteful attempts to evade or avoid such taxes, as well as inducing production to be located in countries with either more favourable demography, or less generous pension systems.

These costs could be reduced substantially if the government were to accumulate a fund in advance of the onset of expenditure pressures.[10] The fund could be run down gradually in later years when demographic pressures begin to mount rapidly, or could be maintained permanently. The advantage of this option is that payroll taxes would not need to be raised as abruptly, so that adjustment costs could be spread over a longer period. A broadly equivalent policy would be to pursue fiscal consolidation in the medium term, reducing public debt/GDP ratios in advance of the emerging demographic pressures. Empirical evidence suggests that spending restraint is more likely to be successful in achieving lasting deficit reduction than increasing taxation. Prefunding and fiscal consolidation are equivalent when return on the fund equals the rate of interest on public debt.

It cannot be emphasised too strongly that, for the prefunding option to be effective, there must be a true accumulation of claims on the private sector or other countries. If social security surpluses are offset by higher outlays in other categories of public expenditure, they will only help to contain the overall indebtedness of the public sector, but will be ineffective in terms of prefunding. When the time comes, taxes would have to rise by just as much, and just as rapidly, as if there had been no prefunding.

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[9]   Taking solely demographics into account, Keyfitz (1985) has demonstrated in the case of the United States that the internal rates of return to PAYG public pensions to generations born after 1960 would be extremely low (under 1.05%), while those of generations born in 2000-2005 would be negative.

[10]   As illustrated in Hagemann and Nicoletti (1989).

Other reforms

There are a variety of ways to reform standard PAYG (or partly funded) public pension systems, and most G-10 countries have already embarked on some of them, though in some cases the reforms are not driven solely or even primarily by the ageing of populations (Table 2.2). The most prominent include:

- reducing the degree of indexation of benefits to wage developments;
- reducing the size of individual benefits relative to earnings;
- reducing favourable tax treatment of pension income;
- tightening eligibility criteria for disability pensions;
- raising the standard age of retirement;
- lengthening the contribution period for eligibility;
- targeting benefits on the poorest retired households;
- shifting partially to mandatory individual advance-funded accounts (discussed later).

Some indication of the sort of results to be expected from certain of these reforms is presented in Table 2.3, which summarises the results of simulation exercises for selected G-10 countries.[11] The table shows that different policy options produce significantly different results in different countries, reflecting institutional factors and starting points. In all countries, though, restricting public pension benefits to the poorest households has the greatest impact, reducing pension expenditures (relative to GDP) to the levels of the 1970s by the middle of the next century. A gradual rise in the standard retirement age is also effective in stabilising pension expenditures relative to GDP, although the retirement age would have to be raised to 70 years for stabilisation at current levels.[12] If the growth of total pension expenditures is limited to that of nominal GDP, costs remain broadly under control. By contrast, if it is indexed to that of average nominal wages, pension expenditures grow even faster than if no further reforms are introduced.

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[11]   These simulations do not in all cases capture all the institutional complexities of individual countries' public pension systems, nor recent reforms. No results are shown for Italy, as recent reforms invalidate the basis of the simulations. Information for Italy can be found in OECD (1997a).

[12]   On average, there are currently three employees for each person over 65 in G-10 countries. This would fall to two employees per person over 65 in 30 years' time. On the standard demographic assumptions, to return to a ratio of three employees to every retired person, the retirement age would have to rise to approximately 70 years.

Table 2.2

Public pension schemes in selected G-10 countries: directions of reform

	United States	Japan	Germany	Italy	France	United Kingdom	Sweden	Canada
Statutory retirement ages (male/female)								
1990	65/65	60/60	65/60	60/55	60/60	65/60	65/65	65/65
2020	67/67	65/65	65/65	65/60	60/60	65/65	65/65	
Contribution[1]		Increased contribution rate		Increased contribution rate				Increased contribution rate
Benefits[1]			Change in benefit indexation rules; cut in replacement ratio in response to greater longevity	Change in benefit indexation rules, cut in replacement ratio	Change in benefit indexation rules; cut in replacement ratio	Change in benefit indexation rules; cut in replacement ratio	Change in benefit indexation rules	Change in indexation rules
Other[1]	Increase in retirement age	Increase in retirement age	Incentives to postpone retirement – approximation of average retirement age to statutory retirement age (65 years)	Increased contribution period, incentives to postpone retirement	Increased contribution period			Increased targeting of flat benefit tier
Average gross replacement rate[2,3,4]	43%	47%	70%; may decline to 64% in response to increase in longevity	80%	70%	40%	55%	35%
Type of financing[2]	"Buffer" fund	Partially funded	PAYG	PAYG	PAYG	PAYG	Partially funded	Increased funding
Social security benefit lowered by legislation	1984	1985/94	1977/84/92/96/99	1992/95	1993	1986/95	1994	

[1] For more details on recent pension reforms, see Davis (1997), Table 7.1, p.24. [2] From Turner and Watanabe, from Table 2.1, p.12. [3] For more detailed data on replacement rates, see Davis (1997), Table 4.1. [4] OECD Secretariat.

Table 2.3

Pension expenditures under various scenarios for selected G-10 countries

(as a percentage of GDP at 1994 prices)

		1995	2000	2010	2020	2030	2040	2050	2060	2070
United States	Baseline	4.1	4.2	4.5	5.2	6.6	7.1	7.0	7.2	7.4
	Cost containment	4.4	4.2	4.5	4.9	4.9	4.9	4.9	4.9	4.9
	Wage indexation	4.1	4.2	5.0	5.8	7.5	8.0	8.0	8.2	8.4
	Later retirement	4.1	4.2	3.6	3.9	5.1	5.7	5.7	5.9	6.1
	Targeting	4.1	4.2	4.5	3.4	2.0	2.1	2.1	2.2	2.3
Japan	Baseline	6.6	7.5	9.6	12.4	13.4	14.9	16.5	15.5	14.4
	Cost containment	6.6	7.5	9.6	11.2	11.2	11.2	11.2	11.2	11.2
	Wage indexation	6.6	7.5	9.6	12.4	13.4	14.9	16.5	15.5	14.4
	Later retirement	6.6	7.5	9.3	9.4	9.3	10.1	11.8	11.0	10.3
	Targeting	6.6	7.5	9.6	7.9	4.0	4.4	4.9	4.6	4.3
Canada	Baseline	5.2	5.0	5.3	6.9	9.0	9.1	8.7	8.4	8.1
	Cost containment	5.2	5.0	5.3	6.0	6.0	6.0	6.0	6.0	6.0
	Wage indexation	5.2	5.0	5.2	7.2	10.0	10.8	10.9	11.0	11.1
	Later retirement	5.2	5.0	4.3	4.2	5.7	6.3	6.1	5.9	5.8
	Targeting	5.2	5.0	5.3	4.7	3.4	3.4	3.3	3.1	3.0
Germany	Baseline	11.1	11.5	11.8	12.3	16.5	18.4	17.5	16.5	15.5
	Cost containment	11.1	11.5	11.8	12.0	12.0	12.0	12.0	12.0	12.0
	Wage indexation	11.1	11.5	11.8	12.3	16.5	18.4	17.5	16.5	15.5
	Later retirement	11.1	11.5	10.7	9.0	10.6	12.6	12.8	12.3	11.7
	Targeting	11.1	11.5	11.8	8.8	7.8	8.8	8.3	7.8	7.3
France	Baseline	10.6	9.8	9.7	11.6	13.5	14.3	14.4	14.2	14.0
	Cost containment	10.6	9.8	9.7	10.7	10.7	10.7	10.7	10.7	10.7
	Wage indexation	10.6	9.8	10.8	13.5	15.8	16.8	17.0	16.8	16.5
	Later retirement	10.6	9.8	7.9	6.6	6.5	7.2	7.6	7.6	7.6
	Targeting	10.6	9.8	9.7	7.8	4.3	4.6	4.6	4.6	4.5
United Kingdom	Baseline	4.5	4.5	5.2	5.1	5.5	5.0	4.1	3.6	3.1
	Cost containment	4.5	4.5	5.2	5.3	5.3	5.3	5.3	5.3	5.3
	Wage indexation	4.5	4.5	5.9	6.2	7.8	8.5	8.3	8.4	8.4
	Later retirement	4.5	4.5	4.3	3.7	3.4	3.3	2.9	2.5	2.2
	Targeting	4.5	4.5	5.2	3.2	1.9	2.0	2.0	2.0	2.0
Netherlands[1]	Baseline	6.0	5.7	6.1	8.4	11.2	12.1	11.4	11.2	11.0
	Cost containment	6.0	5.7	6.1	7.4	7.4	7.4	7.4	7.4	7.4
	Wage indexation	6.0	5.7	6.8	9.5	12.8	13.9	13.1	12.9	12.6
	Later retirement	6.0	5.7	5.1	5.5	7.2	8.3	8.6	8.4	8.2
	Targeting	6.0	5.7	6.1	5.5	3.4	3.7	3.5	3.4	3.4
Sweden	Baseline	11.8	11.1	12.4	13.9	15.0	14.9	14.5	14.8	15.1
	Cost containment	11.8	11.1	12.4	13.3	13.3	13.3	13.3	13.3	13.3
	Wage indexation	11.8	11.1	13.2	15.1	16.4	16.3	15.9	16.3	16.6
	Later retirement	11.8	11.1	6.3	6.4	7.1	7.4	7.5	7.7	7.9
	Targeting	11.8	11.1	12.4	10.4	11.4	11.7	11.2	11.6	12.0

[1] These scenarios do not take account of recent changes to the widows' and orphans' schemes, which the authorities estimate will reduce expenditure by 4%.

Source: Roseveare et al. (1996)

Discouraging early retirement

All of the reforms examined in these scenarios are quite far-reaching. Reforms that provide incentives to working longer than is currently the case, or remove disincentives from doing so, are the most promising because they reduce the dependency ratio, lead to higher output and increase the tax base – a triple gain. Introducing such reforms will be no easy task, even though (or possibly because) citizens of the industrialised countries can expect to live in relatively good health for a greater number of years than their predecessors. Despite greater longevity, the average age at which employees permanently withdraw from the labour force has fallen steadily in the postwar period in many continental European countries, even in those where the standard retirement age has remained unchanged. By contrast, in other countries (for example Japan, Korea and Iceland), participation rates of older workers have remained both high and stable, showing that institutional factors and social customs play an important role.

There is growing appreciation that existing mature PAYG systems, and their interaction with tax systems, private and occupational pension schemes, and other social transfer programmes, constitute an incentive to withdraw from the labour force in advance of the standard retirement age. Pension systems are rarely actuarially neutral: early retirement is not "compensated" by a reduction in the pension that just offsets the shorter period in the labour force and the lower accumulated contributions. In European countries especially, eased access to disability pensions and long-term unemployment benefits permit older workers - especially the low-skilled – to withdraw from the labour force some years before they qualify for state pensions. Pension expenditures thus underestimate the fiscal cost of income support to older citizens. Certainly, the poor employment prospects for older unskilled workers, especially in Europe, need to be acknowledged and addressed, but doing so by appropriate labour market reforms rather than through early retirement would redistribute part of the burden of supporting the elderly from younger workers to older ones.

Other potential reforms to public pension systems, such as targeting and/or taxing benefits and lowering replacement rates, would reduce pressures on public finances. In this case, too, the burden on employees would fall, at the cost of lower living standards of the elderly. How far benefits can be reduced without causing unacceptable hardship among elderly households will vary from country to country, depending on the prevalence of private pension arrangements, the saving patterns of the elderly and the extent to which it is possible to target public pension benefits.

Nevertheless, to have a major impact on future fiscal pressures without raising taxes, extending the retirement age or cutting other spending, benefit rates might have to be severely reduced in some countries. The United Kingdom has gone furthest down this road, as the basic flat rate state pension has risen by only a little more than the rise in prices since 1980, and is currently equivalent to about 15% of average earnings. The retired population would need to have other sources of income in addition to the basic public pension to maintain an acceptable standard of living

(and does so in the United Kingdom). The most prominent alternative is funded private pension schemes. Most countries have private schemes of various kinds. To the extent that public PAYG pension benefits might become less generous in future, it is likely that households will seek alternative sources of income in old age, of which private funded pensions seem to be the most important.

Funded pension systems

If all old age income were derived from mature funded schemes, demography would have few consequences for fiscal policies other than those related to health, educational expenditure and poverty relief in old age. Insofar as funded systems raise national saving rates (see below), they can also result in a higher level of GDP.[13] Their main advantage in current circumstances is that if they were universally available and mature schemes, they would potentially be of lower cost to contributors than PAYG, and would have few fiscal implications. On reasonable assumptions about rates of return, growth of labour income and the extent to which national saving rates would rise, contribution rates to mature funded systems would be lower than those required to support PAYG systems for the same level of benefits. A disadvantage of individual funded systems is that their capacity to provide old age income is inherently uncertain, as it depends on the performance of individual funds over several decades. Administrative overheads are typically highest with individual-based systems and lowest with public defined-benefit systems.

In the current context, however, it is largely irrelevant to compare the fiscal implications of two mature systems. It is unlikely that a sudden and complete switchover from PAYG to funded systems will occur in G-10 countries. Hence, if PAYG benefits are going to fall relatively, and be supplemented by funded pension income, it is the fiscal implications of the transition that are important. Such a transition would necessarily be lengthy: servicing the pensions of existing retirees through the tax system would continue until the last of them died, and it would take many years before individuals entering the funded schemes would accumulate assets on a sufficient scale. Public sector balance sheets would improve under funded systems only if associated with pension reform that reduced unfunded liabilities.

The impact on private saving of a gradual switch to a mandatory funded system is uncertain, but very possibly positive. Private saving would probably not rise by as much as contributions to funded schemes because individuals would alter their saving behaviour. There would also be complex changes in income distribution, which would in turn have uncertain effects on total savings. If aggregate savings did not change at all, there would be complex interactions with rates of return on physical and financial assets as the pension funds attempted to purchase an increasing

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[13] Funded systems can be either public or private, and private systems can be either employer-based or individual-based. Funded systems can have defined benefits or defined contributions. If funded systems were *not* to raise private (or public) saving rates and did not affect labour supply decisions, then they would have little or no influence on average living standards, relative to a pure PAYG system. Material output would be much the same, and only the mechanism by which goods and services are transferred to retirees would be different.

proportion of the available stock of financial assets, driving down returns on the assets they purchased. It is uncertain whether the eventual level of real net wages and pensions would differ from that under a pure PAYG system. The likelihood is, though, that private saving would increase under mandatory funded schemes, albeit not by as much as the mandatory contributions.

Chapter 3

AGEING, PRIVATE PENSIONS AND FINANCIAL MARKETS

Introduction

This chapter examines the impact of the ageing of populations on financial markets. Demographic trends can potentially affect financial markets through a variety of channels, including shifts in government saving, private saving and, in particular, pension saving. This chapter concentrates principally on the recent and prospective trends in private pension funds and their implications for financial markets.

Size and composition of private pension funds

Private pension fund assets, as a percentage of GDP, vary considerably across G-10 countries (Table 3.1).[1] They total more than 110% of GDP in Switzerland, nearly 90% in the Netherlands and around 60% in the United States, but only 2-5% of GDP in France, Germany and Italy. One important reason for these differences is the varying degree to which public pension systems provide benefits for retirees, which in turn affects the demand for private pension plans. Another factor is the diversity across countries of government regulations concerning the funding of private pension plans. It is also notable that the greatest expansion of pension fund assets has occurred for the most part in the G-10 countries that already had a large pension fund sector.

Table 3.1

Total assets of G-10 pension funds

(as a percentage of GDP)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Belgium	2.4	2.4	2.7	2.5	2.7	2.5	2.8	3.1	3.7	4.1
Canada	26.4	26.8	28.7	30.0	32.0	32.8	35.7	37.7	41.0	43.0
France	0.0	0.0	0.0	3.4	3.5	3.2	3.3	3.8	4.3	5.6
Germany	3.4	3.1	3.4	3.3	3.5	5.1	5.5	5.4	5.2	5.8
Italy	.	.	.	.	0.6	1.1	1.7	2.2	2.6	3.0
Japan	38.0	33.7	31.8	37.4	37.9	37.3	41.0	49.4	40.6	41.8
Netherlands	45.5	72.7	81.6	78.4	81.1	72.1	83.5	85.0	86.6	87.3
Sweden	33.4	30.9	30.6	31.0	38.6	29.6	27.1	25.7	30.5	32.6
Switzerland	74.7	64.5	71.3	72.5	75.5	74.7	82.2	86.5	104.3	117.1
United Kingdom ..	62.3	58.2	65.0	59.7	64.1	58.2	72.4	69.2	73.2	74.7
United States	35.7	36.8	36.3	38.1	48.0	48.2	53.4	50.6	58.9	58.2

Source: Blommestein (1998b).

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[1]   These figures understate the financial importance of retirement assets because life insurance companies and mutual funds are also involved in retirement income products. Unfortunately, reliable data across countries are not available.

Table 3.2

Portfolio composition of pension funds' financial assets in G-10 countries

(in percentages, at end of year)

		1990	1991	1992	1993	1994	1995
Belgium	Financial assets (US$ bn)	3.87	5.56	5.67	6.23	6.78	6.78
of which:	Bonds	42.57	32.62	29.08	28.34	26.88	28.88
	Loans	5.09	3.22	2.71	1.91	1.76	1.76
	Shares	41.49	54.26	59.49	61.43	58.79	58.79
	Others	10.85	9.90	8.72	8.32	10.57	10.57
Canada[1]	Financial assets (US$ bn)	164.65	180.08	177.90	187.78	196.56	221.26
of which:	Bonds	58.44	54.62	52.12	50.84	48.55	46.82
	Loans	4.74	4.43	4.02	3.58	3.27	2.90
	Shares	26.28	27.56	28.34	28.96	29.18	30.42
	Others	10.54	13.40	15.52	16.62	19.01	19.87
France[2]	Financial assets (US$ bn)	41.00	42.20	42.00	41.00	50.00	66.16
of which:	Bonds	30.00	30.00	30.00	39.00	39.00	38.00
	Loans	.	.	.	.	.	.
	Shares	20.00	20.00	20.00	20.00	14.00	14.00
	Others	50.00	50.00	50.00	41.00	47.00	48.00
Germany	Financial assets (US$ bn)	51.51	56.01	56.64	47.63	55.48	65.25
of which:	Bonds	47.98	47.84	49.46	51.85	53.95	54.91
	Loans	48.56	48.87	48.06	44.77	43.94	43.05
	Shares	0.03	0.20	0.19	0.21	0.20	0.03
	Others	3.43	3.09	2.30	3.16	1.91	2.02
Italy	Financial assets (US$ bn)	38.54	49.55	38.28	33.94	36.52	42.97
of which:	Bonds	64.07	52.83	52.33	51.69	51.24	51.02
	Loans	0.00	0.00	0.00	0.00	0.00	0.00
	Shares	2.62	2.61	2.38	2.54	2.91	3.05
	Others	33.32	44.56	45.29	45.77	45.85	45.93
Japan[3]	Financial assets (US$ bn)	.	342.64	378.36	460.46	555.44	579.61
of which:	Bonds	.	61.00	61.00	54.90	61.00	67.10
	Loans	.	.	.	.	.	.
	Shares	.	29.70	29.70	29.70	27.00	24.55
	Others	.	9.30	9.30	15.40	12.00	8.35
Netherlands	Financial assets (US$ bn)	229.75	245.53	247.53	262.23	295.50	350.79
of which:	Bonds	18.17	20.06	23.01	24.44	25.49	27.59
	Loans	57.13	52.64	48.36	42.19	41.22	36.58
	Shares	12.74	15.35	17.13	22.15	22.51	25.75
	Others	11.97	11.95	11.50	11.22	10.78	10.07
Sweden[4]	Financial assets (US$ bn)	3.84	4.18	3.89	3.67	4.38	5.37
of which:	Bonds	45.43	58.84	65.63	65.99	65.98	70.13
	Loans	41.66	30.99	26.34	25.76	25.77	15.03
	Shares	12.91	10.17	8.02	8.25	8.25	14.85
	Others	0.00	0.00	0.00	0.00	0.00	0.00
Switzerland	Financial assets (US$ bn)	137.70	137.70	147.61	147.61	189.43	189.43
of which:	Bonds	34.83	34.83	35.40	35.40	33.38	33.38
	Loans	42.88	42.88	43.31	43.31	49.18	49.18
	Shares	19.19	19.19	20.24	20.24	16.29	16.29
	Others	3.10	3.10	1.06	1.06	1.15	1.15
United Kingdom	Financial assets (US$ bn)	536.58	600.26	552.16	683.28	661.30	758.54
of which:	Bonds	12.23	10.48	9.94	10.01	12.61	13.45
	Loans	0.10	0.11	0.07	0.06	0.02	0.01
	Shares	70.91	76.24	74.83	74.53	71.11	70.98
	Others	16.75	13.18	15.15	15.39	16.26	15.56
United States	Financial assets (US$ bn)	2,531.00	2,848.00	3,152.30	3,429.20	3,564.80	4,155.70
of which:	Bonds	34.71	31.31	29.91	29.49	30.49	28.13
	Loans	3.17	3.01	2.73	2.67	3.13	2.68
	Shares	36.17	39.59	42.74	46.39	45.78	52.03
	Others	25.95	26.10	24.61	21.45	20.60	17.15

[1] Data on Canadian holdings of foreign loans, bonds and shares are not available separately, and hence are included among "Others". [2] *Sources*: EFRP (1996); European Commission, "Social Europe" (March 1994). [3] *Source*: EFRP (1996). [4] Autonomous pension funds only. *Source*: OECD (1997c).

Note: '.' data not available.

The composition of private pension fund assets also varies significantly among G-10 countries (Table 3.2). For example, pension funds in Belgium, the United Kingdom and the United States hold the majority of their assets in equities, while those in Germany and Italy invest largely in bonds and hold only negligible amounts of equities. Patterns of holdings have been changing, although not uniformly across countries. In recent years, the shares of equity holdings in pension funds have been increasing in Belgium, the Netherlands and the United States, but declining in Japan and the United Kingdom.

Pension funds generally have displayed a strong home bias in their investment strategies and consequently have been much less internationally diversified than the world market portfolio.[2] In most countries only a small portion of private pension funds' assets are invested abroad (Table 3.3). Moreover, little of the international exposure is in emerging markets.[3] Nevertheless, there has been some movement towards greater international diversification in recent years. In G-10 countries with significant pension fund holdings, the share of foreign assets increased from 12% in 1990 to 17% in 1996.

Table 3.3

G-10 pension funds' holdings of securities issued by non-residents

(as a percentage of total assets)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Belgium	34.1	37.4	33.4	30.0	29.4	29.2	34.3	33.0	35.8	35.4
Canada	.	5.9	.	7.0	9.0	11.0	12.0	14.0	14.0	.
France	.	.	.	.	.	2.0	2.0	5.0	4.4	.
Germany	.	.	.	4.5	4.5	4.3	4.5	7.0	5.3	7.7
Italy	.	.	.	.	.	4.0	4.0	5.0	.	.
Japan	14.3	14.8	14.3	16.0	14.8	14.4	14.0	10.8	12.5	14.9
Netherlands	12.8	13.3	15.2	15.8	14.9	17.1	19.7	22.0	21.0	30.2
Sweden	.	.	.	.	.	.	.	11.0	9.1	14.8
Switzerland	4.0	4.0	4.0	4.2	6.0	6.0	6.0	13.0	16.0	18.6
United Kingdom	14.0	17.0	22.0	20.0	23.0	24.0	27.0	27.0	26.8	29.2
United States	2.5	2.9	3.7	3.5	3.9	4.3	8.1	8.1	9.1	10.4

*Source*: Blommestein (1998b).

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[2]   See OECD Financial Market Trends, No. 68, November 1997.

[3]   Surveys suggest that US pension funds and mutual funds currently have about 2% of their assets invested in emerging markets. Emerging market exposure of UK pension funds and mutual funds is somewhat higher (3-4%), but Japanese and continental European institutional investors have negligible exposure to emerging market assets in their portfolios (Blommestein 1997).

Implications of ageing for the growth and composition of pension funds

The ageing of G-10 populations is expected to lead to an increase in saving rates in the near term as baby boomers build up assets for their retirement (Figure 3.1). Growth in private pension funds and other institutional assets should be associated with this demographic development. Private pension funds could also be boosted by reductions in future public pension benefits in order to avoid unsustainable prospective government deficits. In a similar vein, a continued shift from defined-benefit private pension plans (which can be underfunded) towards defined-contribution plans (which are fully funded), as has been occurring in some countries, could also raise pension saving.[4]

Figure 3.1: Saving rates by age group in major OECD countries
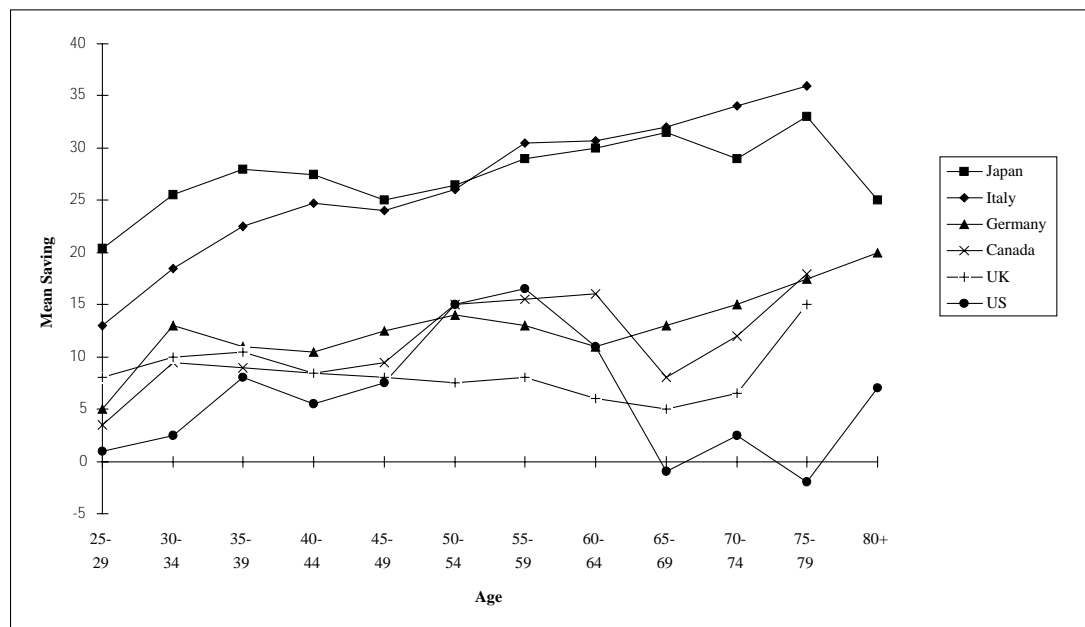
Source: Weil (1994)

The ageing of G-10 populations could also increase investment in assets abroad as differences in saving patterns across countries lead to shifts in net foreign assets (as discussed in Chapter 4 of this report). Gross flows abroad will be spurred by progress in liberalizing controls on cross-border financial flows and strengthening capital markets in developing countries.[5] Moreover, increased reliance on private pensions to fund retirement income in G-10 countries could increase the demand for higher returns. Such

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[4] The United Kingdom and the United States are notable examples. In the United States this shift has occurred as both employers and employees have sought more flexible and portable private pension plans.

[5] See Blommestein (1998a).

demands would lead investors to take greater advantage of the favorable return/risk trade-off provided by international diversification.[6]

Prospective effects of ageing on financial markets

The effects of ageing on national saving rates, and on the growth and composition of pension funds in particular, will have important implications for domestic and international financial markets. One influence will be on the scope and structure of these markets. Higher saving in the G-10 countries will increase the breadth and depth of worldwide financial markets. The composition of that saving will also influence the structure of those markets. For example, countries with large funded private pension systems tend to have highly developed securities markets, while countries with small private pension fund sectors tend to have relatively underdeveloped equity markets.

A second influence concerns the rates of return on various types of assets. Because asset preferences vary across age groups, the ageing of the baby boom generation could affect both absolute and relative levels of stock and bond prices. On average, middle age is the phase of the life cycle when saving rates are highest.[7] Moreover, middle-aged workers are generally more able and willing to hold a riskier portfolio; that is, one weighted more heavily towards stocks than bonds.[8] This is a consequence of two factors: (1) while still working, a stockholder is better able to make up for any bad equity returns, and (2) in middle age, workers have a longer time horizon and thus are willing to accept more risk in exchange for the expectation of higher returns. In this case, the ageing of G-10 populations will tend to increase the price of stocks and bonds, decreasing their rates of return. Moreover, higher demand for stocks relative to bonds should increase the price of stocks relative to the price of bonds, and therefore reduce the rate of return to stocks relative to bonds, that is, decrease the equity premium.[9] After the baby boomers begin to retire, saving rates would tend to fall, stock and bond prices to decline, and the equity premium to rise as baby boom retirees shift their portfolios away from stocks

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[6]   Various studies have indicated that international portfolio diversification brings substantial risk return benefits. See, for example, Blommestein (1998b). However, other analysts have argued that the benefits of international diversification may be decreasing, in part because growing financial integration is leading to an increase in the correlation of returns across countries, which reduces the potential for risk reduction via diversification. See Kessler (1996).

[7]   This type of saving behaviour is a feature of both a theoretical life-cycle model and, more importantly, the type of saving behaviour seen empirically in household data.

[8]   The real return on US stocks, for example, averaged 9% over the period 1947-96 with a standard deviation of 17%. This implies that there is about a 30% probability of a decline bigger than minus 8% or a rise bigger than 26% in any given year. The average real return on long-term US government bonds over 1953-96, however, is much lower (3%) but also less volatile - these returns have a standard deviation of 2%.

[9]   It is generally held that risk aversion increases with age, holding length of life constant. Thus, some have hypothesized that an ageing population would cause the equity premium to increase. But if the age of the population is increasing at least in part because the life span is increasing, and thus time horizons are lengthening, then the ageing of the population does not necessarily imply that average risk aversion should be increasing and the risk premium on stocks rising.

toward bonds. If pension funds move towards greater international diversification of their holdings, similar influences to those just described for domestic stocks and bonds could be felt in international stock and bond markets and in foreign exchange markets.

The ageing of populations may also influence financial rates of return through its effects on government saving. Recent trends in public deficits among G-10 countries have generally been positive, as favourable economic conditions and the Maastricht restrictions have helped to reduce budget imbalances. If governments continue to raise their saving rates and reduce their debt levels as the baby boom generation approaches retirement age, the reduced stock of government bonds may put upward pressure on the price of those bonds and lower their rates of return relative to private financial instruments. However, these effects could be reversed if government debt begins to rise again when the baby boom generation retires and places increasing demands on government pension and health support for the elderly, as discussed in Chapter 2.

The possible effects of ageing on financial rates of return have potentially important implications for the management of pension funds. First, historical average rates of return and equity premiums may not be appropriate either for calculating expected future returns to pension assets or for drawing implications about whether baby boomers are saving enough for retirement. This is particularly important for defined-benefit pensions. Second, pension managers and individual savers need to plan for the possibility of declining equity (and possibly bond) prices at the time when baby boomers are liquidating their assets to finance their retirement.

Policy issues for pensions and financial markets

Because the demand for private pension instruments can be expected to grow as the baby boom generation passes through the high-saving stages of the life cycle, government policies should be geared to accommodating this growing demand. In this light, they should be guided by the principle of allowing private pension funds to perform their key role in efficiently allocating retirement savings and risks. Government action should be designed to ensure that financial markets are efficient and robust. These considerations suggest a number of key elements to a broad framework.

First, reliable supervision of private pension funds is critical both to ensure fund managers face appropriate incentives and to sustain the confidence of contributors to pension funds. A supervisory framework based on "prudent man" principles and sound risk management standards can achieve these objectives.[10] Since 1984 aggregate returns on pension fund portfolios in countries with prudent man investment rules have been 2.5 to 4 percentage points higher than returns in countries using quantitative limits (Table 3.4). However, it is important to note that these differences in returns may be the

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[10] Under the prudent man rule, fiduciaries, trustees and bank trust departments are expected to behave as careful professionals in making investment decisions. "Prudence" is reflected in the two most significant elements of the rule: (i) the requirement to diversify; and (ii) the exhortation to favour "seasoned" situations that similarly placed institutions find appropriate.

result of factors other than differences in regulatory arrangements, including macroeconomic policies, structural factors that influence economic growth (eg. capital market segmentation, discoveries of mineral wealth, etc.), and various features of the institutional infrastructure.

Table 3.4

Returns on pension fund portfolios, 1984-96

(mean of real total return in local currency)

	1984-1993	**1984-1996**
Belgium	8.8	9.0
Denmark	6.3	6.0
Germany	7.2	7.0
Ireland*	10.3	11.0
Japan	6.5	.
The Netherlands*	7.7	8.0
Spain	7.0	.
Sweden	8.1	.
Switzerland	4.4	4.0
United Kingdom*	10.2	10.0
United States*	9.7	9.0
Prudent Man	9.5	9.5
Asset limits	6.9	5.2

* Countries with prudent man principle.

Sources: EFRP (1996), Pragma Consulting and OECD staff calculations.

Second, regulatory authorities should see financial innovations as improvements in the functioning of financial markets. The process of financial innovation has been driven strongly by the growth of pension funds and other institutions such as mutual funds and life insurance companies active in the retirement sector. The challenge for policy-makers is to ensure financial stability without hampering the entrepreneurial activities of financial market participants.[11]

Third, a well-functioning funded pension system requires a stable and efficient financial market infrastructure consisting of the legal framework, accounting standards, the regulatory and supervisory framework, clearing and settlement systems, and the micro-structure for trading securities. Most industrial countries have made considerable progress in developing a solid regulatory and supervisory framework, although further progress is still needed. For instance, several industrial countries have not yet established the proper legal and regulatory basis for dealing with takeovers, minority shareholder protection, insider trading and institutional investor operations.[12]

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[11] For example, increasing the supply of inflation-indexed government bonds could be particularly helpful in spurring the growth of private pensions.

[12] See OECD (1997b).

In addition, disclosure requirements, which vary in part because of differences in legal systems, should be made more uniform. Improvements in disclosure requirements are particularly urgent in emerging market economies, as the recent turmoil in Asia has made clear. It has become increasingly evident that greater transparency is a critical factor in sustaining cross-border flows of pension fund investments from industrial countries into emerging markets. Indeed, lack of transparency and inadequate disclosure are widely seen as having contributed to prolonging the Asian crisis.

If better and more uniform disclosure requirements are to be useful to financial market players, they must be buttressed by adherence to internationally accepted standards of accounting. Auditing standards and practices also need to be adequate to ensure the reliability of disclosed information.

Even in well-developed financial markets with effective regulatory arrangements, a well and prudently managed pension fund may encounter difficulties. If asset prices remain depressed for protracted periods, pension funds may be unable to deliver promised (e.g. in a defined-benefit scheme) or expected (e.g. in a defined-contribution scheme) retirement benefits. A question arises as to what role the public sector can or should play in such circumstances. The first-tier public pension benefit, which typically contains a redistributive element, may provide insurance against such risks. However, plan participants may see this as inadequate, especially where the private schemes have been mandated. Providing additional insurance gives rise to a delicate trade-off between individual and collective interests arising from problems of moral hazard.[13] Setting up an explicit system of government pension guarantees might inadvertently encourage excessive risk-taking or inadequate funding by private sponsors.[14] In this context, government-operated insurance schemes such as the Pension Benefit Guarantee Corporation in the United States can be effective if insurance premiums are set appropriately and there is adequate regulation and oversight. Arrangements of this type may reduce the presumption that the public sector has a much broader and potentially costlier conjectural liability (e.g. in the event of deep and widespread economic crisis). Such policy prescriptions may be needed irrespective of the influences of ageing populations. However, if private pensions are to play a key role in a multi-pillared system of retirement support, it will become increasingly important to encourage their sound management.

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[13]   See Merton and Bodie (1992).

[14]   See Bodie and Merton (1992).

Chapter 4

THE INTERNATIONAL IMPLICATIONS OF AGEING

Current account balances and the associated change in net foreign asset positions result from domestic saving and investment decisions. Insofar as ageing affects either or both, there will be concomitant changes in current account balances in individual countries, and hence in the global pattern of current account and net foreign asset positions (and the associated flows of investment income in the form of net foreign interest and dividend payments). Independently of this, geographical diversification by G-10 institutional (and other) investors in response to liberalisation of global capital markets could lead to higher returns on savings for retirement by citizens of G-10 countries.

Changes in the age distribution of the population could have a substantial impact on a country's private saving rate. The private saving rate of a country could rise for a while as the larger cohorts (born in a baby boom) pass through the high-saving stages of the life cycle.[1] Subsequently, surges in the proportion of the elderly in the population could reduce the private saving rate as the elderly deplete their stocks of accumulated assets. For an economy as a whole, however, it is the national saving rate – the sum of private and public saving – that matters for future economic growth and the eventual level of per capita income. The combined influences of ageing and unchanged public policies would imply a fall in both private and government saving in the future. Increases in government saving through medium-term budget consolidation could play an important role in sustaining national saving rates, provided that this is achieved in ways that do not undermine incentives for private saving. The extent to which saving rates could fall in different countries will depend on the rate at which their populations are ageing (rapidly in Japan, Italy and Germany, more slowly in the United States, Canada and the United Kingdom) and the success of their efforts in pursuing fiscal consolidation (see Chapter 2). Hence the timing and size of ex ante movements in national saving rates might be very different across G-10 countries and especially between them and developing countries.

Ageing may also influence the optimal size of the capital stock, and hence desired investment. With relatively fewer workers, capital requirements would rise less quickly, or even fall in some countries. Gross investment needs would be reduced for a while, even though the scarcity of workers would induce some substitution of capital for labour. It is not easy to predict whether ageing would cause investment to fall more than saving. Many analyses suggest that it would not, over a period, but it may be that investment would react more quickly than saving initially.

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[1]   However, there does not yet seem to be solid evidence that saving rates of members of the baby boom generation, in the United States at least, have increased.

Saving investment balances of individual countries, and hence their current account balances, are therefore likely to evolve in complex ways as their populations age.

Even if the impact of ageing on saving is greater than that on investment for an individual country, this cannot be true simultaneously for all countries, even though the populations of virtually all countries in the world are ageing to some extent. This is because at the global level, changes in individual country current balances must net out to zero. Hence, it is not the absolute fact of ageing that is of importance in assessing the effects on current balances, but rather the speed at which a given country is ageing relative to its trading partners. The pressures on saving investment balances in a given country emanating from domestic demographic developments will thus be attenuated or amplified by demographic developments in all other countries, with these pressures modulating, and being modulated by, exchange rates, the terms of trade and interest rates. Hence the impact of ageing on the current account positions of G-10 countries, and of their current account positions on their living standards, is not a straightforward matter to analyse or predict. It is necessary to construct a coherent and consistent global framework within which the effects of various forces can be isolated and examined.

Work in this field is still in its pioneering stages, and only tentative conclusions can be drawn. A recent exercise by the OECD Secretariat (forthcoming) using a globally consistent, model-based approach implies that, in the absence of further pension reforms or fiscal consolidation, and assuming that private saving rates fall with age, most G-10 countries would experience significant current account surpluses for the next couple of decades. This is partly because the demographic pressures do not emerge fully in G-10 countries for another decade or so, and partly because the faster-growing non-OECD countries are expected to be net capital importers.[2] However, well before the middle of the next century, G-10 countries would be running significant current account deficits, and would have run down most of the stock of net foreign assets built up during the period of current surpluses. Investment income from abroad (which is also affected by the starting levels of net foreign assets) would be boosting living standards in G-10 countries only for the first two to three decades of the next century. It would modestly offset the negative direct impact of ageing on living standards during the period when that direct impact is likely to be most intense. However, under this no-policy-change scenario, ratios of public debt to GDP would start to soar in ten years' time in Europe and the United States, and straight away in Japan.[3]

This analysis also explores the effects of early implementation of different policy options, such as strong medium-term fiscal consolidation, raising retirement ages and pursuing labour market reforms, that could be used to alleviate the impact of ageing on public finances and output. All of these policies tend to raise national saving rates, and thus greatly extend the period during which G-10 countries would

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[2]   Model results are also sensitive to other technical assumptions.

[3]   The precise numerical values coming from the simulations are not reported here, as they tend to be sensitive to the technical assumptions adopted.

experience current account surpluses and accumulate larger stocks of net foreign assets. Investment income from abroad would therefore also be larger and longer-lasting. But the higher national saving rates would drive down interest rates and exchange rates in G-10 countries, worsening their terms of trade. Nevertheless, the positive impact on living standards is greater than in the no-policy-change case.[4]

The analysis thus shows that ageing in and of itself could result in significant and sustained changes in current account positions and in cumulated net foreign assets and liabilities. Individual countries could find that they are deriving a higher proportion of their income in the form of returns on foreign investment than has habitually been the case, and others – mostly in the developing world – would need to accept, and be able to finance, sustained current account deficits.

Ageing and the geographical diversification of capital flows

The growth of global capital markets and especially the growth of pension fund assets might independently lead to a higher level of gross flows of capital from the industrial to emerging market countries. A prudent diversification strategy would encourage industrial country pension funds (or other institutional investors) to place a higher proportion of their assets in fast-growing developing countries. A recent study examines the proposition that investing in younger economies can "beat demography".[5] The basic conclusion is that although diversification of investment can attenuate the negative impact on capital returns and savings of ageing in fast-ageing countries, its positive effects on capital returns and savings are modest for the following reasons:

– Although gross capital flows to non-industrial countries could expand briskly, there is no a priori reason why net flows would be any larger.[6] Net capital flows are determined by domestic saving/investment balances, and unless these change for other reasons, larger flows of industrial country investment to emerging market economies would be offset by bigger capital flows in the opposite direction, unless the host countries have inefficient capital markets and an unsatisfied desire for higher investment.

– Many of the emerging market countries that have been preferred destinations for industrial country foreign investment are high-saving countries to the point where their domestic savings exceed their investment requirements, making them net investors in other countries (especially industrial countries). Their development is not constrained by lack of funds, and higher investment

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[4]   Another scenario examines the impact of higher investment demand in developing countries. Although the inflows of interest and profits on foreign investment are of course higher, these are partly offset by the consequent reduction in investment in G-10 countries, which has a negative impact on labour productivity and the tax base.

[5]   See MacKellar and Reisen (1998).

[6]   The previous section indicated that ageing alone, and a fortiori the effects of policy reactions to it, could of course well result in significant and sustained changes in net flows.

by the industrial countries in those countries would very probably be offset by their higher investment in industrial countries.

– Some emerging market countries, of which China is the most important example, are also ageing rapidly, and either have moved, or are contemplating moving towards, funded systems. They may favour large-scale diversification into industrial countries where returns are more stable: an attractive feature for those with relatively low incomes.

– Even if it were possible to increase the proportion of investment directed towards emerging market countries without offsetting flows in the reverse direction, then returns to capital would rise in the industrial countries and fall elsewhere, tending to reduce the net benefits to industrial countries. A lower capital stock in industrial countries would also depress productivity there, offsetting some of the gains to living standards from receipts of foreign income. Real wages would be lower, narrowing the tax base from which to finance PAYG pensions and reducing the savings from which funded pension systems draw their resources.

– The changes in gross foreign asset positions would have to be very large to generate significant benefits for industrial countries, unless returns on emerging market assets (real and/or financial) are persistently very much higher than those which can be obtained on assets in industrial countries.[7] The political risks would also rise with the size of the gross foreign asset position, as would the financial risks if returns are volatile as well as high (as recent events in Asia underline).

– Higher gross investment in emerging market countries increases the industrial countries' financial claims on those countries. What matters for material living standards, though, is the associated increase in the consumption of real goods and services. This will also depend on how the terms of trade between the two zones evolve, something which cannot be predicted with precision.

The implications for policy are that, abstracting from other influences, ageing would be very likely to result in prolonged swings in current account positions of G-10 countries vis-à-vis each other and vis-à-vis the rest of the world that could lead to large changes in net foreign asset positions. However, there is considerable uncertainty surrounding such estimates. Even the sign or timing of the swings cannot be predicted with certainty for particular countries. That said, the balance of evidence is that current accounts of most industrial countries will move towards surplus during the next decade or so, and even more decisively towards smaller surpluses, or deficits, thereafter. These swings would reflect fundamental changes in domestic saving/investment balances, and not changes in relative competitiveness or relative cyclical positions. Thus there would be no reason to resist them. Independently of

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[7]   Very approximately, if returns on foreign assets are as much as 5 percentage points (500 basis points) higher than on domestic assets, gross foreign assets would have to rise by the equivalent of 10% of GDP each year to offset entirely the depressive effects of ageing on living standards (assuming no change in net foreign assets relative to GDP).

that, there would be substantial increases in gross capital flows and gross foreign asset positions if the financial assets of industrial country institutional investors continued to rise briskly and if managers were to diversify more into foreign assets. Although this would result in higher incomes for industrial countries (to the extent that returns on foreign assets were higher than on domestic ones), the size of the net potential benefit might be only modest, as there would probably be offsetting movements in gross capital flows in the other direction, and possibly also an impact on productivity and capital returns in the industrial countries.

Chapter 5

POLICY CONSIDERATIONS

Introduction

The main challenge for economic policy raised by population ageing is how best to promote the efficient utilisation of society's resources and to augment productivity growth. The impact of measures that provide incentives to working longer than is currently the case, or remove disincentives from doing so, hinges crucially on actions that further the more efficient operation of labour markets. Productivity growth depends on policies that foster public and private saving and that encourage investment in both human and physical capital. Policies should foster the efficient allocation of resources globally by ensuring the free flow of goods, services and financial capital across countries, while also supporting internationally accepted standards of prudential supervision and financial market regulation.

Policy-makers will also face the task of dealing with tension between retirees and workers in regard to the financing of public retirement programmes and should be cognisant of the economic inefficiencies that many redistributional policies can introduce. These issues will be the easier to address, the more successful policies are in stimulating growth and shoring up fiscal imbalances.

Public policy and economic growth

Saving

National saving can come from either the public or private sector, although the interdependence of these two sources of saving must be taken into account in considering the effects of policy actions.

Recent trends in public saving have been encouraging. Most G-10 countries have made significant progress in reducing public deficits. In addition to freeing up additional funds for productive private investment, further deficit reduction can provide significant fiscal benefits by slowing or reversing the growth of public debt and interest costs. Achieving structural budget balance or even surplus should therefore be a primary policy objective in the medium term.

The manner in which fiscal deficit reduction is achieved (e.g. by spending cuts or tax increases) can have an important impact on both the durability of the increase in public saving and on the level of private saving. As was indicated in Chapter 2, empirical evidence suggests that lasting deficit reduction is more likely to be achieved via spending restraint than via tax hikes. Moreover, higher taxes on labour income could reduce the supply of labour, which would tend to retard economic growth. There may be some gain to shifting the tax base from income or payroll taxes

towards consumption taxes because ageing tends to erode revenue more clearly when governments rely on income or payroll taxes for their fiscal receipts. However, concerns about tax incidence and equity would need to be addressed.

Private saving accounts for the major portion of national saving. However, recent trends in most G-10 countries show declining household saving rates. This raises serious policy questions concerning (1) the sufficiency of private saving to help finance investment and achieve adequate economic growth, and (2) the adequacy of saving by individuals in preparation for retirement. A challenge for public policy is to determine what it can or should do to stimulate private saving, especially in a way that does not induce an offsetting reduction in public saving. Unfortunately there are no clear policy answers here. One popular policy option designed to promote private saving has been tax-based retirement saving incentives, used in the United States, the United Kingdom and Canada. However, empirical evidence on the effectiveness of these measures in raising national saving has been mixed. The uncertainty of such measures points to the importance of doing as much as possible to raise public saving.

Investment

Saving is important because it provides funds for investment, which has a direct effect on productivity and growth. Governments will want to consider whether they are doing all they can reasonably expect to do to support productivity growth, for example via investment in education, infrastructure and the funding of basic science, research and technology. These are policies that should be undertaken in any case to the extent that the social return exceeds the social cost, but they may take on added importance in view of the impending adverse effects of ageing on living standards. In the area of education, population ageing may necessitate some shifting of expenditure from child education to adult education and training.

The labour market

The level of economic output (and standards of living) can also be boosted by policy changes that increase the supply and/or productivity of labour. Policy actions that encourage the lengthening of working lives, especially in view of the demographic trend toward longer life spans, should be considered. In many cases, removing incentives to retire early or disincentives to working longer may be effective, although such reforms should take account of the potential interactions between pension benefits and unemployment and disability insurance. Increased public support for education and training may also boost both the supply and productivity of labour.

Additional improvements could stem from using the existing supply of labour more effectively by increasing the efficiency of labour markets, especially in Europe. Reform of unemployment benefit provisions, more support for job-search assistance and retraining, and encouragement of reduced rigidities in employer-employee relationships might go a long way towards achieving this goal. The importance of

making progress on this well-recognised problem will be heightened as retirees place an increasing burden on scarce public funds that are now used to support unemployment benefits, especially in countries with high rates of structural unemployment.

Policy considerations for public and private pensions and health care

Public pension benefits and, in many G-10 countries, support for medical care are the most important elements of public support for retirees; they are also large components of government budgets and account for most of the tremendous increase in budget deficits in medium-term projections under current policies. Private sources of retirement income and health support will become increasingly important if public pension and health care benefits are trimmed as a result of the growing burden that ageing populations will place on public finances. Some countries face a serious problem in the growth of unfunded private pensions.

In considering policy options for dealing with the funding problems of public pensions and health care, it is important to assess their implications for national saving and economic growth. In particular, changes in public policies towards the provision of retirement income could also have significant effects on private saving and labour supply decisions.

Several policy options would address the underfunded status of public pensions and health benefits; each has its own merits and drawbacks:

- Reduce non-retirement spending in government budgets in order to redirect revenue towards more fully funded pension and health programmes. Since lower public investment (in infrastructure, science and research) could have negative consequences for growth, spending cuts should preferably be concentrated in other budgetary categories.

- Raise payroll or other taxes. This option would raise public saving, but higher taxes on capital income might reduce private saving. Raising payroll taxes could have potentially negative impacts on labour markets and hence output during a transition period. Distortions would be the lower, the more closely an individual's contributions were linked to his future benefits. Countries that already have high rates of payroll taxation might prefer to use other revenue sources, should they choose to more fully fund their public pension systems.

- Reduce promised public retirement and/or health benefits. This option would have to be adopted with sufficient lead time to avoid imposing an unfair burden on those already retired or near retirement. It could increase private saving if workers bolstered their saving in anticipation of lower expected retirement and health benefits in the future. Any reductions in retirement and health benefits would of course need to be tailored to meet redistributive and equity goals.

- A more marked reform of public pensions would involve shifting, at least

partially, from traditional mandatory defined-benefit plans to mandatory defined-contribution plans in which everyone has a personal retirement saving account. While this option has the potential of raising national saving, it might merely reallocate saving between the public and private sector. National saving would increase only if this reform integrated the movement towards fully funded pensions without a fully offsetting increase in public debt, as discussed in Chapter 2. This type of public pension reform could also affect labour supply decisions.

– Raise the age for qualifying for a public pension benefit. This option has the potential fiscal benefits of both increasing the contribution (tax) base, as people work longer, and reducing total lifetime benefits paid. As indicated in Chapter 2, the long-term positive fiscal (and real growth) implications of this option could be considerable. Some of the fiscal gains might be reduced by increasing public disability insurance to cover those workers unable to work in their more advanced years. Potential interactions with unemployment insurance should also be taken into account. In some countries unemployment insurance enables elderly workers to withdraw from the labour market before they qualify for pension benefits.

There may also be scope for fostering the expansion and funding of private pension schemes. Increased incentives (e.g. tax breaks or lower administrative costs) for firms that do not currently provide pension coverage could be implemented. However, any increase in private pension saving would have to be weighed against lower public saving resulting from higher tax incentives. In some countries, private pension coverage is relatively broad already, but the level of prefunding is extremely low and will need to be addressed. Many of the beneficial economic effects of moving towards full pension funding could potentially be achieved in a public pension framework as well.

An efficient public pension insurance scheme can help to maintain the integrity of current private pension benefits and may thereby foster their expansion. It is important to design such schemes in ways that encourage businesses to set up pension plans while at the same time avoiding problems of moral hazard. Some countries have developed sound private pension systems without a public insurance system for private pensions, suggesting that the need for this type of insurance may not be attenuated if financial markets are adequately developed.

Public policy, ageing and financial markets in a global economy

Financial markets are important intermediaries in coordinating the supply of saving with investment demand, both nationally and globally. Thus, an important policy goal should be to help ensure that financial markets, both domestically and internationally, function in an efficient manner.

At the national level, one important policy issue in this regard includes the development or maintenance of a sound supervisory, regulatory and legal framework

for financial markets and institutions. Another policy goal should be to ensure that standards of financial accounting are well developed, that they are adhered to, and that transparent and readily available financial reporting is promoted.

Because demographic projections indicate that countries and regions will be ageing at different rates, the time profiles of savings, consumption and investment will differ across different geographical areas. All else equal, such differences could imply potentially significant gross and net capital movements (including growing financial investments by pension funds, mutual funds and other institutional investors). These movements, in turn, are likely to be associated with notable shifts in current account balances. A free flow of capital across different countries is likely to have a positive influence on achieving an efficient allocation of capital by allowing scarce capital to shift to geographical areas with expanding labour forces.

A number of policy issues that could play a potentially important role in accommodating and fostering such cross-border flows include:

– Policies that assist in the development and orderly liberalisation of international markets to ensure the free flow of capital internationally (e.g. developing and applying high standards of accounting, transparency and financial reporting, enhancing financial supervision and regulation, and dismantling capital controls where they exist).

– Policies that minimise the likelihood of destabilising shifts in capital flows across countries. Policies should be especially mindful of strengthening the international framework for prevention of currency crises (e.g. via surveillance and encouragement of sound national macroeconomic and financial policies).

– Adopting trade policies that defuse or avoid protectionist pressures that mount as current account imbalances temporarily increase.

– Adopting monetary and exchange rate policies that accommodate (rather than trying to offset via competitive devaluations) longer-term changes in external balances associated with differences in demographic trends across countries.

Conclusions

The major conclusions of this study of the macroeconomic and financial consequences of the ageing of populations are the following:

– Although many G-10 countries have instituted reforms to address some of the issues raised by ageing populations, demographic developments will have adverse effects on material living standards and will significantly widen budget deficits unless further action is taken.

– The need for early action is urgent because the burden of adjustment for governments and individuals increases the longer action is delayed.

- To ease the burden of adjustment and to offset the expected negative effects of ageing on living standards and fiscal balances, reforms should encourage economic growth and the efficient use of resources. Thus reforms should pursue measures that would:

  - increase national saving and investment. Important in this regard will be further reduction of fiscal deficits and debt, including addressing the problems of funding public retirement and health benefits;

  - increase the supply and efficient utilisation of labour. Ensuring greater efficiency in labour markets and eliminating disincentives to continued labour force participation by older workers will help to achieve this;

  - ensure the efficient allocation of savings both within and across borders. Important actions in this area include strengthening the financial infrastructure, encouraging financial transparency, enhancing financial supervision and eliminating barriers to international capital flows.

- An immediate increase in the funding of private and public pensions would help to alleviate the potentially severe demographic pressures on existing pay-as-you-go (PAYG) and underfunded systems. The choice of how retirement income is provided will depend on national circumstances, but a mixed approach based on all three "pillars" of retirement income - public retirement benefits, private pensions and household saving - has many advantages.

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Annex 1

SELECTED FACTORS INFLUENCING OLD AGE DEPENDENCY RATES

This annex considers two ways in which elderly dependency rates could exceed the levels suggested in Chapter 1 of this report. Although there are many factors which could influence future dependency rates, two of the most often noted are (i) uncertainties regarding future longevity, and (ii) the adverse impact of the declining labour force participation and employment rates of men on elderly dependency rates.

Rising life expectancy

Life expectancies at all ages have risen more or less continuously during the past few decades in the industrialised countries. Although continued increases in longevity are incorporated into UN population projections to 2050, improvements in life expectancy beyond those built into the projections would, other things being equal, raise elderly dependency rates further than shown in Table 1.1.

The divergence of actual from projected life expectancy can be substantial. This is illustrated by the differences between life expectancy at birth in 1990 from the levels that were assumed for that year in the 1973 UN population projections for G-10 countries. As is evident from Graph A.1 below, even over relatively short periods the margin of error can be large.

Graph A.1: Life expectancy at birth in 1990: actual versus projected[1,2]
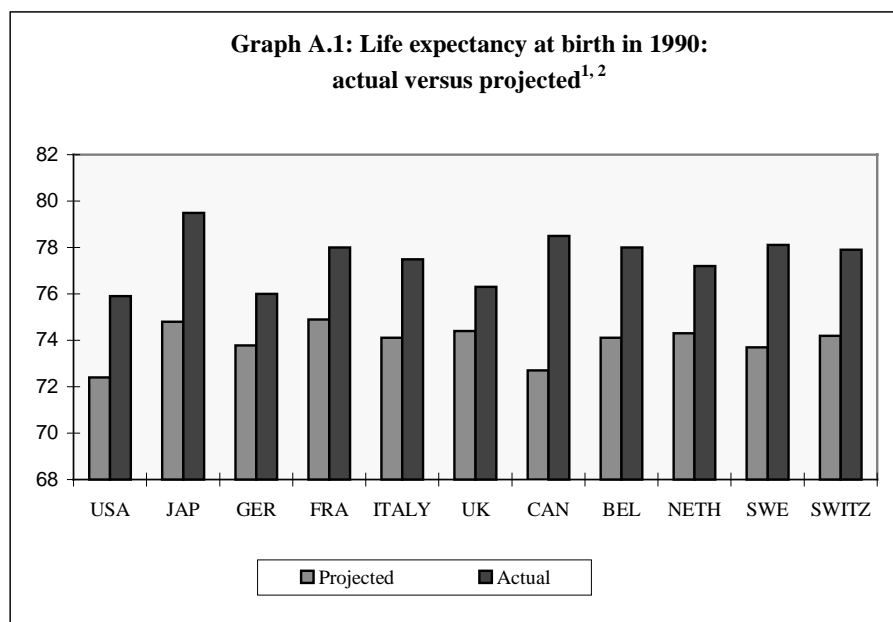
Source: United Nations (1977, 1996).

1   The graph compares the life expectancy at birth in 1990 assumed in the 1973 UN population projections with actual life expectancy in 1990.

2   The "projected" value for combined Germany is a weighted average of projected life expectancies at birth in eastern and western Germany using the 1973 projection of the number of persons aged 0-4 in 1990.

Such divergences in turn have a direct impact on the age composition of the population. For instance, by 1985 the percentage of the population aged 65 and older among G-10 countries – at 13.3% – was 1.2 percentage points higher than it would have been had life expectancy reached the levels assumed in the 1973 projections.[1]

Impact of labour market developments

Recent trends in labour force participation, and the high levels of structural unemployment in some continental European countries, have important implications for the *economic* dependency rate, defined as the ratio of the number of non-working to employed persons. The ratio of retired to employed persons is of particular importance for the sustainability of public pension systems. This ratio would be significantly higher than the pure demographic elderly dependency rate in a number of countries if recent trends in labour force participation and unemployment rates were to persist in the future. To illustrate, one can define a *retired persons* dependency rate (RPDR) as the ratio of retirees to total employment. The RPDR captures the combined influences of demography, age-specific employment rates (which implicitly reflect in part labour force participation rates) and trends in retirement. RPDRs have been simulated for selected G-10 countries using two different assumptions about employment rates (defined as the number of employed persons as a percentage of the population in each broad age group):

(i) that they remain at the levels observed in 1995; and
(ii) that they return to the levels observed during the 1960s.

As is evident from the simulated rates shown in Table A.1, the weak employment (due in part to labour market rigidities that have contributed to increases in structural unemployment) and/or higher retirement rates implicit in the simulations based on 1995 rates add considerably to the projected dependency burden.[2] For instance, if employment and retirement rates in 2050 returned to the levels observed during the 1960s, the RPDR would be 32 percentage points lower than might otherwise be reached in France, and slightly more than 42 percentage points lower in Italy. Employment rates were higher during the 1960s because of lower rates of unemployment and, more notably, higher overall labour force participation rates. If the prospective decline in the growth of the labour supply caused by ageing could lead to lower unemployment, and if account were taken of the increase in the labour force participation rates of women witnessed during the past several decades, the projected RPDRs would be lower than shown in the table.

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[1]   Age-specific population projections prepared in 1973 were not available for 1990.
[2]   Such rigidities stem from attractive unemployment benefits, restrictive hiring and firing policies, and so on.

Table A.1

Simulated retired persons dependency rates

	1960	1968	1970	1990	1995	2020	2050
1995 employment rates[1]							
United States (15.3)[2]	13.3		15.0	22.0	21.9	31.8	40.1
Japan (9.4).....................................		7.6	8.1	16.9	18.9	32.5	41.4
Germany (21.7)			25.6	34.8	39.0	51.8	80.1
France (20.2)................................		21.7	23.8	39.2	41.3	58.9	78.6
Italy (16.9)...................................			24.9	40.4	44.0	67.2	107.2
Canada (12.7)...............................	10.8		13.3	21.3	23.3	40.9	54.9
1960-70 employment rates[3]							
United States (15.3)[2]	13.3		13.7	14.6	14.8	20.4	26.6
Japan (9.4).....................................		7.6	7.9	12.8	14.8	24.6	30.7
Germany (21.7)			25.6	27.1	29.0	37.6	57.3
France (20.2)................................		21.7	22.4	23.8	25.5	34.8	46.6
Italy (16.9)...................................			24.9	30.9	31.6	46.5	64.8
Canada (12.7)...............................	10.8		11.0	12.4	13.4	22.1	30.5

[1] Dependency rates for 2020 and 2050 are based on age-specific employment rates observed in 1995. [2] Figures in parentheses are the ratio of persons aged 65 and older to persons aged 15-64 (as a percentage) in the earliest year for which age-specific employment rates were available. For instance, the elderly dependency rates in the United States and Canada were 15.3% and 12.7% respectively in 1960. [3] Dependency rates for subsequent years are based on employment rates in 1960 for the United States and Canada, 1968 for Japan and France, and 1970 for Germany and Italy.

Source: OECD.

Annex 2

Glossary of pension fund terms

Accrual rate	The rate at which pension benefit builds up as pensionable service is completed in a defined-benefit scheme.
Accrued benefits	The benefits for service up to a given point in time, whether vested rights or not. They may be calculated in relation to current earnings or projected earnings.
Active investment management	A style of managing a portfolio which is designed to achieve, over a period of time, performance which is superior to index-based performance benchmarks.
Actuarial assumptions	The set of assumptions as to rates of return, inflation, increase in earnings, mortality, etc. used by the actuary in an actuarial valuation or other actuarial calculations.
Actuarial valuation	An investigation by an actuary into the ability of a pension scheme to meet its liabilities. This is usually to assess the funding level and a recommended contribution rate based on comparing the actuarial value of assets and the actuarial liability.
Actuarial value of assets	The value placed on the assets by the actuary. This may be the market value, the present value of estimated income and proceeds of sales or redemption, or some other value.
Annuity	A series of payments, which may be subject to increases, made at stated intervals until a particular event occurs. This event is most commonly the end of a specified period or the death of the person receiving the annuity.
Annuity option	The right to apply the proceeds of an insurance policy to buy an annuity in various pre-specified ways.
Asset allocation strategy	The long-term apportionment of pension scheme assets between the various investment classes such as equities, fixed interest and cash.
Assets	The items such as investments, debtors and cash to which the trustees of a pension scheme have title.

Glossary of pension fund terms

Basic pension	The single person's flat rate state pension paid to all who have met the minimum national insurance contribution requirements. A widow, widower or in some cases a married woman may also claim a basic state pension on the contribution record of his or her spouse.
Beneficiary	A person entitled to benefit under a pension scheme or who will become entitled on the happening of a specified event.
Deferred annuity	An annuity which commences from a future date.
Defined-benefit plan	Plan whose sponsor agrees to make specified payments to qualifying employees at retirement, according to factors such as the length of service and the earnings of the employee.
Defined-contribution plan	Plan whose sponsor is responsible only for making specified contributions into the plan on behalf of qualifying participants.
Employee Retirement Income Security Act of 1974 (ERISA)	Comprehensive US legislation regulating several key features of corporate pension plans and including the "prudent man" statutes and rules.
Final pensionable earnings	The pensionable earnings, at or near retirement or leaving service, on which the pension is calculated in a final salary scheme. The earnings may be based on the average over a number of consecutive years prior to retirement.
Funding	The provision in advance for future liabilities by the accumulation of assets, normally external to the employer's business.
Funding level	The relationship at a specified date between the actuarial value of assets and the actuarial liability.

Glossary of pension fund terms

Funding plan	The arrangement of the incidence over time of payments with the aim of meeting the future cost of a given set of benefits. Possible objectives of a funding plan might be that, if the actuarial assumptions are borne out by events: (a) a specified funding level should be reached by a given date; (b) the level of contributions should remain constant, or should after a planned period be the standard contribution rate required by the valuation method used in the actuarial valuation.
Guaranteed annuity option	The right to apply the proceeds of an insurance policy to buy an annuity at a rate guaranteed in the policy.
Hybrid pension plan	Plan that combines some features of the defined-benefit approach and some aspects of the defined-contribution method.
Indexation	1. A system whereby pensions in payment and/or preserved benefits are automatically increased at regular intervals by reference to a specified index of prices or earnings. 2. It is also in common use as a method of investment management where the objective is to produce a return equal or close to that of a chosen stock market index.
Inflation proofing	A term commonly used to describe indexation.
Insured-benefit plan	Plan whose defined benefits the sponsor insures through an annuity policy with a life insurance company.
Investment management agreement	The document in which an investment manager sets out the basis upon which it will manage a portfolio. The document is normally countersigned on behalf of the pension fund trustees and forms the legal and regulatory framework for the relationship between the trustees and the investment manager.

Glossary of pension fund terms

Investment manager	An individual or body to which the investment of the whole or part of the assets is delegated by the trustees in accordance with the provisions of the scheme documentation.
Investment performance measurement	The comparison of the rate of return of a given pension fund over a period with the notional return of a model fund, the actual rates of return of other funds, and/or the movement in stock market indices over the same period.
Liabilities	Amounts which a pension scheme has an obligation to pay now or in the future. The amounts may not be immediately ascertainable and some liabilities may be dependent on the occurrence of future events.
Managed fund	An investment contract by means of which an insurance company offers participation in one or more pooled funds. Also used to denote an arrangement where the scheme assets are invested on similar lines to unit trusts by an external investment manager.
Matching	1. The policy of selecting investments of a nature, incidence or currency similar to that of the expected outgoings. 2. An accounting term, meaning that revenue and costs are matched with one another or "edged" so far as their relationship can be established or justifiably assumed.
Occupational pension scheme	An arrangement organised by an employer or on behalf of a group of employers to provide pensions and/or other benefits for or in respect of one or more employees on leaving service or on death or retirement.
Pay-as-you-go (PAYG)	An arrangement under which benefits are paid out of revenue and no funding is made for future liabilities.
Pension Benefit Guaranty Corporation (PBGC)	The US federal agency established in 1974 by the ERISA legislation to insure the vested benefits of private pension plan participants.

Glossary of pension fund terms

Pension fund	Strictly speaking the assets of a pension scheme, but very often used to denote the pension scheme itself.
Pensionskassen	German term for legally separate but actually captive and in-house companies that manage pension funds.
Pension plan	A fund that is established for the payment of retirement benefits.
Pension plan sponsor	The entity that establishes a pension plan for its employees, which may be a private business or a unit of state/local government. Sponsors may also be a union acting on behalf of its members or individuals acting for themselves.
Pension schemes	Pension schemes can be classified into the following three categories: 1. Public managed pension schemes with defined benefits and pay-as-you-go finance, usually based on a payroll tax. They are mandatory for covered workers. In most OECD countries coverage is (almost) universal. 2. Occupational pension funds that are privately managed and offered by employers to employees. Within this category of funds there is a trend shift in OECD countries away from defined-benefit and partially funded schemes towards defined-contribution schemes. 3. Personal pension plans in the form of saving and annuity schemes. These schemes are normally voluntary and based on fully funded defined-contribution plans (e.g. 401(k) in the USA). In some non-OECD countries (e.g. Singapore and Malaysia) there exist publicly managed, mandatory schemes that are fully funded and based on defined contributions, known as provident funds. Tax incentives encourage the development of these plans, although at present their share of total income in old age is relatively small but growing.

Glossary of pension fund terms

Prudent man rule or principle	A number of countries do not impose quantitative limits but impose guidelines such as the so-called "prudent man rule" or "prudent man principle". Under the prudent man rule, fiduciaries, trustees and bank trust departments are expected to behave as careful professionals in making investment decisions. In the United States, the Employment Retirement Income Security Act (ERISA) stipulates that the fiduciary must be knowledgeable enough to act as a careful professional, experienced and educated in trust and financial matters. "Prudence" is a design standard, not a performance standard. This is reflected in the two most significant elements of the rule: (i) the requirement to diversify; (ii) the exhortation to favour "seasoned" situations that similarly placed institutions find appropriate.
Solvency test	An actuarial calculation to determine whether the assets of the scheme are sufficient to meet the statutory obligations to the members under the rules of the scheme.
Unfunded scheme	A pension scheme for which the employer does not set aside and accumulate assets in advance of the benefits commencing to be paid. The basis may be pay-as-you-go or terminal funding.
Valuation method	An approach used by the actuary in an actuarial valuation. The main categories of approach are the accrued benefits valuation method and prospective benefits valuation method. A variety of methods can be used but the method or methods used in a particular case should be adequately described in the actuarial report.

Annex 3

WORKING PARTY ON THE AGEING OF POPULATIONS

Chairman: Henk Brouwer

Belgium:	C. Petit	Ministry of Finance
	J. Claeys	National Bank of Belgium
Canada:	S. James	Department of Finance
	J. Murray	Bank of Canada
France:	C. Waysand/T. Francq	Ministry of Finance and Economy
	P. Sicsic/G. Kremer	Bank of France
Germany:	C. Holters	Ministry of Finance
	W. Fritsch	Deutsche Bundesbank
Italy:	A. Zodda	Ministry of the Treasury
	D. Franco	Bank of Italy
Japan:	S. Taniguchi	Ministry of Finance
	H. Shirakawa	Bank of Japan
Netherlands:	E. van Andel	Ministry of Finance
	H. Brits	Netherlands Bank
Sweden:	Å. Törnqvist	Ministry of Finance
	C. Berntsson	Bank of Sweden
Switzerland:	G. Boller	Swiss National Bank
	B. Weber	Federal Department of Finance
United Kingdom:	N. Glass/B. Burgess	HM Treasury
	A. Bowen	Bank of England
United States:	J. Gagnon	Department of the Treasury
	P. Hooper III	Board of Governors of the Federal Reserve System

Observers:

Bank for International Settlements:	J. McCarthy
European Commission:	M. Buti
International Monetary Fund:	P. Heller/R. Hagemann
Organisation for Economic Cooperation and Development:	H. Blommestein/N. Vanston

Secretaries:*

G. Bingham
E. Gardner/R. Hagemann
C. Pigott/G. Nicoletti

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* E. Engen and M. de Vor also made important contributions to the preparation of the report.

LIST OF DEPUTIES, OBSERVERS AND SECRETARIES

Chairman: Mario Draghi

Belgium:	G. Brouhns	Ministry of Finance
	J.-J. Rey	National Bank of Belgium
Canada:	J. Judd	Department of Finance
	P. Jenkins	Bank of Canada
France:	J. Lemierre	Ministry of Finance and Economy
	H. Hannoun	Bank of France
Germany:	J. Stark	Ministry of Finance
	H. Schieber	Deutsche Bundesbank
Italy:	A. Zodda	Ministry of the Treasury
	P. Ciocca	Bank of Italy
Japan:	E. Sakakibara	Ministry of Finance
	A. Nagashima	Bank of Japan
Netherlands:	J. Oosterwijk	Ministry of Finance
	H. Brouwer	Netherlands Bank
Sweden:	K. Lotsberg	Ministry of Finance
	S. Ingves	Bank of Sweden
Switzerland:	J.-P. Roth	Swiss National Bank
	G. Colombo	Federal Department of Finance
United Kingdom:	N. Wicks	HM Treasury
	M. King	Bank of England
United States:	L. Summers	Department of the Treasury
	A. Rivlin	Board of Governors of the Federal Reserve System

Observers:

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European Commission:	G. Ravasio
International Monetary Fund:	Deputy Managing Directors
Organisation for Economic Cooperation and Development:	I. Visco

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