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Population Ageing

Responses to Population Ageing: A Review of International Experience

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1997

Institute of Policy Studies of Sri Lanka
Health Policy Programme

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GLOSSARY

Ageing of population. A gradual process in which the proportions of adults and elderly increase in a population, while the proportions of children and adolescents decrease. This results in a rise in the median age of the population. Ageing occurs when fertility rates decline, while life expectancy remains constant or improves at the older ages.

Birth rate (or crude birth rate). The number of births per 1,000 population in a given year. Not to be confused with *growth rate*.

Child dependency ratio. The ratio of number of children (under 15 years of age) to the working age population (ages 15-64).

Cohort. A group of people sharing a common temporal demographic experience who are observed through time. For example, the birth cohort of 1900 is the people born in that year. There are also marriage cohorts, school class cohorts and so forth.

Crude birth rate. Same as Birth rate.

Demographic transition. The change in which a population shifts from a high mortality, high fertility state to a low mortality, low fertility state. It generally involves first a decline in mortality rates, followed by a subsequent fertility decline.

Dependency ratio. The proportion of the economically dependent part of the population to the productive part, arbitrarily defined as the ratio of the elderly (age 65 and older) plus the young (under age 15) to the population in the working ages (ages 15-64)

Disability free years. The number of years spent by an individual without any disability

Disabled, or dependent. Elderly people whose overall level of functioning is substantially reduced, such that they are likely to require help from a third party, or substantial help from aids and adaptations, in order to fulfil the normal activities of daily life.

Elderly people. All those aged 65 or over.

Fertility rate. The number of live births per 1,000 women of ages 15-49 years in a given year.

Frail elderly people. Elderly people with a long-standings limiting condition, or whose overall level of health is such that they may be "at risk" of neglect or injury.

Infant mortality rate (IMR). The number of deaths to infants under one year of age per 1,000 live births in a given year.

Level of disability. The measure of the duration and severity of disability in total population.

Life expectancy. The average number of additional years a person at a given age would live if current mortality trends were to continue.

Long-term care. Any form of care provided consistently over an extended period of time, with no predetermined finishing date, to a person with a long-standing limiting condition or who is at risk of neglect or injury.

Median age. The age that divides a population into two numerically equal groups; that is, half the people are younger than this age, and half are older.

Migration. The movement of people across a specified boundary for the purpose of establishing a new permanent residence. Divided into international migration (migration between countries) and internal migration (migration within a country).

Mortality. Deaths as a component of population change.

Old age dependency ratio The proportion of the retired population (aged 65 and over) to the working age population (aged 15-64).

Passivity Ratio The number of years spent in retirement as a ratio of the number of years worked by the average labour force participant

Pension. A regular flow of payments that begins at retirement and usually continues for the remaining life span of an individual.

Population growth rate. The rate at which a population is increasing/decreasing in a given year due to natural increase and net migration, expressed as a percentage of the base population.

Population projection. Computation of future changes in population numbers, given certain assumptions about future trends in the rates of fertility, mortality and migration. Demographers often issue low, medium (also known as standard) and high projections of the same population, based on different assumptions of how these rates will change in the future.

Replacement level fertility. The level of fertility at which a cohort of women on the average are having only enough daughters to replace themselves in the population. By definition, replacement level is equal to a net reproduction rate of 1.0. The total fertility rate (TFR) is also used to indicate replacement level fertility, and a TFR of 2.1 is considered to be replacement level in low mortality countries..

Total fertility rate (TFR). The average number of children that would be born alive to a woman (or a group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year.

Very elderly people. All those aged 80 or over.

Working age population - The population between the ages of 15-64 years

ACRONYMS

ASEAN	Association of South East Asian Nations
CAB	Current Account Balance
DB	Defined Benefits
DC	Defined Contributions
DHS	Demographic Health Survey
EMU	European Monetary Union
ESCAP	Economic and Social Commission for Asia and the Pacific
GDP	Gross Domestic Product
HPAE	High Performing Asian Economy
ILO	International Labour Organisation
IMR	Infant Mortality Rate
NIE	Newly Industrialised Economy
NWC	National Wage Council
OAIS	Old Age Income Security
OECD	Organisation for Economic Co-operation and Development
PAYG	Pay As You Go
TFR	Total Fertility Rate

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Section 1

INTRODUCTION AND OVERVIEW

A. Introduction

It is well known that Sri Lanka has achieved remarkable progress in the past fifty years in the area of health and population. The rapid decline in the infant mortality rate that was achieved from 1945 onwards, coupled with other trends towards better access to basic education and greater emancipation of women, have led to a declining fertility rate. This in turn has led in recent years to a decline in the overall population growth rate, which is now little less than 1% per year.

What is less known and understood is that these achievements will take Sri Lanka into uncharted waters in the coming decades. Data collected in the most recent DHS survey carried out in 1993 revealed that the total fertility rate had declined at a faster rate than earlier anticipated. Extrapolation of the trends observed suggest that the country would have achieved below-replacement level fertility by 1994, making Sri Lanka the poorest country to have achieved this status. This evidence of a more rapid decline in fertility than expected has long-term implications for the country's population growth and structure, but has not been fully reflected in current official projections and planning documents.

As a response to the data published from the 1993 DHS, IPS commissioned a new set of population projections for the country. These were prepared by Dr. Indralal W. De Silva of Colombo University, and became available in late 1996 (De Silva 1997). These projections reveal the following:

- Total fertility rate in Sri Lanka has fallen faster than officially projected, and reached replacement level (2.1) in 1993, 8 years before the official target of 2001, and two years before China. Fertility in Sri Lanka today is below replacement level (possibly <2.0).
- Fertility may continue falling until it stabilises at 1.5 by 2010.
- Sri Lanka's population will most likely stabilise at 21 million before 2025.
- The median age of the population will increase from 25 currently, and will reach 30 in 2005, 40 in 2025, and continue rising until approaching 50 after 2050.
- The percentage of the population aged over 60 years will increase rapidly from 8% currently, to reach 13% in 2010, and 21% in 2025.

The following aspects of Sri Lanka's situation should be noted:

- Sri Lanka will enjoy a short and favourable demographic window from now until about 2010. Until then the labour force will continue growing, and the number of child dependants will decline.
- After 2010, the labour force will start to decline in size, and the percentage of the population who are elderly will rapidly increase, while the number of children will eventually halve.
- In 2025, one third (31%) of the population will be of pensionable age, if the current pension age limits hold.

The future demographic scenario for Sri Lanka raises many critical issues and challenges. Sri Lanka faces a period of demographic ageing, in which all the indicators of this ageing process will progress upwards at a much faster rate than experienced elsewhere in the developed world. While many Asian countries are in the same situation of facing historically rapid rates of population ageing, Sri Lanka, because of its unusual success in the health sector, will experience one of the most rapid transitions to an aged population. Moreover, Sri Lanka will experience this transition at a much lower level of income and economic development than others. Sri Lanka faces the same rapid rate of population ageing as Japan or South Korea, but without the advantages that rapid economic development brings to these countries.

The challenge that Sri Lanka faces in managing this expected demographic transition is thus unique, and perhaps shared only by China. Given that even OECD economies are still searching for an adequate policy response means that there are unlikely to be ready-made policy solutions for the country. Sri Lanka may have to develop new policy responses to this emerging challenge in the years to come. However, in doing so, it does not have to repeat the same mistakes that others have made. It can benefit with hindsight from the experience of others who have tread the path of demographic ageing earlier, and it may also be able to benefit from the research and thinking that has already been carried out by other Asian industrializing economies. When in the 1960s, the challenges of an ageing population first emerged on the policy agenda of the Japanese government, it responded by a systematic examination of the experience of other countries, most notably in the Western world. It was on the basis of this review, that the first official responses were crafted in Tokyo. Sri Lanka can well afford to learn from this approach.

As research in Sri Lanka on international responses to population ageing has been very limited, the IPS Health Policy Programme took the opportunity created by the interest of H.E. The President, Chandrika Bandaranaike Kumaratunga, in these issues to carry out this investigation of international responses to population ageing. This first draft report represents the initial results of this research. It attempts to present some findings of how the advanced OECD economies are responding to these problems, and it also discusses the responses of other countries where data or literature were available. In examining other developing countries, emphasis has been placed on the industrialising economies of Asia, where possible, in the belief that these countries offer the most relevant lessons for Sri Lankan policy-makers. As a complementary part of this research, the IPS Health Policy Programme has assembled what it believes is the most comprehensive collection of materials and information on international responses to ageing available in this country. This collection of books, journals, press reports and reports, many of which are unpublished, were collected over a period of one year. The collection numbers over 500 items, and is still being properly catalogued in order to make it fully accessible to others in Sri Lanka. At the end of the report the major items in the collection are catalogued in a systematic manner for the benefit of readers. This bibliography is organised in two ways. The first part arranges the material according to thematic areas of interest, and the second arranges the material according to its geographical focus.

B. Overview of policy responses

Ageing populations present a complex of challenges for policy-makers, as well as some potential opportunities. Changes in the age structures of population and overall population numbers have profound implications for all areas of economic, social and cultural life. Each of these in turn have implications for other sectors, and so the ultimate impacts of population ageing may not be immediately evident.

Sri Lanka is well advanced into a process of demographic transition, which first commenced in the advanced countries of Northern Europe and North America. Initial declines in mortality brought about by advances in sanitation and medical knowledge in the last century led to an increase in population. Eventually, after several decades this decline in mortality led to a decline in birth rates, and ultimately to reduced population growth. Sri Lanka has already largely completed this transition, with child mortality rates approaching the lowest levels seen in Europe, and fertility rates now below replacement-level.

The economic and social impacts of demographic ageing are necessarily long-term, and most of the consequences will only become real several decades from now. However, many of the effects can be predicted well in advance, since the future dynamics of population change are largely predetermined by today's age structure and fertility patterns.

The major economic impacts of ageing will be felt in the areas of:

- pensions and old-age income security systems
- health care provision
- savings and capital markets
- long-term care of the dependent elderly

Pensions are a formalised mechanism of ensuring adequate income for individuals when they reach old age. In traditional societies this has not been necessary, as individuals could depend on the care and support of children. With economic modernisation, such traditional support mechanisms become insufficient, as extended families contract, norms of filial piety change, patterns of co-residence by parents and children alter, and as individuals shift from an agricultural livelihood to a more specialised formal economic life. Pensions or old-age income support can be provided through a number of formal mechanisms. The two principal options are pay-as-you-go systems, where today's workers pay through current taxes to support today's retired, and savings based systems, where individuals save during their own lifetimes to provide for their own retirement.

Demographic ageing places pension systems, particularly PAYG ones, under strain, as it alters the ratio of current workers to current retirees, and as this changes the percentage of wages that must be contributed increases in order to maintain the same level of retirement income. OECD countries face major long-term fiscal challenges in meeting future pension promises. Assuming no policy changes take place, pension expenditures will become the principal type of public expenditure in developed countries, and make it very difficult for such countries to achieve fiscal balance. Reforms have been suggested in a number of areas, but OECD practice seems to be concentrating on increasing the time spent in work relative to the time spent in retirement by individuals. This is being done by increasing formal retirement ages, and by encouraging the development of flexible work arrangements to allow older workers to remain productively employed as long as possible. OECD countries generally have not attempted to move towards individual savings based systems for a variety of reasons, which include political difficulties, short term fiscal costs that such a transition

would raise, as well as general societal support for most existing PAYG systems with their redistributive and risk-sharing elements. In developing countries, the World Bank has been vociferous in encouraging its particular model of pension reform, but to date actual experience with this approach has been limited mostly to Latin America.

In health care, population ageing is expected to substantially increase demand for health care services, as older people use and need more health services. Since in advanced economies, the public sector carries the bulk of the burden of paying for health care services, this is expected to add to fiscal pressures facing governments. Although a number of responses, which can be grouped together as "healthy ageing" approaches, have been suggested, the experience of the OECD countries suggests that the major option for dealing with health care costs of ageing will be in increasing the long-run efficiency of health care systems. Ensuring that health care providers provide higher volumes of services with the same amount of resources will be critical. Countries which fail to control problems of medical cost inflation will be the ones most challenged in dealing with the health costs of demographic ageing.

Increased health care costs and pension liabilities will result in a long-run reduction in government savings. Although private savings may rise to counteract this, the effect will only be partial. The available evidence is quite strong that demographic ageing will lead to a reduction in net national savings, and that this may have impacts on long-term growth prospects, as capital in practice is not truly mobile across national borders. The evidence from both OECD countries and Asia, however, does suggest that the better the initial savings positions of countries, the better the eventual savings positions with ageing. Thus the greater the level of initial savings, the less the expected future shortfall. Countries facing demographic ageing, such as Sri Lanka, are best advised to make strong efforts now to increase overall national savings in both government and private sectors. This appears to have been the position of the Japanese government throughout the 1980s and 1990s, when it strongly resisted suggestions by the US government to run a more relaxed fiscal stance, on the grounds of the future impact of demographic ageing.

Demographic ageing will also impact labour markets. Most importantly in Asian countries it is expected to reduce the rate of growth in labour forces, and ultimately to lead to labour scarcity. This will reduce long-term growth prospects in many Asian countries, which have relied on labour-intensive growth strategies. Policy responses to this include encouraging increased female labour force participation, raising retirement ages, increasing labour productivity and immigration. While this problem may not seem relevant to Sri Lanka today, they are germane to any national long-term development strategy which presupposes achieving rates of growth similar to those now achieved in South-East Asia.

Responding to these complex economic and social problems requires long-term planning by governments. This process has already started in much of South-East Asia and East Asia, and most countries in these regions are actively co-operating in developing policy frameworks, and in conducting the necessary research. Sri Lanka does not currently participate in much of this effort, but greater interest on the part of Sri Lankan policy makers may be desirable to learn from these other countries.

Section 2

GLOBAL DEMOGRAPHIC TRENDS

Overview

In 1990, 5.3 billion people inhabited the earth. This figure is expected to reach 7.7 billion by the year 2020. Asia, followed by Africa will be the main contributors to this population expansion. Europe, on the other hand, will decline in its share of the world population.

There are considerable variation between regions. The overall world population currently grows at a rate of 1.6 per cent. This rate is expected to decline to 0.8 per cent by 2025-2030. Europe's growth rate which was at 0.3 per cent in the period 1990-1995, will decrease to 0.1 per cent by 2025-2030. The corresponding growth rate for Asia will be 0.8 per cent.

Main causes of population growth

Global population has been driven by reduction in mortality and corresponding increases in life expectancy. As mortality rates have fallen, population growth increased as birth rates remained high. With time, families have responded to lowered mortality rates by reducing fertility and this will eventually result in lower population growth, and even stabilisation of the global population.

An ageing world population

The decline in fertility rates and increasing life expectancy have inevitably lead to an increase in the population share of the elderly. This demographic transition first started in Europe and has now spread to Asia, where demographic ageing has been relatively more dramatic. The relative success the Asian region has had in reducing mortality and fertility rates at a rapid pace, has made this a particularly marked feature in Asia relative to other developing regions.

Within Asia, population ageing is proceeding at varying rates, with the most rapid increases expected in East and Southeast Asia, and South Asia lagging considerable behind. Sri Lanka, however, is more demographically advanced than other countries in the region. Its experience is more comparable with that of East Asian and European countries. For instance, in most advanced economies, the ageing process on average takes 45-135 years. In Japan and other East Asian countries this process takes about three decades. In Sri Lanka, this process will take place in just two decades.

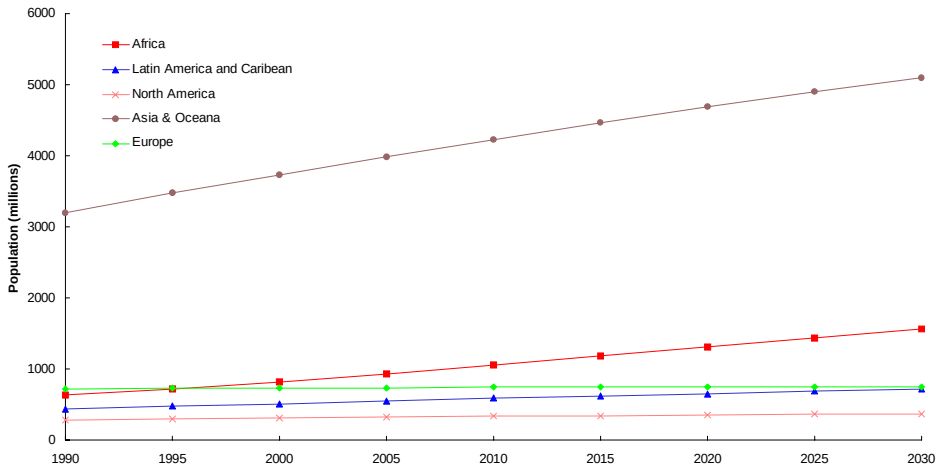
Though population ageing is indicative of improvements in life expectancy, mortality and fertility rates, it will have serious implications for the productive capacity of an economy. A rising elderly population share will reduce the working age population. This in turn, will increase the burden of existing working age populations who will then have to support their children and their elders. Similarly, increased costs in the area of pensions, income support and social services will create pressure on government fiscal balances.

A. World population trends

By the 1960s, the population of the world had reached three billion people and thirty years later in 1990, it had increased 77% to 5.3 billion people. By 2020, the human population is projected to rise by 45% to 7.7 billion people, and by 2100, 10 to 11 billion people are expected to inhabit the earth (Bos et al. 1994).

The Asian region will be the main contributor to this population expansion, followed by Africa. In the 1990s, Asia accounted for just over three billion people, which is approximately 60% of the global population, while Europe accounted for 14% of the global population. In 2020, Asia is expected to maintain its share of 60% of the global population, while Europe's share in the global population is projected to decline to 10% (744 million) (Figure 2A.1) (Bos et al. 1994).

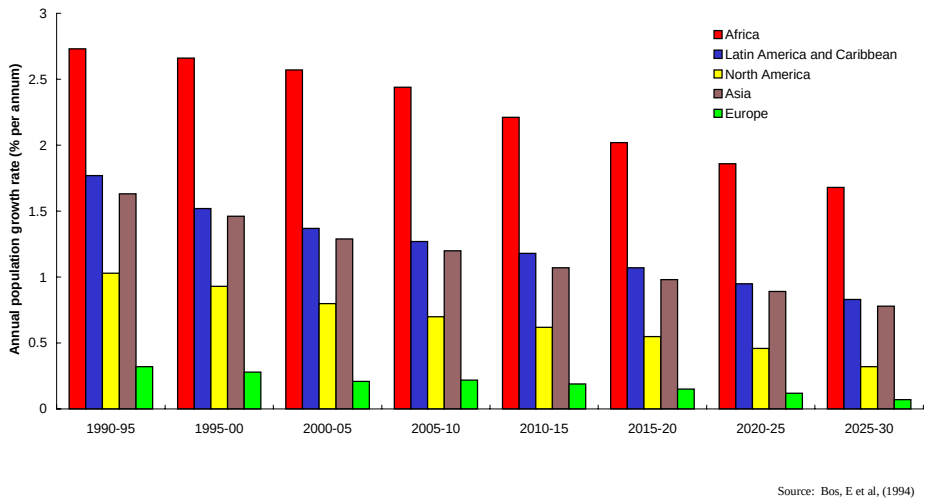
Figure 2A.1: World population projections by region, 1990-2030



Population growth

The world's population is currently growing at 1.6% per year. This rate of growth is projected to decline to 0.8% in the years 2025 - 2030. This overall picture hides considerable regional variation. The slowest growing region, which is Europe, is expected to see its growth rate, which was 0.3% in the period 1990-95, decrease to 0.1% in the period 2025-30. The Asian population which is currently growing at 1.6%, the global average, is expected to see its growth rate decline to just below 0.8% in the period 2025-2030. (Figure 2A.2) (Bos et al. 1994).

Figure 2A.2: World population growth trends by region, 1990-2030



Source: Bos, E et al, (1994)

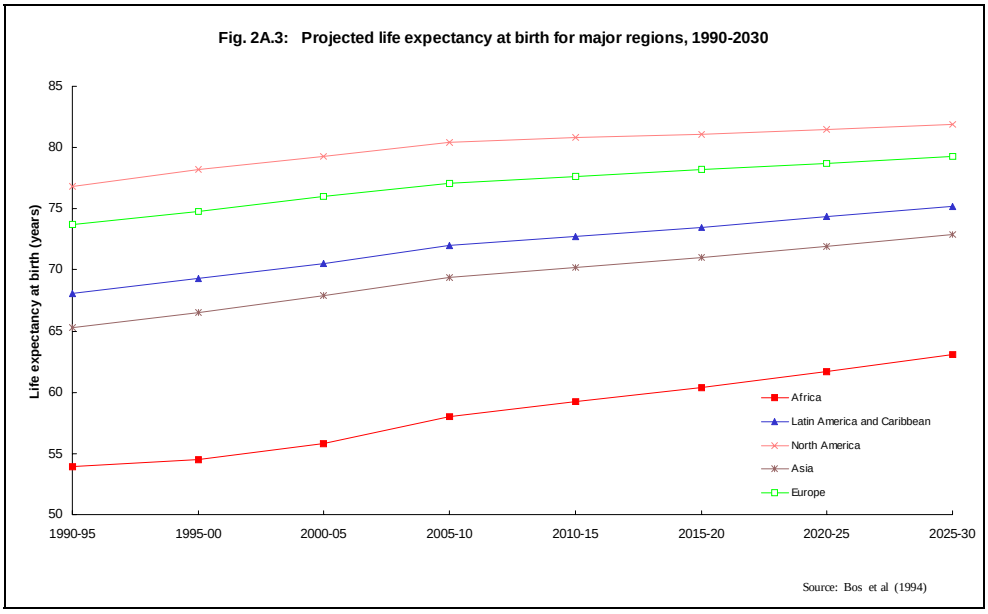
For most of its existence, the human population was small and relatively stable in size, although individual populations experienced considerable fluctuations over time, as a consequence of famine, disease, malnutrition and wars. During the past five hundred years, the world's population has gradually grown as advances in human knowledge have enabled increases in productivity and general living standards, and more recently reductions in mortality. In the twentieth century, population growth has been profoundly influenced by technological advances and economic influences, such as economic development, advancements in medicine, knowledge, the control of diseases and the expansion of education and health services and food supplies. It took most of human history for the world's population to reach one billion - in 1800. It then doubled to 2 billion by 1930's and added successive billions by 1960, 1975 and 1987.

The impact of, first, higher living standards, second, changes in sanitation and water supply, and later medical advances, has resulted in unprecedented changes in overall mortality rates. A decline in mortality rates and increase in life expectancy rates has contributed to a general decline in birth rates and overall fertility.

Life expectancy

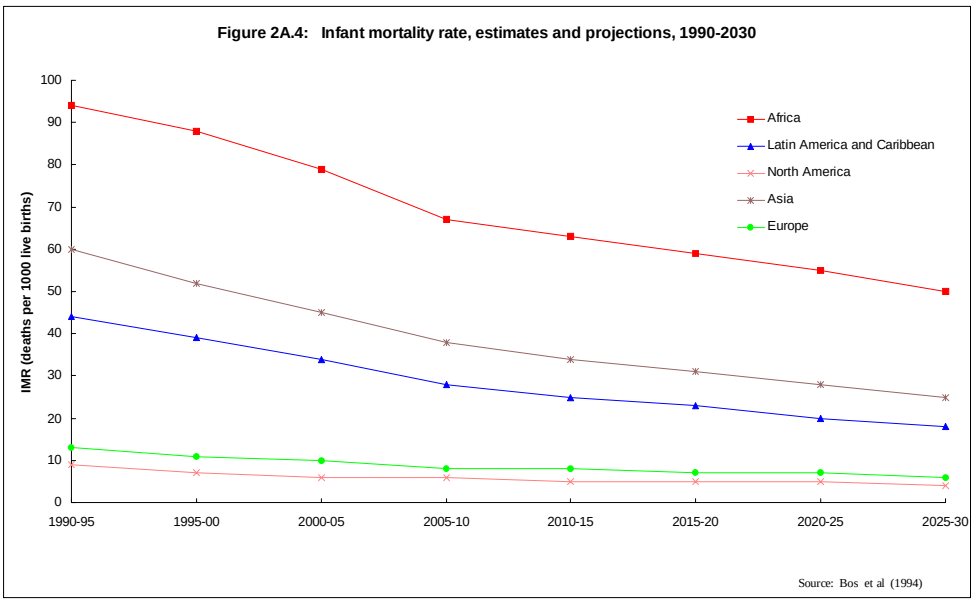
There has been a general increase in human life expectancy in this century, and this trend continues. In the period 1990-95, life expectancy at birth for both sexes was 65.9 years on average for the whole world. Since then it has increased to 66.8 years (1995-2000) and is projected to rise by 5.5 years to 72.3 years by the period 2025-2030.

In Europe, life expectancy at birth, which is 74.8 years in the period 1995-2000, is expected to rise by 4.5 years to 79.3 by the period 2025-2030. In Asia, the approximate life expectancy at birth of 66.5 years in 1995-2000 is projected to rise to 72.9 years by 2025-30, a gain of 6.4 years. The increases in South and South West Asia have lagged improvements in East and South East Asia for at least two decades, and they are expected to continue doing so. Life expectancy in South and South West Asia is expected to increase 6.1 years from 1995-00 to 2025-30 (Bos et al. 1994).



Infant mortality rates

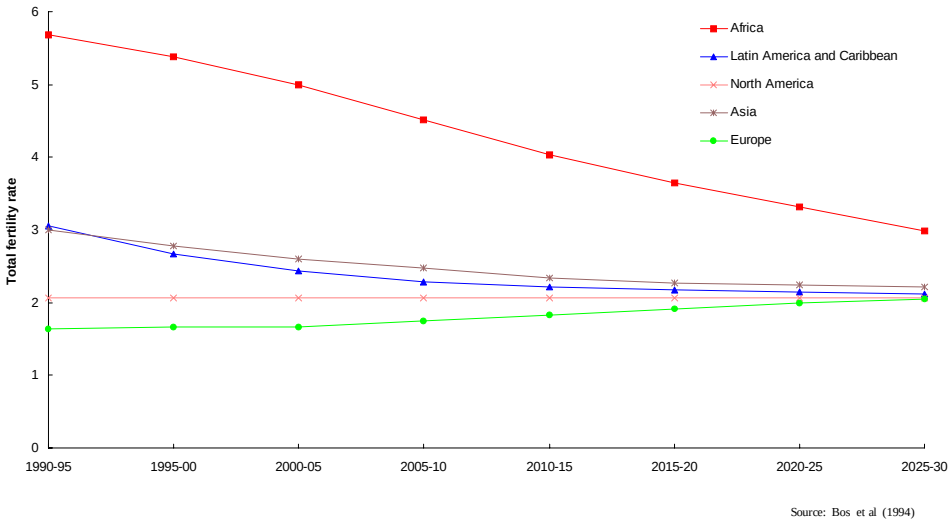
Declines in mortality have occurred at all ages, but the most substantial reductions have been at the younger ages. The infant mortality rate (IMR) which was at 60 per 1000 live births on average for the world, during 1990-95 has been projected to decline substantially over the next 40 years to 29 per 1000 live births. The European region is projected to experience a decrease in IMR from 11 per 1000 live births in the period 1995-2000 to 6 per 1000 live births in the period 2025-2030. In the Asian region, IMR is expected to halve from the period 1995-2000 (52) to 2025-2030 (25). The largest absolute decline in this region is expected be in the South Asian region (72 to 35 deaths per 1000 live births) (Bos et al. 1994).



Total fertility rates

Fertility rates have significantly declined in the recent past. In the 1995-2000 period, rates of fertility ranged from 5.4 children (Africa) to 1.7 children (Europe). Between 1990-95 and 1995-2000, fertility is projected to decline from 3.1 to 2.9 world wide. Globally, fertility is projected to decline to 2.3 children per woman by 2025-30. By that time the fertility rates of many countries will equal or be below the replacement level (2.1 children) of the population (Bos et al. 1994).

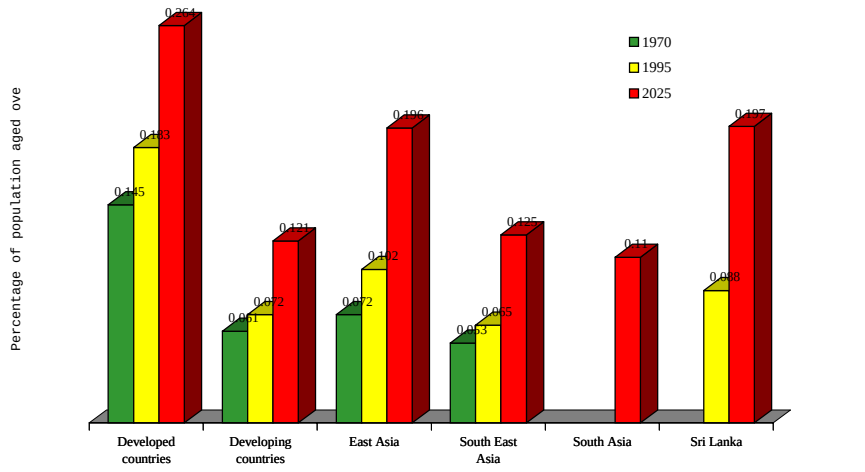
Figure 2A.5: Projected total fertility rate, 1990-2030



B. Ageing: a global population trend

The decline in fertility rates and increasing longevity leads inevitably to population ageing, which is an increase in the share of the elderly in the total population. Although, this demographic transition commenced in Asia decades after Europe and in the developed world, it has onset at a faster rate than witnessed in those countries. This means that population ageing in the Asian region will be relatively dramatic. While population ageing is a feature of most developing countries, it is particularly marked in Asian countries, because of the relative success in the region in reducing mortality rates and fertility at a rapid rate.

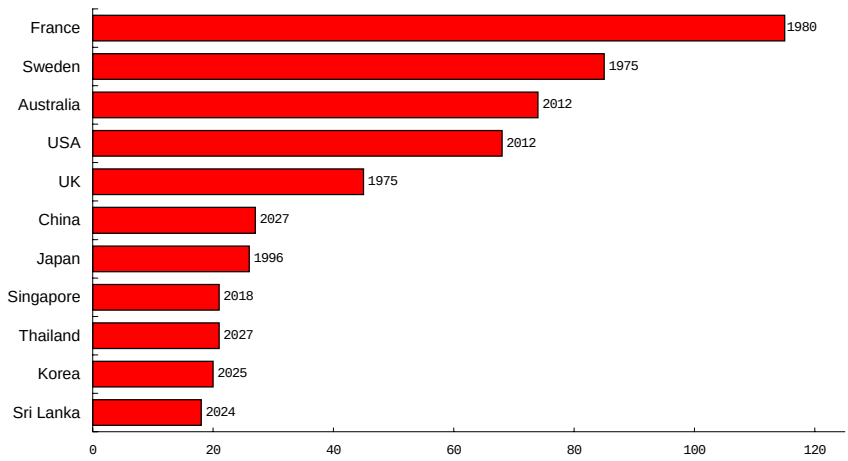
Figure 2B.1: Patterns of ageing in Asia 1970, 1995, 2025



Source: ESCAP and JOICFP (1996) snd IPS data

Within Asia, population ageing is proceeding at varying rates. The most rapid increase is expected in the NIEs and in East Asia, with South Asia lagging considerably behind. However, Sri Lanka's experience will be comparable more with East Asian countries than other South and South East Asian countries (Figure 2B.1). The rapidity of population ageing can be illustrated by the number of years that are required for the share of the aged population to double from 7 to 14%. In most Western advanced economies, this process took 45-135 years. In Japan and other East Asian countries, it will take three or fewer decades. In Sri Lanka this process will only take two decades (Figure 2B.2).

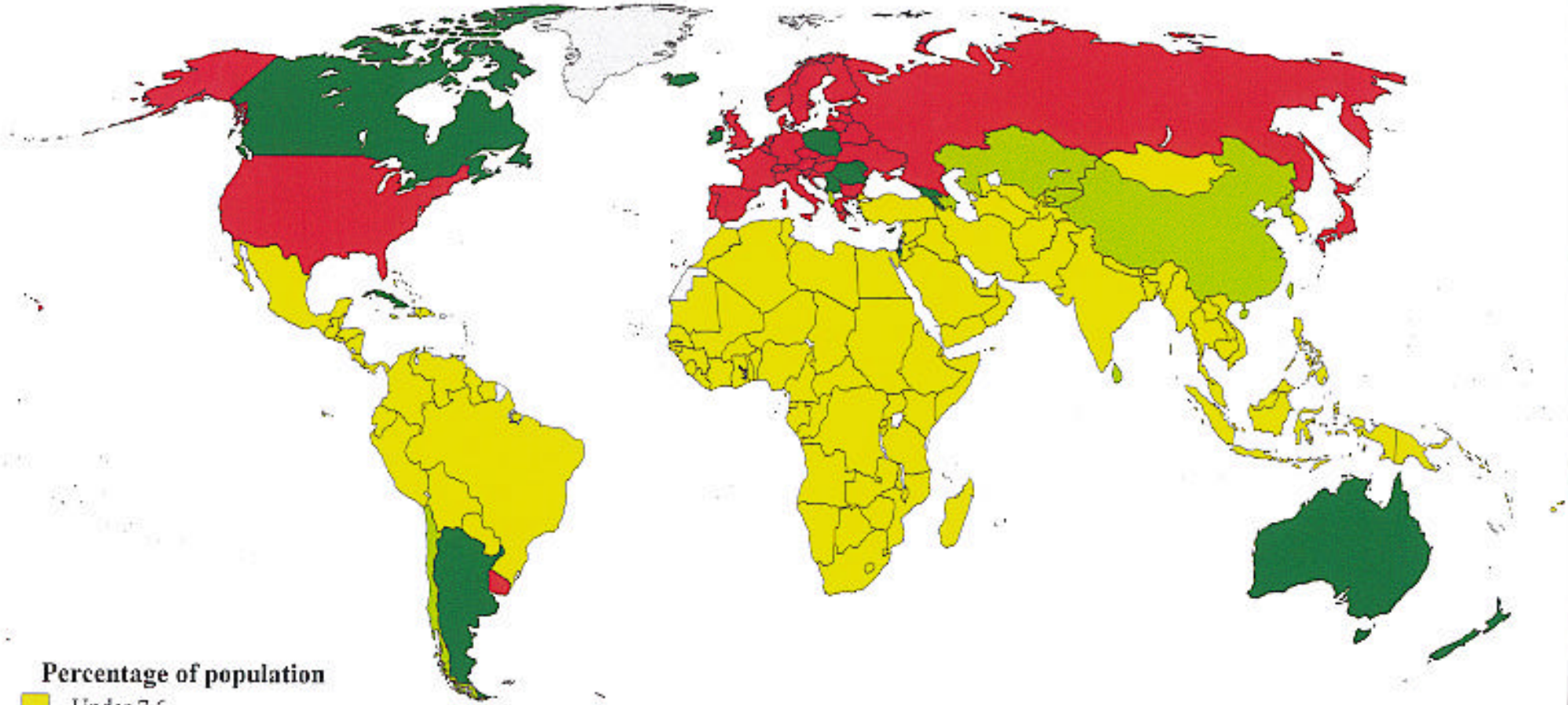
Figure 2B.2: Rapidity of the Ageing Process



Source: ESCAP and JOICFP (1996) and IPS data

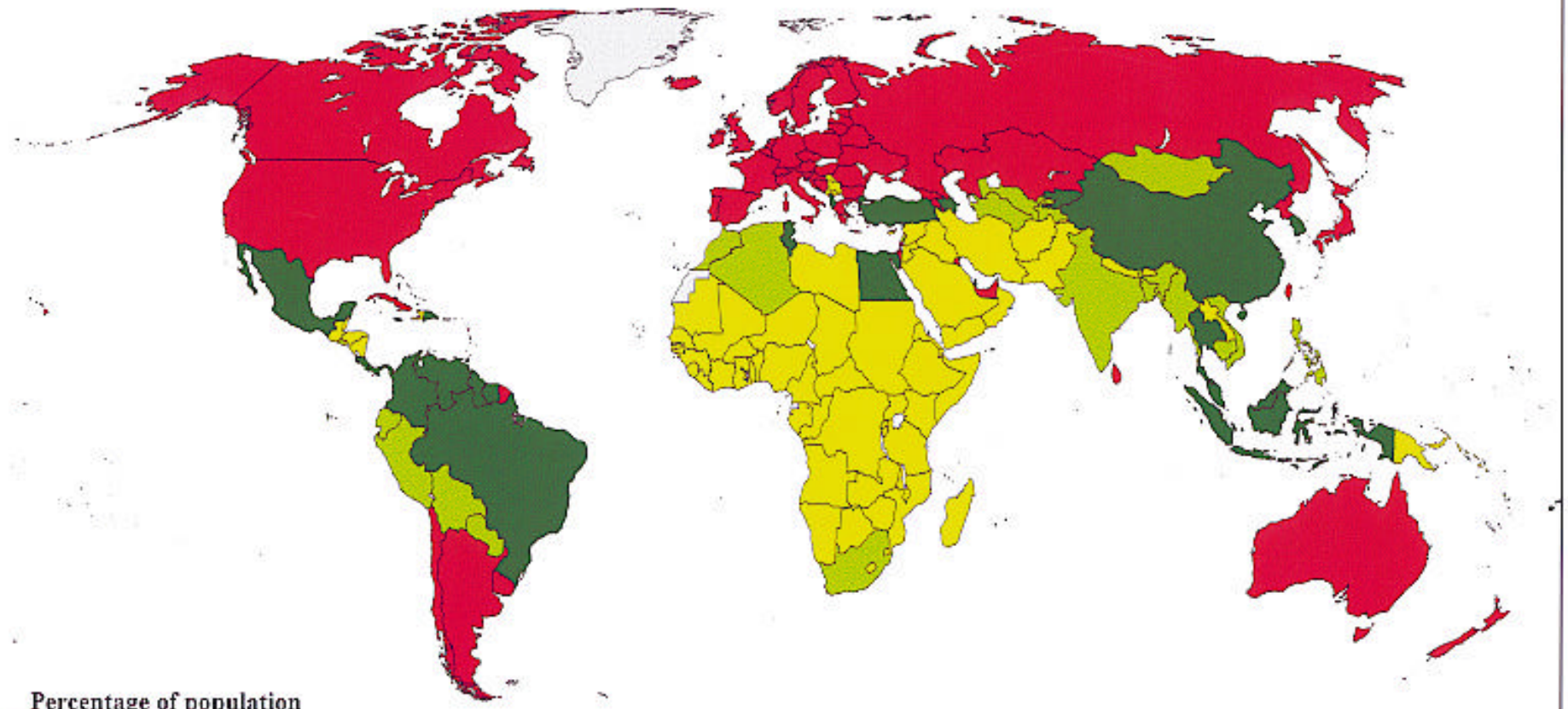
This process of ageing in the world's population is significant. Figure 2B.3 shows the distributions of the world's aged population in 1990, and the expected distribution in 2020 is shown in Figure 2B.4. As can be seen, by 2020 a large number of countries in North America, Europe and East Asia will have populations, where more than 17% are aged 60 years and above. The developing countries will generally have younger populations, but in this regard Sri Lanka is projected to have joined the ranks of these more advanced economies by 2020. Figure 2B.5 shows the expected extent of ageing in Asia by 2020. As is clear, Sri Lanka can expect to have one the most aged populations in the region by that time.

Figure 2B.3: Distribution of world's population over 60 years, 1990



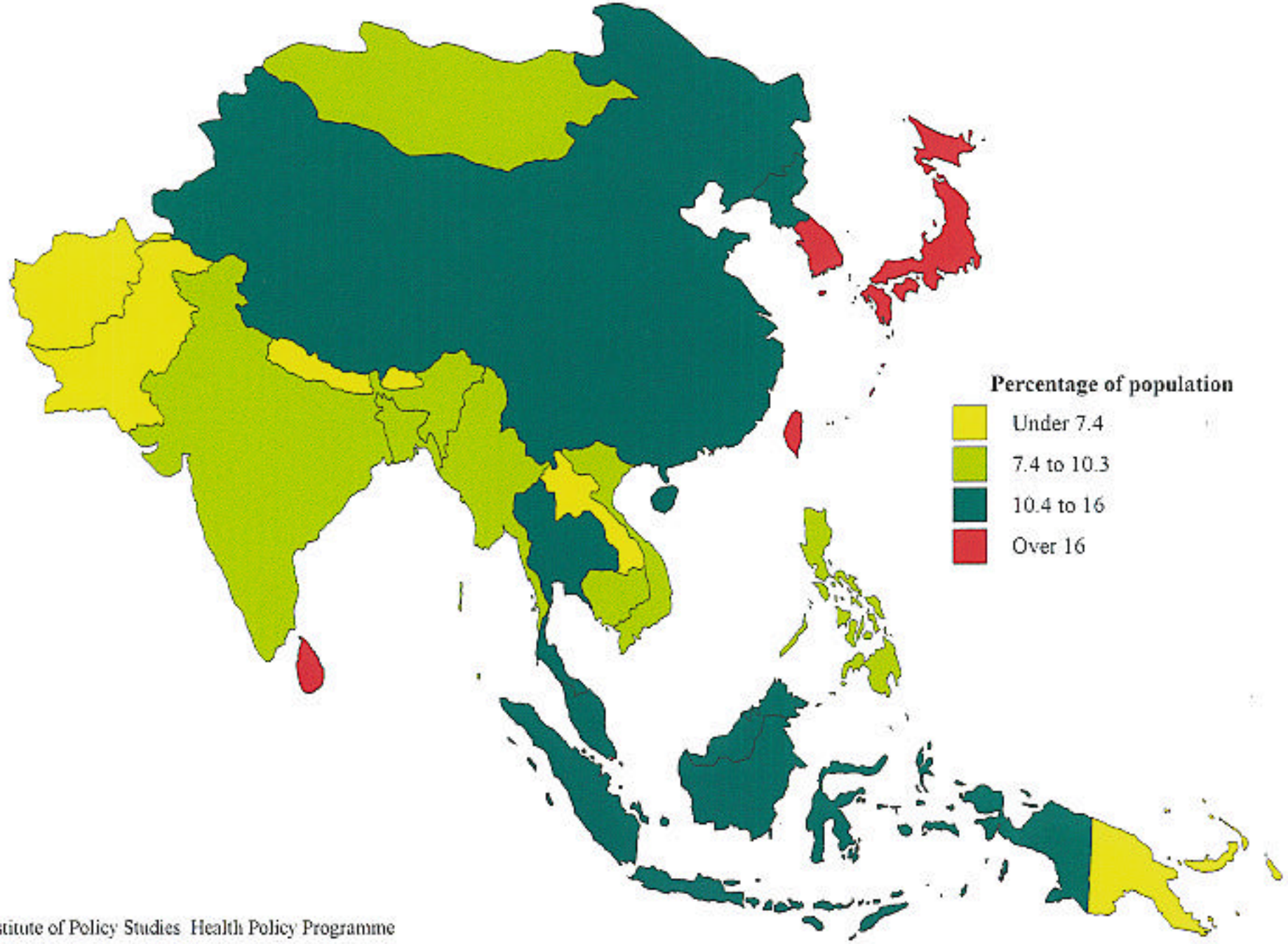
Institute of Policy Studies Health Policy Programme

Figure 2B.4: Distribution of world's projected population over 60 years, 2020



Institute of Policy Studies Health Policy Programme

Figure 2B.5: Distribution of Asia's projected population over 60 Years, 2020



Changes in the productive population

As populations age, their composition changes. The most significant change involves the share of the productive age groups in the total population. The total dependency ratio is an important measure of the size of the working age population (aged 15-64 years) in relation to the dependent populations of children (under age 15 years) and the elderly (aged 65 years and over). The total dependency ratio is itself the combination of the child and aged dependency ratios.

Total dependency ratio = $\frac{\text{(population aged 0 - 14) + (population aged 65 and over) x 100}}{\text{population aged 15 - 64}}$

Old age dependency ratio = $\frac{\text{(population aged 65 and over) x 100}}{\text{population aged 15 - 64}}$

Child dependency ratio = $\frac{\text{(population aged 0 - 14) x 100}}{\text{(population aged 15 - 64)}}$

The total dependency ratio reflects the burden on the working aged population, who have to simultaneously support their children and their elders. Declining birth rates result in a fall in child dependency ratios, thereby contributing to a temporary reduction of total dependency ratios. However, a rapid ageing process then leads to an increase in old age dependency ratios thereby negating the positive effects of low child dependency ratios. These changes in dependency ratios have important implications for economies, as both groups must be economically supported by those in work.

In Asian countries, declining birth rates have led to declining child dependency ratios, and thus an initial decline in total dependency. However, with population ageing, aged dependency ratios have begun to rise in Japan, and are expected to rise in other Asian countries too.

Section 3

THEMATIC ISSUES

A. Income security and pensions

Overview

As people become old, they become less able to work, and require material support from others. Pensions have developed as a means of ensuring a secure and adequate source of income for those in retirement. Pensions are a form of old-age income security arrangement. There are two types of these arrangements:

1. **Provident fund type individual accounts**

◊ A saving that is accrued over the working years and is usually paid as a lump sum to the worker on retirement.
◊ Contributions are defined as a percentage of the wage and benefits as the accrued returns to contributions.
◊ A forced saving through which future payments are fully funded in the present

1. **Tax financed pensions**

◊ A stream of regular payments that begins at retirement and usually continues for the remaining life span.
◊ Benefits are usually defined as a percentage of wage and contributions come in the form of payroll tax
◊ Usually unfunded because the payroll tax on the current labour force finances the payments to the current retirees i.e., as a pay-as-you-go (PAYG) system

Costs and Coverage

- Coverage by government-run pension systems varies tremendously from less than 1% to universal coverage at 100% in some countries. In developed nations, pension expenditures are substantial, as coverage is generally near universal, and such expenditures have become the largest single item in the public budget of most advanced economies, averaging over 9% of GDP. Poorer countries generally spend less on pensions and cover a correspondingly smaller proportion of their populations. However, Sri Lanka spends a greater percentage of GDP covering a smaller percentage of the population than other countries.

Problem posed by demographic ageing

- Population ageing leads to an increase in the percentage of old age pensioners and a fall in the working age population, thereby increasing the pension burden. The pressure is more acute if existing pension systems are pay-as-you-go financed rather than fully funded.

Solutions

- **Economic Growth:** The growth of real wages at a rate that is faster than the growth of old-age-dependency is the surest way of averting the pension crisis induced by population ageing.
- **Increasing Retirement Age:** The easiest way of delaying the onset of the pension crisis is to gradually raise the statutory retirement age.
- **Pension Reform:** All models of pension reform raise the following options, each of which raise different challenges in terms of political viability, labour market efficiency, taxation and financial markets:
    - ◊ Transition from PAYG to fully funded systems
    - ◊ Transition from a defined *benefit* systems to defined *contribution* systems with individual accounts
    - ◊ Transition from centralised public systems to decentralised private systems

Imagine a working individual, saving for his retirement, who is suddenly told by his doctor that he will have to retire many years earlier than he had planned. This means, that there would be a reduction in the number of years he works, and an increase in the number of years he spends in retirement. It is easy to see that if he does not start saving more (and thereby consuming less) immediately, he would face severe economic hardship during his retirement years. In order to smooth his consumption over his lifetime he would probably have to both, decrease his consumption over the working years, and live on a lower retirement income, than he had initially planned. The dilemmas posed by demographic ageing, to a country with formal old age income security arrangements, is almost exactly analogous to the problem faced by this imaginary individual. The longer a country takes to discern the problems and respond to them the more severe will be the cost and consequences when they are finally addressed.

The Technical Annex at the end of this document formally develops this analogy in mathematical terms. The problem posed for countries, by demographic ageing, unlike for the individual is also complicated by questions of generational equity and labour market distortions as enumerated in this review of income security and pensions.

Introduction

An international review of pensions reveals the following important facts.

- There are important social, economic and political reasons for governments to be involved in old-age-income-security
- The post World War II popularisation of tax financed unfunded pension schemes was based on an assumption about population demographics, that is no longer valid. Such systems have therefore run into problems of financial sustainability all over the world.
- The problems posed by changing demographic patterns may be considerably mitigated in developing economies with high rates of real wage growth
- The differential success of similar schemes of pension reform in different countries points the need for respecting country specific, historical and political context in engineering pension reform
- Even pension reforms that have been successful in terms of creating sustainability may turn out to be failures in terms of long term economic efficiency, equity and social acceptability.

What is old age income security?

The goal of *old-age-income-security* (OAIS) systems is to provide a secure and adequate source of income for those who are beyond the age of retirement, in order that they may be financially independent and not be in poverty. This possibility of financial security, in old age, assumes a long working life during which individuals can generate enough savings in order to provide for their consumption during retirement. Old age-income-security schemes achieve the above through engaging in the following:

1. Redistribution of income - both across time and generations
2. Protection of workers from employer exploitation and abuse
3. Provision of incentives for long term saving
4. Paternalism in regulations as a partial cure for myopic saving tendencies
5. Creation of insurance through risk sharing with respect to disability, unemployment, an unexpectedly long life etc.

The attempt to formalise OAIS as a system, rather than depending on the informal mechanisms of family based arrangements arose out of the impact of urbanisation and labour mobility consequent to industrialisation and economic modernisation, changes in family structure, the need to ensure social solidarity in modern societies, and the need to protect against old age poverty. The current need for reform in formalised *old-age-income-security* systems arises as a result of the unexpected reduction in fertility rates and increased life expectancy leading to progressively higher rates of old age dependency (i.e., fewer and fewer workers needing to support more and more retirees) – phenomena that were not foreseen when formal systems of *old-age-income-security* were first instituted.

Types of old age income security systems

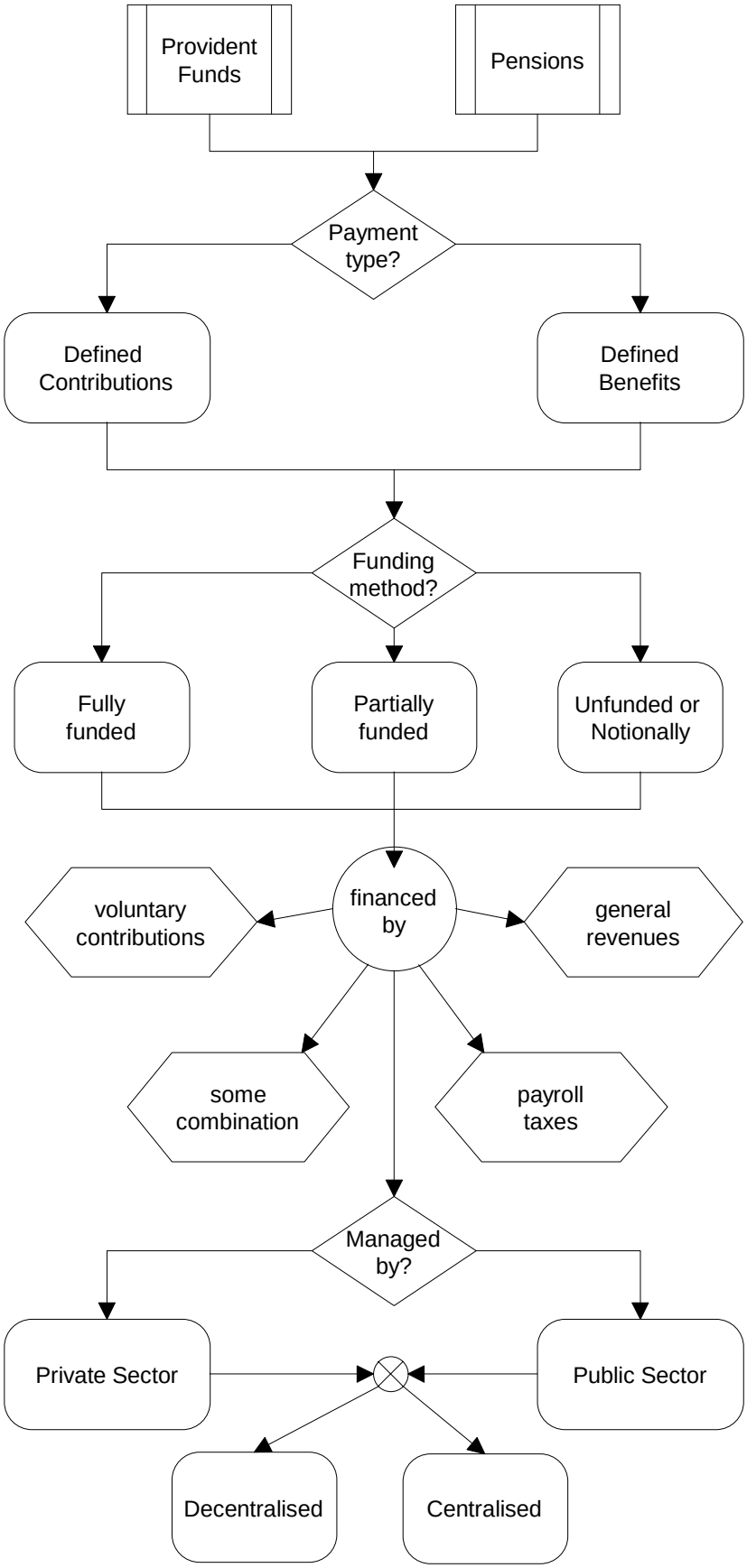
Old age income security systems fall into two basic categories:

(i) Provident funds
(ii) Pensions

A provident fund is a saving that is accrued over the working years and is paid as a lump sum to the worker on retirement. A pension is a stream of regular payments that begins at retirement and usually continues for the remaining life span. A provident fund benefit may be converted to a pension by annuitizing the accrued capital.

The principal difference between provident funds and pensions lies in the manner in which benefits are calculated. Provident funds usually adopt the method of *defined contributions* where the contribution rate into the fund is defined as some percentage of the wage. The benefits are then calculated based on the returns to investment that accrue to the *individual accounts* of the wage earner. Provident funds therefore are usually fully funded. Pensions usually follow a *defined benefit plan* where the benefits are predefined in terms of a percentage of average wage and contributions come in the form of a payroll tax on the current labour force to finance the current retirees. This is known as a *pay-as-you-go* (PAYG) system and usually implies that there is no accrued funds to finance the pension payments

Figure 3A.1: Permutations of old-age-social-security arrangements



Old age income security arrangements also differ with regard to types of insurance offered (disability and early mortality), ownership (public or private) and management (centralised or decentralised). The possible permutations are enumerated in *Figure 3A.1* The right side of *Figure 3A.1* shows observed norms with regard to pension arrangements. The left side of *Figure 3A.1* shows the observed norms with regard to provident fund arrangements.

The observed norms are however not necessary elements of *old age income security* design. Provident funds may only be notionally funded and the benefits may be defined by guaranteeing some fixed rate of return. On the other hand pensions can be fully funded by regularly adjusting the contribution rate to compensate for the market rates of return.

The history of old age income security systems

The first national contributory *old age income security* scheme in the world was created in 1889 by the creator and first Chancellor of the German Empire, Otto Von Bismarck. It was one of the last sweeping social reforms that he successfully adopted in a bid to hold back the advancing tide of German socialism (World Bank 1994b). Thirty years later, Britain's Conservative Finance Minister, Winston Churchill successfully pressed for the introduction of state pensions, arguing that his objective was, "the appeasement of class bitterness, the promotion of a spirit of co-operation [and] the stabilisation of our national life" (Gilbert 1991).

At the turn of the century, European countries were debating whether to provide broadly based contributory old age social insurance as in Germany - or narrower means-tested non-contributory schemes for the old to complement the poor laws that applied to everyone (Peterson 1986 cited in World Bank 1994b). The debate is relevant to this day to countries like Sri Lanka, as policy makers seem to be torn between broadening the coverage of pension schemes (the institution of the Farmers, Fisherman's and Self Employed Pension schemes being some of the recent attempts in this regard) and leaving the problem of old age poverty to be tackled by poverty alleviation schemes such as Merit-Wages and the continuation of food stamp provisions within Janasaviya and Samurdhi.

By the start of the World War II, national contributory schemes, partially funded and partially PAYG, had been created in Austria, Belgium, Bulgaria, France, Greece, Hungary, Italy, Luxembourg, the Netherlands, Poland, Portugal, Romania, Spain, Sweden, the United Kingdom, the United States, Chile, Argentina, Uruguay and Brazil (Weaver 1982, cited in World Bank 1994b). These schemes were modest, providing no more than 15 to 20% of the average wage, with most workers expected to live only a few years after retirement.

In 1942, the Beveridge Report in England called for a new and large public sector role in old age security. With funded pension schemes discredited by the financial disarray of the inter-war and wartime periods, public pension plans increasingly became contributory, payroll-tax financed, and PAYG. The PAYG financing scheme seemed, at the time, like an honest Ponzi scheme[1] due to the expectations of never-ending population growth and wage growth, i.e., there would always be more youth than the old, and the average wage of the current youth would always be greater than the average wage received by the current old. The result was the creation of new social insurance schemes in Switzerland (1949), the Netherlands (1957),

[1] Charles Ponzi (1882-1949) was an Italian-born speculator, who organized a scheme (1919-1920) to swindle investors by promising them 50% returns in 45 days and 100% returns in 90 days, and financed the promises made to the first investors from the large influx of funds that he attracted through the initial, rapidly increasing number of people joining the system.

Sweden (1960), Norway (1966), and Canada (1966), and the dramatic expansion of schemes in the rest of Europe, Japan , and the United States. Australia and New Zealand were the only countries that refused to make pensions dependent on prior earning and contributions (World Bank, 1994b).

The enthusiasm for public pension schemes soon spread to developing countries. After World War II, most developing countries, some of them newly independent and formulating afresh their social policies, established contributory PAYG plans. In the Soviet Union and Eastern Europe, old age pensions were included as part of the cradle-to-the-grave security that communism was supposed to provide all workers (World Bank 1994b). Sri Lanka had a minute on pensions as early as 1901. This was made part of the statutory law by the enactment of the Judicial Officer's Pension Ordinance No. 2 of 1947, by which Sri Lanka adopted a non-contributory PAYG scheme for government employees.

Some countries however, opted for a publicly mandated provident fund scheme over a public pension scheme after World War II (World Bank 1994b). Malaysia was the first in 1951, Sri Lanka joined their ranks in 1958 with the Employment Provident Fund; the more limited Public Service Provident Fund was established in Sri Lanka as early as 1942 to cover certain categories of public sector employees that did not benefit from the government pensions. Other British ex-colonies, such as India, Singapore, and parts of Africa, also opted for funded provident schemes. By the 1990s more than 20 nations had such schemes and none of them, except for Sri Lanka, had a pay-as-you-go-scheme when the provident fund was established. Where provident fund coverage is extensive such funds may in effect be the primary formal old-age-income-security arrangement (Kinsella, 1995).

Government involvement in old age income security

From a neo-classical perspective, it would seem ideal to leave the problem of *old age income security* to individual choice, and let people save according to their inter-temporal preferences of consumption before and after retirement. However, the neo-classical economic expectation of optimisation through individual choice depends on the assumption of human rationality. Recent studies in psychology as well as economics have revealed that human rationality often fails to optimise when the relevant choice involves weighting of probabilities and discounting the future in order to make decisions today (Rachlin 1989, Lowenstein 1992 and Plous 1993). In the area of old age income security, this failure of rationality results in people regularly failing to save adequately in order stay out of poverty in their old age.

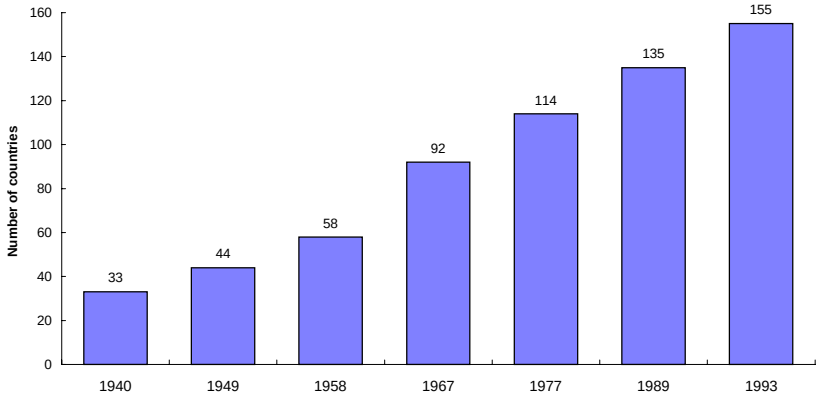
Since poverty is a social problem as much as it is an individual problem, old age poverty that arises out of the above described failure of rational choice, becomes a burden on the welfare system of the country. The benefits of welfare are then perceived to be unfairly distributed from the more prudent to the more imprudent savers, and creates all kinds of perverse incentives to those who are saving at present for their future retirement.

Governments have increasingly begun to mandate and get involved in *old age income security* in order to counter these economic problems, such as inadequate incentives to save, old age poverty, the need to pool investment risks, and the failure of rational choice. Governments have also had political motives such as promoting social solidarity (as with Bismarck and Churchill), and bolstering political support during times of economic adjustment (for example, Japan and Latin American countries after Chile).
Data for 1950 to 1993 reveal that the number of countries with government old age social security programmes increased from 33 to 155 over the fifty year period. (See *Figure 3A.2*

for a depiction of trends). The World Bank estimates that formal government programs provided coverage for approximately 30% of the world's older (aged 60 and over) population in 1994 (Kinsella 1995).

The neoclassical frame of thought, however, has not been abandoned. As we shall see when examining pension reform, the current trend in many developing countries is to mandate individualised pension accounts, and increase the choice and consequences to individuals with regard to how pension funds are invested.

Figure 3A.2: Number of countries with public old age social security programs



Overview of costs coverage financing and management

Cost of Social Security Systems

The International Labour Office reported in 1995 that in most industrialised countries pension expenditures had become the largest single item in the public budget (ILO 1995). On average it exceeded 9% of GDP. In the early 1990s in many Eastern European countries as well, pension outlays accounted for over 10% of GDP and constituted the largest single expenditure of government budgets (Kinsella 1995).

These averages, however, are marked by a great deal of variation both across regions (figure 3A.3) and across countries (Table 3A.1). Even within the OECD group some countries spend over 14% of GDP and others spend around 4%. Public spending in Eastern Europe ranges from 3.6% in Armenia to 13% in Ukraine. Latin America ranges from 0.1% in the Dominican Republic to 8.8% in Uruguay. In the Middle East and North Africa region, Malta spends 9.5% and Jordan spends just 0.3%. The highest spender in Sub-Saharan Africa is Mauritius, which spends a mere 2.6%. In Asia, Fiji is the highest spender (8.5%), followed by China (2.6%), Singapore (2.2%) and Sri Lanka (2.2%), while Bangladesh (less than 0.1%) and Indonesia are amongst the lowest (0.1%).

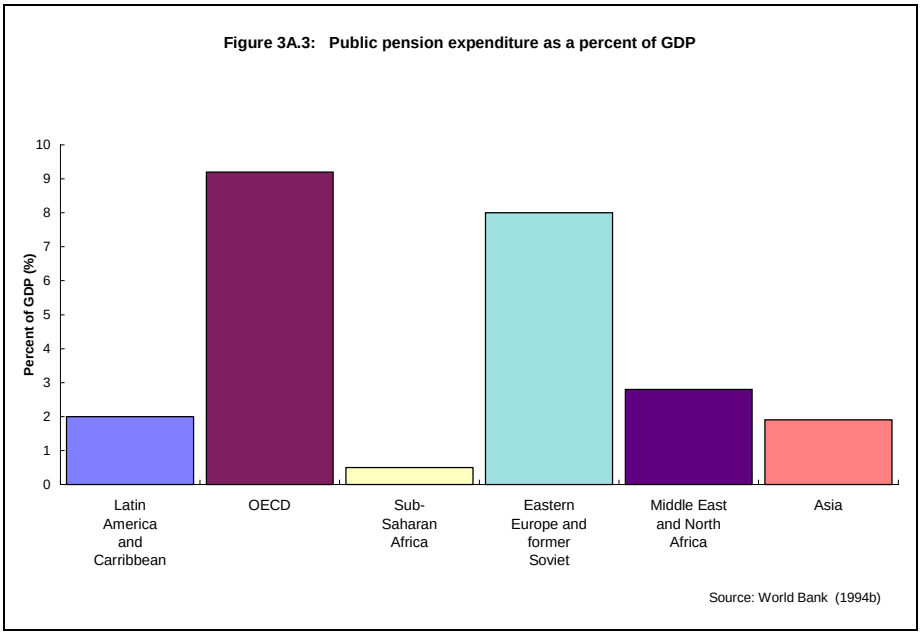
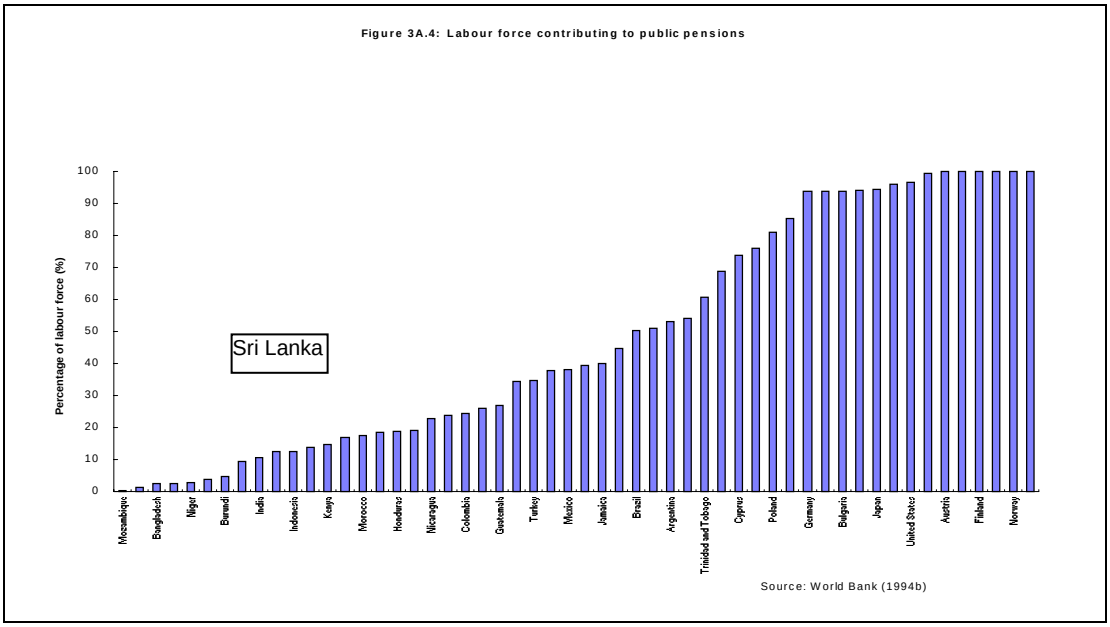


Table 3A.1: Comparative public spending on pensions

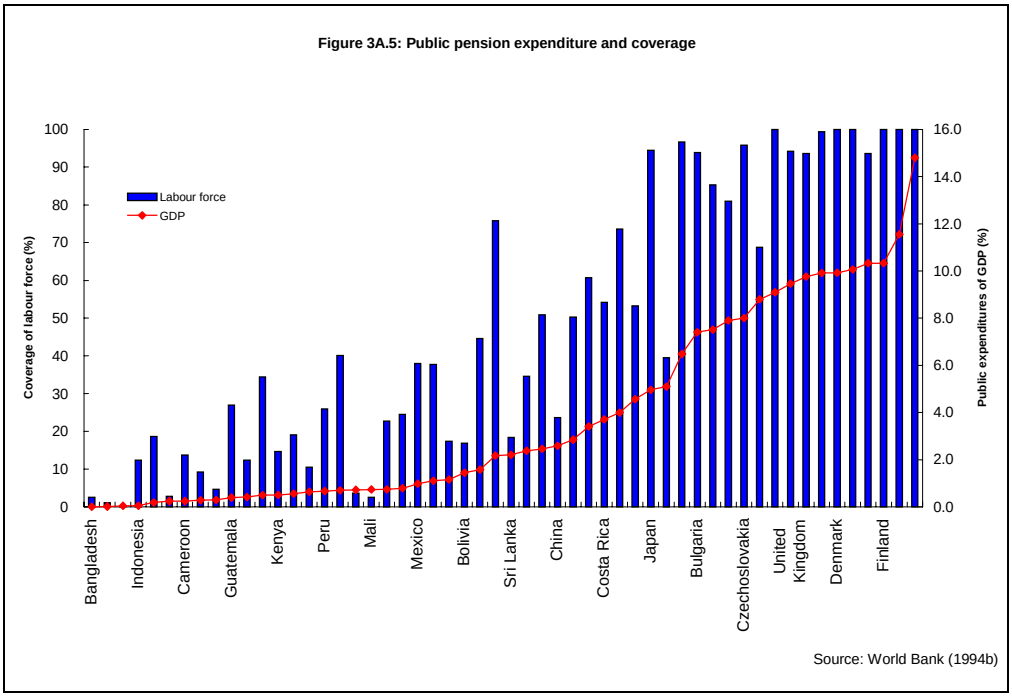
REGION	HIGH Spenders	Spending as a % of GDP	LOW Spenders	Spending as a % of GDP
OECD	Austria	14.8	Australia	3.9
	Italy	14.4	Canada	4.2
	Greece	12.3	Iceland	4.8
		Average for region = 9.2		
Latin American and Caribbean	Uruguay	8.8	Dominican Rep.	0.1
	Chile	5.7	Guatemala	0.4
	Panama	5.1	El Salvador	0.4
		Average for region = 2.0		
Asia	Fiji	8.5	Bangladesh	<0.1
	China	2.6	Indonesia	0.1
	Sri Lanka	2.2	India	0.6
	Singapore	2.2	Philippines	0.6
		Average for region = 1.9		
Sub Saharan Africa	Mauritius	2.6	Uganda	<0.1
	Mauritania	1.4	Mozambique	<0.1
	Ethiopia	1.1	Chad	<0.1
		Average for region = 0.5		
Eastern Europe and former USSR	Ukraine	13.0	Armenia	3.6
	Georgia	11.0	Kazakhstan	4.7
	Poland	12.4	Azerbaijan	5.6
		Average for region = 8.0		
Middle East and North Africa	Malta	9.5	Jordan	0.3
	Israel	4.3	Syrian Rep	0.3
	Cyprus	4.0	Bahrain	0.4
		Average for region = 2.8		

Source: Data obtained from Estelle James, World Bank



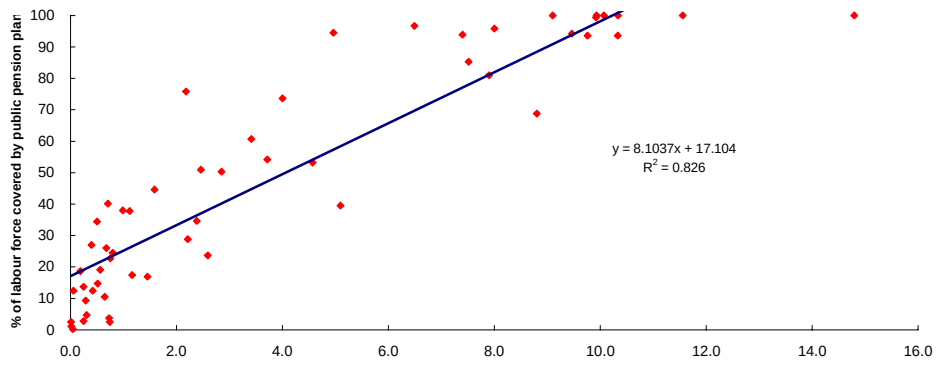
Coverage of Social Security Systems

There is a great deal of variation in pension costs (as a percentage of GDP) between countries. However, the low percentage cost for pensions and social security in some countries is not evidence of greater efficiency. In fact the evidence suggests, with some exceptions, that larger sized funds tend to be more efficient, i.e., the OECD countries have much lower average administrative costs (3%) than the LAC countries (18%). Therefore the size of the *old-age-income-security* system tends to reflect, more, the relative coverage and level of benefits paid out by the *old-age-income-security* schemes than their respective efficiency.



The relationship between coverage of public pension plan of a country and percentage of GDP spent on these pension plans is displayed in *Figure 3A.4* and *Figure 3A.5*. The regression line in *Figure 3A.6* suggests that across countries a difference of 1% of GDP spent on *old-age-income-security* by the public pension plans tends to indicate a difference in coverage of about 8% of the labour force.

Figure 3A.6: Labour force covered in relation to the size of the public pension plans



Source: World Bank (1994b)

When the relationship between labour force coverage and size of pension plan is controlled for income level of the country, we find that an increase in 1% of GDP is correlated to a 5% increase in coverage. Coverage tends to increase by about 2% of labour force for every US$ 1,000 increase in per capita income.

Generally, public schemes in developing countries have lower coverage, with informal support mechanisms being more prevalent, but there is wide variations in these patterns and several notable exceptions to the rule. *Figure 3A.4* shows the wide variation in labour force coverage by public pensions schemes in different countries, with Mozambique having a coverage as low as 0.2% and several countries such as Denmark, Norway, Finland, Sweden and Austria having a coverage of 100%.

Table 3A.2: Labour force coverage by public pensions in countries with pension costs comparable with that of Sri Lanka

COUNTRY	% GDP spent on public pensions	% Labour enrolled in public pensions
Malaysia	1.6	45
Singapore	2.2	76
Sri Lanka	2.2	29
Turkey	2.4	35
Tunisia	2.5	51
China	2.6	24
Brazil	2.9	50

Source: Data obtained from Estelle James, World Bank

When we contrast the levels of spending and coverage on public pensions in Sri Lanka we notice that all the other countries spending between 1.5% to 3% of GDP on public pensions

have a higher coverage of the labour force than does the public pension system in Sri Lanka. See Table 3A.2. Furthermore all other public pension systems that cover 15% to 20% of the labour force, in terms of GDP percentage, cost less than Sri Lanka. See *Table 3A.3*.

Table 3A.3: Spending on public pensions by countries with labour force coverage comparable with that of Sri Lanka

COUNTRY	% GDP spent on public pensions	% Labour enrolled in public pensions
Bolivia	1.5	17
Morocco	1.2	17
Sri Lanka	2.2	18
Honduras	0.2	19
Philippines	0.7	19
Nicaragua	0.8	23
China	2.6	24
Colombia	0.8	25

Source: Data obtained from Estelle James, World Bank

Financing and management of pension schemes

Pension financing has evolved and has taken many forms throughout the industrialised world. The main financing source of public pension schemes is social security contributions levied on gross wage earnings, at statutory rates ranging from 5% in Canada to over 27% in Italy. In some countries, the contribution is shared equally by the employer and the employee (e.g. United States, Japan, Germany and Canada). In other countries the employer bears more than half of the burden (e.g., France, Italy and Sweden) (Chand and Jaeger 1996). While most Western European countries finance pensions primarily through employer-employee contributions, Central and Eastern Europe have tended to rely heavily on state funding from general revenues. Notable exceptions are Hungary and Romania, where employers make major contributions (Kinsella 1995). Sri Lanka, too has a non-contributory mechanism and relies on funding from general revenues.

Public pension schemes in many industrialised countries, including Germany, France, Italy, the United Kingdom, United States[2], and Canada, still continue to be financed on a *pay-as-you-go* basis, whereas Japan, and Sweden have adopted partially funded schemes.

Traditionally most pension systems have been publicly managed. Historically, only two developed countries have relied significantly on privately managed decentralised mandated saving policies for retirement: Switzerland and Australia. But in the last decade, Several Latin American countries, including Chile (1981), Peru (1993), Argentina (1994), Columbia (1994), and Bolivia (1996), have moved in the same direction (Bateman and Piggott 1996a and Pinera 1997b)

In most countries, pension benefits are indexed to the inflation rate, as measured by the consumer price index (CPI). Japan and Germany however use indexation schemes that link existing pensions to the growth rate of wages (Chand and Jaeger 1996).

[2] Even though the United States has build up a small fund but it is used only to smooth out the fluctuations in contributions rather than to increase benefits or adopt the characteristics of a defined contribution plan

Demographic ageing and old age income security

Correspondence of demography and pension burden

There is a strong correspondence between demography and pension burden in countries that have a pension system that is mostly unfunded and financed through a special payroll tax or general revenues. In such situations the ratio of the payroll tax rate on the labour force to the wage replacement rate for the aged is directly linked to the old age dependency ratio. The relationship, simply stated, is that as the percentage of the aged increases in the population and as the percentage of those in the labour force decreases in the population the payroll tax has to be increased and the wage replacement rate (i.e., pension payment) has to be decreased in order to maintain the sustainability of the pension system. (The Technical Annex describes the formal correspondence between demography and the pension burden).

The problem of ageing for pension systems

The phenomenon of population ageing is characterised by the percentage of the population, who are elderly increasing with respect to the percentage in the labour force. This is an increase in the demographic old age dependency ratio. An increase in the demographic old age dependency ratio leads to an increase in the percentage of old age pensioners and a decrease in the percentage of those in the formal sector of the labour force. This then leads to an increase in the system dependency ratio, which is understood as the percentage of the aged, **receiving pensions**, with relation to the percentage in the **formal sector** labour force (Technical Annex).

This discussion will not go into the subtleties of reverse dependency where the young depend on the elderly for support through informal arrangements, and where the elderly contribute towards the pension system: directly though remaining as wage earners and indirectly through caring for grand children and making it possible for young mothers to be full time wage earners etc. In pension literature these factors are generally considered to be negligible

If we go back to the analogy of the imaginary individual, the number of years the individual spends in retirement is analogous to the number of the pensioners in the population. The number of years that the individual spends working is analogous to the number of formal sector workers in the population. Therefore, the individual's predicament of having to face a lower level of consumption both in retirement and at present is analogous to lower pension payments for the pensioners and higher tax rates for those in the labour force.

However, just as much the individual's lower consumption can be offset by increasing his real wage, the problems faced by demographic ageing can also be offset by the growth of wages through the growth of GDP. Therefore, the acuteness of the demographic ageing problem depends not only on the increase in the system dependency ratio but the increase in the system dependency ratio in relation to the increase in GDP. Therefore, in a situation where pension payments are indexed only to prices, and real wages grow at a rate that is faster than the increase of the system dependency ratio, there is in fact no sustainability crisis of the pension system.

This possibility of substantially averting the crisis in pension systems through rapid economic growth, tends to be neglected in most current literature. The reason is perhaps that demographic ageing has hitherto been primarily an experience of the large rich OECD economies where future growth rates are generally low, and major crises in pension systems

have occurred mostly in Latin America. However, for Asian economies, with potential for high economic growth and therefore rapid rises in real wages, this avenue, to avert the pension crisis, may be of importance.

It must be noted that the offsetting effect of wage growth depends on the nature of the indexation. If the benefits are not indexed then the wage growth effect that will offset growth in system dependency will be nominal wage growth (i.e., compound of inflation growth and real wage growth - which will be related to GDP growth.) In this event the real value of the benefits will decline very quickly after retirement. If indexation is linked to inflation then the wage growth effect will be real wage growth. Most countries have benefits indexed at least to inflation. Some countries index to wages as well. In the last case there will be no offsetting effect from wage growth.

When the system dependency ratio increases faster than the growth of wages, the increased burden of supporting the aged has to be met by:

i. reductions in replacement rates
ii. increases in payroll taxes, and
iii. changing the rules of the calculation to reduce the indexation or average wage estimations of the pensioners.

Typically, and for obvious reasons, demographic ageing is also associated with the increased political power of the aged population. A good example this can be seen in Poland where a new political party called the "National Party of Old Age and Disability Pensioners", scored between 6 to 10 percent in opinion polls (Reuters 1997) and polled an estimated 2.7 percent (www.geocities.com). Therefore, the reduction of previously promised benefits, or lowering the indexation calculation can be politically very difficult for countries that have been through demographic ageing. Often the best that may be attempted (i.e., politically feasible) is reducing the benefits to **future** pensioners. This invariably does not solve the problem unless done in anticipation of demographic ageing rather than in response to it.

Increasing payroll taxes is also fraught with difficulties since the benefit calculation is invariably linked in some way to the contributions. Therefore, simply increasing the current rate of contributions also increases the future burden of payments to unsustainable levels. If the link between contributions and benefits is weakened in order to avoid this problem, then high payroll taxes tends to increase the rate of evasion. This not only distorts labour supply and reduces economic efficiency by moving people out of the formal sector, but feeds back into increasing the system dependency ratio even further, which in turn raises the pension burden (Technical Annex).

Both the reduction of benefits and increase in taxes which must be undertaken despite the above mentioned complications, also raise serious issues of inter-generational equity. The fact is that the generation that first received pensions, did so without having to pay for it in their working years. Also, all the generations that received pensions when the demography of the country resembled a pyramid structure, i.e., when there was a large base of payroll tax payers relative to pensioners, enabling generous pensions, would have benefited more than they paid through the pension system. Therefore to ask the current generations to pay for all the 'unpaid for consumption' of the past generations may not only be perceived as unjust, it may also be unsustainably costly. Therefore methods need to be devised to spread the cost of past pension consumption to future generations as well and thereby reduce the inter-generational inequities. It is this complex network of problems and issues that results in the dilemmas of pension reform and old age income security in light of demographic ageing.

Responding to demographic ageing

The solutions attempted for *old-age-income-security* problems can be categorised into four areas:

i. Fiscal adjustments.
ii. Demographic adjustments. i.e., encouraging labour force participation and immigration etc. to reduce old age dependency
iii. Adjustments to the pension system.
iv. Reforming the Pension Systems. i.e. reducing the *pay-as-you-go* component of the pension and developing a fully funded component..

(i) Fiscal adjustments

Almost always the first reaction to increased burden of government expenditure, whether due to *old-age-income-security* or for some other reason, is to find ways of cutting government expenditure and raising general taxes in a manner that will compensate for the added burden of existing *old-age-income-security* arrangements. A corollary step may often be to attempt revisions in the pension promises and thereby reduce the escalation of the fiscal burden. In Sri Lanka the revoking of circular 44/90 in December 1996 is an example of the second type of intervention.

(ii) Demographic adjustments

Governments attempt demographic adjustment through various indirect means. Singapore has provided tax and welfare incentives to have more children, publicly supported advertising that encourages larger families and encouraged immigration of younger workers. Policies on immigration, free public schooling, welfare payments that depend on the number of children, all tend to encourage a shift in the demographic structure away from ageing. Since governments cannot, usually, mandate family size, attempts at changing demographic structures must, largely, be limited to immigration policy, financial incentives and social advertising.

(iii) Adjustments to the pension system

Adjustments to the pension system have to do mainly with changing the parameters of pension contributions and benefits in order to accommodate effects of demographic ageing. The adjustments can include changing the contribution rate, replacement rate, indexation formula and retirement age (Technical Annex).

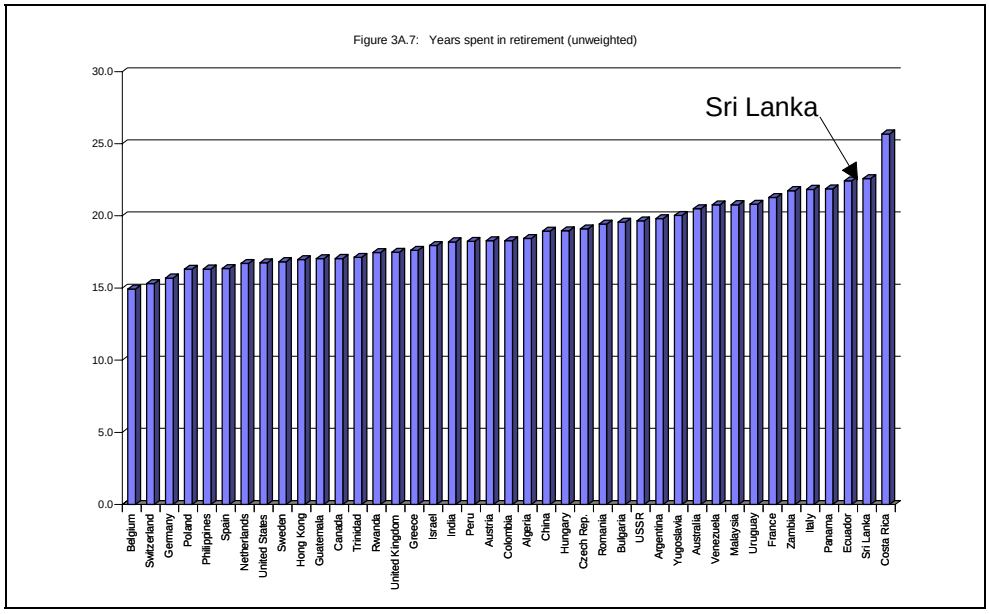
The United States, Japan, Germany, and Italy have resorted to raising the contribution rate as well increasing the statutory retirement age. Italy has also resorted to other mechanisms (e.g., increasing the minimum number of working years) to tighten the eligibility criteria.

An increase of the retirement age becomes particularly important as the life expectancy of the population increases. As life expectancy increases, if the retirement age is not correspondingly increased, the savings that have been made over the working life of the individual need to sustain consumption over a longer period of non-working life. This increase in the number of years spent in retirement is known as an increase in the passivity

ratio and the problem is identical to the case of the imaginary individual eluded to at the beginning of this section.

Developing countries have often maintained low statutory retirement ages in order to alleviate the problem of unemployment. However, since population ageing is also contiguous with the declining growth rate of the labour force, raising the retirement age to both, reduce the pension burden, and to maintain the growth rate of the labour force, must be considered as a serious policy option.

An unweighted analysis of retirement ages across countries reveals that Sri Lanka has perhaps the highest passivity ratio in the world. As is shown in *Figure 3A.7* Costa Rica is the only country where an average worker spends more years in retirement than in Sri Lanka.



(iv) Reforming pension systems

Pension reform has become in the last few years, a major policy issue in many countries, particularly in Latin America, Eastern Europe and most recently in the EU, because of the Maastricht criteria for EMU membership.

After the 1981 reform in Chile, a wave of reforms started in Latin America with Peru in 1993, Argentina and Colombia (1994); Uruguay and Bolivia (1996) and other countries such as Mexico (1997), Costa Rica and Nicaragua are very close to enacting their reforms or seriously discussing them. However, none of the Latin American reformers have introduced reforms as radically pro-privatization as Chile, and it appears that such radical reforms as implemented in Chile are no longer politically feasible in the more democratic environment that prevails in Latin American countries in the 1990s (Mesa-Lago 1997). In the last few years several Eastern European countries have also started to consider the possibility of pension reform (Rofman and Bertin 1996).

Transition from pay-as-you-go systems to funded systems

PAYG systems are always dependent on the current working population to finance the retirement income of the current aged. Therefore the system represents an inter-generational transfer sustained by the promise of similar inter-generational transfers in the future.

However with demographic ageing arises the problem of sustainability of these transfers, i.e., the pension promises, due to the limits of taxation and benefit reduction and the increasing burden that gets placed on the limited finances of the government.

As a result, *funded* systems, whereby each generation (and even each individual) funds its own pension promises are being increasingly resorted to as a sustainable alternative to the current *pay-as-you-go* arrangements. For instance, in November 1996 Bolivia's congress approved the Pension System Reform Law, and opted for a complete change from the previously existing pay-as-you-go system, to a fully funded (FF) individual pension plan system' (Jemio 1997).

The advantage of a fully funded individual pension plan system is that it is immune to the problem of population ageing and forces politicians to put their money where their mouth is when they make promises of higher pensions. However, fully funded individual pension schemes are not the primary method of ensuring old-age-income security in OECD countries, with the single exception of Australia. The OECD (1996a) itself notes that the value of pensions received under this approach depends on the savings instruments available and the return obtained. In all countries which have instituted such systems, the choice of instruments is limited. If small accounts are confined to "safe" bank instruments, the rate of return will be lower than for larger accounts. They thus replace the political risk - that politicians will promise more than future generations will be able to afford - with the market risk that investments will return less than is initially anticipated. Fully-funded individual savings plans are also difficult to extend to informal sector workers and the poor or unemployed. These categories of the population are larger in developing countries, and may make it more difficult to implement such schemes outside the OECD. Finally, it must be noted that recent election results, in New Zealand and UK, suggests that it may be very difficult to implement a comprehensive individual savings system in mature democracies, since it prevents income redistribution and risk sharing across generations.

Transition from defined benefit systems to defined contribution systems with individual accounts

In *defined benefit* (DB) plans benefits are defined as a ratio of earnings during a certain period of life rather than contributions. In *defined contribution* (DC) plans benefits are defined with direct reference to contributions. In current economic theory, labour market distortions are thought to occur in proportion to the lack of linkage between contributions to, and benefits from a social security system. Therefore, the transition from a DB system to a DC system with individual accounts is expected to reduce labour market distortions which are caused by the tendency of labour to escape into the informal sector and evade social security payments.

But a DC plan with individual accounts also implies that there will be no income redistribution and only limited risk sharing either across generation or across individuals of the same generation. Therefore, while reducing labour market distortions the system also loses the "social" nature of the social security system.

It must be noted as a caveat that PAYG plans don't always yield the desired kind of redistribution through the 'social' nature in which they treat participants. For instance, since average life expectancy is used to calculate and annuitise monthly benefits after retirement, those who live longer will invariably be favoured by the pension system over those who have shorter lives. While on one hand this may be seen as a means of redistributing risk in much the same way as life insurance, on the other hand when those who tend to live longer are the

rich and those who tend to have shorter lives are the poor. The redistribution can be seen as somewhat perverse.

The transition from a DB system to a DC system also requires a phasing out of the DB liabilities that have already been accrued. This involves:

i. for current pensioners, financing the pensions they were receiving under the DB system and
ii. for the current participants, making some calculation of accrued benefits and crediting it to their DC accounts as past contributions.

This cost of transition has been handled in many different ways by different countries, and is an area that requires much thought and consideration in an agenda for successful pension reform. Chile, for instance, handled the cost of reform by issuing government Bonds. The accrued benefits were paid as indexed long term bonds with a 4 % real rate of return, maturing at the time the recipient would have been eligible for his/her pension under the previous system.

Transition from mandated centralised public systems to mandated decentralised private systems

The current trend in pension reform in many developing countries is to move from centralised publicly managed systems to decentralised privately managed systems. The reasons put forward for this are three fold:

i. To prevent misuse of funds by government and unsustainable fiscal pressures generated by opportunistic political promises;
ii. To create competitive investment maximisation through market competition;
iii. To allow workers choice in determining the risk return ratios of their long term savings.

Such a transition, alluring though it may seen, is complex, and fraught with pitfalls. The transition would always involve at least the following steps (Kotlikoff 1996):

i. Eliminating payroll taxes that are being charged to finance the government system
ii. Mandating contributions to private pensions (and thereby insuring against their corruption and failure)
iii. Phasing out the benefits due under the system being dismantled
iv. Financing these benefits during the transition period

In this form of transition as well, Chile is regarded as a prototype. In 1981 a government-run pension system was replaced with a privately administered, national system of pension saving accounts. The apparent success of the Chilean pension reform has led to it being hailed as a model for other countries, and it being emulated by several Latin American countries in recent years. However the reasons for the "success" of the Chilean reform are mixed and some very real problems persist. The most significant problem that has arisen with regard to decentralisation is that administrative costs are invariably higher when the size of the funds are smaller. When the decentralised system is competitively managed by the private sector this problem is compounded by the fact that marketing and advertising substantially increase the administrative costs. The Chilean reforms have also failed to cover a substantial proportion of the population, raising significant equity concerns, and polling data suggests that the reforms are extremely unpopular.

After the transition, competitive private management, in order to function effectively depends on the availability of sophisticated capital markets. In the absence of such markets within the country the option are to, invest in other countries or to resort to financing government debt. Moving pension funds to outside capital markets invariably denies local investors and governments of initiating development programmes within the country. Financing government debt on the other hand may not justify the high expense of private competitive management.

It is interesting to note that the so called success in Chile's private fund management was sustained by the less publicised fact, that the government issues pension fund managers bonds and treasury bills at very high rates of real interest in order to assure the apparent success of the reforms.

World Bank model for transition

The World Bank model for pension reform begins by recognising that the functions of old-age-income-security arrangements are three fold: Saving, Redistribution and Insurance. Savings involves smoothening income over a life time; Redistribution involves shifting lifetime income from one person to another; and insurance involves protection against uncertainties. The World Bank then recommends mandating a two tiered old-age-income-security system in order to separate the functions of savings and redistribution, and allowing a voluntary third tier that would provide supplemental savings and insurance. The underlying view is that attempting to handle all three functions through a single fund leads to problems of efficiency and incentives and management.

In practical terms the above recommendation would involve (i) downsizing existing government managed old-age-social-security systems and using it as a minimum guarantee of old-age-support, (ii) creating and regulating a decentralised privately managed mandated defined contribution plan, and (iii) giving incentives to voluntary old-age-income-security plans.

This report does not go into a detailed description of the World Bank model since it is fully enumerated in the publication 'Averting the Old Age Crisis' (World Bank 1994).

Conclusion

There are important social, political and economic reasons for governments to be involved in the area of old-age-income-security. This section has described the crisis faced by countries, that adopted a pay-as-you-go pension scheme, when they experienced the unexpected phenomena of demographic ageing. It is clear that the surest means to averting this crisis lies in the possibility of economic growth that occurs at a greater rate than demographic ageing.

The easiest way to 'buy time' with regard to the demographic transition on pension costs is to increase the statutory retirement age. Due to a comparatively low retirement age and a high level of life expectancy, apart from Costa Rica, Sri Lankan workers may have the highest number of retirement years in the world.

In the event of pension reform being undertaken, the implementation of the World Bank model, or for that matter, almost any model of structural pension reform would involve working through several transitional issues; of moving from a pay-as-you-go system to a funded system; moving from a defined benefit plan to a defined contribution plan and moving from a centralised public managed plan to decentralised privately managed plans.

Models that avoid radical pension reform and therefore the transitional issues, if they did not coincide with higher rates of economic growth, would still have to struggle with the implications of demographic ageing on cost, coverage, and financing that have been highlighted in this section. The Sri Lankan public pension system is financed by general taxes and it spends more on public pensions than other countries with comparable labour force coverage.

It is important to remember that demographic ageing is also a transitional issue. After a country has been through the process of ageing, age structures can once again be expected to stabilise in some predictable and stable manner. Therefore any pension reform that is introduced needs not only to face the issues of demographic ageing but also serve, in the long term, as an optimum pension arrangement in a post-ageing demographic structure. Therefore any new old-age-social-security arrangement needs to be carefully and contextually thought out before implementation. Old-age-income-security systems exist, in part, as a counter to myopic tendencies in human rationality. It is important that they not fall prey to the very problems that they are trying to solve.

B. Health and long term care

Overview

Ageing populations present large challenges to systems of health care, and raise significant new policy problems in the area of long-term care. Increased resource demands by health care providers are inevitable in all countries, but significant opportunity exists for mitigating many of the expected pressures through health care reforms aimed at increasing health sector efficiency.

1. Older people have more health problems

Illness and morbidity increase with age, after the age of 25 years. There is a gradual increase with age, until people reach the age of 70 years, when the incidence of illness, presence of disability and health care utilisation increase substantially. Evidence is greatest for developed countries, but the available data show very similar patterns in countries such as Sri Lanka. Health care utilisation and expenditures are twice the population average at age 70 years and twice the average at age 80 years. There is little evidence for the view that increasing life expectancy in human populations will result in increased years of life free of disability and illness.

2. Aged populations place greater demands on health care systems

Older populations will naturally place greater demands on health care systems and resources. Given that the public sector must share part of the burden of financing health care services, such an increase will inevitably put pressure on government budgets. Projecting such demands is difficult, and has only been attempted for the developed countries. In the OECD, ageing is expected to have a significant on health care costs in the very long-term (15-30 years), but effects in the shorter term (5-15 years) are expected to be minimal because of only gradual ageing in the population.

3. Cost impact of ageing on health care systems will be dependent on changes in efficiency

OECD simulations of the impact of ageing on health care costs reveal that long-term gradual changes in health system efficiency can mitigate substantially the fiscal impact of ageing. Population ageing does not inevitably mean the financial collapse of health care systems. The OECD countries which are expected to face the biggest financial impact from ageing are not those with the most rapidly ageing populations, such as Japan, but those with the greatest problems with unrestrained medical cost inflation,, such as the USA and Korea. Health systems reform in order to enhance long-term system efficiency are the key to dealing with the increased health care demands of the elderly. Health care providers need to be given incentives to provide increased volumes of services with the same amount of resources. Global health care budgets and appropriate incentive structures for health care providers are likely solutions.

4. Active ageing policies are necessary to maximise the years of health life spent by individuals

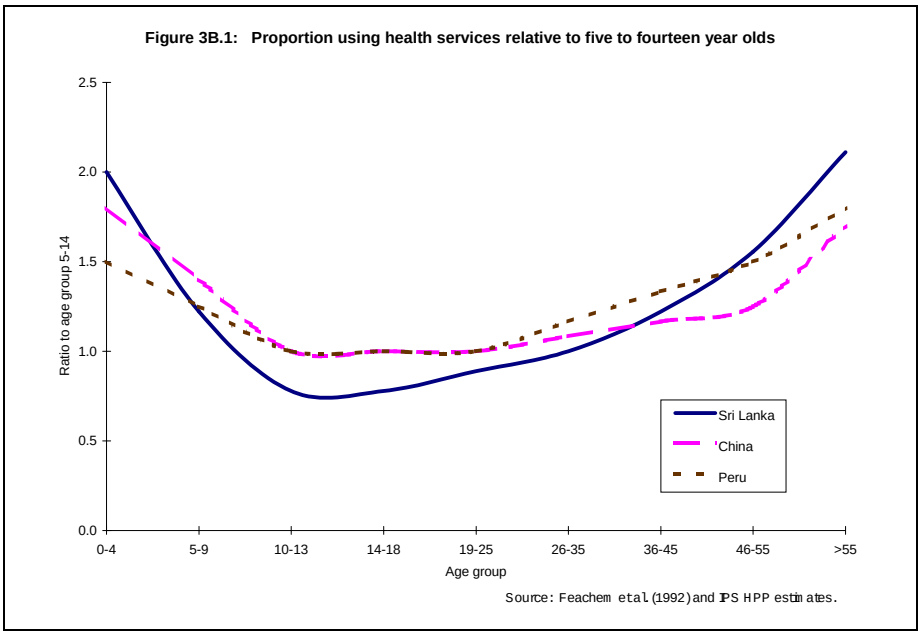
Although disability and dependency is not avoidable for many individuals at the most advanced ages, there is room for improving the long-term health of individuals in their fifties and sixties. Such policies requires intersectoral co-ordination, removing barriers preventing older people from remaining in work, and concerted behavioural interventions.

Ageing populations present large challenges to systems of health care and long-term care. Older people generally need more health care than younger people, and at advanced ages there is a substantial need for long-term care. This presents problems in terms of how this additional volume of services can be financed, in the design of appropriate systems of care, and in reinforcing policies of active ageing.

Health care

Health expenditures, and especially long-term care expenditures are heavily concentrated among older people, particularly the very old. As individuals grow older, personal health care consumption increases as the incidence of illness increases, and as the rates of health care utilisation increases. Data from OECD countries show that health care expenditures increase moderately before age 60, when mortality rates are still low. After age 60, expenditures rise to reach twice the average at age 70, and peaking at four times the average at age 80 and above. It is important to note that international studies also show quite clearly that there are substantial variations within each older age group with respect to infirmity, with many people showing hardly any impairment, and others severe disability. Data for developing countries are limited, but the available evidence does confirm that similar patterns of health care use and expenditures are found in developing countries too. Figure 3B.1 shows the pattern of health care utilization for a number of different developing countries, including Sri Lanka, using available data.

Figure 3B.1: Proportion using health services relative to five to fourteen year olds

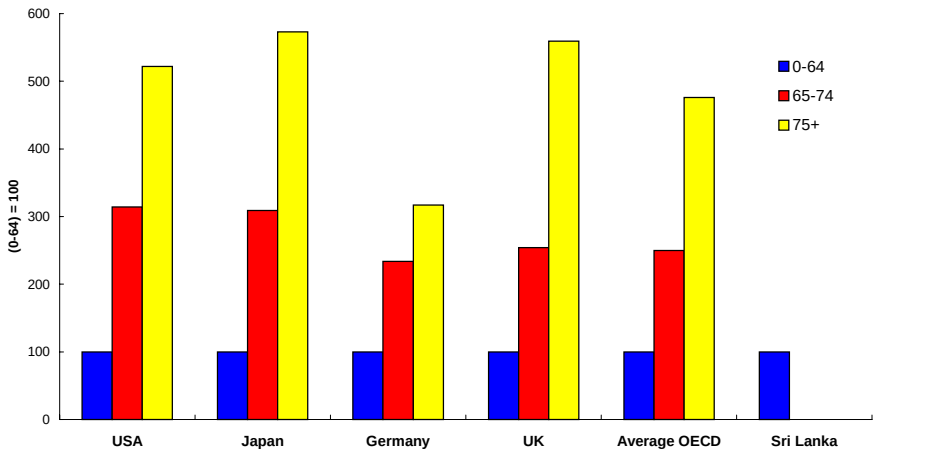


In OECD countries, spending increases associated with ageing are particularly steep for institutional care services, such as acute hospital care and nursing home care. Increases are less significant for outpatient consultations, pharmaceuticals, medical supplies and other ambulatory services. Consumption of dental services peaks at age 60, and then declines thereafter. OECD experience is that the costs per service for older people are lower than the average for the population as a whole. Although lower costs per services are then more than offset by higher rates of utilisation (OECD 1996a).

Differences in OECD countries

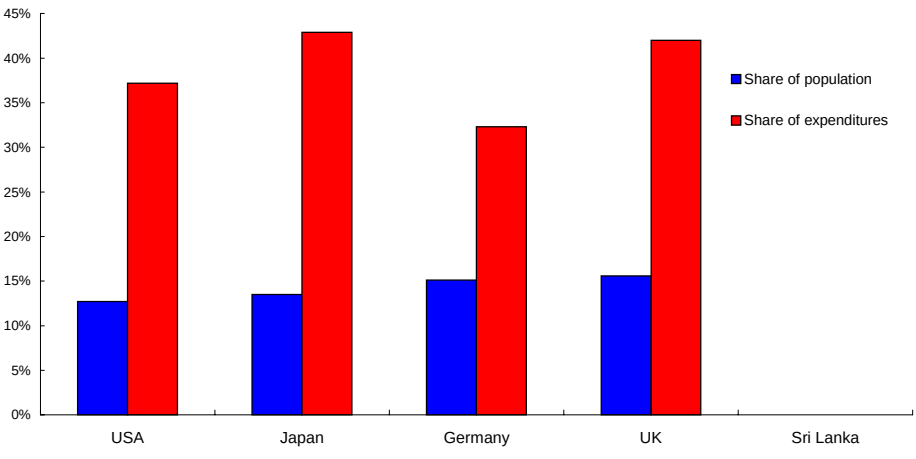
Figures 3B.2 and 3B.3 show recently collected data on differences in health expenditures by age for a selection of OECD countries, compared with IPS estimates for Sri Lanka.

Figure 3B.2: Health expenditures by age group



Source: ESCAP and JOICFP (1996) and IPS data

Figure 3B.3: Concentration of total health expenditures on those aged 65+ years



Source: OECD (1996a)

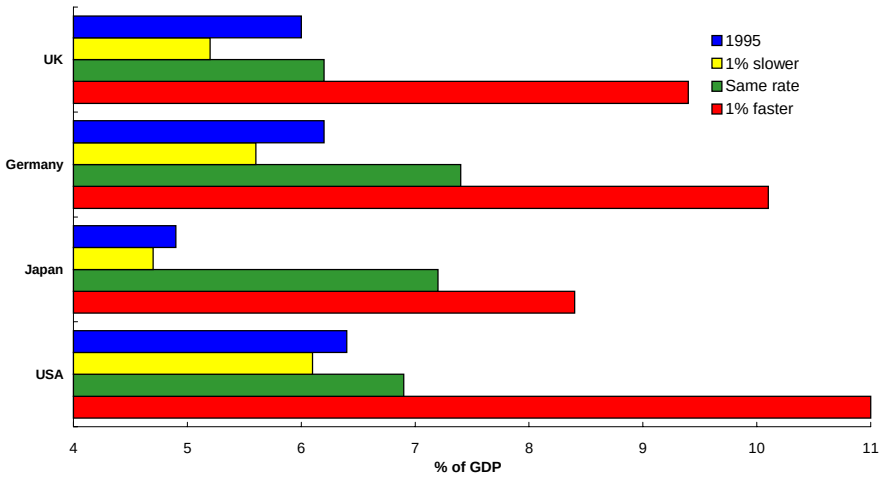
As is clear, there are some variations between countries in the relative health care costs for the elderly. These differences appear to be related to institutional differences, for example the extent of public coverage of long-term care costs, and to underlying differences in unit costs of health care. As populations age, one might expect that these age differences in costs would lead to upward pressure on national health expenditures.

Projections of future costs

Several studies of OECD countries have suggested only limited impacts to date of population ageing on total national health care expenditures. One recent time-series analysis of OECD health expenditures found that changing age structures did substantially increase health expenditures, but that the effect was seen only for some countries and not others. Of these only the USA and Canada were found to have significant positive age effects (O'Connell 1996).

The impact of ageing on future health care costs has been projected for several OECD countries. Most of these projections assume that per capita health costs remain the same, and then estimate by adjusting for the future changes in age structure. A key conclusion of these types of projections is that the eventual impact of ageing is highly dependent on the rate of medical cost inflation over time. Figure 3B.4 gives the OECD estimates of future public health care costs in a number of OECD countries taking into account the expected increases in the number aged over 65 years, but making different assumptions about future medical cost inflation.

Figure 3B.4: Projected public health care expenditures in 2030

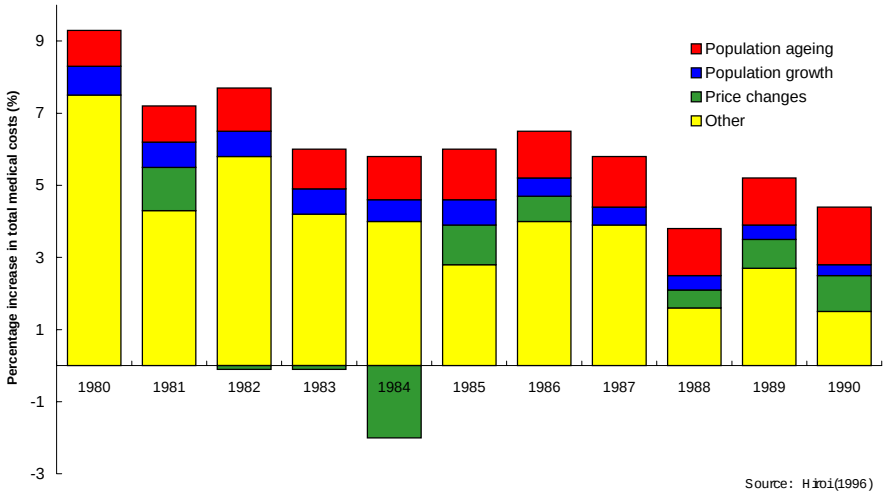


Source: OECD (1996a)

As can be seen, if health treatment costs grow at 1% less than real GDP growth, eventual public costs will be almost half of expected public costs if treatment costs grow at 1% more than real GDP growth.

This is consistent with projections prepared on a national basis. For example, in projections prepared by Health Care Financing Administration for the USA, national health expenditures are expected to increase from 13.9% of GDP in 1994 to 17.9% of GDP in 2005. However, only a very small proportion of this is due to ageing, which is expected to account for less than 1% per year of the growth in personal health expenditures. Similarly, other official US estimates indicate that only a small part of the actual increase in health expenditures during the 1980s was due to population increases and ageing (Office of National Cost Estimates 1990). In Japan's case, a similar type of analysis shows that population ageing accounted for only a small part of overall health care expenditure growth during the 1980s (Figure 3B.5).

Figure 3B.5: Causes of medical expenditure growth in Japan, 1980-90



The implications of this are that the future impact of population ageing may be muted in most advanced economies, if cost inflation in health care systems can be moderated. As argued by OECD (1996a), continuing efforts **to improve the efficiency and effectiveness of health care systems are an important element in responding to ageing populations**.

Health care costs in most OECD countries remained stable during the 1980s, despite increases in the aged population, as structural reforms proved effective in restraining expenditure growth. Although most of these reforms were not motivated by population ageing, they have had favourable implications for the costs of delivering care to an ageing population. It is important to note that in the case of Japan these reforms did not work by reducing utilization of services by the old, but by reducing the unit cost of treatments. Measures such as increases in user fees for the elderly had minimal impact, and policies designed to reduce the overall price of medical services took most of the credit (Hiroi 1996). Given that medical cost inflation remains more of a problem in USA than Japan, it is likely that medical care costs will rise more substantially in USA than Japan in future, despite the fact that population ageing is expected to be more substantial in Japan.

The major lesson to be drawn from the limited OECD experience to date is that population ageing does not necessarily lead to an increase in health care expenditures. If policy is focused on reducing the costs of producing services, an increased volume of services can be provided without straining government budgets or household health expenditures.

The financing crisis facing Korea's National Health Insurance Program

There has been very little discussion of the impact of demographic ageing on health care systems outside OECD countries. One notable exception has been South Korea, which is currently facing a potential crisis in the funding of its National Health Insurance (NHI) scheme. Korea's NHI program achieved universal coverage of the Korean population in 1989, which is generally regarded as a considerable national achievement. The program is a pay-as-you go system funded through a combination of earmarked payroll taxes and government subsidies. Currently, NHI is enjoying a financial surplus, as premiums are greater than actual costs, and the system is steadily accumulating asset reserves (Gertler et al. 1995).

Korean philosophy in the health sector has been generally that it is a market for private goods and should be regulated by consumer sovereignty, with the government's role in financing

limited to traditional public health services and subsidising the poor. Accordingly, it has depended heavily on the use of high co-payments in restraining cost inflation, and has set prices under NHI on the cost-plus basis traditionally used in the US health system, where prices are set at a fixed rate above providers' average costs, except in the case of high-technology services, which are not covered by NHI and where providers can set their own prices. This approach has essentially failed to control costs, and Korea already faces a more severe problem with medical cost inflation than does the USA. Providers are able to charge above-average margins for high-technology services, and thus face considerable incentives to introduce new technologies, leading to upward cost pressures.

In the long run, several factors are expected to increase costs faster than revenues in NHI. These include a higher utilisation rate amongst older people and an ageing population, medical cost inflation which occurs when prices rise faster than general inflation, and a general secular increase in average utilisation rates. These are expected to eventually result in NHI running a deficit by 2004, and exhausting its asset reserves by 2010. This rapid deterioration in NHI's financial condition is largely due to the speed of population ageing in Korea, which is occurring faster than in the USA and other developed countries.

Amongst policy options suggested by Gertler et al. (1995) to solve this expected deficit are improvements in efficiency through better incentives, and converting NHI from a PAYG-type scheme to a savings scheme, where premiums would be actuarially fair. Gertler et al. argue that efficiency savings would be insufficient to solve the problem. However, the experience of Japan's NHI scheme suggests that global budgeting and long-run incentives for providers to maintain low costs might be appropriate for Korea also. Other analyses have shown that Korea's NHI suffers from many of the same characteristics that have led to high medical cost inflation in USA, and lacks the cost-reducing incentives of Japan's NHI. If medical prices and costs were controlled as effectively as in Japan, then Korea's NHI may not face any long-run funding problems.

Healthy ageing

After the age of 65 years or so, the probability of disability or of impairment in general functioning increases dramatically. While people are increasingly living beyond seventy years of age, this increased life expectancy is not necessarily additional years of life free of disability. As the numbers of elderly increases therefore, the number of disabled elderly will increase, and these individuals will need additional support in order to maintain themselves.

Little is known about the health status of the elderly in developing countries. However, the evidence from OECD countries indicates considerable variation in the level of disability amongst the elderly in different countries. This results in a variation in the number of disability-free years that an elderly person can expect to live.

Recognition that these variations exist has prompted most advanced countries to examine ways in which to increase the number of years that the elderly can live without disability, and to prolong health life expectancy. Examples include interventions to prevent illness such as hip fractures, osteoarthritis, etc., secondary prevention through screening and periodic examination, and tertiary prevention to assist the elderly rehabilitate rapidly after illness or injury.

C. Labour markets

Overview

Demographic ageing has implications for labour market policy for two sorts of reasons:

(i) Demographic ageing changes the age structure of the population, and the rate of growth in the size of the labour force.
(ii) The increased fiscal burden of pensions for retired workers can be reduced substantially by increasing the ratio of workers to pensioners, through encouraging increased labour force participation.

1. Demographic ageing leads to reduced labour force growth, and possibly labour scarcity

Demographic ageing implies that birth rates fall. Each successive age cohort increases at a diminishing rate, and then falls in countries, such as Sri Lanka, with below-replacement level fertility. In Asian economies, labour force growth has contributed to overall economic growth. Reduced labour growth will result in lower long-term economic growth rates in many East Asian economies in the absence of productivity growth.

2. The significance of ageing for labour scarcity differs for mature European and newly industrialising economies in Asia

Most OECD economies do not face problems of labour scarcity, because of high chronic unemployment. So policy responses have not emphasised increasing labour force participation, and most often have focused on encouraging early retirement by older workers in the hope that this will create jobs for the unemployed. This approach is not recommended for countries such as Sri Lanka. Evidence is weak, if not contrary, that such early retirement policies reduce unemployment even in Europe. Factors include firm and sector-specific human capital embodied in older workers, which new workers lack, and the need to finance early pensions for the early retirees. Successful Asian economies all relied on labour-intensive growth strategies; they generally have full-employment and face the opposite problem of labour scarcity.

3. Several options exist for countering the impact of demographic ageing on labour scarcity

Mechanisms to increase labour availability include:

- Increased female labour force participation
- Increased retirement ages
- Employment of retired workers in informal sector or in flexible work arrangements
- Immigration from poorer, labour-rich economies

Firms in several countries, e.g., Japan and Singapore, are reluctant to employ older workers because of higher wages due to the seniority compensation system. This system may need to be modified. Immigration is used in several Asian economies, e.g., Malaysia, Singapore, Korea, Japan and Hong Kong, but may encounter social resistance. All these solutions have their limits in the long-run, and improved labour productivity is long-term the key to labour scarcity in Asian industrialising economies.

4. Increased labour force participation must be encouraged through labour market policies in order to reduce the burden of pension systems

Pensions must be paid for through the current earnings or output of existing workers. Increasing the number of workers and their overall earnings will reduce the relative burden each must carry in order to sustain pensions for today's workers.

The demographic transition and population ageing have significant consequences for labour markets, their functioning and public policy. An ageing population implies changes in the share of the population who are of working age, the age structure of the work-force, and labour mobility.

As the demographic transition proceed, and birth rates fall, the number of people in each successive age cohort first increases at a diminishing rate, and then in countries with below-replacement fertility even falls. With a 15-20 year time-lag, this results in a decrease in the number of entrants to the work-force. In most developing countries, including Sri Lanka, policy-makers are accustomed to large annual additions to those seeking work. Population ageing implies that this will eventually cease, and that a problem of too few entrants to the labour market may emerge. The extent to which reducing population numbers can lead to labour scarcity will be modified by a number of factors, including the rate of economic growth, changes in labour force participation by women and older adults, migration patterns, and labour productivity trends.

The level of the burden of supporting an aged population in the coming decades will depend on the extent to which the population of the working age in general and older workers will participate in the labour market. The fewer the workers in an economy, the greater the relative burden on them of supporting the non-working population. Higher employment rates reduce the fiscal pressures associated with funding pensions and health care, since the burden on individual workers will be less, while increasing real incomes in the population as a whole.

Countries have thus faced two related problems in the labour market.

1. Countries have to deal with the consequences of labour scarcity as a consequence of population ageing.
2. Countries are facing the problem of how to maximize the numbers in work by increasing labour force participation by all age groups and by women.

Responses and experiences in OECD Countries

The OECD countries have been the first to experience the impacts of population ageing on their labour markets. While this experience is thus instructive, it needs to be borne in mind that some of the conditions which are relevant to OECD countries are not typical of many faster developing Asian economies, in particular chronically high levels of unemployment which has been a feature of most continental European economies since the 1970s. Thus, for most OECD economies the second problem of how to increase labour force participation has been more of concern.

Many of the OECD countries, particularly in Europe, have experienced high unemployment rates and a decline in the labour force participation of older workers. These are not unrelated. Under conditions of high unemployment, governments have often responded by attempting to move older workers into retirement, and thus create employment opportunities

for younger workers. Even if this has not been a conscious objective, high unemployment or an over-supply of labour has not encouraged efforts to keep older workers in employment. OECD countries have thus generally seen declines over time in labour force participation by older adults, which has added to the pressures on pension systems. Some of the factors attributed to the decrease in the labour force participation of older workers are an increased individual preference for early retirement (which is probably related to higher living standards), retirement policies, social security systems and a decreased demand for older workers (OECD 1996a).

The provision of pension schemes and the pressure of early retirement policies have frequently reduced the incentives for individuals to prolong their participation in the labour market. Workers are observed to shift from full time work to full time retirement owing more to the incentives of the retirement schemes, than due to their personal preference (OECD 1996a).

Several features of retirement systems in OECD countries have influenced the decrease in the participation of older workers in the labour force. For instance (OECD 1996a):

- Earnings rules (that are incorporated into many public pension schemes) which are likely to be a disadvantage to people willing to work longer than the statutory retirement age. For example, any earnings above a prescribed limit may result in a reduction in pension payments, causing a high effective marginal tax rate on earned incomes and resulting in a disincentive to seek or continue in work. Several OECD countries have now abolished these rules, including UK and France.
- Provisions (in some private pension schemes) which result in the loss of the pension rights if the employee resigns from that particular job. This has the effect of reducing labour market mobility.
- The capacity to receive a public pension before the standard age of retirement.
- Encouragement of early retirement in order to help reduce unemployment. Some OECD countries (UK, Germany, Australia, Belgium) have explicitly or implicitly relaxed the rules governing the receipt of unemployment benefits. Italy has introduced a mobility allowance (an unemployment benefit) to workers on collective layoff whose dismissal is permanent. For older workers this allowance varies according to regions of high and low unemployment.
- 'Unemployment pension provisions' in some European countries, such as Germany, the Netherlands, Italy, Spain and Sweden, which have extended benefits for long term unemployed workers, or older workers who were made redundant, until they reach the standard age of retirement and then become eligible for a public pension.
- Introduction of benefits to allow employed workers to take an early retirement, provided their positions were replaced with unemployed youths. In the past, a few European countries have initiated such schemes. Although these measures have mostly been removed, the perception exists that in times of high unemployment, these schemes are likely to be introduced. Denmark and Belgium continue to have such schemes, but they have been phased out in most, including France, Germany and the UK. In general these schemes tend to be costly because of differences between pension and unemployment benefits, and because of the loss of skilled workers from the labour force.
- Invalidity and sickness benefits are similar to retirement schemes. These have been used in many European countries when unemployment rates have been high.

Comparisons of OECD economies suggest that there is no direct relationship between the fall in participation rates of older workers and unemployment. This suggests that most of the early retirement policies described above fail in practice to reduce unemployment. Reasons

include high levels of industry specific human capital in older workers which make it difficult to find replacements from new workers, the tendency for many old-age workers to look for another job after retirement, and a failure of these programmes in general to address the underlying labour market distortions that cause unemployment (OECD 1996a).

Decreased demand for older workers is also another factor that has resulted in lower participation rates of older workers. Experience has shown that employers are often reluctant to employ or retain older workers. Age profiles of earnings coupled with employer perceptions of productivity of old-age workers are likely to influence the demand for older workers. For instance employers perceive that:

i. In the absence of continuous training the skills and competencies of some older workers may become obsolete (this is likely to influence the implementation of many early retirement programmes for older workers), and
ii. There is a positive relationship between age and earnings, which leads to increasing costs of employing an older worker.

Policy Reforms in OECD Countries

The general approach and thinking in OECD countries has been to urge close co-operation of governments, employees and employer representatives to improve policy and address issues that inhibit the participation of older workers in the labour force and implement policies that would help the labour market adjust to demographic changes. Policy recommendations and goals have tended to emphasise (OECD 1996a):

1) Pension schemes to be consistent with demographic trends and minimal interference with the decision to work, change jobs or retire.
   - Changes should be introduced over time to avoid adversely affecting the income of the current generation of older workers and help future generations to adapt their expectations accordingly.
   - Raising the retirement age
   - Private pension schemes that are encouraged as a means of saving for retirement to be closely regulated by the Government with regard to vesting periods and portability provisions, to assist individuals understand the implications of such clauses.

2) Introduction of gradual retirement schemes that would increase the incentives to participate longer in the labour market. Such schemes allow people to receive a partial pension while working part-time.

3) Reform of public benefit entitlements
   - Modifying provisions that encourage early retirement such as invalidity benefits and unemployment benefits to avoid them being used as a mechanism to promote early retirement of workers.
   - The longer term consequences of early retirement along with its impact on the future generation of older workers should be considered.
   - Early retirement should be avoided as a measure to solve short term labour market problems.
   - To avoid unjust discrimination against older workers, some countries have enacted legislation to ban the discrimination in hiring older workers.

4) Older workers should be encouraged to maintain workforce attachment by the implementation of active labour market policies and a life-long learning process.

Japan and Asian NIE experiences

In Japan and the more advanced Asian economies, population ageing has had or is expected to have qualitatively different implications. While labour remains cheap and plentiful in the poorer Asian economies of China, South Asia, Indonesia and Indo-China, sustained rapid economic growth has produced conditions of full-employment in countries such as Japan, Hong Kong, Singapore, Taiwan, Korea, Malaysia and Thailand. Under such conditions, continued economic expansion tends to lead inevitably to labour scarcity, and rising labour costs as wages rise. This has major impacts on economies which have relied on labour intensive manufacturing (and agriculture) to drive economic development. Increasing unit labour costs erodes the competitiveness of labour-intensive manufacturing, and has tended to force economies to move out of labour intensive industries into more capital and skill intensive sectors. The problem of encouraging older workers to remain in employment in order to reduce pension burdens has not been so acute a problem in these countries, because pension commitments remain less than in the more established market economies.

Population ageing with its effects on both the growth of the labour supply, and the age structure of the work-force, exacerbates the effects of labour scarcity, and can lead to reduced levels of economic growth. While there is continued dispute about the relative importance of each factor, it is generally agreed that rapid increases in labour supply and in capital stocks have contributed greatly to the rapid rates of economic growth in the Asian region. The scarcity of these resources is expected to be exacerbated over the next 15 years as labour force growth rates are projected to decrease because of population ageing (Table 3C.1). A decline in the expansion of their labour forces and an ageing work force is expected to strain their economic performance (Bauer 1995).

Table 3C.1: Labour force growth rates in selected Asian countries (per cent per year)

COUNTRY	1980-1990	1990-2000	2000-2010
Japan	0.9	0.4	0.4
Singapore	1.6	0.6	0.3
South Korea	2.8	1.8	1.1
Taiwan	3.5	1.7	0.7

Source: Bauer 1995

As a result of this labour scarcity and loss of competitiveness in labour intensive production, the governments and firms of these Asian economies have shifted into higher value added industries that require more intensive skills, transferring some of the manufacturing process overseas through foreign direct investment, importing labour, encouraging the participation of women in the labour force and prolonging the participation of older workers. In some instances, there has also been a shift in employment from the manufacturing to finance and business services sectors (Bauer 1995), and from labour-intensive manufacturing to non skill-intensive manufacturing.

Government policies of NIEs have accordingly been developed to encourage this restructuring process. In Taiwan and South Korea, the government has increased its spending on research and development and subsidised entrepreneurs in high technology fields. In Singapore, in addition to promoting research and development, the government has encouraged investments in high technology manufacturing and the financial business services sector. For example, it has introduced significant tax concessions to “pioneer industries” and ‘new technology companies’, and in an effort to meet the growing demand for skilled labour,

it has raised the number of new enrolments to the national university and polytechnic institutes (Bauer 1995).

In an effort to counter the effects of a declining labour force, Japan and the NIEs have resorted to increasing their labour supply by (i) importing workers from abroad, (ii) encouraging the participation of women in the labour force and (iii) postponing retirement. However, while employers in Japan, Hong Kong, Singapore and Taiwan hire significant numbers of overseas workers, this has come under severe social pressure and criticism, resulting in governments imposing restrictions on the importation of labour. Thus, foreign labour has become increasingly expensive and has forced employers to use more skill intensive production methods (Bauer 1995).

The ageing of the labour force is believed to increase labour costs in Japan and the NIEs due to seniority based compensation schemes. Labour costs appear to increase in excess of productivity due to the employment contracts entered into by workers and firms, under which wages increase with age even if productivity does not. Studies have shown that during the 1980s, many firms made changes in the seniority wage system in response to the pressures imposed by ageing. For example, some firms restricted the rise in wages of employees after a specific age.

Singapore is also concerned about rising labour costs that are associated with an ageing labour force. Singapore's wage structure has been based on seniority, long salary scales and pre-determined wage increases. However, after the recession of 1985-1986, the National Wage Council (NWC) suggested that firms adopt a flexible wage system, in a bid to reduce the importance of a seniority based wage structure. However, it has been observed that a weakening seniority system is likely to accelerate labour turnover, which is a considerable problem in Singapore. A strong seniority system is believed to promote firm specific training which is considered vital to Singapore as it continues to move into higher value added industries. (Bauer 1995).

Further, NWC of Singapore in 1988 requested Singaporean firms to raise the retirement age from 50 to 60 or higher in an effort to counter the growing labour shortage and increase in life expectancy. However, employers were reluctant to implement this proposal due to the high costs attached to the seniority based compensation scheme. As a result in April 1993, the government passed the Retirement Age Act 1993, which prohibits employers from dismissing workers below the age of 60. By the year 2003, the mandatory retirement age will be raised to 67. As a further step to encourage firms to employ older workers, the Singaporean government lowered mandatory employer contributions to the central Provident fund for employees over the age of 55.

Japan and NIEs have high participation rates of the elderly in their respective labour markets. The trend towards late retirement is partly a response to growing labour scarcity. Since 1965, Japanese firms have increased the mandatory retirement age by an average of four years. The Japanese Employment Council in 1993 proposed that employees be retained until the age of 65. However, as firms did not accede due to the high costs attached to the seniority based compensation scheme, the government has introduced subsidies to firms to retain older workers (Bauer 1995). Japan is also like some other OECD countries attempting to gradually raise the official retirement age.

D. Savings and capital markets

Overview

Population ageing is expected to have severe impacts on long term national savings, which comprises of private and public savings. Private savings behaviour is normally found to represent a pattern whereby households save during their working life and dissave during retirement. This is referred to as the life-cycle savings pattern.

Impact in OECD countries

- Public and private savings in OECD countries are predicted to fall as a result of demographic ageing. Increased pressure on demographically sensitive government expenditures, such as pensions and health care, will increase government budget balances and therefore reduce government savings.
- Private savings behaviour of OECD countries accord with life-cycle saving patterns. Therefore, a rising elderly population will induce a decline in private savings. Notably, it is countries that start off with high saving positions prior to ageing, that have less falls in private savings than countries that start off with low savings ratios.

Impact in Asia

- There is growing evidence that the life-cycle pattern of savings hold in Asia, where there is expected to be a dramatic demographic transition in the next 50 years.
- Recent research by Higgins (1997) suggest that demographic ageing will bring about falls in national saving.
- They go on further to analyse the effect of ageing on investment, and therefore on the capital account, and conclude that higher old age dependency depresses investment more than savings, inducing capital outflows, while youth dependency induces capital inflows by depressing savings more than investment.
- Provisional figures for East and Southeast Asia suggest that they will graduate from their heavy foreign capital dependency to a position of net capital exporters. South Asia, with the exception of Sri Lanka, will also become net exporters of capital, but at a slower rate than the East Asian countries.

The current account balance of Sri Lanka is expected to remain in deficit well into the next century. This is perhaps indicative of exogenous forces at work, such as the ongoing civil war and poor economic management, despite Sri Lanka being demographically advanced.

Introduction

Population ageing is expected to have profound impacts on long term national savings, and by extension, implications for capital market policy. National savings consist of government and private saving. Increased costs in the area of pensions, income support and social services due to population ageing creates pressures in favour of increased government dissaving, which must be offset by other means (Leibfritz 1996). Ageing can also have adverse effects on private savings, although the exact effects are not so straightforward. The impact of ageing on private savings can be visualised using a life-cycle framework, which postulates that households smooth their consumption over their lifetime by saving during their working life and dissaving during their retirement.

The impact in OECD economies

Fiscal effects

An ageing population will place stress on demographically sensitive public expenditures such as pensions, health and education. This, in theory, should reduce fiscal balances. However, the evolution of fiscal positions in response to an ageing population depends crucially on the *starting positions* before the pressures from an ageing population begins to mount, (Leibritz 1995).

In a series of studies, the OECD has projected the impact of ageing on fiscal balances in its member countries. The OECD refers to its starting position as the Medium Term Reference Scenario (MTRS) for 2000. The MRTS assumptions are rather optimistic, whereby they assume that there will be a significant fall in public sector deficits for the OECD area from 45 per cent in 1993 to 1.9 per cent of GDP by 2000, (Leibritz 1995).

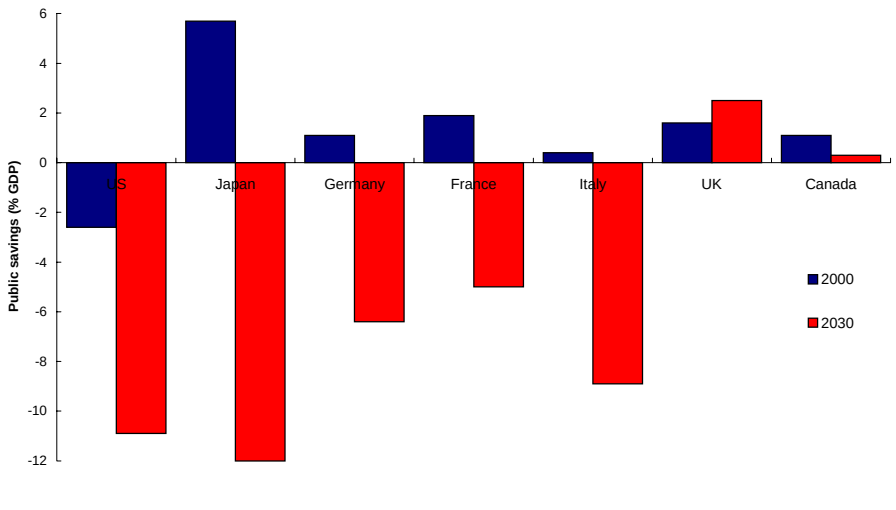
The primary balance is an account of government expenditures and revenues excluding government borrowing and debt. The MRTS indicate that all major seven countries, except Japan, will have a positive primary balance in 2000. However, if all the items in the primary balance except pensions, health and education, are assumed to remain constant, ageing will lead to erosions of the primary balance positions by 2030. They range from an approximate balance for the United Kingdom to a deficit of 8 percent for Japan, (Leibritz 1995). There are considerable variations between countries on revenue and expenditure components that contribute to the primary balance. It is found that pensions expenditure play a major role in the deterioration of primary balances in Japan, Germany, France, Italy and Canada, rising from 4 to 7 percent of GDP between 2000 and 2030, (Leibritz 1995). In contrast, pension outlays play smaller role in the United States and the United Kingdom. In Canada, rising pension outlays are partially offset by increases in contribution. Health care expenditures rise more sharply in both Canada and United States than in other countries.

Public savings effects

In view of the inevitable fiscal pressures on balances described, public savings are likely to fall. With the exception of Canada and the UK, all other major OECD countries will experience government dissaving (Figure 3D.1). The United States and Japan will experience the largest falls in public savings by the year 2030. This is primarily due to the

significant increase in public expenditures on health care as a result of high projected dependency ratios.

Figure 3D.1: Projected impact of demographic ageing on public savings, 2000 and 2030



Source: Liebfritz et al (1995)

Policy implications

The following policy responses are identified by the OECD as a means of offsetting the dependency crisis:

1. **Increasing the workforce -** This option will increase both output and the working-age population relative to the elderly, thereby reducing public expenditures on the elderly as a percentage of GDP. The workforce may be increased by raising participation rates, increasing immigration and increasing working lifetimes.

    - **Raising participation rates**: For the OECD as a whole, participation rates for men are currently around 20 percent higher than for women, with marked variations across countries. France and Canada for instance, show differences around 15 per cent, while Japan and Italy show 30 per cent, (Leibritz 1995). Similarly, participation rates are well below the formal retirement rate in most countries. This partly reflects the reliance on 'early retirement' policies as a response to high unemployment. Although raising participation rates would increase GDP growth rate in the period when raised, it will not do so in the subsequent years. Only GDP *levels* would be higher from there onwards.
    - **Increasing immigration**: Attracting foreign skilled workers from outside the OECD area may provide a means of offsetting the fall in working-age populations. Programmes to attract foreign migration are already in place in countries like Canada, Australia and New Zealand, though the immigrants entering under these programmes remains low compared to overall immigration flows in those countries. However as Leibritz (1995) indicates, the interaction between immigration and economic performance is quite complex and there are likely to be practical constraints, such as age and family structure of immigrants, that hinder the successful implementation of such programmes.

- **Increasing working lifetime**: Increasing life expectancy, late age of entry to the workforce, and shift of work from manual to sedentary jobs through technological advancement, implicate the extension of the working lifetime. In other words, increasing the retirement age will not only have a positive impact on GDP growth but also on elderly dependency ratios.

2. **Reforming public pension and health programmes -** If present pension payments remain unchanged, the pension schemes in some countries would impose major burdens on their societies in the next century, either through requiring higher taxation or other spending cuts, or by rapidly increasing public debt burdens resulting from high primary deficits. One reform cited by OECD (1996a) is to move to a 'defined benefit' basis for calculating public pensions. Under such scheme, those already retired would receive pensions equivalent to the contributions that have paid adjusted to the net present value as of their pensions had been paid into a fully funded pension scheme and earned interest. The main limitation in this approach is that it make no allowance for differences in personal circumstances. A major goal of designing a public pensions scheme is to alleviate old-age poverty, and a defined benefit system does not imply a redistribution of income through pensions.

3. **Improving overall budget positions -** Budgetary pressure may be reduced either by building a better starting position before demographic pressures mount or by curbing expenditure and raising taxes. A better starting point mean a lower net/debt ratio and a higher primary surplus in 2000.

Private savings effects

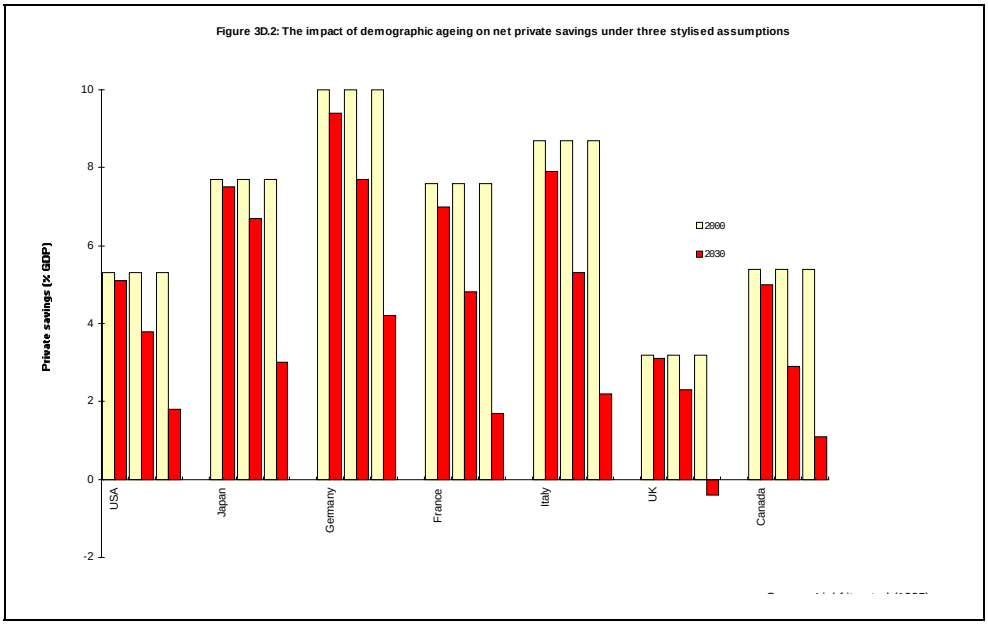
The overall impact of different individual saving patterns in a situation of an ageing population may be illustrated on the basis of three models about age-specific saving rates and the relationship between individual household saving and total private saving. Although this approach is simple it does provide an idea of the magnitude of the impact of demographic changes. The three alternative models are :

A. A 'dynasty model' saving pattern that assumes the elderly continue to save, not for themselves but in order to leave high bequests to their children and grand-children, and thus have positive net saving. It is assumed that their net saving rate equals half the average net private saving rate;

B. A life-cycle saving pattern that assumes retired people have a negative saving rate of 10 percent, implying that in many cases some wealth may still be left for bequests;

C. A gradual shift from a dynasty model of saving pattern to a life-cycle pattern as demographic pressures mount, which would lead to a stronger decline in average private saving rate, (Leibritz 1995).

Figure 3D.2 illustrates the decline in saving ratios under all three models. Savings are dramatically projected to fall from year 2000 levels by 2030. The most dramatic fall in savings result under pure life-cycle assumption or (C), where, for instance, in the UK the savings fall from 3.2 percent in 2000 of GDP to -0.4 percent by 2030 as dependency ratios increase. Interestingly, in countries that start off with high savings ratios in 2000, like Germany and Japan, have fewer falls in private saving than countries that start off with a low savings ratios.



National savings and the interaction between private and government savings

Whether demographics will have a significant effect on national savings and therefore on the productive potential also depends on both the interactions between private and government savings. For an economy as whole it is the overall national savings, that is the sum of private and government saving, that matters for future economic growth. On balance, it seems likely that with ageing populations and unchanged policies, both private and public savings will fall in the future. However, it is not strictly correct to simply add together separate estimates of private and public savings as this ignores any possible interaction between them.

Such an interaction is emphasised by the Ricardian Equivalence hypothesis. According to this hypothesis, a change in the path of taxes over time, for instance a reduction in taxes in the present and an increase in the future, does not effect overall private expenditures and therefore has no effect on national savings, investment or the capital account, (Sachs 1993). Thus, if a government announces a cut in current taxes, thereby increasing current disposable income, forward looking households will not change their present level of consumption in anticipation of a future tax rise. Households save the rise in income they receive from the tax cut in order to pay for future tax increases. If the Ricardian Equivalence hypothesis holds, an increase in government savings will be offset by an equivalent reduction in private savings. Most empirical studies have rejected the strict equivalence hypothesis, but as pointed out by Leibritz (1995), some offset of a decline in government saving by an increase in private saving is likely.

Table 3D.1: Impact of demographics on net national savings under three stylised assumptions

		Private Savings			Govt. Savings	National Savings					
						Without Ricardian Equivalence			With partial Ricardian Equivalence		
	Years	A	B	C		A	B	C	A	B	C
United States	2000	5.3	5.3	5.3	-2.6	2.7	2.7	2.7	2.7	2.7	2.7
	2030	5.1	3.8	1.8	-10.9	-5.8	-7.1	-9.1	-1.7	-3.0	-5.0
Japan	2000	7.7	7.7	7.7	5.7	13.4	13.4	13.4	13.4	13.4	13.4
	2030	7.5	6.7	3.0	-12.0	-4.5	-5.3	-9.1	4.4	3.6	-0.2
Germany	2000	10.0	10.0	10.0	1.1	11.1	11.1	11.1	11.1	11.1	11.1
	2030	9.4	7.7	4.2	-6.4	3.0	1.3	-2.2	6.8	5.1	1.5
France	2000	7.6	7.6	7.6	1.9	9.5	9.5	9.5	9.5	9.5	9.5
	2030	7.0	4.8	1.7	-5.0	2.0	-0.2	-3.3	5.5	3.3	0.1
Italy	2000	8.7	8.7	8.7	0.4	9.1	9.1	9.1	9.1	9.1	9.1
	2030	7.9	5.3	2.2	-8.9	-1.0	-3.6	-6.7	3.7	1.1	-2.0
United	2000	3.2	3.2	3.2	1.6	4.8	4.8	4.8	4.8	4.8	4.8
Kingdom	2030	3.1	2.3	-0.4	2.5	5.6	4.7	2.1	5.1	4.3	1.7
Canada	2000	5.4	5.4	5.4	1.1	6.5	6.5	6.5	6.5	6.5	6.5
	2030	5.0	2.9	1.1	0.3	5.3	3.2	1.4	5.7	3.6	1.8

Source: Leibritz 1995

Table 3D.1 shows the overall impact of ageing on national saving assuming partial Ricardian Equivalence and the impacts based on the theoretical framework of life-cycle saving and new classical growth theory. Under Ricardian Equivalence, the illustrations suggest that the deterioration of government savings play a more significant role in declining national savings. The life cycle theory model imply a much more important role for weakening private saving in the decline of national saving. If the former factor is emphasised, then it is more the increasing burden on the government of having to maintain a high dependency rate that results in declining national savings, as opposed to life-cycle behaviour evident in countries today. The life cycle models take into account the inter-relationships between saving, investment and growth and sometimes international repercussions, thus providing a broader analytical framework as compared with partial analysis. On the other hand, they assume that the economies are initially in equilibrium (where actual savings equals optimal savings) and embody quite restrictive assumptions. Thus caution is needed when drawing direct conclusions about the future development of actual saving.

Implications

There are varying views on the extent to which a demographically induced fall in savings would reduce living standards. The proponents of this assumption argue that a fall in national savings would reduce investment and thus reduce economic growth and living standards. Those opposing this view, argue that a lower working age population would require less additional capital (thus investment) to equip them to be productive. Therefore, a fall in savings as populations age would not lead to a fall in living standards. However, this

debate requires a more extensive analysis of the long run determinants of economic growth and the interaction between savings and investment. Savings, investment and capital accumulation collectively is only one factor determining long-term living standards. Other factors, such as technical progress and political stability, are perhaps far more important and are likely to have adverse effects on living standards than ageing populations on living standards.

However, ageing populations are likely to place heavy burdens on a government's budget, thus increasing savings in anticipation of ageing effects would increase wealth and generate higher income later.

Impact in Asian economies

Although there is extensive literature on dependency theory, little exist with regard to the fiscal impacts in Asian capital markets. From the available literature we might conclude that the impact of demographic ageing on fiscal balances is similar to that of the OECD experience.

Savings effects

The impact of ageing on OECD countries may not be strictly comparable to experiences in Asia, particularly in the developing countries of the region. Pension and welfare systems are generally less developed, and capital and labour markets may be structurally different to those in the advanced economies. However, recent research by Higgins and Williamson (1997) suggest that the predictions of the life-cycle framework with regards to capital flows do hold in Asia.

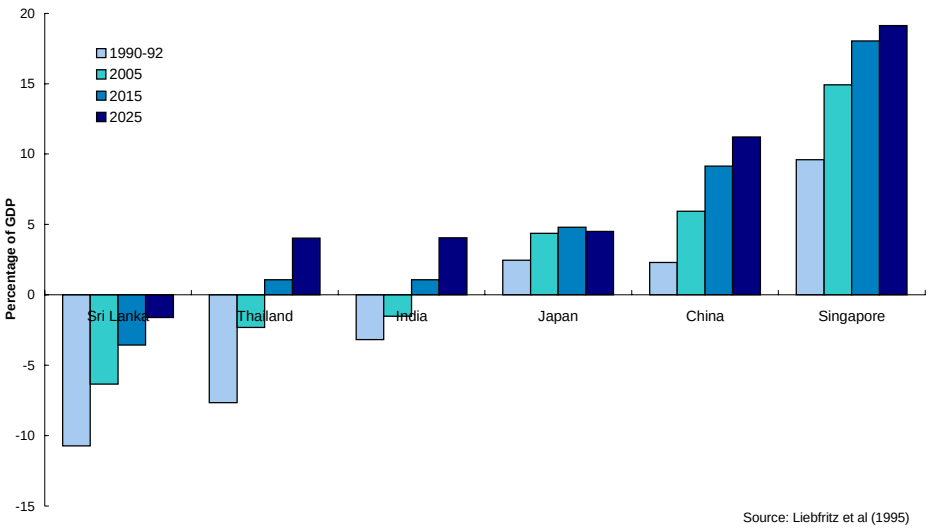
Demographic patterns of Asian countries indicate that while youth dependency is on the decline, old age dependency is on the rise. The biggest declines in youth dependency have occurred in East and Southeast Asia. For instance, the South Korean youth dependency rate has declined by -18 per cent and the Japanese by -16.7 per cent, (Higgins and Williamson 1997). In contrast, the smallest declines have occurred in the economically slow growing, South Asia. In India and Pakistan, for example, youth dependency has only declined by -4.1 and -0.4 percentage points respectively, (Higgins and Williamson 1997). The notable exception is Sri Lanka, where the youth dependency rate has decreased by -9.9 percent, (Higgins and Williamson 1997). Southeast Asian countries have generally fallen in between. The old age dependency, on the contrary, is on the increase. With the exceptions of Bangladesh and Pakistan, the share of population over 65 has risen, with the most notable rise in Japan, from 5.1 per cent to 12.4 per cent, (Higgins and Williamson 1997).

Higgins and Williamson (1997) attempt to test for correlation between dependency and savings rate by using a dynamic model, incorporating demographic effects on both savings supply and investment demand built on existing macroeconomic models of the savings/demography link.

After empirical testing Higgins and Williamson (1997) arrive at results that suggest the following conclusion: substantial demographic effects, bringing about rises in youth and old age dependency, lead to falls in saving rates. The results also highlight an interesting fact that higher youth dependency depresses savings more than investment, inducing capital inflows, while higher elderly dependency depresses investment more than savings, inducing capital exports.

Implications for capital markets

Figure 3D.3: Projected impact of expected changes in population age shares on current account balance in selected countries of Asia, 1990-2025



The impact of demography on capital markets in the year 2025 predicted by Higgins (1997) is illustrated by Figure 3D..3. South Asia will graduate from its current heavy dependency on foreign capital to complete independence (except Sri Lanka) by 2025. The current account balance (CAB) in Sri Lanka will improve significantly between 1990 and 2025. However, its CAB will still remain in deficit at –1.61 percentage points by 2025. This is in contrast to India and Thailand, which recovers from an initial deficit position in 1990 and 2005. A possible reason for this is the rapid demographic dynamics experienced in Sri Lanka compared to India and Thailand. The movement towards net capital export positions will be most pronounced in Southeast Asia. For instance, the CAB share will rise by 9.5 per cent in Singapore and by 11.7 per cent in Thailand.

Conclusions and policy implications

These projections should nevertheless, be viewed with precaution. There are too many reasons that might offset the potential impact of demography on foreign capital dependency over the next 30 years. For instance, global capital markets may retreat behind autarkic barriers, just as they did between 1914 and 1970s, (Higgins 1997). Perhaps, the robust investment booms experienced in the Southeast Asian economies may falter in the future or instead spread throughout South Asia. In other words, the real world may be very different to the one that is predicted by Higgins and Williamson (1997). It is countries in Southeast Asia, like Singapore, with high economic growth rates, that are predicted to have greater CAB increases, while countries in South Asia will have lower CAB gains. Sri Lanka's predicted deficit in its CAB by the year 2025 may be indicative of the power of external forces at work despite improved dependency rate conditions. Persistent depressing effects on saving by civil strife and military expenditure are some of these external forces. Therefore, although dependency rates can explain savings behaviour in capital markets, the role of other factors cannot be discarded.

E. Care of the dependent elderly and the role of the family

Introduction

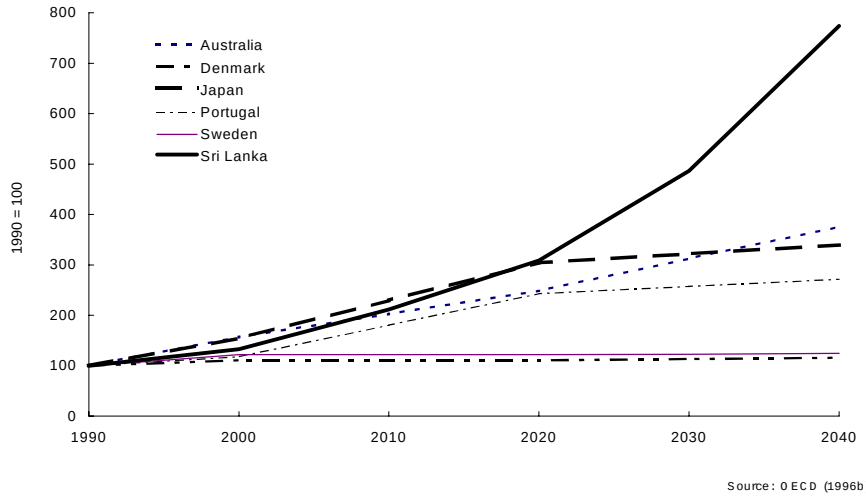
The problem of ensuring adequate long term provision of care for elderly people who are frail or disabled is a recent concern in the advanced countries, and in general not yet on the policy agenda of any developing country. It has only recently moved from being a rather marginal issue in welfare policy to the centre stage of discussions in the developed countries. Nevertheless, it is probably the most under appreciated and understated policy problem, created by population ageing, which faces rapidly ageing developing economies, particularly in Asia.

The rapid ageing of the elderly population

As populations age, the numbers of the most aged, the most elderly of the elderly, increases substantially, and eventually significantly faster than the numbers of all elderly people. This ageing of the aged creates new policy challenges in modern economies. The very elderly, typically aged 80 years and over, are significantly more likely to be disabled or chronically ill, and dependent on others for their well-being. Traditional social mechanisms, which have involved family support systems, erode during modernisation, and increasing numbers of the most elderly will not be able to depend on their families or their own resources for support. These trends increase the demand for formal services, and eventually force governments to intervene to ensure adequate provision of such care.

Although the size of the 80+ population remains small in relative terms in all countries, it is expected to grow considerably faster than the population as a whole in demographically ageing countries. The projected growth in the numbers of this section of the population are shown in Figure 3E.1 for a number of OECD countries, and also for Sri Lanka. Advanced European economies are expected to experience an increase of 200 - 400% in the numbers aged 80 and over during 1990-2040, while non-European OECD members, most remarkably Japan, are expecting increases of 300 - 450%. In contrast, Sri Lanka is expected to experience an increase of more than 700%.

Figure 3E.1: Growth of the number of people aged 80 and over



Disability and the need for care

The increases in the numbers of the most elderly is being or will be accompanied by greater inter-generational independence, and increased numbers of elderly living alone. It is this trend, plus the increase in absolute numbers, which raises significant policy challenges for the demographically advanced countries.

The prevalence of disabling conditions rises sharply after age 75, and the consequent loss of independence in daily activities leads to corresponding growth in the need for care from others. For example, in a survey in the United Kingdom in 1986, nearly 50% of those aged 75 and over were found to have some difficulties with walking and climbing stairs, 31% had difficulty with personal care, 26% had difficulties with seeing clearly, 15% had difficulties with incontinence, and 11% had difficulties with intellectual functioning. Similar findings have been reported from other developed countries (OECD 1996b). From what limited evidence exists for developing countries in Asia, it is clear that this pattern of substantially increased chronic disability at ages above 75 years holds true for these other countries. The evidence in fact points to higher levels of prevalence of such disabilities in the poorer Asian countries, perhaps due to lower levels of health care and nutrition in their younger years in comparison with people in developed countries (Table 3E.1).

Table 3E.1: Some indicators of disability in the most elderly in South-East Asian countries (percentage of age group)

	Indonesia	Philippines	Thailand	Malaysia	Singapore
Can see well					
75+	28	18	36	24	80
All ages	42	23	49	33	89
Can hear well					
75+	52	49	64	73	82
All ages	74	71	79	81	92
Can get around home					
75+	67	56*	35#	n/a	84
All ages	86	72*	59#	n/a	91

* Refers to those who could get around the home without physical disability as observed by the interviewer.
# Refers to those who could get around the home with or without difficulty
Source: Chen and Jones 1989

It was previously thought that with time the increase in life expectancy would slow down, and that a "natural" human life span of around 85 years would emerge. Further improvements in health would then result in delays in the onset of disability with age, and an overall decline in the prevalence of disability in old age (Fries 1980). However, recent studies reviewed by the OECD (1996b) have concluded that the available evidence does not support this hypothesis, and that improvements in life expectancy have not been accompanied by an increase in human ability to prevent or delay disabling conditions. Given this, demographic ageing can be expected to create in future the same increase in the numbers of the disabled and dependent elderly in Asian countries, that it has created in the advanced societies.

Decline in family support due to modernisation and demographic ageing

In traditional peasant-agrarian societies, production tends to be family-based and unspecialised (Ogawa and Retherford 1997). Successive generations tend to have the same occupation, typically farming. Parental authority over children is reinforced by parents' longer experience and expertise in shared work, and co-residence of parents and adult children makes both economic and social sense. With modernisation, production shifts to more specialised processes; modern market economies depend on an inherent division of labour. Increasing individualism in the labour market eventually diffuses into other areas of life, including the legal system, family relations and social values. Parental authority of elderly parents over adult children loses most of its economic and legal basis, and generally weakens. Changing outlooks, and the need for adult children to move in search of employment result in a decline in co-residence. This is particularly the case in event of rapid urbanisation, which can result in parents being left behind in rural areas as children move to the cities.

As co-residence declines and labour mobility increases, the extended family system contracts, and nuclear families become the dominant household type. The decline in the extended family system may be more dramatic in Asian countries than in the West, since the available evidence suggests that extended family systems were not the norm in northern European societies even in the pre-industrial era.

The elderly still have needs for support and care that must be met. An intergenerational consensus will tend to arise that government should intervene and shoulder a substantial part of the burden of supporting and caring for the elderly. These trend is hard, if not impossible, to resist in democratic societies. As social security systems, pension plans, and other systems of old age income support are established, they will tend in turn to reinforce the changes in values that are already occurring. Expectations of old-age support from children weaken, as do filial values and norms of caring for elderly parents. Contributing to these trends in most advanced economies is the increasing prevalence of female labour force participation, which increases the opportunity costs of staying at home to care for elderly parents who need such care (Ogawa and Retherford 1997).

In all societies, both developing and advanced countries, Western and non-Western societies, informal sources, principally family members, remain the primary providers of care to the elderly. This care in most cases is provided by elderly spouses, or younger relatives, usually female relatives. Most of these female relatives tend to be in 45-64 age group. The care provided by these relatives is substantial, and comprises an "invisible welfare state", underpinning even the formal welfare states of advanced economies (OECD 1996b).

Data on the identity of care givers to elderly people in developing countries are limited, except for South-East and East Asia, where there has been considerable comparative research in the past decade. Surveys in Sri Lanka indicate that middle aged women do play an important role in Sri Lanka as elsewhere (Table 3E.2).

Table 3E.2: Identity of primary care providers for elderly in Sri Lanka by location percentage of total

Age (years)	Urban		Rural		Estate	
	Male	Female	Male	Female	Male	Female
20 - 34	11	11	9.5	21.2	6.7	26.7
35 - 44	18.5	11	14.6	14.6	6.6	33.3
45 - 69	14.8	33	10.2	26.3	6.7	20
70 - 79	-	-	1.5	2.2	-	-

Source: Derived from Table 152 in Perera (1989). Data obtained in a small-scale survey of 179 resident primary care providers in 1986/87.

Demographic ageing in addition to producing an increase in the numbers of the most elderly, is simultaneously reducing the potential of the younger, predominantly female, population to provide care for older relatives. With demographic ageing, the ratio of middle-aged women to more elderly people will itself decrease. Table 3E.3 shows the trends in several OECD countries during 1960-90, which illustrates clearly the diminishing level of the so-called "daughter care potential".

Table 3E.3: Contraction of the "female care potential" in eight OECD countries
Number of women aged 46 to 69 in proportion of the population aged over 70 years

	1960	**1990**	**1990 ratio as a % of 1960 ratio**
Belgium	2.00	1.42	71
Germany	2.64	1.57	59
Ireland	1.60	1.40	88
Italy	2.30	1.60	70
Luxembourg	2.43	1.61	66
Netherlands	2.16	1.48	69
Portugal	2.50	1.60	64
Spain	2.48	1.53	62
Average 8 countries	2.26	1.53	68

Source: OECD 1996b

At the same time that the demographic basis for informal support declines, economic modernisation is associated with growth in women's paid employment. Increased female labour market participation has been the case in all OECD countries in the post-war period, and it has added to the pressures facing these societies, by further reducing the available "care potential" (OECD 1996b). In the Asian industrialising economies, economic modernisation has been accompanied by similar, and more rapid changes in female labour market participation (Table 3E.4), and there is already concern that this will have negative implications for these countries (Chen and Jones 1989). Female labour force participation has increased over time in Sri Lanka too, and the continuation of this trend in future can be expected to have implications for the care of the elderly in Sri Lanka too.

Table 3E.4: Trend in female labour force participation by age group in selected OECD countries, 1970 and 1993

	% of age group	
	1970	**1993**
Australia		
15-44	50.4	66.3
45-64	33.8	48.8
65+	3.7	2.4
Canada		
15-44	42.4	72.3
45-64	36	56.5
65+	5.0	3.7
France		
15-44	48.9	62.4
45-64	45.1	51.8
65+	8.6	1.4
Japan		
15-44	53.2	57.2
45-64	53.9	59.8
65+	17.9	16.0
United Kingdom		
15-44	53.7	71.3
45-64	49.3	58.6
65+	6.4	3.5
United States		
15-44	49.2	71.6
45-64	49.3	62.3
65+	9.7	8.2

Source: OECD 1996b

Policy responses

The combination of (i) increasing numbers of very elderly, many of whom are disabled and dependent on others for support, (ii) declining ratios of middle-aged women to the elderly, (iii) declines in the extended family system, and (iv) increased labour force participation by women, will create new problems of how to care for the dependent elderly in Asian industrialising economies. The lack of close relatives in many cases, and a general decline in the capacity of families to look after dependent elderly relatives, will create new demands on public budgets, as societies look to governments to assist.

In the advanced economies, it took a considerable time for governments to recognise and responsibilities in this field, and when they did so it was with some reluctance. Governments in OECD countries have been forced to provide an extensive mix of health and social services to support the dependent elderly. The financing and organisation of this care has been quite mixed, and there has been no uniform OECD approach. Nevertheless, in most OECD countries, public agencies do expect families to bear part of the financial costs of

providing long-term care to the elderly, typically by requiring better-off families to run down their assets before receiving public support. This principle is contrary to that applied to most health care services, where protection of households from "catastrophic costs" is the generally accepted principle (OECD 1996b).

In the Asian advanced economies, such as Japan and Singapore, it has taken longer for these problems to be officially confronted for several reasons. First, because economic modernisation has occurred more rapidly in Asia than in the West, social values have tended to lag economic developments, and so pre-existing family support arrangements and family expectations of providing support have persisted longer (Ogawa and Retherford 1994). Second, the demographic ageing process itself has started later than in the West. Third, Asian policy makers have tended to regard social trends in the Western countries, in particular the greater reliance on formal elderly support services and institutional homes for the elderly, as not being relevant to their own cultural situations. However, although the evidence does support the view that the extended family system and traditions of filial piety are stronger than in Western countries, economic modernisation has not spared even Japan or Singapore from such social trends. When these changes do occur, they have occurred more rapidly than in the West. Initial responses by most advanced Asian countries has been to discourage families from shifting the burden to the state, and some cases using legislation to force families to adhere to what is perceived to be their filial duties. Both Japan and Singapore have legislation on the books to force families to look after their elderly relatives. However, these responses are not an ultimate solution, and eventually governments are being forced to develop more comprehensive solutions based on public financing to look after the dependent elderly. This process is most advanced in Japan (Ogawa and Retherford 1997).

Section 4

COUNTRY EXAMPLES

Private pensions in Chile

In 1980 the government run pension system was replaced with a privately administered national system of pension savings accounts (PSA). When it was inaugurated, workers were given the choice of entering the new system or remaining in the old one. Half a million Chilean workers (i.e. one fourth of the eligible workforce) chose the new system by joining in the first month of operation alone. Today more than 90% of the Chilean workers who had been under the old system are in the new system.

Since the system began to operate the average real return on investment has been 13% per year. But this exceptionally high average rate of real return is marked by oscillation between minus 3% and plus 30%. Government bond being sold for real interest rates as high as 15% may have a major role to play in explaining these rates of return.

The transition was handled in the following manner:

- Those receiving pensions would continue to do so without any change
- Those in the system were given the choice of staying or switching with a recognition bond (which was payable when the worker reached legal retirement age
- New entrants were required to join the new system

US pensions system

Spending more than $350 billion a year the U.S. social security system is the largest single mandated centralised public system in the world (Pinera 1997b). Furthermore, it is a DB system and looms large as an exception to the many pension systems that have re-formed under the lobby by U.S. economists and international institutions. The main old-age public pension scheme is the Old Age Survivors Insurance (OASI) programme, more commonly referred to as 'Social Security'. This covers all private sector and public sector employees, including military personnel. The Social Security contributions by both employers and employees is currently 10.52 per cent.

The social security system is partially funded by the government, and held assets equivalent to 6 per cent of GDP in 1993 (Leibfritz 1995). Additional revenue is accrued through interest income on assets held by the pension system. In 1994, the average replacement rate is 42.5 per cent, and this is projected to remain constant over time. After retirement, pensions received are indexed to consumer price inflation.

The capacity for good management is sometimes cited as the reason that the US is able to operate contrary to the emerging conventional wisdom of current economic theory – which assumes and generalises with little question, the view that government ownership necessarily implies poor management and constant political interference.

Public pensions in Japan

Japan currently has six public pension programs covering different sectors of the population. The earliest plan was established in 1890; the most recent in 1961. Legislation enacted in 1985 introduced substantial changes in the country's entire old-age, disability and survivors benefits under the social security system. Under the new system all sectors of the population receive a basic minimum benefit. The other five systems for employees provide a supplement on top of the minimum related to contributions. Although each system has its own contribution and benefit structure, all systems are similar, operating largely like PAYG systems.

The programs can be divided into two tiers. The first is a flat-rate basic benefit scheme, the Kokumin-Nenkin (KN), which provides benefits to all retirees. The second is a principle-earnings related scheme, the Kosei-Nenkin-Hoken (KNH), which covers non-agricultural workers in the private sector, (Leibfritz 1995). Dependent wives of men in the KNH scheme are entitled to pensions without making contributions. Civil servants of the central government, local government employees, private school teachers and employees, and employees of agriculture/forestry/fishing organisations are covered under special programs.

In 1996, the contribution rate applied to wage income is 16.5 per cent, and this rate is reviewed every five years, (Leibfritz 1995). The government partially funds the pension system. In 1992, pension assets were equivalent to 37 per cent of GDP (Leibfritz 1995). The system is currently operating in approximate balance. In the KNH scheme, benefits are accrued at a rate of 0.75 per cent indexed monthly wages, multiplied by the number of months of insurance coverage(Leibfritz 1995). After retirement benefits are indexed to inflation.

Pensions reform in China

The formal pension system in China is largely urban biased, PAYG and benefits are based on the worker's wage in the last year of employment. In the urban sector, the pension system is mainly focused on state-owned enterprises (SOEs's) and older collective enterprises (OCE's). Only a minority of the workforce in the new non-state sector (private companies, foreign enterprises, self-employed), accounting for a rapidly growing share of employment, is covered. Very few of the rural sector workforce are recipients of any formal pension. As a result, only a quarter of the Chinese working-age population is covered by a pension plan, (Friedman 1996).

With the end of the Cultural Revolution, and introduction of market capitalism, the state enterprises are faced with increasing difficulty to keep pension promises without becoming non-competitive. A policy reaction has been to 'pool' benefits and risks across enterprises. Consequently, some problems have been eliminated, but since the state sector is growing slowly relative to rest of the economy, the ratio of pensioners to workers is high for the pool as a whole. Furthermore, incomplete pooling results in limited risk-sharing. Benefit rates continue to be high relative to wages, partly because wage indexation of pensions is used. In China, the average replacement rate stands over 80 percent compared to an average of 40-60 percent in other countries, (Friedman 1996). Also, the duration of retirement is long, as the retirement ages are low relative to the rising life expectancy in China. Thus, the costs of these high benefits lead to evasion and exemption, which raises the required contribution rate even higher. Thus, pooling at the municipal level alone does not seem to have solved the short run financial problem of SOE pension system. Recent trends are for local governments to push risk-pooling upto the level of provinces.

In addition to immediate short run problems in the state sector, in the long run, rapid population ageing and rural/urban migration is likely to strain the pension system. It is likely that the dependency ratio of 21 percent in 1995 will reach 42 percent by 2030 and 55 percent by 2050, if the retirement age, urban/rural migration and coverage remain at present levels (Friedman 1996). Given these potential problems the Chinese government set out to partially pre-fund its future pensions obligations. However, in China as in other countries, it is proving difficult to finance the transition from PAYG to funding-paying the benefits of current retirees while also pre-funding the future retirees.

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TECHNICAL ANNEX

A. Calculating Pensions in an unfunded defined benefit (i.e. pay-as-you-go) system

Due to the nature of the system it is true by definition that:

current payroll taxes = current old-age-income-security benefits

i.e.

(1) $$W_{current} \times T_{payroll} \times E_{formal} = W_{past} \times R_{wage} \times P_{eligible} \times i$$

Where:

$W_{current}$ = Average wage of those employed in the formal sector

$T_{payroll}$ = Payroll tax rate for financing pension payments

E_{formal} = Percentage of the population employed in the formal sector labour force

W_{past} = Average wage calculation of the past labour force i.e.current pensioners

R_{wage} = Percentage of wage replaced in the form of a pension

$P_{eligible}$ = Percentage of the population who are eligible for pensions

i = Indexation multiplier; could be linked to inflation, real wage etc...

$\therefore$ It can be derived from (1) that

(2) $$\frac{P_{eligible}}{E_{formal}} = \frac{T_{payroll}}{R_{wage}} \times \frac{W_{current}}{W_{past}} \times \frac{1}{i}$$

where $\frac{P_{eligible}}{E_{formal}} = Pension\ System\ dependency\ ratio$

We also know that

$$\frac{P_{eligible}}{E_{formal}} = \int\left(\frac{Aged}{LF_{potential}}, ER, \varepsilon, LFP, U\right)$$

where:

$LF_{potential}$ = percentage of population that is counted as potential labour force

$Aged$ = percentage of population that is above the retirement age

ER = Eligibility Ratio: the ratio of eligible pensioners to the aged

ε = Evasion Rate the ratio of labour force evading participation

LFP = Labour force participation rate

U = Unemployment rate

and $\frac{Aged}{LF_{potential}}$ = *demographic old age dependency ratio*

The precise formula for the above being:

(3) $$\frac{P_{eligible}}{E_{formal}} = \frac{Aged_{pop}}{LF_{pop}} \times ER\left(\frac{LFP}{U} + \frac{1}{\varepsilon}\right)$$

we may define X as the systemic adjustment:

where $X = ER\left(\frac{LFP}{U} + \frac{1}{\varepsilon}\right)$

$\therefore$ It can be derived from (2) and (3) that

(4) $$X \times \frac{Aged_{pop}}{LF_{pop}} = \frac{T_{payroll}}{R_{wage}} \times \frac{W_{current}}{W_{past}} \times \frac{1}{i}$$

When the pension is fully indexed to real wages (4) reduces to

(5) $$X \times \frac{Aged_{pop}}{LF_{pop}} = \frac{T_{payroll}}{R_{wage}}$$

B. Calculating Pensions in a fully funded defined contribution system

Due to the nature of the system it is true by definition that:

accrued value of life time contributions = discounted value of total benefits

i.e.

(6) $$W \times T_{payroll} \times E_{years} = W \times R_{wage} \times P_{years}$$

Where

W = a weighted average of real wages during working life

P_{years} = average number of years spent as $P_{eligible}$

E_{years} = average number of years spent as E_{formal}

And for simplicity, interest rate is assumed to be equal to inflation.

$\therefore$ It can be derived from (6) that

(7) $$\frac{P_{years}}{E_{years}} = \frac{T_{payroll}}{R_{wage}}$$

where $\frac{P_{years}}{E_{years}}$ = passivity ratio

In comparing equation (5) and (7), we find that the effect of the demographic dependency ratio in the case of a pay-as-you-go system is analogous to the effect of the passivity ratio in the case of the fully funded defined contribution scheme.

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