

Population Ageing, Elderly Welfare, and Extending Retirement Cover: The Case Study of Sri Lanka

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Acronyms

AAIB	Agrarian and Agricultural Investment Board
APPF	Approved Private sector Provident Funds
CB	Central Bank
CFS	Consumer Finance and Socio-Economic Survey
DCS	Department of Census and Statistics
DoP	Department of Pensions
EPF	Employers' Provident Fund
GAD	Government Actuaries Department
HMT	Her Majesty's Treasury
HPP	Health Policy Programme
IPD	Implicit Pension Debt
ISIC	International Standard Industrial Classification
OECD	Organisation for Economic Co-operation and Development
ILO	International Labour Organisation
IPS	Institute of Policy Studies
IMF	International Monetary Fund
LFS	Sri Lanka Labour Force Survey
NGO	Non-Government Organisation
NPV	Net Present Value
PAYGO	Pay-As-You-Go
PSPS	Public Sector Pension Scheme
SLIS	Sri Lanka Indicators Survey
SSB	Social Security Board
UN	United Nations
USP	Universal State Pension
WAP	Working Age Population
WOP	Widows and Orphans Scheme

Executive Summary

Context of Research

Population ageing is a process no longer confined to industrialized countries. Demographers expect most of the growth of the world's elderly population during the next 50 years to occur in developing countries. A distinctive feature of ageing in these countries, likely to present additional developmental challenges, is the rapidity of the ageing process expected. Many less advanced economies are ageing at a much faster rate than that witnessed in OECD economies, and also at a much earlier stage of their economic development, placing them at a greater disadvantage in terms of their ability to respond to ageing pressures. Not only will the political timeframe available to formulate and implement policy responses be shorter, but the availability of financial, institutional and technical resources and capacities to respond to ageing pressures are currently more limited.

Low-income countries with the most severe ageing pressures are those whose social policies covering health and education have achieved successful developmental outcomes, as reflected by reductions in infant mortality and fertility levels, improvements in nutritional status of the population, and universal access to education and healthcare. Despite these advances, ageing is occurring at a time when social security coverage has not – by a large margin – achieved comprehensive coverage and where formal retirement institutions are limited in coverage to a minority of the better-off elderly. In addition, traditional institutions in the form of filial systems of protection, which have supported the elderly in the past, are gradually eroding due to out-migration, a progressive reduction of family size and an increase in the participation rate of women in the workforce.

Research Questions

Despite the expected growth in elderly populations in low-income countries, international research on elderly welfare is currently limited. The following analysis aims to fill some of these gaps. Gaps in knowledge stem from a combination of factors, including a lack of general awareness of the problem and a lack of importance attached to it. Practical considerations, in terms of the non-availability of comprehensive survey datasets, have also been contributory factors.

Sri Lanka provides a unique case study for reviewing the ageing problem. Not only is the population ageing at a rate unprecedented in the world, but good quality time series data covering income, expenditure and labour force status of the population are available. This paper addresses the following:

- What are the expected demographic developments in Sri Lanka?
- What is the current status of the elderly relative to other groups?
- What are the current systems of retirement protection, and how adequate are they?
- What are the gaps in coverage, and what options are available to extend access affordably?

Key findings

Ageing and dependency

Sri Lanka's old age dependency ratio has progressively increased over the last 20 years and is expected to double over the next 20. By 2040 demographers forecast that one in three of the population will be aged 60-plus. Although these changes constitute a significant development, the implications for growth and income distribution may not be quite as dramatic as these statistics imply. The old age dependency ratio, although informative in describing changes in a country's age composition, does not provide a reliable indication of the economic effects of ageing. A better measure of the latter can be obtained with reference to a country's economic dependency levels, where the numbers of dependants (non-working adults and children) are measured relative to those who are economically active. Despite the progressive increase in the level of age dependency, Sri Lanka's level of economic dependency has remained stable over the last 10 years. This is principally due to the lack of comprehensive social security coverage in the country, which has obliged individuals to work longer in response to rising life expectancy. Although a positive development and one that should be encouraged, over time, as the ranks of the very elderly increase, formal social security systems will need to be strengthened if the welfare of specific elderly sub-groups, including the very elderly without filial support, the elderly lifetime poor and the disabled, unable to work or save adequately for retirement, is not to be compromised.

A country's level of economic dependency – unlike the general dependency measure – is significantly more malleable and responsive to policy intervention. This is principally related to the impact that government policies can have on the denominators of the equation – the labour supply and productivity performance. Many OECD countries are currently responding to ageing pressures via efforts to lower economic dependency levels by means of parametric reforms to pension schemes, including the introduction of incentives as well as directives to progressively raise retirement ages and contribution levels and to reduce benefit levels. In addition, many OECD countries are sourcing labour from outside their borders, including through skilled migrant programmes and other immigration policies to boost their labour supply potential. Such policies, although important in maintaining the economic welfare of the host country, can have a beggar-thy-neighbour impact on source countries, particularly when these migration channels are permanent and targeted at skilled workers. Such policies, geared to meet domestic skill shortages in OECD economies, act to accelerate further ageing pressures in low-income countries.

Temporary migration, by contrast, can confer economic benefits to source countries. Temporary out-migration from Sri Lanka has increased the income-earning potential of many workers, augmented foreign-exchange earnings via remittances and increased the effective labour force participation rate of women. The knowledge and skills acquired by migrants working abroad can be deployed in the domestic workforce on their return, acting to increase the stock of skills – and productivity – in the domestic economy. One million temporary migrants living and working in the Middle East and other countries in the region have augmented Sri Lanka's effective labour supply by making available work opportunities for women. Approximately 80 percent of migrant workers are women, many of whom, due to domestic commitments and lack of flexible working opportunities would have remained outside the labour force. Despite the economic benefits derived, emigration is not without costs in particular social costs in the form of the dislocation of families which particularly affects the children who remain in Sri Lanka.

North- South ageing dynamics

Higher levels of economic dependency in low-income countries are attributed to larger shares of children in total populations and a larger proportion of women outside the labour force. The

average participation rates of women in Sri Lanka, India and Bangladesh are 32%, 30% and 8% respectively. This compares with rates of 68%, 64% and 72% in the UK, Germany and the US. Although social and cultural factors play a role in accounting for these differences, the broader policy environment, including the lack of labour market flexibility, is also an important contributory factor. Policies in low-income countries should acknowledge these differences and aim to facilitate the entry and re-entry of women into the workforce.

Higher levels of economic dependency in advanced economies – both now and in the future – are related to the larger share of the non-active elderly in the dependent population. North-South ageing dynamics will therefore proceed on divergent paths. Developing countries, including those in South Asia can be expected to experience downward pressures on economic dependency levels over the next 30 year period as children progress into the working age population and augment the labour supply potential. With appropriate policy intervention a progressive increase in the number of women in the work force will also yield beneficial effects on per capita income. In addition, as the ranks of the elderly electorate expand creating a demand for more comprehensive social security coverage, a contraction of the labour supply is likely to be felt among older age cohorts creating upward pressure on economic dependency. Despite these considerations, the net effects should act to check the growth of economic dependency. A simulation exercise forecasts that Sri Lanka's economic dependency levels will remain broadly stable until 2050, rising thereafter as the currently lower fertility levels feed through as a smaller working age population. Economic dependency will rise more rapidly than forecast where retirement coverage expands and in a situation where the growth of the labour force is unable to absorb the growth of the working age population. By contrast, economies in the North will experience significant upward pressures on economic dependency levels as working age populations enter retirement, contracting the labour supply.

Rising levels of economic dependency do not, however, automatically compromise a country's standard of living. Where such increases are matched or exceeded by the growth of output, welfare, measured by per capita incomes, can be maintained. The level of economic dependency, in addition to its relative growth, can therefore have important implications for per capita income levels. *Ceteris paribus* the higher a country's economic dependency, the lower a country's in per capita income for any given level of output growth, and the smaller the real gains conferred on the population.

Regardless of the expected ageing developments, Sri Lanka's level of economic dependency is consistent with that of other countries in the region including India, Bangladesh and Pakistan and far exceeds the level in many OECD countries which have been ageing for some time. Policies to respond successfully to ageing pressures therefore involve lowering a country's economic dependency through measures aimed at augmenting the labour supply and enhancing productivity. The labour supply can be augmented by increasing the number of years in work the retirement age and levels of worker participation, reducing unemployment rates and increasing the working age population (positive net migration).

A credible avenue for Sri Lanka to explore, and for policy interventions to target, includes policies aimed at increasing the labour force participation rate of women. The female participation rate is low (32%) in relation to per capita income and the educational attainment of women, and compares with an average of 66% for men. Such a gender gap stems from cultural and social factors but also from the lack of flexible working opportunities in the labour market to allow workers to combine career and domestic aspirations. The introduction of family-friendly policies including increasing part-time working opportunities would be highly relevant in this respect. It has been estimated that a 20% increase in the labour force participation rate of women could reduce economic dependency levels by as much as 40% over the 2001-80 period, with positive repercussions for output and competitiveness.

Elderly welfare

Evaluation of household survey data sets reveals that many elderly people continue to remain economically active until late into their lives, many have multiple income sources and 90% live in multiple-person households. As a result, the incidence of poverty amongst the elderly, or more accurately households with elderly, is below the national average. By contrast, poverty incidence amongst households with children is significantly above the national average even after incomes are equalized for household size and composition. Consistent with the poverty profile of the population as a whole, elderly poverty has a strong spatial dimension. Poverty amongst rural and estate elderly – measured by the poverty head count – is 16% and 50% respectively compared with a 4% rate for urban elderly. Sources of income were seen to change significantly with ageing: income from employment declines whilst that from transfers, including pensions, government and family, increase their share of the total. Given the limited degree of social security coverage, the family, as expected, provides a significant pillar of support to current retirees. This is unlikely to remain a viable option in the future, however, as average household size continues to decline, placing greater inevitable demands on formal mechanisms of protection.

Retirement coverage and adequacy

Retirement systems currently cover 25% of Sri Lanka's working age population; the vast majority of the population do not have formal social protection for old age. And those who are covered, a large proportion are located in the top two income quintiles, suggesting that Sri Lanka's retirement system does not adequately meet the needs of the poor.

A large proportion of those not covered are outside the labour force, the majority (70%) of them women. These statistics highlight the prevailing gender bias in access to social security in Sri Lanka, as in many other low-income countries. All schemes as they are currently designed are employment-based, which by definition excludes those outside the labour force – principally women, yet the majority of the very elderly both currently and in future (80%) will be women. Policies to expand social security coverage are likely to disproportionately benefit women and their welfare in old age.

Extending access

Although Sri Lanka's social security coverage is high by regional standards it is low in relation to per capita income. Historical experience suggests that few countries has achieved comprehensive coverage in the absence of some mechanism to redistribute income from the working to the non-working population and from the lifetime wealthy to the lifetime poor. Empirical work in countries introducing universal or near universal coverage have found that pension provision for the elderly, even in a situation where cash injections are small, can confer significant improvements in the welfare of recipients. Introduction of the old age pension in the Indian states of Tamil Nadu and Kerala for example, had a positive impact on the nutritional status of beneficiaries. In South Africa the old age pension, contrary to popular belief, has successfully crowded-in family support, rather than supplanting it. If the welfare of future generations of elderly is to be maintained, the Sri Lankan government will need to develop a strategy that explicitly recognizes the need for redistribution to elderly groups. As ageing progresses expansion of retirement coverage is likely to become a political as well as an economic necessity as the size of the elderly electorate increases. Such political pressures should not dictate the speed and the level of coverage of such policies, whose design should be informed by affordability and the relative poverty reduction impact.

Despite progressive ageing, policies to enhance the status of the elderly must be informed by the relative economic situation of the elderly versus other groups in the population. Welfare programmes for the elderly have an opportunity cost in terms of fewer resources available for children, the disabled and the unemployed. The report evaluated, through modelling work, the

relative impacts of two alternative policy options on the poverty head count: a universal child benefit versus a universal age benefit. The former was found to reduce the poverty head count to a much greater degree (45% compared with 8%) mainly because of the higher poverty incidence amongst households with children. Priorities for social security coverage should therefore be carefully assessed and channelled at the margin to maximize both growth and equity objectives in a manner affordable to the government.

Achieving comprehensive coverage need not compromise fiscal sustainability or growth objectives. A realignment of existing resources could free the necessary revenues required to extend coverage. Sri Lanka already has a sizeable social assistance programme, the cost of which exceeds the health budget. Samurdhi – the government’s main poverty alleviation programme – covers 55% of the population, a large proportion (75%) of who are non-poor.

Alternatively, an expansion of social assistance programmes could be financed by progressively increasing the tax to GDP ratio. Modelling work increasing its ratio from the current level of 17% to 30% of GDP by 2050 could reduce the public sector wages and pensions bill as a share of recurrent revenues from the current level of 47% to 26% by 2050, even under the most generous scenario of wage-indexing pensions and public sector salaries and despite a 30% increase in pensioner numbers. Despite popular belief, therefore, the public sector pension scheme will not create unsustainable burdens on the budget if it is index-linked to wages.

Conclusion

Regardless of future population ageing developments, Sri Lanka’s economic dependency levels, consistent with those of other countries in the region, far exceed those of many OECD countries – including Japan whose share of elderly is the highest in the world. The current levels place unnecessary burdens on the population, acting to lower potential output. Policies to augment the labour supply should form a central strategy to lower economic dependency levels and respond to ageing pressures. Policies to enhance labour productivity ranging from macroeconomic stability and investment in physical and social capital to consolidation of the peace, are all relevant in responding to ageing pressures and accelerating the country’s growth potential.

The analysis has found that Sri Lanka’s contribution-based retirement system has currently reached its limits. If Sri Lanka is to achieve comprehensive coverage it will need to do so via redistributive policies that transfer income from workers to non-workers. A universal pension benefit was evaluated as unaffordable in the medium to long term, due to a tripling of the elderly population by 2050. A means tested benefit would, however, provide a credible alternative. The means test would need to be set at a generous level, at least initially, and guided by affordability, in order, both to limit the growth of inequality and disincentives to save among low-income workers.

Before an extension of social assistance can proceed, Sri Lanka needs, as a priority, to reform its current programme, to better target government resources on those most in need. The introduction of an age-related pension – whether means-tested or universal – is likely to have negative implications for economic dependency levels and the labour supply, particularly among older age cohorts who, in the absence of social assistance, would continue to work. Such trade-offs will need to be acknowledged, if policies are to remain fiscally sustainable; however, the continued expansion of the country’s working age population will act to counterbalance this. The introduction of a universal child benefit was evaluated as having a more powerful impact on the poverty head count than a universal pension. Relative poverty effects could be expected to change in future, however, as the share of the elderly increases and that of children declines: such relative effects should be evaluated on a regular basis and monitored to guide policy decisions.

Chapter 1: Ageing Development, Economic Effects and Policy Responses

1.1 Introduction

Population ageing is a process no longer confined to industrialized countries. Many developing countries are now also experiencing ageing of their populations – reflected by the rising share of the elderly in the total population. Not only are developing countries ageing, they are ageing at a much faster rate and at a much earlier stage of economic development, thus placing them at a greater disadvantage in terms of their ability to respond to ageing developments. The availability of domestic resources, for example, to finance ageing pressures on public finances and public services are likely to be more limited. In addition, the political timeframe available to formulate and implement appropriate policy responses will be shorter. Developing countries are confronting ageing pressures at a time when social security coverage is still limited to a minority of the better-off elderly population, and when the filial systems of protection which have supported the elderly in the past are gradually eroding.

This chapter will review demographic developments at global, regional and country levels with a specific focus on the Asian region. Expected changes to the underlying demographic drivers, fertility, life expectancy and migration, and the causes of these changes will be elaborated. The final section assesses the policy implications for countries.

1.2 Global Population Developments

The world's population is projected to grow by 50% over the next 50 years, from 6 billion currently to 9 billion people by 2050. Asia will be the main contributor to this growth, accounting for 60% of the increase, followed by Africa (Rajan et al., 2003). The absolute increase in population size masks dramatic changes in age composition. During the next 50 years the percentage of elderly- those aged 60 plus – in the total population is expected to more than double from 10% to 20%. For the first time in history the number of elderly will surpass the number of children aged 14 and under. Among the elderly population, it is the oldest age group (i.e. those aged 80 and over) whose rate of increase will be most rapid, increasing in size from 70 million to 320 million by 2050 (an increase of 350%). Ageing is now universal in its coverage¹ and no longer confined to advanced economies.

1.3 Determinants of demographic change

Changes in a country's demographic structure are principally related to changes in one or a combination of the following demographic drivers: changes in life expectancy, fertility rates and/or net migration levels. The most salient development during recent years has been the progressive increase in life expectancy and the reduction in fertility levels at both country and global levels. The more rapid pace of ageing in developing countries is explained by concurrent changes in these indicators, whilst the slower ageing economies in the West experienced declining fertility only after a lag following improvement in life expectancy.

Despite the absolute increase in population, all regions in the world will experience a slowing of population growth rates, due to a global decline in fertility levels from an average of 5.4 to 2.7 children per woman since the 1950s, projected to decline still further to an average of 2.3 children per woman by 2030 (UN Population Report, 2002). This current and continuing development is attributed to the greater availability of contraception, the education of women, the rising opportunity costs of childbearing related to the participation of women in the workforce, and the

¹ Sub-Saharan African countries are an exception to this because of the HIV/AIDS epidemic

availability of social security reducing the demand for children. Despite the trend reduction in fertility rates, countries and regions continue to exhibit significant variations in fertility levels. African fertility rates continue to remain high and are currently three times the European level (5.4 as compared with 1.7 children per woman), although rates in many African countries have started to decline. Falling fertility in many countries (including Sri Lanka) to levels below the replacement rate (2.1 children per woman) has been the principal driver of population ageing.

With the exception of some sub-Saharan African countries, because of the AIDS epidemic, life expectancy has increased on a universal basis. In the near term, this trend is expected to continue.

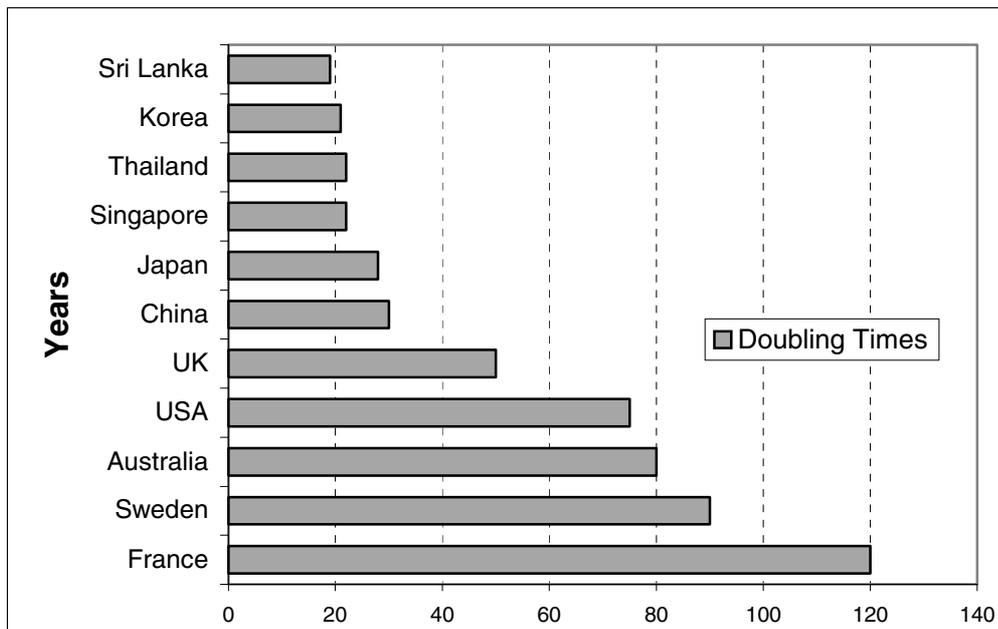
Migration both within and between countries has seen a progressive increase during the last few decades. This is related to a number of factors, including greater regional and internal conflicts but also greater migratory opportunities as policy barriers to migration have been relaxed, and in some countries migration has been (Middle East and OECD countries) actively encouraged to fill specific skills shortages, with implications for both source and recipient economies. Net migration flows are subject to a high degree of volatility, making them the most variable input into population projections. The levels of outflows and inflows are sensitive to a range of both push and pull factors including the relative economic performance of importing and exporting countries, and changes in migration policies acting to facilitate or impede the ability to migrate. The OECD economies are increasingly resorting to targeted or managed migration schemes to augment their declining working age populations.

1.4 Pace of ageing

As mentioned above, ageing is progressing at a much more rapid rate in low-income countries. An index used to measure the rate of ageing is the doubling time which measures the time required for a country to double the percentage of elderly in total population. Doubling time has taken between 45 and 135 years in the OECD countries. For example, while the doubling time in France and Sweden was 120 and 80 years respectively, the comparable figure for the UK was 50 years (Rannan-Eliya et al., 1998).

East Asian countries are expected to double their dependency ratios in even less time. Estimates for Japan, Thailand and Singapore are 30, 28 and 22 years respectively. Sri Lanka's doubling time is projected to take slightly less than two decades – currently the fastest rate of ageing in the history of the world (see Figure 1).

Figure 1: Doubling times for selected OECD and Asian countries



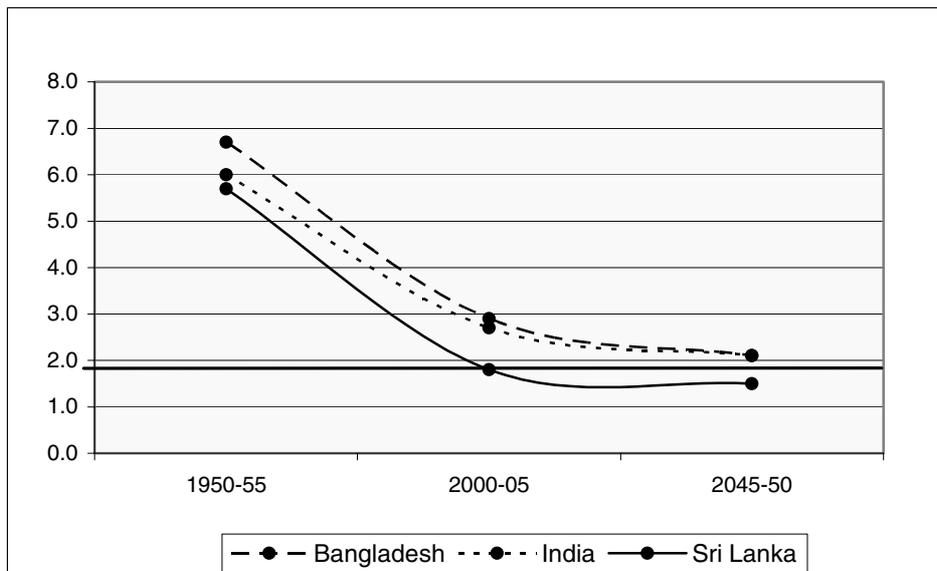
Source: IPS (1998)

The countries ageing most rapidly are those which are most successful in extending universal access to basic services such as education and health care to their populations, allowing progressive and rapid reductions in infant and maternal mortality rates. Although this is highly desirable, ageing is occurring in low-income countries at a much earlier stage of economic development relative to the slower ageing OECD economies. Sri Lanka, for example, will have the third oldest population in Asia and the largest share of elderly in the world relative to its income status by 2025. This is likely to create additional pressures on already limited resources in low-income where countries tax bases are narrow and social security provisions will need to expand to meet the growing elderly populations of the future.

1.5 South Asia demographic profile

An important explanation for the different speed of ageing in the Asian region is the different speed of fertility decline. Fertility rates in Southern Asia were uniformly high in the 1950s, however, by 2001 Sri Lanka's fertility rates had fallen below those of its neighbours India, Pakistan and Bangladesh. Sri Lanka attained replacement fertility in 1993, eight years before the official estimates, making it the poorest country in the world to have achieved below replacement fertility.² For comparison, India and Bangladesh are not expected to reach replacement fertility until 2015-20 (see Figure 2). Rapid fertility decline is attributed in Sri Lanka to several factors including increased number of educated women, the more equitable access and coverage of health care, the participation of women in the workforce, and the structural shift of economic activity and hence job opportunities, following liberalisation, from agriculture to the service sector, all acting collectively to reduce the demand for large families. These developments have proceeded at a much faster rate relative to Sri Lanka's regional counterparts.

² Replacement fertility is defined as the level of fertility required to maintain a stable population. Fertility below the replacement level, in the absence of net migration or rising life expectancy, results in a reduction in the size of a country's population.

Figure 2: Total fertility rates, South Asia 1950-2050

Source: UN Population Projections (2002)

The South Asia region has experienced a progressive increase in life expectancy over the last half-century. Again, Sri Lanka leads other countries in terms of performance against this demographic indicator. Life expectancy at birth is expected to rise in Sri Lanka from 73 to 75 years for males and from 76 to 80 years for females over 2000 and 2025 period. These figures are only slightly behind those of OECD countries.

It is important for policy-makers to be aware of the gender dimension of the ageing process. Ageing will result in the growth of the elderly population, but more specifically of the female elderly population. Currently 80% of Sri Lanka's very elderly, i.e. those over 80 are women, the vast majority of whom are widowed. This situation is explained by women's higher life expectancy, coupled with their tendency to marry older spouses. These statistics highlight the disproportionate burden of ageing placed on women, not simply because of their greater longevity but also related to their lower incidence of social security coverage. Policies targeted at the elderly are therefore likely to benefit women disproportionately while at the same time acting reduce the current gender bias in access and coverage of social security provision.

1.6 Ageing and dependency levels

Recent projections by De Silva (2003) forecast that the share of Sri Lanka's elderly (60 plus) population - referred to as the old age dependency ratio - will increase from 10 per cent currently to 20% share by 2020. This compares with an average of 13% for South Asia as a whole. By 2040 almost one-third of Sri Lanka's population will be aged 60 plus (see Table 1).

Table 1: Growth of Sri Lanka's elderly population: 2001-46 (%)

	2000	2020	2040
Old Age Dependency	10	18	27
Dependency	55	63	76

Source: De Silva, 2003

An alternative statistic – the dependency ratio (which measures both the young and the old as shares of the remaining population) – is expected to increase in Sri Lanka from 55% currently to 76% by 2040. A dependency ratio of 50% implies 2 people of working age currently supporting 1 dependant. As the ratio increases to 100% the relationship becomes one to one. The youth dependency ratio (those below 15 years as a share of the total population) is, in contrast, expected to decline from 33% to 19.5% between 2001 and 2031 (De Silva, 2003).

Due to changing retirement behaviour and changes in unemployment and labour force participation rates, the dependency ratio is unlikely to provide an accurate measure of the economic burden of an ageing population. A preferred measure is therefore the economic dependency ratio, which measures the number of dependants as a proportion of the labour force or those in active employment. Sri Lanka's level of economic dependency is significantly higher than the overall dependency levels (consistent with other developing countries), principally because of lower female labour force participation rates and larger shares of children in the population. The gap between the two indicators is 85%, compared with a 19% gap in the UK (see Table 2 for international data comparisons).

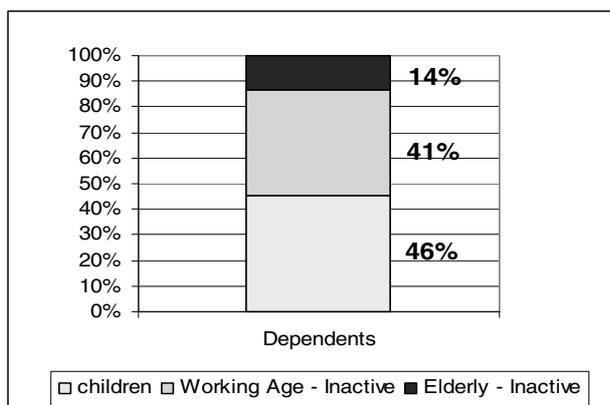
Table 2: Economic and overall dependency levels (%)

	Dependency	Economic Dependency	Gap
Sri Lanka	55	140	85
UK	53	72	20
US	51	75	24
Japan	46	62	16

Source: LFS, DCS, Sri Lanka, OECD (2000)

High levels of economic dependency act to lower welfare by reducing per capita incomes. Figure 3 breaks down the Sri Lankan dependent population into three components; the proportions accounted for by children, the elderly (over 60) and those of working age but not working. Approximately 40% of dependants are of working age but not working, while a further 46% are children. The elderly constitute only a 14% share of the dependent population in Sri Lanka. This contrasts with OECD countries whose dependent populations are predominantly accounted for by the non-working elderly.

Figure 3: Percentage breakdown of Sri Lankan dependent population



Source: Derived from LFS data and De Silva (2003)

Note: (1) Elderly defined as those 60 plus

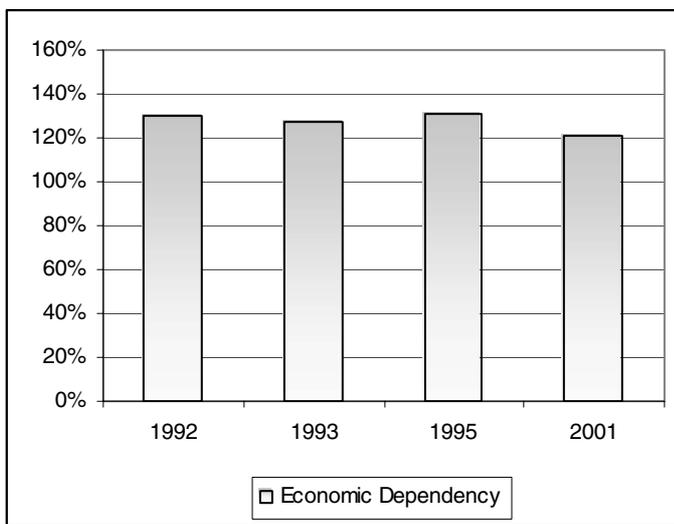
(2) Working Age Population defined as those above 15 and below 60

Despite the progressive increase of Sri Lanka's dependency ratio and life expectancy levels, the level of economic dependency has remained relatively unchanged over the last 20 years (see Figure 4). Unlike many OECD countries, where economic dependency has risen sharply (and is

projected to increase further), economic dependency in low-income countries has not witnessed dramatic changes, owing to the immaturity of their social security systems, the funded nature of private pensions schemes, and the absence of universal pension benefits, which has required people to work longer to meet their social security requirements in old-age.

Although increases in life expectancy should be matched by increases in years worked in order to maintain welfare to reduce the burden on those in work, the lack of comprehensive systems of social security for the elderly in Sri Lanka is likely to compromise the welfare of certain elderly sub-groups both now and in future. These groups include elderly women, who because of domestic responsibilities were not able to acquire rights to employment based social security schemes, the disabled and the life-time poor unable to work or save adequately for retirement. In the absence of formal systems of support, the growth of the elderly population, compounded by the erosion of informal care, is likely to result in an increase in the vulnerability of elderly groups.

Figure 4: Economic Dependency Levels 1992-2002



Source: Derived from LFS data, 1992-2001

1.7. Economic effects of ageing

Ageing is expected to affect both the supply side and the demand side of the economy. The impact of ageing on the supply side can be evaluated in terms of its impact on the determinants of growth – the labour supply, capital and productivity performance. Demand-side effects are expected to change the pattern of demand for services (for example, education, transport, housing, criminal justice, and health care and long-term care) and the composition of public finances.

The standard production function illustrates the principal determinants of growth on the supply side:

$$Y = AL^{\alpha}K^{\beta} \quad (i)$$

The above equation relates output (Y) to inputs of capital (K) and labour (L), and technical progress or productivity (A) (the effectiveness with which capital and labour translate into output). Both theory and empirical work suggest that ageing is likely to have direct (and indirect) effects on all three determinants of growth. The anticipated effect of ageing on each factor will be reviewed briefly, drawing on the literature.

1.7.1 *The Labour Supply (L)*

The size and structure of a country's current and future labour supply depend upon several factors, including demographic changes, the participation rate or willingness of groups of people to join the labour force, net migration patterns, hours worked and the length of their working life in addition to its quality (skills and work habits).

A feature of population ageing apparent in OECD countries, and likely to emerge in the developing world, is the reduction in both the absolute and then relative size of the working age population. A reduction in the size of the working age population due to changing demographics will have repercussions for the supply of labour in the absence of changes in participation rates. To help understand this relationship, equation (ii) disaggregates economic growth into its two constituent components: the growth of worker productivity and the growth in the labour force. Economic growth is derived as the sum of these two variables, i.e. the rate of output growth is directly related to the growth in the number of workers plus the growth in their productivity.

$$\Delta Y = \Delta A + \Delta E \quad (\text{ii})$$

Where Y = GDP Growth, A = Productivity Growth, W = Employment Growth, Δ = Change

The high growth performances of South-east Asian economies during the 1990s can be attributed as much to an expansion in the number of workers in the national labour force as to improvements in worker productivity (output per worker). Even in slower growing economies such as the UK, employment growth accounted for a substantial part (over one third) of output growth, while productivity growth accounted for almost two-thirds of total output growth (HMT, 2000). Given the expected decline in the size of countries' working age populations in both relative and absolute terms, population ageing will (in the absence of improvements in productivity performance) result in a decline in labour supply and economic growth (although not necessarily per capita growth).

Population projections by De Silva (2003) suggest that Sri Lanka's working age population will continue to grow for at least two decades, with a positive bearing on the size of the countries' workforce during the intervening period. The size of a country's labour force is, however, sensitive to other factors, in addition to changing demographics. Labour supply may not increase as rapidly as working age population, if hours or years worked decrease, if labour force participation rates contract, and/or the level of net out migration rises. The point at which the working age population declines will be sensitive to changes in these other factors. This is a very real possibility in a situation where economic activity is unable to absorb the expansion of the working age population. In more mature OECD economies the labour supply is observed to decline more rapidly than the working age population. Policies to reverse the decline have included parametric changes to pension systems to encourage workers to postpone retirement. Postponing retirement effectively increases the size of a country's working age population (and therefore its labour supply). Alternatively, a country can augment its labour supply by raising worker participation. Although such a policy option is now limited in OECD economies, it remains a real possibility in Sri Lanka, where labour force participation rates of women, remain low by international standards (see Table 3).

Approximately 10% of Sri Lanka's overall national workforce are temporary migrant workers. The absence of such workers from the Sri Lankan economy acts to nominally increase the level of economic dependency, as migrant workers are not classified as part of the country's labour force. However, such a definition may raise economic dependency artificially, given the significant contribution migrants make to the Sri Lankan economy via the remittance of wages and the supply of foreign exchange. For example, it has been estimated that migrant workers account for more than 17% of national savings, and 20% of foreign-exchange earnings (Central Bank Statistics,

2003). Sri Lankan migrant workers have therefore enabled the country's population to enjoy a higher standard of living than would be the case, had they remained at home.

Table 3: Female participation rate by region

OECD (2000)	Participation Rate (%)	SE Asia (1995)	Participation Rate (%)	South Asia (’95,’00)	Participation Rate (%)
UK	68	Malaysia	52	Sri Lanka	32
Germany	64	Thailand	67	Pakistan	16
US	72	Korea	65	India	30
Finland	72	Mongolia	75	Bangladesh	8

Source: OECD (2001), World Bank (1995)

1.7.2 Productivity (A)

Mirroring the increase in the median age of the population, population ageing will result in an increase in the median age of the workforce. Such a development is expected to have a positive bearing on productivity, as the stock of skills and work experience rises over time. Empirical evidence suggests a strong link between qualifications and skills (and experience) and productivity performance in an economy. The extent of the gains will, however, be dependent upon complementary investment in physical capital.

A shrinking labour force may have a positive impact on productivity through changes in the capital-labour ratio, in addition to a skills effect. If, for example, labour becomes scarce and costly relative to capital, firms will have an incentive to substitute capital for labour or to make labour-saving technical or organisational improvements. Cutler et al. (1990) suggest that incentives to innovate are strongest when labour is scarce, thus supporting the ‘scarcity is the mother of invention’ argument. The changing age composition of the workforce coupled with its relative scarcity over time should therefore have beneficial effects on unemployment rates, marginal productivity and wages. Ageing can thus confer important economic gains to a society as well as creating economic challenges.

1.7.3 Capital (K)

The life-cycle hypothesis predicts that, as individuals and societies age, savings rates decline as the relative share of individuals dis-saving in the population – principally to finance retirement – increases. If savings behaviour is consistent with the theory, all else being equal, savings rates would be highest when labour force to population ratios are high. Conversely, national savings rates would be lower when a large percentage of the population is either very young or above retirement age. However, a number of factors may mitigate this effect: as people live longer, they need to save more during their working life for retirement, acting to increase saving rather than reduce it, or at least act to counterbalance a relatively larger share of elderly dis-saving. A longer life in retirement means that people are likely to draw down their savings more gradually, and, finally, not all savings is done for retirement; people save for other reasons.

Another limitation of the life-cycle model is the focus on household savings behaviour, but household saving is only a small proportion of aggregate saving. In the UK, for example, household saving in 2000 was 3.5% of GDP, corporate savings 9% and government savings 3.5%. Under an ageing scenario governments are likely to dis-save, because of increases in age-related spending in

the budget including social security and health care. The effect of ageing on corporate saving is more uncertain. A strong link between household and corporate saving is required for life-cycle effects to drive aggregate saving.

The absence of such a link is confirmed by the wide range of estimates of savings rates in countries exhibiting similar ageing profiles. Under these circumstances ageing may not result in an aggregate fall in savings, with attendant rises in the cost of capital (assuming unchanged demand for capital and constraints on capital inflows) and a dampening of investment demand and growth. Even if a savings-investment gap emerges, access to international capital may well provide the necessary stop-gap. The impact of ageing on savings is therefore likely to be much weaker than the predictions of the life-cycle hypothesis.

1.7.4 Demand side – public finances

The lower tax base implied by a declining labour force may limit the growth of tax revenues, potentially creating fiscal pressures in the future, in a situation where age-related spending in the budget is expected to increase.

Fiscal pressure arising from ageing are not, however, a certainty. The extent to which fiscal pressures emerge will depend mainly upon two factors: the amount of intergenerational transfers within the budget (including pensions, health care, and social services), and the growth of economic dependency relative to wider growth in the economy. If economy-wide growth exceeds the growth of economic dependency, these pressures can be contained (assuming, of course that age related spending does not grow in excess of GDP). As mentioned in the previous section, the level of economic dependency in Sri Lanka has remained broadly stable over time; however, an expansion of unfunded social security coverage, may lead to a gradual increase in economic dependency levels in the future.

Developing countries have an important advantage over OECD countries in terms of their ability to cope with more rapid ageing. The onset of ageing at an earlier stage of economic development may have certain advantages in the sense that younger economies have greater propensities towards higher economic growth, due to the continued expansion of working age populations, making rising age-related spending (including an expansion of social security) affordable. Containment of costs will be dependent, however, on the ability of the government to tax additional output growth effectively.

Fewer young people may confer budgetary savings (in education and child benefits) and offset increases elsewhere, although the high fixed-cost element associated with the delivery of services may limit the extent of these gains. Ageing, on balance, in the absence of rapid economic growth, may pose budgetary challenges for low-income countries whose tax bases are already low (Sri Lanka's tax base is 16% of GDP as compared with the OECD average of 40%), and expenditure commitments (including social security provision) need to expand to meet development and poverty reduction objectives.

1.8 Policy Responses to Population Ageing

As described above, ageing is likely to affect all the determinants of growth. The most direct and immediate effect will, however, be felt via changes in a country's labour supply. In the absence of countervailing policy measures, a reduction in the labour supply will have direct effects on output by reducing the availability of labour input, but will also affect the other determinants of growth indirectly. As the labour supply declines the level of domestic savings is likely to be affected ceteris paribus, increasing the cost of capital, in the absence of international capital inflows, potentially lowering investment and output. On a positive note ageing is expected raise productivity performance as the stock of skills and experience increase in the economy.

Policies to expand the labour supply are likely to have multiple benefits. As people increase their hours or years of work, they will save for a longer period of time, and dis-save for a shorter period. Augmenting savings increases the funds available for investment, thus lowering the cost of capital and increasing investment demand particularly where access to international capital is constrained. Measures to increase the labour supply through policies to raise the retirement age are expected to have a positive effect on productivity performance. Provided that older workers are given appropriate incentives during their final working years, increasing the stock of experienced workers will act to enhance the average productivity performance of the workforce. Increasing the number of people in work or the hours worked expands the tax base, while simultaneously reducing the transfer of income to those out of work (in the form of welfare or pension outlays). Under such circumstances more workers relative to dependants can enable countries to manage ageing pressures better on the demand side. Such results therefore justify the current focus on the labour supply and the targeting of government policies to augmenting the labour supply potential.

As discussed above, labour force trends are a critical variable not only affecting social security coverage but also as an important policy response to population ageing. Despite the steady increase in Sri Lanka's old age dependency ratio, the level of economic dependency has remained broadly unchanged during the past decade. This is principally related to two factors; an increase in average years worked and a rise in the labour force participation rates of workers (principally women). These two developments have augmented Sri Lanka's labour supply potential (the denominator of the economic dependency ratio) at a rate equivalent to the rise in the number of dependants. As a result, the level of economic dependency (currently 125%) has remained static.

With the absence of comprehensive old age security and social assistance for the elderly in Sri Lanka, as life expectancy, and importantly healthy life expectancy, increases, people are obliged to work longer to maintain economic and social welfare levels. In countries where incentives to encourage workers to continue working do not operate, ageing can create unsustainable burdens for the population as a whole. This is principally the case in many OECD countries where the introduction of parametric changes to PAYGO pension systems, including, raising the retirement age, has encountered political problems. Such resistance will – without further reform – create unsustainable pension liabilities for governments.

The economic dependency measure can provide a useful framework to inform government's policy responses to population ageing. As a rule of thumb, age-related pressures can be contained in a situation where the labour supply (denominator) expands at a rate equivalent to, or greater than, the growth in the number of dependants (numerator).

Policies to augment a country's labour supply can provide a powerful antidote to the effects of population ageing. An increase in labour the supply can result from an increase in one or a combination of the following factors: years and hours worked; participation rates; working age population (demographic factors); labour productivity; positive net migration³; and the retirement age; and a reduction in unemployment rates.

It is generally observed that the levels of economic dependency exceed – and in some countries far exceed – the levels of overall dependency. This is principally due to the fact that a large proportion of people of working age are not employed. Economic dependency levels tend to be higher than overall dependency in developed countries because of the following factors: high unemployment rates, early retirement incentives acting to reduce the participation of older workers, and rising numbers of 'disability' claimants of working age.

Similarly, economic dependency rates are observed to exceed overall dependency ratios in low-income countries. In Sri Lanka the level of economic dependency was 125%, in 2000, while overall dependency was 50%. These differences are principally explained by: lower female participation in

³ In Sri Lanka's case net out migration has been beneficial for the economy, generating remittances, employment for those abroad and foreign currency.

the workforce (32 % on average in Sri Lanka), out-migration (1.2 million temporary migrant workers reside outside the country), and high unemployment rates.

Regardless, therefore, of the expected ageing developments, Sri Lanka's current levels of economic dependency far exceed the levels recorded in mature OECD economies whose populations have been ageing for some time (for example, Japan, the UK, the US and France). A dependency ratio of 125% implies that each employed person has to support 1.25 dependent persons. Such a level of dependency is a significant burden for those in work. To draw a comparison, the UK's economic dependency ratio is currently 70% – inferring that each dependant is supported by 1.5 people in work. Even at the height of ageing – correlated with the retirement of the baby boom generation in approximately 2020 – economic dependency levels are projected to rise to a maximum ceiling of 90%.

Table 4 illustrates current and projected economic dependency levels for a select group of OECD countries and Sri Lanka. Sri Lanka's economic dependency remains above that of Japan over the 2000-50 period, even though Japan's share of elderly in the total population is currently the highest in the world and even though its economic dependency ratio is projected to double. Sri Lanka's economic dependency levels are not dissimilar to those recorded in other low-income countries (India, Pakistan and Bangladesh). Higher dependency levels in these countries are explained by one or a combination of the following factors; a large share of children in the total population and/or lower economic activity rates of the working age population (related to higher unemployment and lower female participation). Large shares of children or youth dependency in the total population imply positive demographic dynamics, as children eventually enter the workforce and expand the labour supply, offsetting the expected growth of the elderly population. Eventually, unless age-specific participation increases, economic dependency will rise as outflows from the labour force exceed inflows (as lower fertility rates feed through as a reduction in the working age population with a time-lag). Regardless of population ageing developments to come, therefore, the Sri Lankan government should seek to address the already high dependency levels.

Table 4: Economic dependency level: 2000-50 (%)

	2000	2050
UK	70	90
US	75	92
Japan	60	120
France		
Sri Lanka	125	133

Source: OECD (2002)

As stated in the Government's Poverty Reduction Strategy Paper (PRSP), enhancing the country's productivity performance represents a key policy objective. (Government of Sri Lanka, 2003). Such policies also form an important policy response when confronted with population ageing effects, including policies to augment labour supply. Despite lower levels of female participation, positive developments have emerged over the past two decades. The proportion of women active in the labour market has increased by 20% over a 20-year timeframe. It is unclear, however, whether such trends will continue. Policies to support further increases should be introduced to ensure that these trends do not stall or slow down. Policies to lower economic dependency can potentially confer immediate and substantial economic benefits by improving a country's competitiveness and increasing output.

1.9 Forecasting economic dependency levels

A simple methodology was used to forecast the evolution of Sri Lanka's labour supply and economic dependency levels. The forecasting exercise is an illustrative one only and attempts to review the effect of changes in Sri Lanka's underlying demographic structure on the future labour

supply. The methodology applies age-specific participation data for 2000 to demographic data projections over the 2001-81 period (De Silva, 2003) – disaggregated by age and gender – to derive estimates of the labour supply. The exercise is a static one in the sense that it holds age-specific participation rates constant at the 2000 level. Although this is unrealistic in practice, as participation rates can be expected to change, because of shifts in policy including the introduction or scaling back of social security, such simplifying assumptions are useful to identify underlying trends. The results are presented below.

There are two principal observations that can be made from the projections illustrated in Figure 5 and Table 5. First, Sri Lanka's economic dependency ratio is projected to decline marginally until 2010 and subsequently to remain static until 2030. Secondly economic dependency levels rise progressively thereafter to a high of 150% by 2081 – representing a 20% increase on current levels.

The continued expansion of the working age population at a rate marginally higher than the rise in the number of dependants explains the former development. This is mainly related to the progression of children, who currently constitute 30% of Sri Lanka's population – into the working age population. From 2030 onwards a reverse pattern emerges: the working age population begins to decline, as the numbers leaving the workforce exceed those entering, resulting in a reduction in labour supply relative to dependants. The projection assumes that age-specific participation rates recorded in 2000 remain unchanged. The introduction of comprehensive old age security is likely to change the picture somewhat as individuals no longer need to respond to higher longevity by working longer to meet their needs.

Figure 5: Projected economic dependency: 2001-81

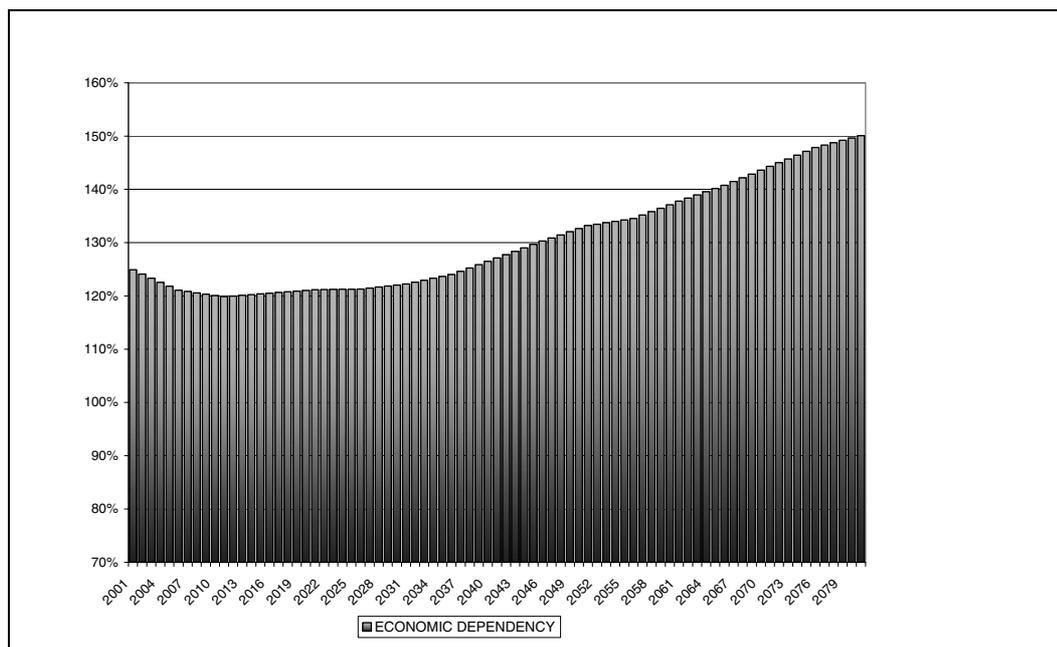


Table 5: Projected economic dependency: 2001-81(%)

	2001	2015	2030	2050	2065	2080
Economic Dependency	125	120	122	133	140	150

1.9.1 Modelling changes to economic dependency levels

Sensitivity analysis was applied to the data to evaluate the impact of increasing female labour force participation on economic dependency levels and average years worked. The latter variable was derived using cross-sectional age-specific participation data. Again this exercise is a static one meant for illustrative purposes only. Female participation rates were initially increased from a 40% level registered in 2000 to 50%. The participation rate for men was held constant at the 2000 level (78%). The new rate was then applied to same the demographic data projections. The results are presented in Figure 6 and Table 6.

These show that, the higher the level of economic activity, the lower is the level of economic dependency. The economic dependency rate declines from an average of 130% to 110% over the 2001-81 period. A rise in participation increases average years worked from 22 to 29 years (see Table 8). As before, economic dependency initially declines until 2010, remains constant until 2030 and thereafter progressively increases. This trend mirrors the expected changes in the country's demographic structure. The ageing of the country's population and also working age population, acts to reduce Sri Lanka's labour supply, *ceteris paribus*, as older age cohorts record lower activity rates relative to younger age cohorts.

Figure 6: Economic dependency: 2001-80, female activity=50%

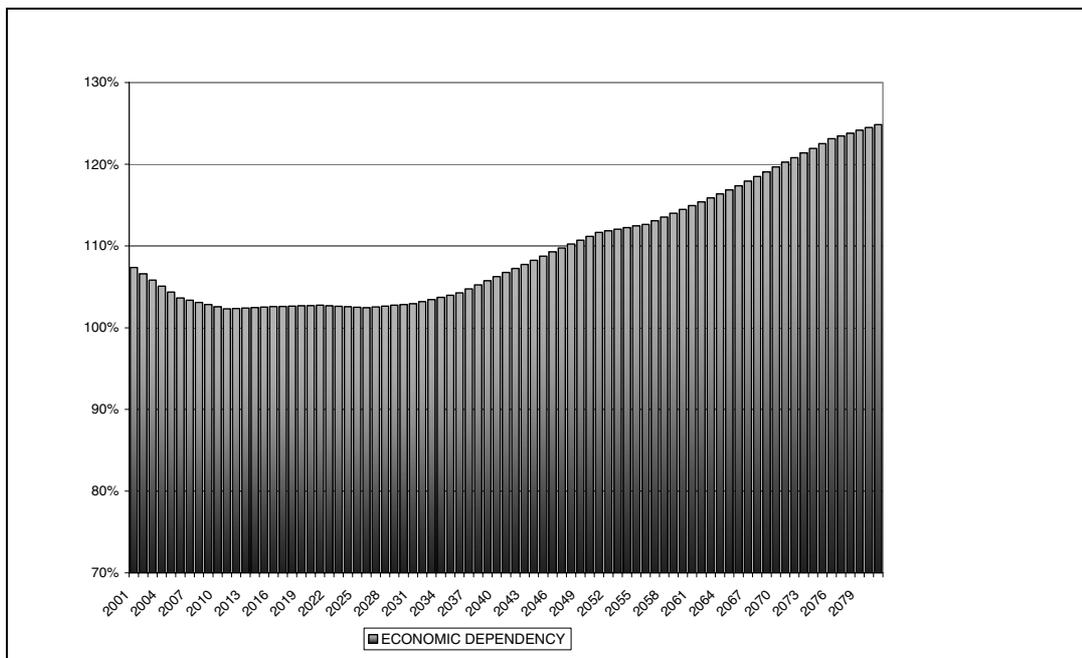


Table 6: Raising female participation: 40 to 50% (%)

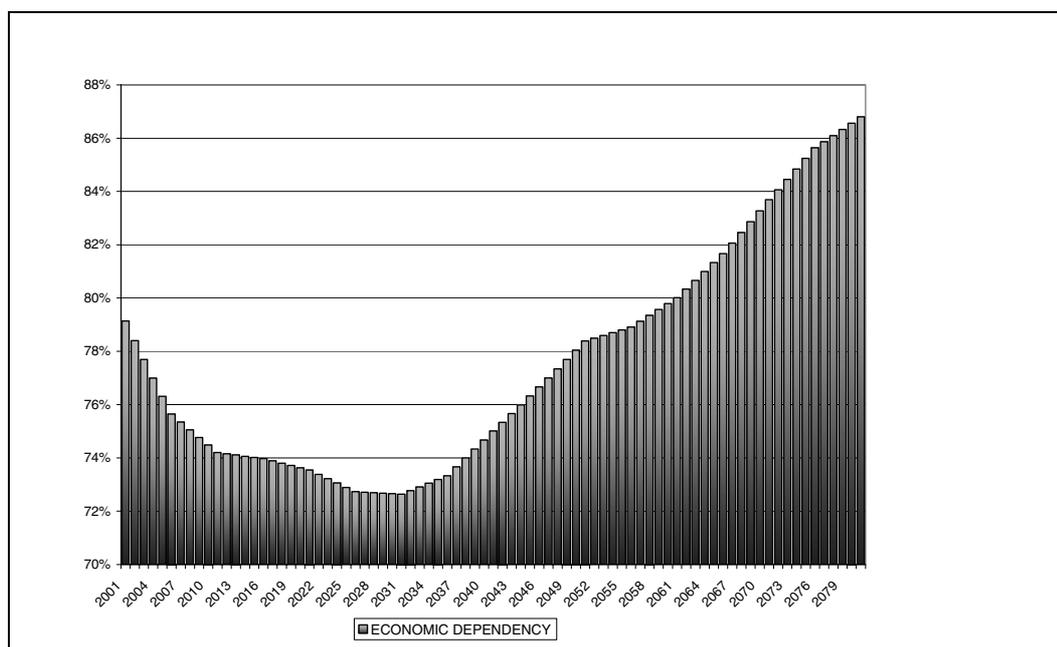
Economic Dependency	2001	2015	2030	2050	2065	2080	Average 2001-2080
Activity Rate=40%	125	120	122	133	140	150	130
Activity Rate=50%	107	103	103	111	117	124	110

Female participation rates were increased to 70% and the impact on economic dependency and years worked is presented in the Table 7 and Figure 7. Although such increases seem large in relation to current levels, they are not unrealistic, given historic developments. If the growth of female participation over the past two decades (equivalent to a 1% per annum increase) is projected forward, female activity rates could reach 60% by 2020 and 70% by 2030.

Table 7: Raising female participation: 40, 60 and 70% (%)

Economic Dependency	2001	2015	2030	2050	2065	2080	Average 2001-2080
Activity Rate=40%	125	120	122	133	140	150	130
Activity Rate=60%	92	87	86	93	97	104	92
Activity Rate=70%	79	74	73	78	81	87	78

Figure 7: Economic dependency: 2001-80, female activity rate=70%



The data above confirm the substantial impact that a moderate increase in female activity rates can have on economic dependency levels. A 20% increase causes dependency levels to fall from 130% to 92% over the 2000-80 period. Average years worked increase from 22 to 32 years (see Table 8). With the participation rate for women raised further to 70%, economic dependency falls by a further 14% over the 2001-81 period, while average years worked rises to 43 years.

Table 8: Impact of raising female activity rates on years worked

	Years worked
Activity Rate=40%	22
Activity Rate=50%	29
Activity Rate=60%	36
Activity Rate=70%	43

1.10 Economic dependency and economic growth

The level of economic dependency also has important implications for a country's per capita income levels. As table 9 illustrates, the higher the level of economic dependency, the lower is the level of per capita income for any given level of output. For example, in an economy without

dependants and with one income earner, an income of 1000 units is equivalent to the country's per capita income. With the addition of one dependant – equivalent to a 100% increase in the economic dependency level – per capita income drops to 50% the former level (i.e. to 500 units). To maintain per capita incomes at the original level, economic growth would need to increase by 100%. Provided the rate of economic growth is equivalent to the growth of economic dependency, per capita incomes can be maintained. If such a condition is not fulfilled, per capita incomes will fall. The counterfactual i.e. no dependants, would confer the largest increase of per capita income – equivalent to 100%.

The benefits of real output growth can therefore quickly dissipate where the level of economic dependency continues to rise, or more accurately where it rises in excess of the growth of output. The growth of incomes must therefore be greater than the expected rise in economic dependency levels to confer real per capita income gains to the population. Growth of per capita incomes can be equally derived via a reduction in economic dependency levels, as Table 9 demonstrates.

Table 9: Per capita incomes and economic dependency

Economic Dependency	Income= GDP	Worker	Dependent =1	Dependents=2	Per Capita Income
0%	1000	1000			1000
100%	1000	500	500		500
200%	1000	333	333	333	333

A hypothetical exercise was undertaken. The impact of expanding the female labour supply on per capita incomes was estimated, using household expenditure and labour force data for 2002. The results are presented in Table 10. As illustrated, increasing female activity rates from 40 to 70%, could potentially results a 25% expansion of per capita incomes. For simplicity, the calculation assumes that each additional worker receives a wage equivalent to the prevailing average wage rate, and that (perhaps unrealistically) expanding labour supply does not result in a dampening effect on average wage rates.

Sri Lanka's historic growth in labour productivity has averaged 2.25% per annum over the last 10 years (IMF, 2003). To achieve a comparable increase in per capita incomes, on the basis of productivity growth alone, would require labour productivity to grow at its historic average rate of 2.25% for 11 years. A combination of productivity growth and an expansion of worker participation would allow Sri Lanka to achieve increases in per capita incomes at a much faster rate. The expansion in the female participation rate would of course, be dependent upon increases in the demand for labour, which are themselves contingent upon wider economic growth and the expansion of economic activity more generally.

Table 10: Activity rates and per capita incomes: 2002

Activity Rate	% Increase	Per Capita Income (Rs.)
40%	0%	6,228
50%	5%	6,553
60%	17%	7,282
70%	25%	7,803

Source: LFS and DCS 2002

1.11 Conclusion

In conclusion, increasing the level of economic activity in the economy not only provides an effective policy response to population ageing, it also confers immediate increases in per capita incomes on the population. In addition, the lower a country's economic dependency level, the

larger are the real gains conferred on the population from any given expansion of output. Reducing economic dependency would also permit a government to expand social security coverage in a fiscally sustainable manner, as the country's labour supply, and therefore the tax base, expands.

Expanding formal social protection systems will become an increasing political reality as ageing progresses, and the share of a country's elderly electorate increases. The government should therefore seek to introduce policies to reduce already high levels of economic dependency and increase labour productivity as a twin strategy to raise per capita income growth and respond to population ageing pressures. Some of the relevant policy options to achieve these objectives have been outlined in this chapter.

Chapter 2: A Socio Economic Profile of the Elderly

2.1 The importance of retirement income

Sri Lanka is atypical of other developing countries in the sense that its social security provision (including pensions) is fairly underdeveloped. Adequacy of, and access to, a reliable source of income in retirement has been recognised in Sri Lanka as having a significant implication for future poverty and standards of living, given the rapid demographic ageing as described in Chapter 1. There is currently no universal state pension available to the elderly in Sri Lanka and 72% of the working age population (predominant informal sector workers and those outside the labour force) are not covered by formal retirement savings schemes.

The term 'pensioner' within the context of this report refers to individuals over the age of 60. Not all pensioners in Sri Lanka receive a pension. It has been estimated, using survey data for 1996/97 (Central Bank, 1999), that only 15% of the population above the age of 60 receive regular income in retirement. Approximately 75% of those receiving pensions are located in the top two income quintiles, which suggests that Sri Lanka's current retirement systems is quite inadequate in meeting the needs of the poor.

The 15% figure does, however, underestimate the access to retirement income; a further 24% of individuals in the labour force make mandatory contributions to provident funds. On retirement, employees receive a lump sum equivalent to their contributions plus the interest earned. Currently there is no facility to convert lump sum payments into annuities (guaranteeing a stream of monthly income until death), resulting therefore in the transfer of longevity risk to the individual. For those who are covered by formal pension schemes, the retirement income is generally regarded as insufficient to meet economic and social needs. The low level of replacement income, coupled with the non-indexing of benefits to prices or wages has significantly eroded the real value of incomes in retirement.

The following analysis reveals that elderly people have access to several sources of retirement income with a large share - 30% on average - derived from intergenerational transfers, in both kind and cash. The extended family network in Sri Lanka continues to provide a major pillar of support for a substantial proportion of the elderly. However, this channel of social protection is undergoing fundamental changes, which may lead to a weakening of informal care in the future.

A breakdown of family and community support is already apparent in Sri Lankan society, largely due to changes in family size, urbanization, and internal and international migration (Tudawe, 2003). The breakdown of the extended family system caused by children moving away from villages in search of better economic opportunities is one example of the declining availability of domestic care in the home: rising participation rates of women in the workforce is likely to be a second contributory factor. Internal migration has increased by 25% during the 1995-2000 period, based upon figures published by the Department of Census and Statistics figures (2000). International migration from Sri Lanka has also increased substantially over the past 20 years. Approximately 1.2 million Sri Lankan workers reside and work overseas (representing 10% of Sri Lanka's labour force)

Policy intervention to enhance the status of the elderly must be informed by analysis of the relative economic situation of the elderly vis-à-vis other groups. Government programmes for the elderly impact directly on the welfare of the young as well as the old. Resources transferred to the elderly have an opportunity cost in terms of a reduction in resources available to other groups in society for example the disabled, mothers with children or the unemployed.

Rapidly ageing societies, in the absence of comprehensive social security arrangements, may not be confronted by declining living standards for a number of reasons. Elderly people, unlike other

socio-economic groups (children, mothers with young children, the disabled), can remain economically active for longer, are less likely to have dependants to care for, and are far more likely to have recourse to alternative and multiple income sources (their own family, government transfers and accumulated assets). Increased longevity has been accompanied by falling morbidity, thus allowing individuals to be economically active for longer. Deterioration in health status and permanent disability requiring an exit from the labour market are unlikely to occur until late in to life. Elderly people (particularly the young elderly) are therefore likely to have greater command over financial resources and assets.

Certain sub-groups of elderly, however, may experience greater vulnerability and risks when old, (for example, widows, elderly without children, disabled elderly), which, compounded by other factors, such as non-attachment to the labour force, inheritance laws, and changing demographics, may (in the absence of formal and well targeted assistance) lead to a descent into poverty. Formal mechanisms of targeted social assistance may be required for these specific groups to guard against a general rise in elderly poverty as ageing progresses.

For these reasons policy interventions need to be informed by the poverty situation of the elderly relative to other groups in the population (young adults, families with children, working age population). World Bank (1995) analysis suggests that households with elderly are under-represented amongst the poor.

Key questions to be addressed in the context of Sri Lanka's changing demographic profile and current social security arrangements include the following:

- (i) Are the elderly (both young and old elderly) over- or under-represented in poverty statistics? What are the implications of rapid ageing for elderly poverty and the attainment of poverty reduction goals?
- (ii) How can retirement systems be extended to increase coverage to the poor and excluded, without compromising fiscal sustainability and economic growth?
- (iii) With the expected erosion of informal care in future, will governments need to provide greater formal protection for the elderly in order to maintain their economic welfare?

This chapter will address the first question, by drawing on micro data sets to construct a socio-economic profile of the elderly. The analysis draws on the Central Bank's report on *Consumer Finance' and Socio-Economic Survey (1996/97)*, and the Department of Census and Statistics' *Labour Force Survey (1992-2002Q1 rounds)*, as well as the *Sri Lanka Indicator Survey* for 2001.

2.2 Constructing a socio economic profile of the elderly

This chapter attemptst to provide a comprehensive analysis of the socio-economic status of the elderly relative to other groups in the population. Understanding the relative position of the elderly is an important first step in informing the prioritisation of policy interventions to address poverty. If, for example, the elderly are over-represented in poverty statistics, policies should be tailored to redistribute towards such groups; if on the other hand, they are under-represented policies, should be re-prioritised accordingly.

The analysis will identify the current role of pension schemes in maintaining the incomes of the elderly versus other income sources – including informal systems of support through the family, continued employment, personal savings and government social assistance. Because of the underdeveloped nature of social security systems in many low-income countries, the family constitutes the main pillar of social and economic support in old age. The extent to which this pillar continues to provide support needs to be assessed in the light of rapidly changing demographics, the shift towards nuclear families and the greater geographic mobility of younger generations.

The socio-economic status of the population can be reviewed in many dimensions ranging from household size and composition to average per capita incomes and marital status. The following analysis reviews socio-economic status in relation to the following categories; Labour force trends; sources of income and income distribution; and poverty analysis. Data are disaggregated by age, gender, and geographical location (urban, rural and estate) to review ageing trends and identify those groups most vulnerable to poverty. Poverty incidence (measured in terms of the poverty head count) is estimated by reference to an absolute poverty line⁴. To supplement information on economic status, social indicators are also reviewed, including household structure and marital status.

Consistent with other low-income countries, the elderly in Sri Lanka reside in multiple-person households, with incomes and resources consumed jointly by household members. As a consequence, the relative poverty situation of households with elderly members compared with non-elderly households, rather than an assessment of incomes or expenditures on an individual basis. OECD equivalence scales are applied to income data when deriving per capita indicators, to adjust for economies of scale in the use of household resources.

Households can contain more than one spending unit. A spending unit can be defined as group of individuals who make joint spending decisions and/or share common resources (for example, cooking, vehicles, etc.). Domestic staff residing with employers, for example, would comprise a separate independent spending unit. The pooling of income by a spending unit is more accurate in determining the welfare of individual groups (elderly etc.) and therefore income and expenditure at the level of the spending unit have been evaluated.

2.3 Labour force trends by age

The employment status of the elderly (and other groups) has an important bearing on an individual's or household's economic welfare and also its access to social security coverage. This is particularly the case in societies where social security systems and welfare benefits are underdeveloped and/or poorly targeted and where access to social security is based on contributions from those in work. Because of the limited degree of formal social security coverage in South Asia, the majority of workers – particularly those in the informal sector – continue to work until physical disability or sickness prevents them from further participation in the labour force. An individual's labour force status not only has important implications for social security coverage and welfare; it also provides an important policy solution to ageing. Countries can mitigate ageing pressures by increasing the labour supply. If the average person spends a longer period of their life in productive employment, ageing can be managed without imposing unacceptable burdens on the young. As mentioned in Chapter 1, this can be achieved via increasing participation, and the numbers of years worked, reducing unemployment, and enhancing labour productivity. Trends in these aggregates will now be reviewed.

2.3.1 Labour force participation trends

Table 11 and Figure 8 show Sri Lanka's labour force activity rates for 2000 disaggregated by age and gender. As the data illustrate, a significant number of men remain economically active until late into their lives. One in three men aged 70-74 participates in the labour force, while the corresponding figure for the 75-79 age group is one in four. Such patterns are consistent with those of other countries in the region. For example, according to the latest census statistics for India, one third of elderly men continue to work beyond the age of 80 years (Rajan et al., 2003). These figures confirm, as one would expect given the limited extent of formal social security coverage, that men derive a large proportion of their income in old age from employment. The corresponding rate for

⁴ The national poverty line is estimated by reference to a minimum expenditure outlay required to meet an individual's daily nutritional requirements (equivalent to Rs 871 per capita per month in 1996/1997 prices).

women is 5%, suggesting that women, unlike men, rely on non-employment-based sources of support in old age.

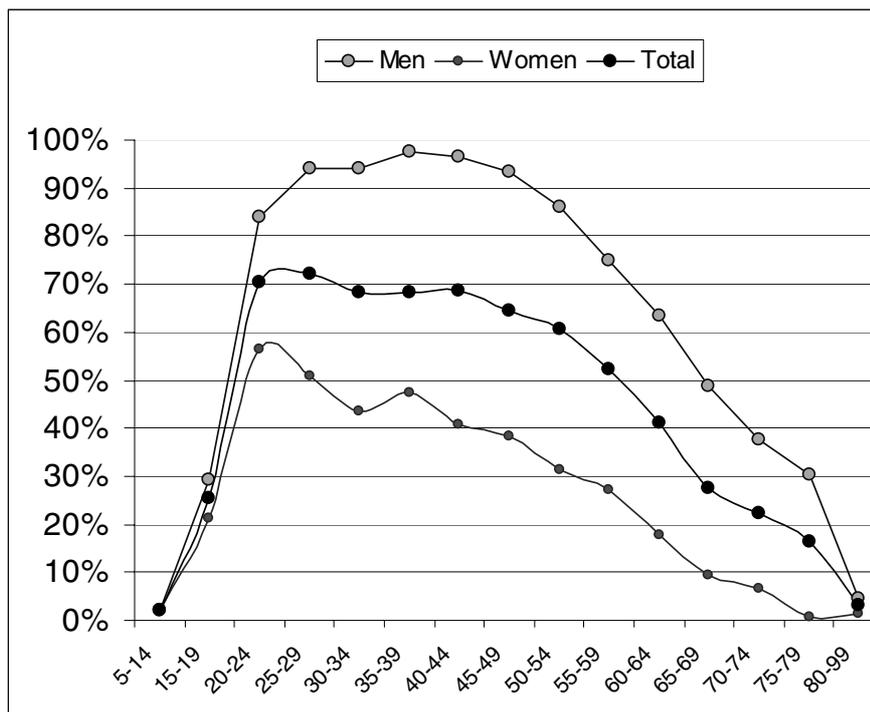
Table 11: Labour force participation rates 2000 (%)

Age Group	Men	Women	Total	
55-59		80	32	58
60-64		65	19	42
65-69		46	15	29
70-74		30	6	17
75-79		25	4	15

Source: Derived from Dept. of Census and Statistics' Labour Force Survey data, 2000.

Labour force statistics for 2000 show a significant gap in participation between men and women. During 2000, 78% of men were economically active, compared to 40% share of women – representing a gender gap of 38%. The gender gap is consistent with that of other countries in the region including India (60%), Pakistan (74%) and Bangladesh (80%)⁵. OECD countries by contrast exhibit significantly lower gender participation gaps, for the UK the gap is 30% while that for Korea is 10%. Such differences have an important bearing on the equality of coverage and access to social security. If women are not in the labour market, they cannot acquire rights to social security given the current contribution-based systems operating in the Sri Lanka.

Figure 8: Labour force participation disaggregate by age and gender



Source: Derived from Labour Force Survey data, 2000, DCS

In the absence of non-contributory benefits, and given the tendency for women to outlive men, the high incidence of women outside the labour force is likely to result in greater exposure to vulnerability and income insecurity in old age, particularly where informal systems of social protection are expected to be eroded in the future.

Even in a situation where women are economically active, smaller numbers are able to acquire rights to social security cover in Sri Lanka, owing to differences in employment status. It is generally the case that: a larger number of women are engaged in informal sector activity; many

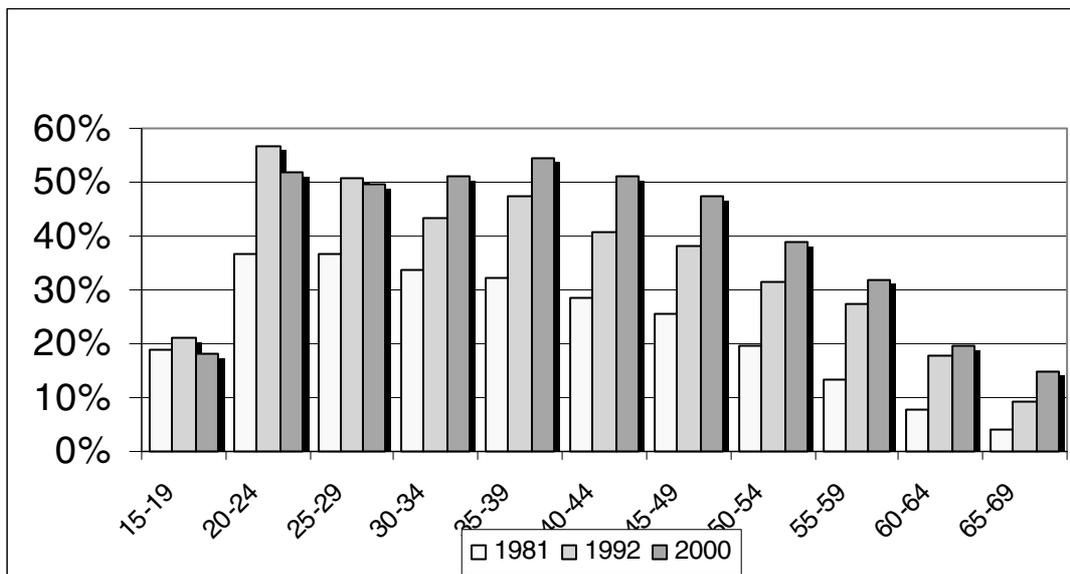
⁵ World Bank (1995) and OECD (2000)

have interrupted employment histories; and a large proportion work as unpaid family workers without cash incomes.

Such differences are reflected in the social security data. Only 8% of woman over the age of 60 receive a pension, in comparison with 17% of men. If social security coverage is to be expanded on an equitable basis, it would be desirable for female activity rates to increase, and/or the proportion of those engaged in the formal sector to expand. Alternatively, policies to extend social security coverage to informal sector workers could be introduced, or benefits provided on a universal basis, as a way of minimising and/or eliminating the current gender bias in social security coverage. Voluntary pension schemes targeted at informal sector workers (farmers, fishermen and the self-employed) were introduced by the government in the mid-1980s as a mechanism to extend access to the poor. Preliminary analysis suggests that these schemes have only partially met the objectives of extending access to social security.

Although female participation rates are low by international standards the proportion of women active in the workforce has steadily increased over the last two decades (refer to Figure 9). Since 1981, female activity rates have increased from 23% to 40% by 2000. If these trends continue, female activity rates could reach 60% by 2020. Such a development will act to improve social security coverage to a lesser or greater extent, as an individual's propensity to make contributions. The speed with which additional workers are absorbed into the labour force will be dependent upon wider economic growth, but also the provision of labour market policies to facilitate the entry and/or re-entry of women. The availability, for example, of flexible working patterns and the elimination of gender discrimination will be important determinants in this respect.

Figure 9: Female labour force participation: 1981, 1992, 2000



Source: Derived from LFS data, CSD, 1981, 1992 and 2000

2.3.2 Average years and hours worked

Average years worked estimate the total number of years a person works or is available for work during their lifetime. Years worked have steadily increased over the last two decades from 27 to 35 years for both men and women in Sri Lanka. Such a development is consistent with *a priori* expectations, given the underdeveloped nature of the social security coverage and rising life expectancy.

Based on labour force data for 2000, men were estimated to work on average 47 years, while women worked an average of 23 years. Years worked have increased faster than increases in life

expectancy, implying that the proportion of economically active life has increased as a share of the total. These developments will have a positive bearing on social security coverage and income security in retirement, as lifetime-accumulated savings and pension benefits increase.

Figure 10: Average years worked: 1981, 1992, 2000



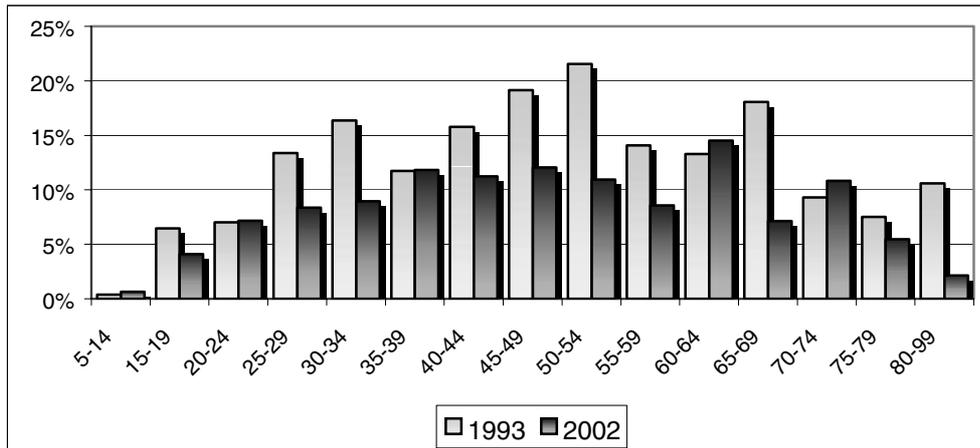
Source: Derived from LFS data, 1981, 1992, 2000

Average years worked have been calculated from cross-sectional age-specific participation data. For example, where an individual experiences the age-specific participation rate of each cohort recorded in 2000, they would expect to work an average of 47 years if male and 23 years if female. Such a disparity is quite significant and policies to narrow the gap, including increasing labour market flexibility, would be important in this respect. For example expanding opportunities for part-time working and introducing family-friendly policies would facilitate a progressive rise in worker participation – particularly for women.

The following analysis suggests that the incidence of part-time working opportunities remains low in Sri Lanka, and has been declining, albeit marginally, over the last 10 years. For example it was 7% in 2000, representing a 2% reduction during the 1990s. It is lowest amongst the oldest and youngest age cohorts. Flexible working opportunities are therefore becoming more limited in Sri Lanka, which is inconsistent with the government's central objective to increase labour market flexibility as part of its productivity agenda.

Increasing the availability of part-time work among older age cohorts would be beneficial to allow older workers to manage the transition to retirement (including the loss of earnings). The ability to exit the labour market gradually may also act to encourage workers to remain attached to the labour force for longer than they would have otherwise – with positive implications for the labour supply. Anecdotal evidence would suggest that the lack of part-time work has an important bearing on female participation rates. The absence of flexible working patterns and other family-friendly policies acts to limit the ability of women – the principal carers in the home – to balance work and domestic responsibilities.

Figure 11: Proportion of part-time workers in the labour force: 1993 and 2002



Source: Derived from LFS data, CSD, 1993,2002

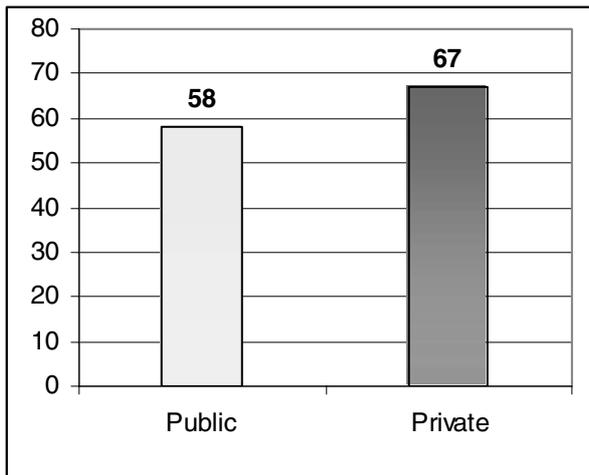
The UK and the Netherlands have the highest proportion of part-time jobs in European labour markets and some of the highest female activity rates. Conversely, countries, including Italy and Germany where such flexibility is more limited reveal much lower female participation. Other factors – such as labour legislation – are likely to contribute to these differences; anecdotal evidence would suggest that the availability of flexible working opportunities is also important. The introduction of policies to encourage the entry of women into the workforce could achieve several complementary objectives. It would confer productivity benefits and increase output, whilst simultaneously allowing women to achieve both career and home-life aspirations.

The provision of part-time working opportunities in the labour force implies greater transaction costs for employers and lower rates of return on investment relative to a full-time worker. Governments should seek to introduce policies to reduce these transaction costs in order to expand flexibility in the labour market, which could confer significant economic benefits in the medium to long term.

Such policies should not comprise cultural values or imply that society undervalues the substantial contribution women make within the home (which by convention is not reflected in traditional GDP statistics). Providing greater choices for workers in work and home-life spheres should form an integral part of a country's development path and policies. The absence of such choices made equally available to all, or the lack of recognition of the need to broaden such choices effectively, compromises the basic rights of all citizens, while failing to maximise the use of economic resources to their full potential.

2.3.3 Public and private sector retirement age

In the public sector, most workers retire by the age of 60. The effective retirement age in Sri Lanka for public sector workers was estimated to be 58 in 1998. Retirement age in the private and informal sectors of the economy is significantly higher, owing to the lower social security coverage. The average retirement age in the private sector, based on 2000 LFS data, was estimated to be 67 for men (see to Figure 12), representing a difference of 9 years in retirement ages between public and private sector workers. The corresponding figure in 1992 was 65. The private sector retirement age in Sri Lanka has therefore increased by 2 years over a ten-year period. Such an increase is consistent with a general rise in life expectancy.

Figure 12: Effective retirement age 2002

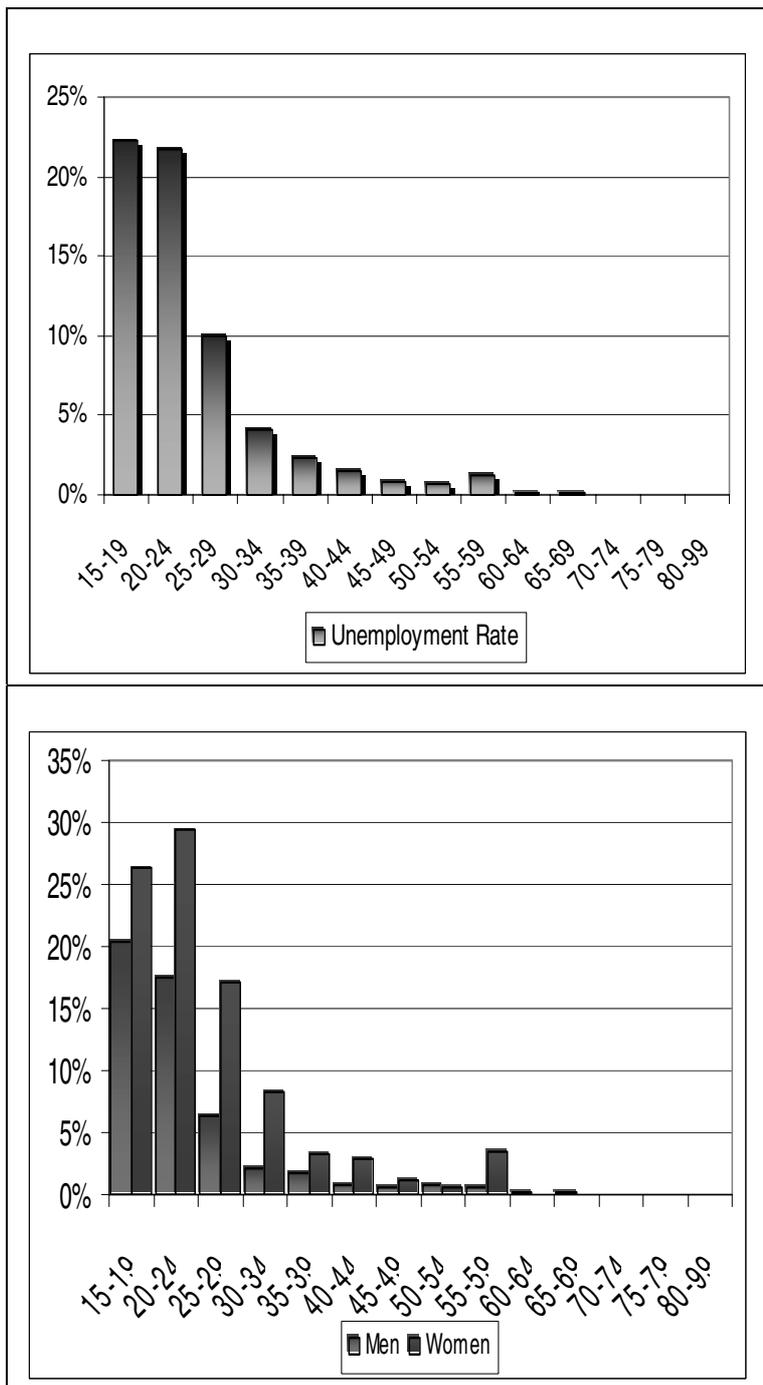
Source: Derived from LFS Data, 2000 and Public Sector Census, 1998, CSD

2.3.4 Unemployment rates by age

Unemployment rates by age and sex are shown in Figures 13 and 14. Two observations can be made; first, unemployment rates amongst elderly cohorts are very low and secondly women are systematically over-represented in the unemployment statistics. The low unemployment rates recorded among elderly cohorts are related to two factors: (i) elderly people do not classify themselves as being unemployed, despite being available and actively looking for work; and (ii) there is a genuine desire and preference on the part of employers for skilled and experienced workers rather than younger and less experienced workers. The former explanation would effectively hide the true incidence of unemployment among elderly groups. Empirical investigation would be needed to distinguish the relative contributions of each factor in explaining the pattern observed below.

It is generally recognized that both demand- and supply-side factors contribute to the high incidence of youth unemployment in Sri Lanka. On the supply side, high unemployment rates have been associated with a general rise in the reservation wages acceptable to new entrants in the labour market, corresponding with an increase in educational attainment and the qualifications of younger workers. On the demand side, employers typically place a premium on work experience, thus creating a bias towards more experienced workers. This is confirmed by the fact that a large proportion of those unemployed are first time job seekers. Figure 14 disaggregates unemployment rates by gender. The higher incidence of female unemployment suggests a degree of discrimination operating in the labour market as such differences are not explained by differences in educational attainment which is broadly comparable by gender.

Figure 13 and 14: Unemployment rate by age and sex, LFS 2000



Source: Derived from LFS data, 2000, CSD

2.3.5 Employment status of the elderly

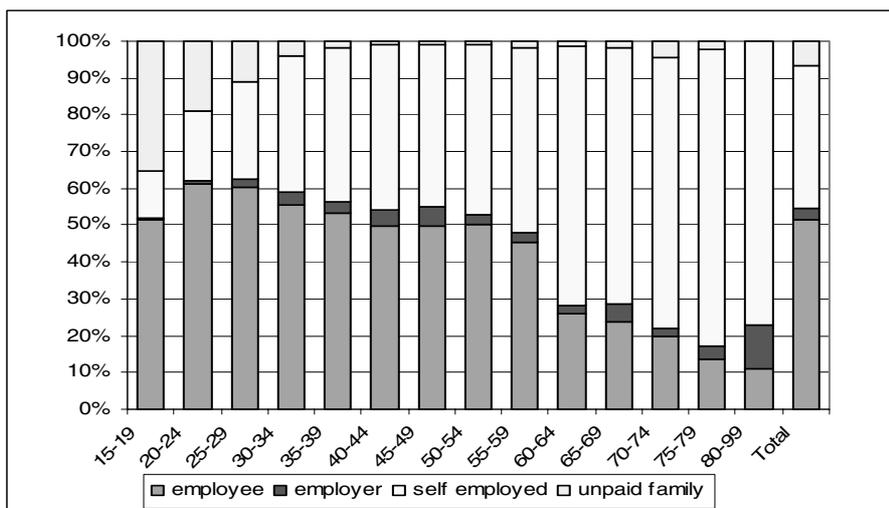
An individual's work status has an important bearing on social security coverage. A higher incidence of self-employed workers would generally imply lower social security coverage, as such workers are typically located in informal sector activity where earnings are lower and incomes more erratic, making regular social security payments difficult. In addition, the responsibility for making payments resides with the individual rather than being a joint responsibility between employer and employee. As a result, the onus of making contributions rests with the worker, who is required to make double the employer's contribution.

Figure 15 illustrates the variation in employment status by age. A significantly larger share of older men compared with younger age cohorts, are registered as self-employed. For example, 80% of men aged 75-79 are self-employed compared with a 25% share for 25-29-year-olds. A similar pattern is apparent for women.

The shift in the composition of workers from self-employment to employee status reflects broader structural changes in the economy. An expansion of formal sector employment has coincided with the growth of the service and manufacturing sectors and the contraction of agricultural activity. These new sectors are better able to attract younger workers, who typically possess the skills and qualifications demanded by employers; they also represent the more productive sectors of the economy, with higher average incomes.

The change in employment status is likely to have a positive bearing on social security coverage. The unstable income patterns characteristic of self-employment make regular contributions to pension schemes difficult, giving rise to a lower incidence of social security coverage. So, irrespective of government policy intervention in this area, one should expect an expansion of social security coverage as the share of workers in regular employment increases over time. A recent development, which may counteract this, has been the rise in the share of casual and contract workers in the labour force. Because of the uncertain and irregular nature of job security, regular savings/contributions may prove difficult under such circumstances. Productivity levels should also rise, as the share of workers in these productive sectors increases over time.

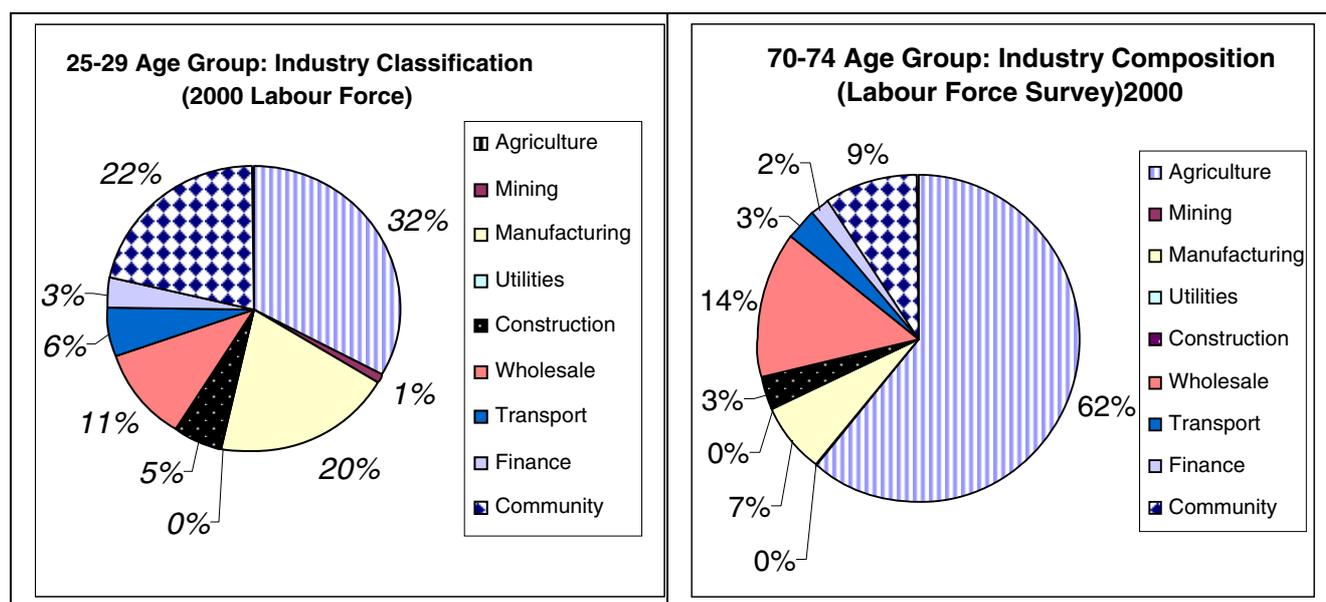
Figure 15: Male employment status by age: 2000



Source: Derived from LFS data, 2000, CSD

A larger proportion of women relative to men are unpaid family workers. The percentage does not vary significantly by age, although the proportion has declined among the younger age cohorts. Currently, one-third of women active in the labour market are registered as unpaid family workers compared with 7% of men. As a result, a larger share of women will remain economically dependent on their spouses or family during their working life and in retirement. Consistent with a higher share of the elderly in self-employment, a larger proportion of elderly people work in the agricultural sectors of the economy. For example, 65% of older workers are engaged in agriculture compared to a 32% share in the younger groups. Younger workers, as explained above, have been relatively more successful and better equipped in obtaining employment in the new growth sectors. As Figure 16 illustrates, 20% of younger workers compared with 7% of older workers have manufacturing jobs.

Figure 16: Industry classification by age



Source: Derived from CFS data, Central Bank

2.4 Sources of income and income distribution

2.4.1 Sources of income

Ageing is expected to result in a shift in sources of income. As an individual ages, s/he should expect, particularly in countries with limited formal protection, a decline in formal income sources, such as employment, and a subsequent rise in transfer and informal protection, including from the family and the government.

Figures 17 and 18 illustrate the composition of income sources by age. Cross-sectional rather than time series data are presented. A reference period of 6 months was used to smooth out fluctuations in income. Income is defined here to include that received in cash and in kind.⁶ A detailed explanation of income sources and data issues is contained in Annex 1. As the figures below confirm, sources of income change quite significantly over an individual's lifetime. As one should expect *a priori*, income from employment declines, whilst transfer income from pensions, the government and the family increases with ageing.

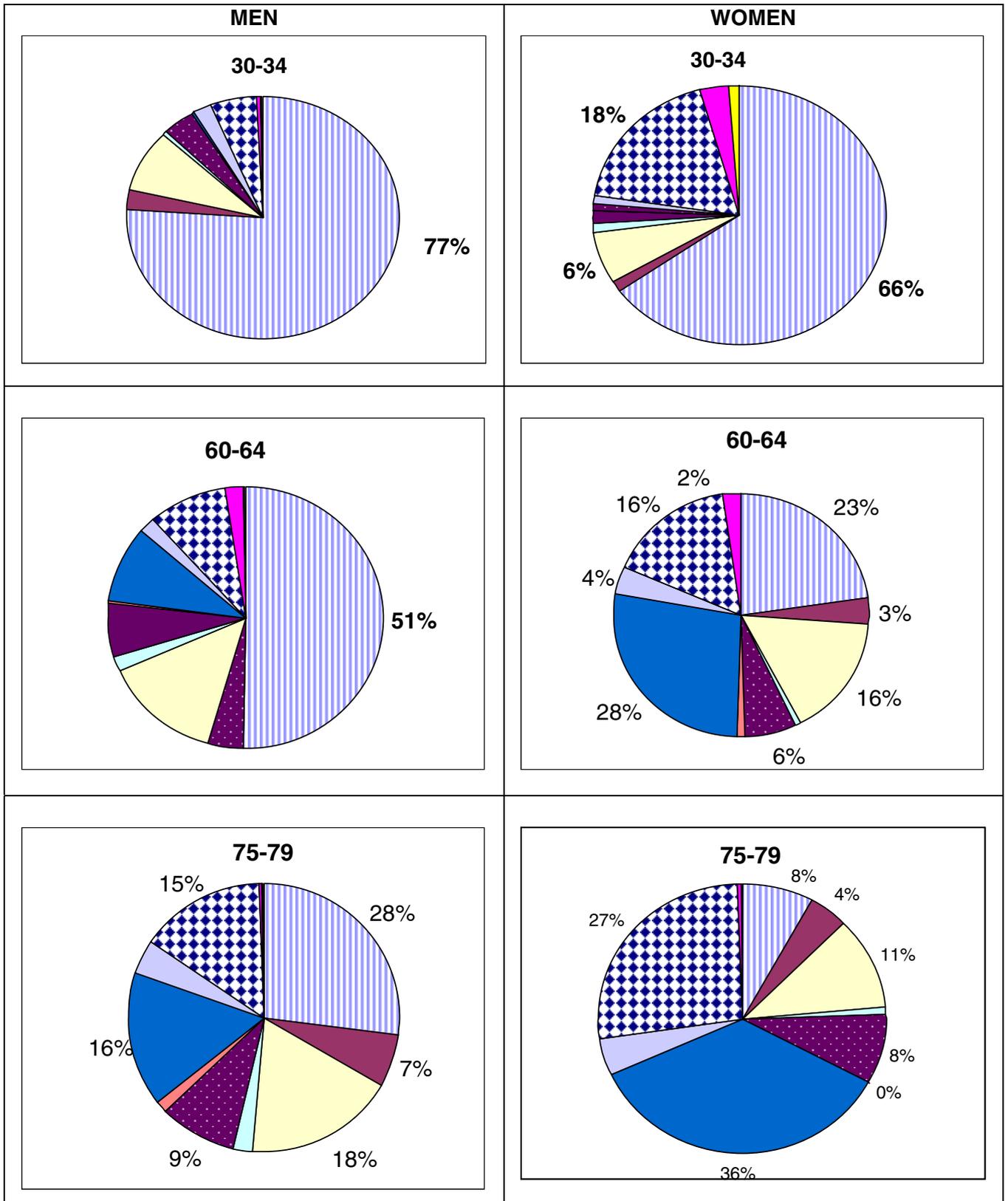
Some key observations from the figures are the following:

- employment income accounts for 50% of total income for men aged 60-64
- The corresponding figure for women is 23%
- By age 75-79 employment income represents one-third of total income for men compared with 8 per cent share for women
- As expected, the share of income derived from transfers, including pensions and family transfers, increases with age. For the 60-plus age group, transfer income constituted 62% of

⁶ Cash incomes cover wages, provident funds, interest or dividends, rent, or transfer income. Income in kind consists of the imputed value of various goods and services, such as the rental value of owner-occupied dwellings, free living quarters, free meals, uniforms, home garden produce, firewood, and gifts received.

total income for women and 36% for men; this figure increases to 72% and 45% share respectively by age 75.

Figure 17: Sources of income by age and sex



Occupation	Property	Imputed Rent
Interest, Dividends	Home produce	Windfall income
Pensions	Government Transfers	Family Transfers
Other Transfers	Other Income	

Source: Derived from Consumer Finance Survey data, 1996/97, Central Bank

These findings confirm earlier expectations that elderly people, particularly those residing with family members, receive both financial and other support from the family. According to survey analysis by Tudawe (2002), intergenerational support within the home is provided on a reciprocal basis. A cross-subsidisation of support effectively occurs between elders and family members. Children live in their parents' home on a rent-free basis, whilst financial and other support is extended to parents. In Sri Lanka this type of reciprocal arrangement is possible because of the large proportion of elderly people owning their own homes.

Government transfers (either in the form of pensions or social assistance) do not constitute a significant source of income for the elderly, representing only 5% of total income for the 60-plus age group. The Ministry of Social Welfare provides a financial safety net to the very poor elderly; however, due to financial constraints, only a small amount is distributed to a minority of the elderly poor. These benefits are not index linked to prices and have rapidly lost their real value over time, limiting their effectiveness in meeting the economic and welfare needs of the elderly poor.

To better understand the coping strategies of women without a pension, the above analysis was repeated to identify income sources for women with and without a pension. Figure 18 and Table 12 illustrate the results. Salient observations include the following:

women without pensions obtain a larger share of total income from employment, family transfers and the government. Employment income accounted for 30% of total income for the 65-plus compared with 15% those with a pension;

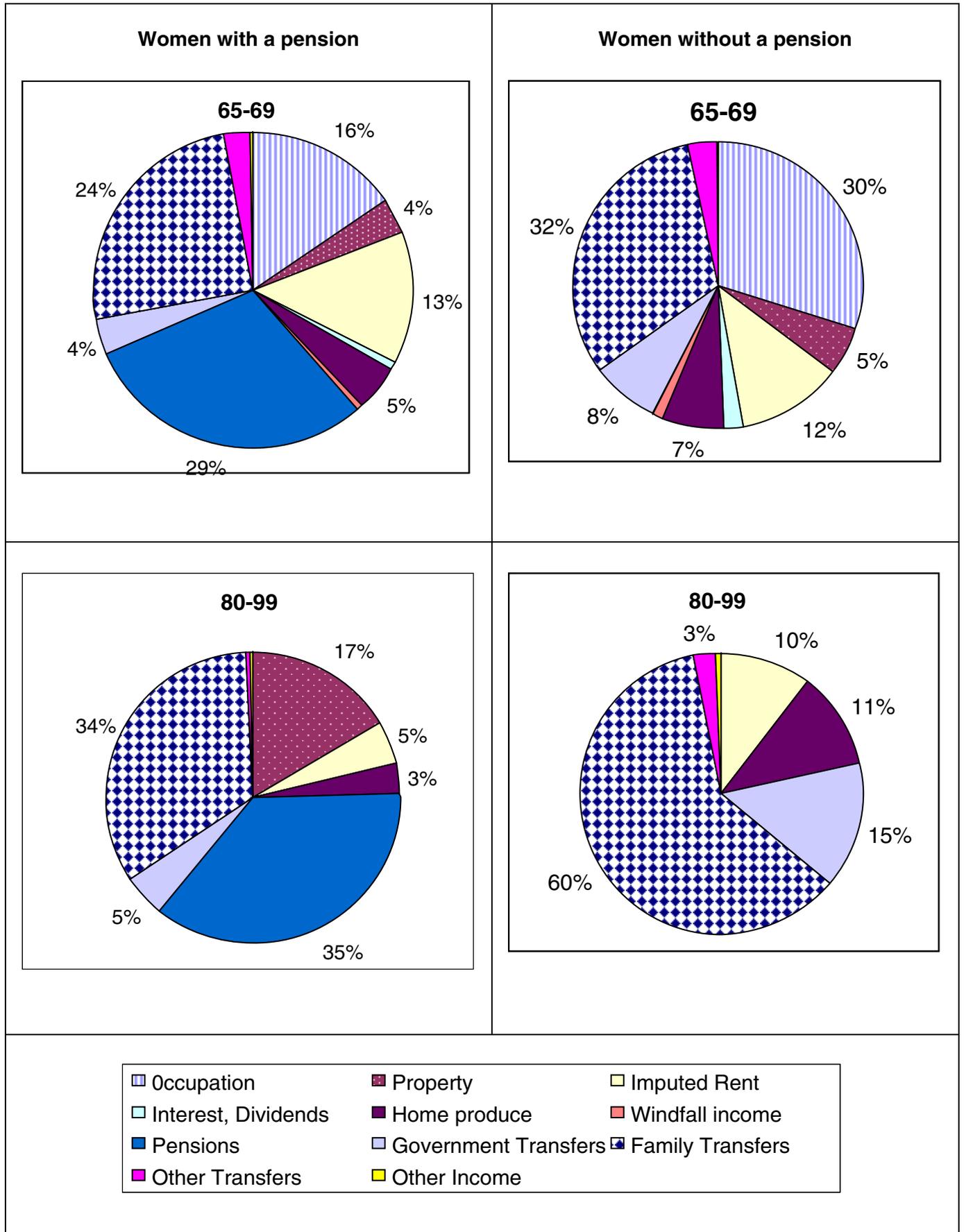
family transfers represent a 32% share for those without pensions compared with 25% for those with. By age 80, this figure increases to 60% for non-recipients compared with 34% for pension recipients.

Table 12: Income sources for women with and without pensions (%)

Income Sources	65-69		70-74		75-79		80-99	
	Pension	No Pension						
Employment	15	30	12	22	8	12	0	0
Pensions	30	0	33	0	35	0	36	0
Family	25	32	14	22	27	51	34	60
Government	4	8	5	9	4.5	9	4.5	15

Source: Derived from CFS Data, CB, 1996/97

Figure 18: Sources of income for women



Source: Derived from CFS data, 1996/97, Central Bank

2.4.2 Elderly income and income distribution

Figure 19 shows the monthly per capita income distribution of the population by age. Per capita income was derived with reference to individual income rather than computed on the basis of the average for the household. Calculating incomes in this way may give an inaccurate picture of elderly welfare, on the basis that most elderly people live in multiple-person households, where incomes are pooled and resources shared. However, the analysis below gives an indication of income-earning capability by age. As one should expect *a priori*, per capita incomes progressively increase up to middle age and then decline thereafter. They peak at age 45-49, equivalent to incomes in the second highest income quintile. By age 70-74, income levels drop to 40% this level, declining to 20% by the age of 80 – equivalent to incomes in the second lowest income quintile.

Figure 19: Age income distribution (Per capita monthly income -1996/97 prices)

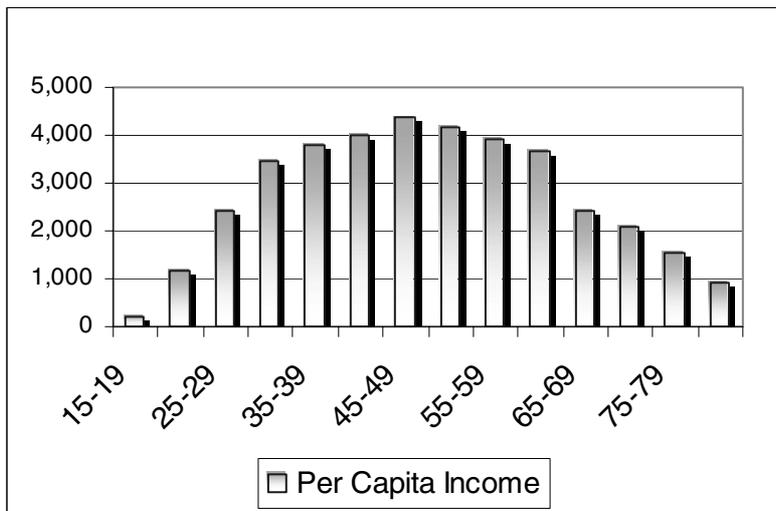


Figure 20: Income distribution: urban, rural, estate sectors (Per capita Monthly Income)

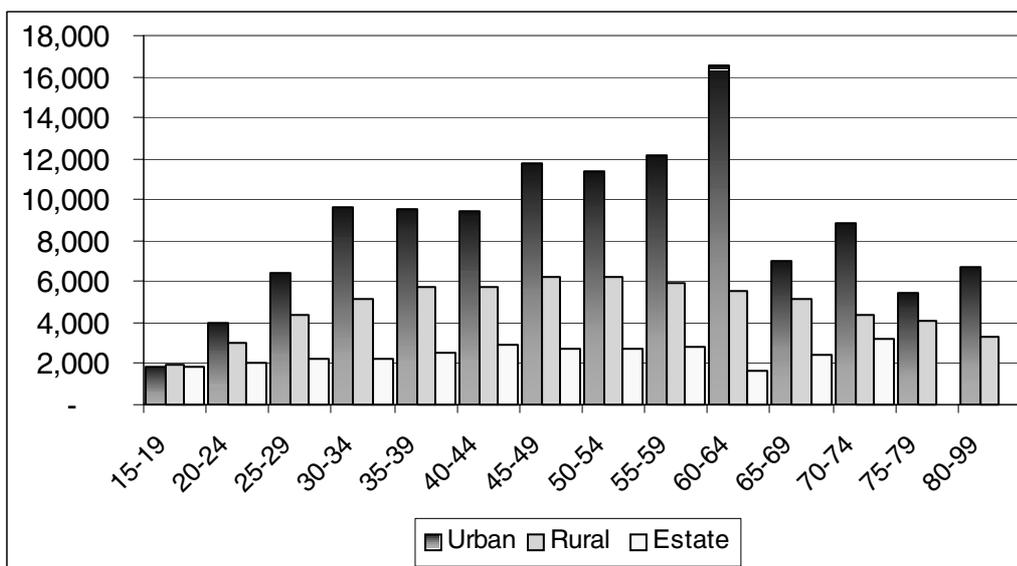


Figure 20 disaggregates income by sector (urban, rural and estate). It illustrates the sizeable differences in income distribution geographically. Such differences have an important bearing on the design of policies aimed at reducing poverty. A high proportion (82%) of Sri Lanka's population resides in the rural sector. Incomes of rural households amount to approximately 60%

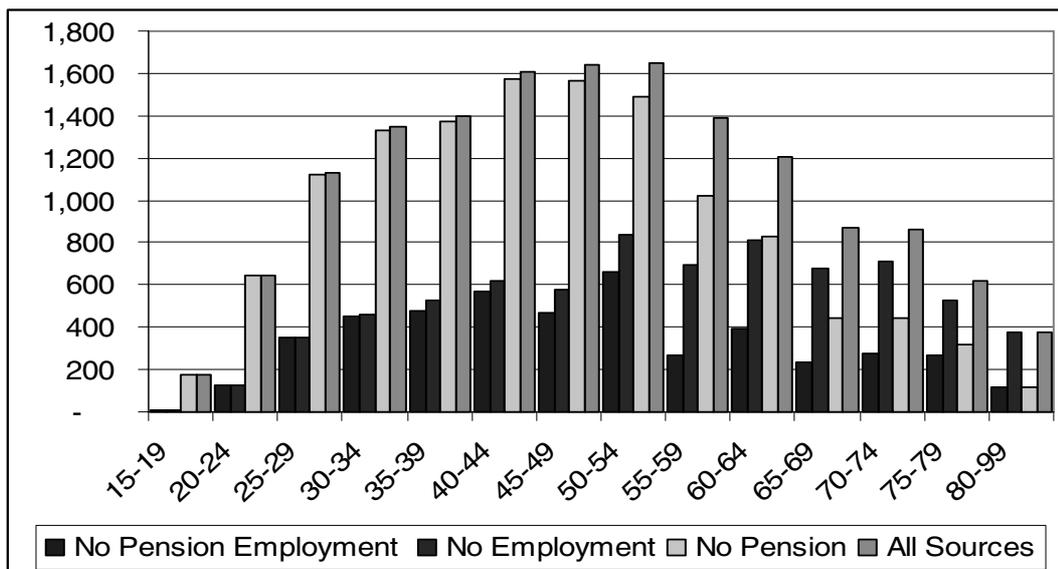
of urban incomes, while incomes of estates households are 30%. Consequently, the rural and estate elderly are the most disadvantaged as compared with the urban elderly.

Figure 21 breaks down the income distribution of various sub-groups of women. The sub-groups identified reflect exposure to different degrees of risk and vulnerability in old age, as follows:

- I. women without access to either pensions or employment income (representing 83.8% of all women above age 60)
- II. women without income from employment but receiving other income including pensions (representing approximately 16 % of women above age 60)
- III. women with access to employment and other income sources but without a pension (approximately 16% of women above age 60)
- IV. women with income from all sources (representing 8% of the elderly female population).

Not surprisingly, income distribution is least favourable for the first two sub-groups without access to employment income relative to other groups. The graph shows a significant gap in average incomes for the sub-groups (i) and (ii); on average, their incomes are 30% of those of women who receive employment and/or pension income. The relative income status of women with employment income but no pensions deteriorates rapidly relative to those with pensions from age 60, highlighting the contribution of pensions in maintaining the economic status of elderly women.

Figure 21: Female income distribution by source



Source: Derived from CFS data, 1996/97, CB

The decline in average incomes with ageing potentially represents two effects; a cohort effect and an age effect. The age effect represents the depletion of assets and the reduction in income-earning potential with age, while the cohort effect reflects the past performance of the economy and pensions policies. Individuals in the oldest age cohorts (70-plus) may have lower incomes relative to the young elderly, because the benefits accruing to them in the form of wages and pensions during their working lives were lower, reflecting the immaturity of pension systems and the limited degree of coverage. Successive generations of pensioners will tend to be richer because higher productivity and wages, coupled with expansion in institutional coverage, should boost savings and therefore income in retirement. So, the current income distribution of the elderly, reflecting past economic growth and income and savings patterns, is not necessarily indicative of the future income levels of elderly groups.

Looking at pensioner incomes across time allows the cohort effect to be disentangled from the age effect (Whitehouse, 2000). Johnson and Stears (1996) find that cohort effects explain the decline in income with age in the United Kingdom. Under-indexation of pension benefits and de-accumulation of assets (age effects) explain only a small part of the pattern. In developing countries, cohort effects are also likely to explain the low income status of elderly groups, because of the past, but also prevailing, immaturity of social security systems. Age effects are likely to dominate in countries where the elderly spend long periods of time in retirement. Future generations of elderly may have incomes significantly higher than current generations, because of the cohort effect acting to increase savings and hence future consumption levels.

The above analysis uses income as a measure of welfare. However, income may provide only an incomplete picture of elderly welfare. Household expenditure is regarded as a better measure of living standards. If people's spending plans are based upon expected lifetime income, then expenditure is likely to give a better picture of an individual's command over resources (Whitehouse, 2000). Consumption can be an even more robust indicator of living standards. People can consume goods beyond the point at which expenditure is incurred on them; this is particularly relevant for the elderly, whose consumption of goods and services may be higher than their expenditure outlays would imply. To form a comprehensive picture of elderly welfare, the analysis of income should be supplemented with a review of expenditure and consumption. To be even more comprehensive, the analysis should be extended to include ownership of assets (both physical and financial).

2.5 Quintile analysis and poverty incidence

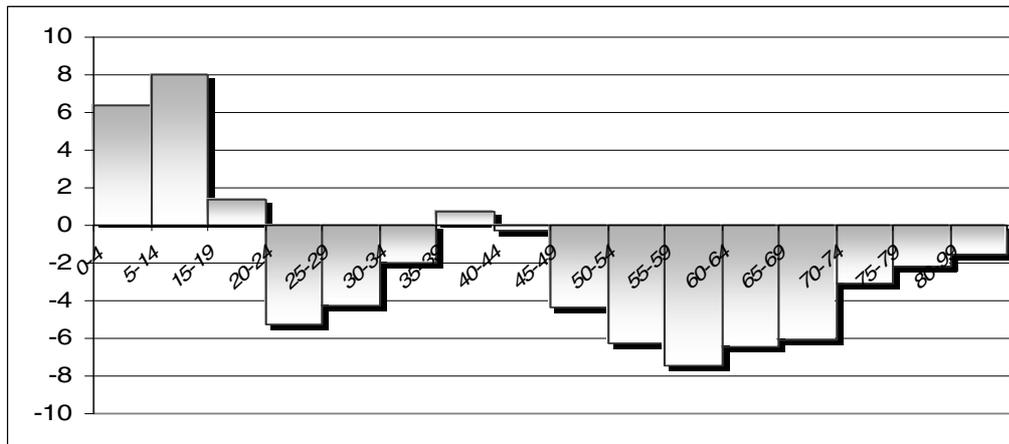
The previous section looked at the average incomes of elderly groups. Such an approach, although informative, does not convey the relative poverty situation of elderly groups vis-à-vis other groups in society. For example, the analysis does not tell us whether the elderly are over-represented or under-represented in poverty statistics. Figures 22 and 23 reviews whether the elderly are over or under represented in the bottom and top quintiles of income distribution in Sri Lanka.

The present analysis derives per capita income based on the pooled income of each spending unit. As already noted, a spending unit refers to a group of individuals within a household who make joint spending decisions. To obtain per capita figures, the total income for each spending unit was divided by the number of individuals within the unit. Alternatively per capita incomes could be derived based on household income. Although the two concepts are closely related, households in Sri Lanka can contain more than one spending unit.

2.5.1. Quintile analysis of elderly households

The analysis divides the population into five equal groups (or quintiles) ranked from the poorest to the richest. If the incomes of elderly groups correspond to the population income distribution as a whole, then a fifth or 20% of pensioners would be in each population quintile. Bars above the line imply that the respective age group is over-represented in that income quintile and bars below imply that they are under-represented. For ease of reference the X-axis has been drawn through the 20% level in Figures 22 and 23.

Figure 22: Percentage in poorest income quintile: unequivalised



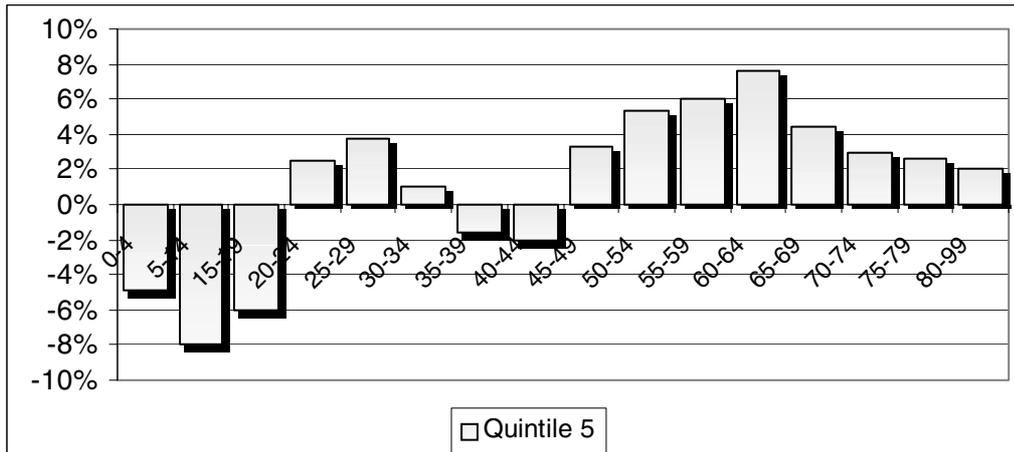
Source: Derived from CFS data, Central Bank, 1996/97

Figure 22 shows the percentage distribution of individuals located in the bottom income quintile. The data suggests that the elderly are under-represented in this quintile, reflected by bars below the X-axis. This is contrary to the situation in OECD countries where pensioners tend to be over-represented in the lower income quintiles, although they are typically under-represented in the lowest quintile owing to the provision of social assistance on a universal basis. The data also reveal that children are significantly over-represented in the lowest income quintile.

A distinction can be drawn between the young and the old elderly. The former group, corresponding to individuals aged 55-69 years, are significantly under-represented in the bottom quintile, whilst the old elderly (75-plus) are only marginally under-represented. The age groups with the lowest proportion in the poorest quintile are those aged 55-59 years. As identified in the section on average incomes, this age cohort corresponds to individuals in the peak income-earning years. The lower incidence of young elderly in the poorest quintile can also be explained by the composition of elderly households. Socio-economic data (presented below) indicate that the majority of elderly reside in multiple-person households, typically with their children. Households living with their children are less likely to be poor on average, not just because of the individual's income capacity but also due to the income capacity of the household. Differences in labour force participation rates can explain the relatively better economic status of the young versus the old elderly.

The above analysis can be repeated for the richest income quintile. Figure 23 shows a reverse pattern emerging across age cohorts. The elderly are over-represented in the highest income quintile, whilst children (18 years and below) are significantly under-represented. Broadly speaking, elderly people (most notably the young elderly) are systematically under-represented in the bottom two quintiles and over-represented in the top two quintiles. This contrasts with pensioners in the OECD countries, whose elderly are typically under-represented in the top two quintiles and over-represented in the lowest quintile. The main explanation for the difference is that the majority of elderly people in low-income countries live in multiple-person households.

Figure 23: Percentage in richest income quintile – unequivalised



Source: Derived from CFS data, Central Bank, 1996/97

2.5.2 Equivalising income

If a government were designing policies to maximise poverty reduction, the above analysis would favour a targeting of families with children in preference to elderly groups. Before such a conclusion can be drawn, however, the analysis needs to be adjusted to take account of differences in household size and composition. It is generally accepted that the cost of living varies by household size, because of the ability of households to share resources to a greater or lesser extent. Two people with an income of around 1.5 times that of a single person can enjoy equivalent welfare levels. This adjustment is known as equivalising incomes.

The majority of elderly people in developing countries live in multiple person households, and therefore equivalising incomes is important if welfare measures are to be estimated accurately. If such an adjustment were not applied to the data large households would systematically be over-represented using straightforward per capita measures.

Equation (iii) shows a general simple equivalence scale (exposition from Whitehouse, 2000). Equivalent income (Y_E) is the ratio of the household's gross income divided by the number of people in the household (n) raised to the power of the 'equivalence elasticity' \mathcal{E} :

$$Y_E = \frac{Y}{n^{\mathcal{E}}} \quad (\text{iii})$$

The equivalence elasticity is a choice variable, and is determined by the degree to which resources are shared within the household. An equivalence elasticity of one implies that there are no economies of scale. In such a situation, a household of two persons would need twice as much income as a person living alone in order to enjoy the same standard of living. The analysis presented above assumes an equivalence elasticity of one. At the other extreme, an equivalence elasticity of zero means that 'equivalent' income is simply the household's gross income. An extra household member has no effect on the household's standard of living, implying that they require no additional resources.

Burniaux et al. (1998), Smeeding and Saunders (1998) and Antolin et. al. (1999) use an equivalence elasticity of 0.5. Equivalent income is gross income divided by the square root of household size. Other studies use equivalence scales that differentiate between children and adults on the basis

that additional children 'cost' less than an extra adult. Johnson (1998) and Hauser (1998) use the OECD (1982) equivalence scales (Whitehouse, 2000). The 'old scale' is:

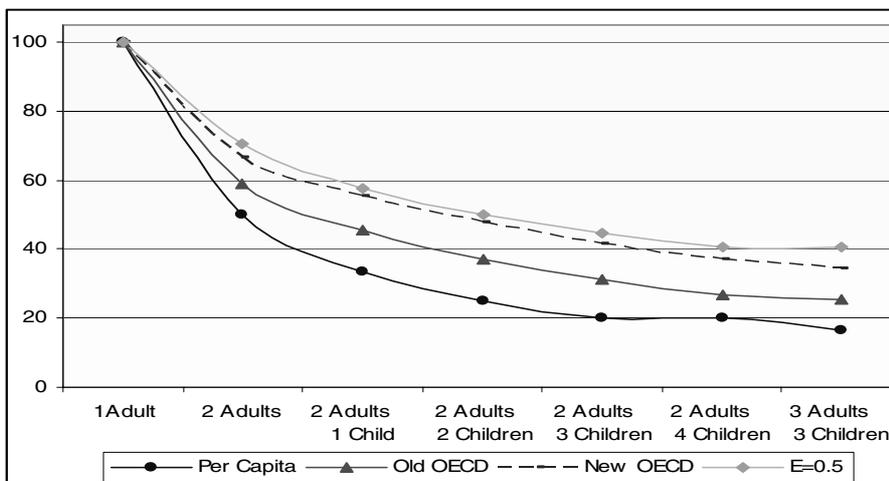
$$Y_E = \frac{Y}{1 + 0.7n_a + 0.5n_c} \quad (\text{iv})$$

where n_a is the number of adults after the first and n_c the number of children in the household. The 'new' scale uses a weight of 0.5 for each additional adult and 0.3 for children. The application of different scales can have quite a dramatic effect on household income and relative income status. Figure X compares three scales used in the literature (the new and old OECD scale, and an equivalence elasticity of 0.5) with the benchmark of unequivalised income. The horizontal axis shows the adjustment by household composition. For example, the income of a couple with two children is adjusted by multiplying by the following coefficients:

- 0.5 under the equivalence-elasticity approach ($1/\sqrt{4}$)
- 0.37 under the old OECD equivalence scale ($1/2.7$ i.e., the reciprocal of 1 plus 0.7 for the second adult and 0.5 for each of the two children)
- 0.48 under the new OECD scale ($1/2.1$ i.e., the reciprocal of 1 plus 0.5 for the second adult and 0.5 for each of the two children)

As Figure 24 illustrates, the effect on measured income of different equivalent scales can be quite large. The old OECD scale would rate a two-adult, two-child family as 48% richer relative to the base line (per capita measure), whilst the new OECD scale would rate each family member as 90% more wealthy. The equivalence elasticity approach generates the highest per capita income of 100% of non-equivalised income. The relevant equivalence scale should be guided by empirical analysis.

Figure 24: Equivalent scales and per capita income

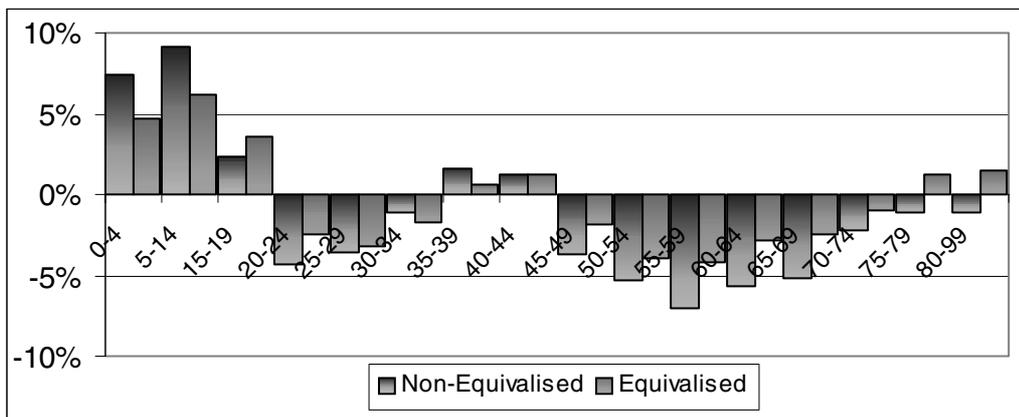


Source: Author's own calculation

2.5.3 Poverty analysis using equivalised income

The analysis above is repeated but per capita incomes are now derived using the old OECD equivalence scale. The old scale assumes that each additional adult requires 70% more income and each child 50% more income to enjoy the same standard of living. Equivalising income has the effect of compressing the level of income inequality across the income distribution, as Figure 25 illustrates – represented by lower percentage shares above and below the X axis.

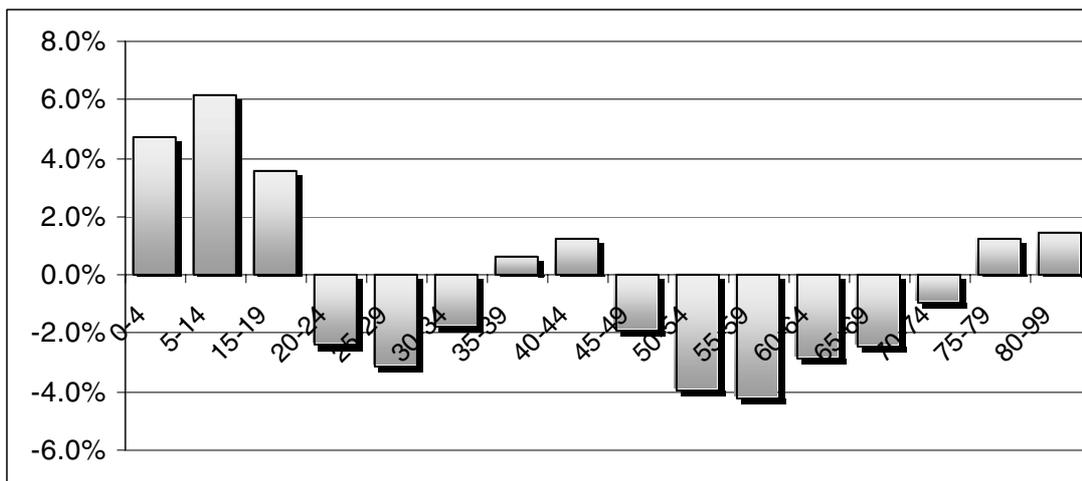
Figure 25: Comparison of equivalised and non-equivalised Income



Source: Derived from CFS data, Central Bank, 1996/97

A similar poverty profile emerges by age cohort after incomes are equivalised. The young elderly continue to be under-represented in the lowest quintile, whilst children continue to be over-represented. The only exceptions to this are the oldest two age cohorts who make a transition from being marginally under-represented to being marginally over-represented in the poorest quintile (see Figure 25 and 26).

Figure 26: Percentage in poorest quintile: equivalised



Source: Derived from CFS data, Central Bank, 1996/97

A high incidence of old elderly or children in the lowest quintile does not necessarily equate to a low standard of living for these sub-groups. This is dependent upon the distribution of income. It is conceivable that a high proportion of the elderly in the lowest quintile is consistent with a high standard of living where income distribution is narrow and average income levels are high. This contrasts with a situation where elderly are under-represented in the bottom quintile but have low welfare because of a broader income distribution and a lower average mean income. For example in very egalitarian countries like Denmark, 60% of pensioners are in the lowest income quintile of

the income distribution, however, average incomes of the elderly in Denmark is three-quarters of that population average. Thus the above analysis measures the relative poverty of the elderly and other groups in the population.

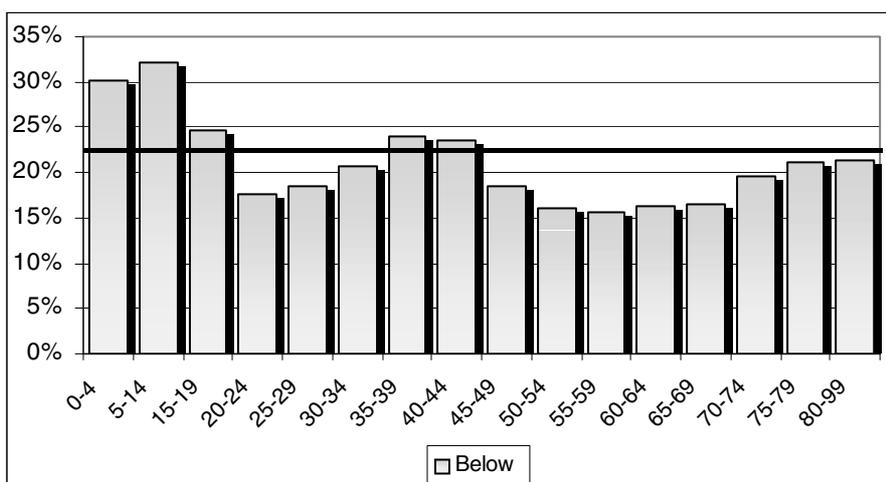
2.5.4 Poverty incidence of elderly households

To provide a more comprehensive picture of elderly welfare, the above analysis is supplemented with a review of the poverty incidence of elderly people. Poverty incidence – or poverty head count – measures the numbers of people living below a stated poverty line. This measure is more robust to changes in the shape of the income distribution relative to the quintile measure. The poverty head count can be measured in either relative or absolute terms. In the former case, the poverty line is some percentage of average income, while in the latter case the poverty line represents a minimum level of income or expenditure required to meet basic needs. Over the long term governments have tended to increase the safety-net level of income faster than prices (Whitehouse, 2000), implying that societies evaluate poverty in relative terms. However, absolute poverty levels are useful for international comparisons. The following analysis makes reference to an absolute measure of poverty defined in terms of a level of income required to meet an individual's minimal nutritional requirements. In addition to absolute and relative concepts of poverty, choices can be made between the use of income or expenditure.

Although income is easier to measure than expenditure, expenditure is a preferable indicator of standards of living for two reasons; firstly, individuals smooth consumption rather than income, and secondly incomes tend to be systematically under-reported in national surveys. These two factors result in an overestimation of poverty statistics when income measures are used.

Figure 27 illustrates the percentage of individuals in Sri Lanka living below the poverty line by age category. The poverty line was estimated to be Rs. 871 per capita per month in 1996/97 prices. The Sri Lanka average poverty head count was 23% in 1996/97. The graph suggests that the incidence of poverty among elderly groups is below the national average. In fact, the young elderly are significantly under-represented in poverty statistics. Consistent with the quintile analysis above, children are significantly over-represented in poverty statistics, reflected by poverty shares above the national average level.

Figure 27: Poverty incidence (poverty line = Rs. 871 per capita per month)



Source: Derived from CFS data, Central Bank, 1996/97

2.5.5 Poverty Analysis by Region and Gender

A marked variation in poverty incidence is apparent between the urban, rural and estate sectors of the economy. Poverty levels are highest among the rural and estate sectors as compared with the urban sector of the economy. Correspondingly, poverty rates are highest among estate and rural elderly as compared with the urban elderly (4, 9 and 50% respectively). Although the estate sector accounts for 4% of all households in Sri Lanka this geographical and ethnic sub-group – mainly of Indian Tamil origin, located in the central and highland areas – is systematically over-represented in poverty statistics. On average poverty incidence among the estate sector is double the national average (see Figure 28 a) to c).

Figure 29 disaggregates the poverty head count by gender. Despite the significantly lower proportion of women in the workforce and the correspondingly lower levels of social security coverage, these differences are not apparent in poverty statistics. To review welfare more comprehensively, income and/or consumption per capita measures should be derived on an individual rather than a household basis. The methodology explicitly assumes that resources are shared equally within the household, irrespective of gender and age. This is unlikely to be the case in practice; empirical studies have found that in low-income countries – in both Asia and Africa – men tend to consume a larger share of household income than the average level and typically spend less on other family members.

Figure 28: Poverty incidence by sector, urban and rural, 1996/97

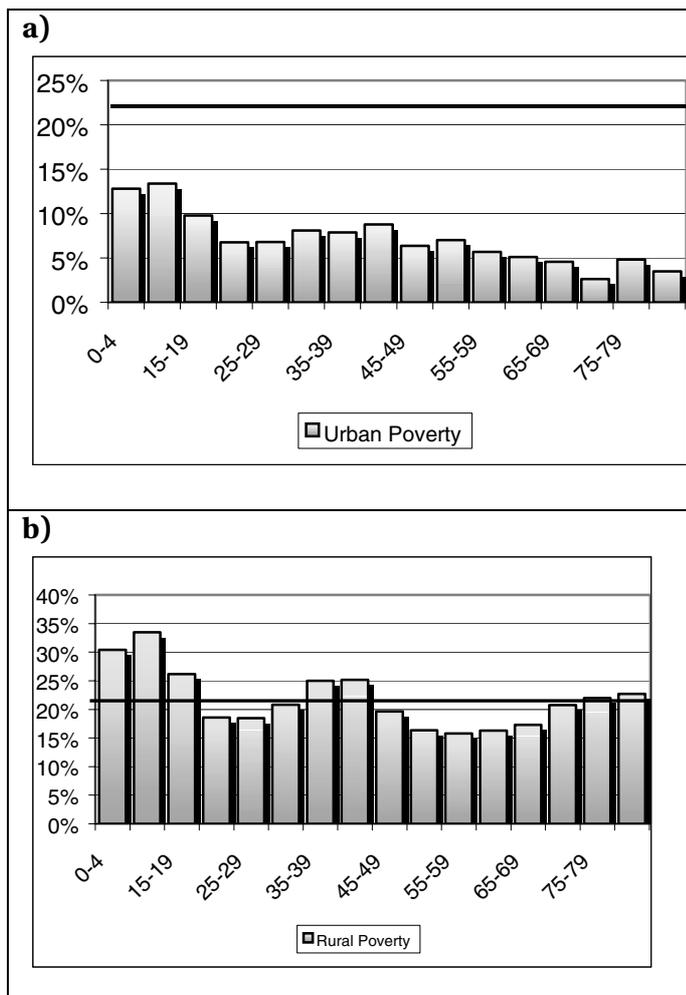


Figure 28 c): Poverty incidence: estate sector, 1996/97

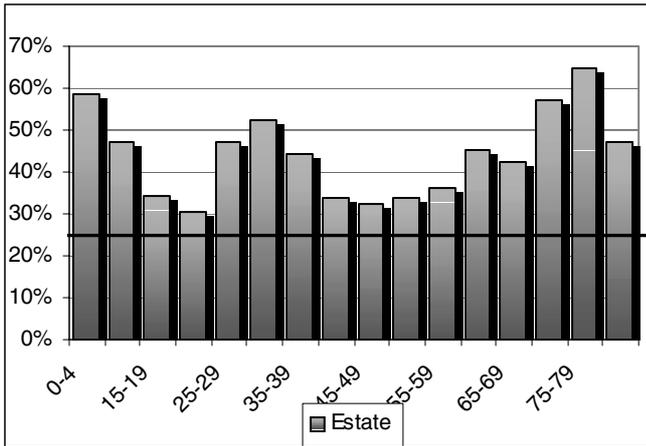
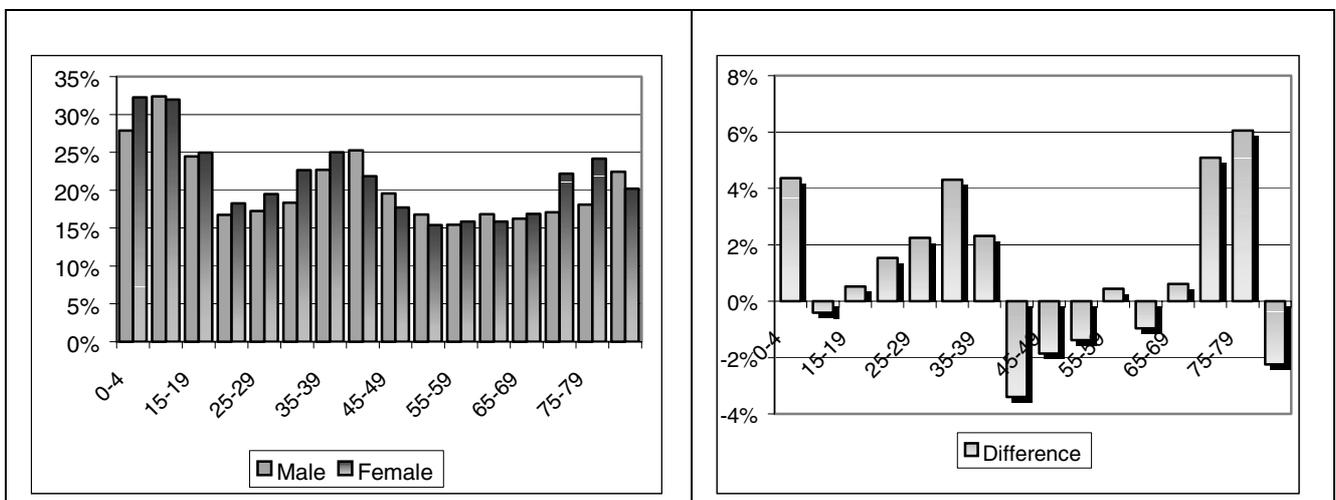


Figure 29: Poverty incidence by gender

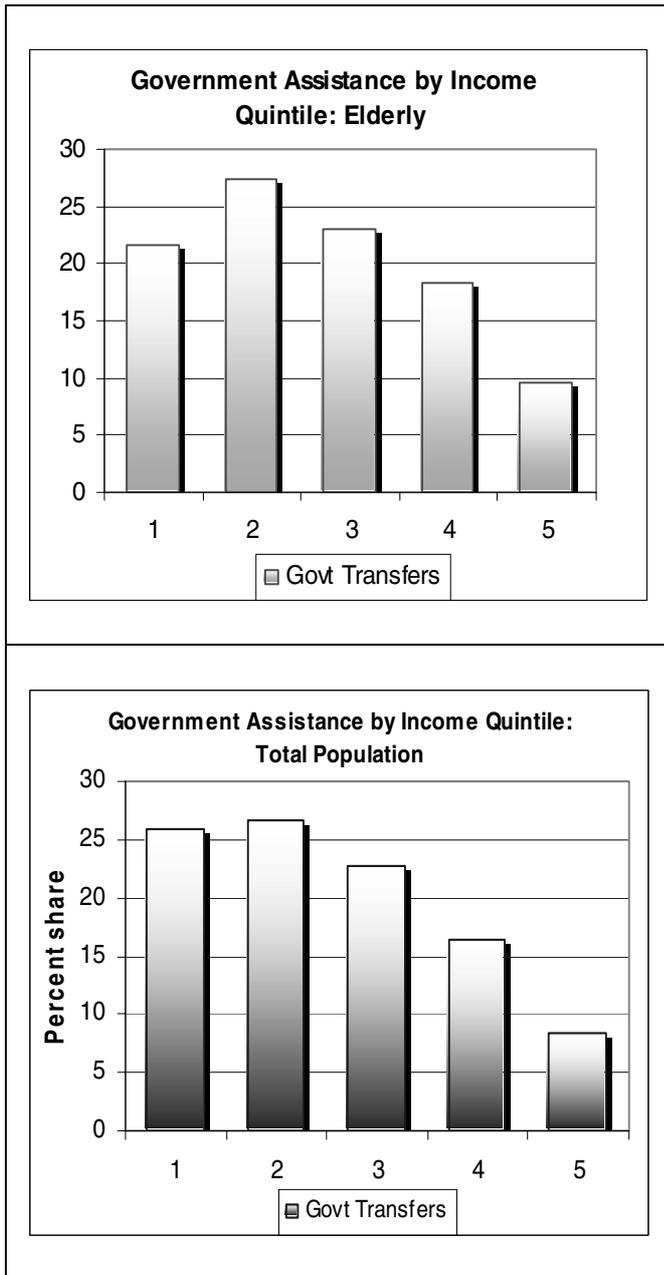


Source: Derived from CFS Data, CB, 1996/97

2.5.6 Targeting of government transfers

Figure 30 shows the percentage of elderly (60-plus) in receipt of social assistance from the government by quintile. The statistics suggest that the government’s main poverty alleviation programme (Samurdhi) is not well targeted at the elderly poor. The bottom quintile receives only a 28% share of total government transfers, whilst the top quintile receives 8%. This pattern is consistent with the distribution of Samurdhi payments for the population as a whole. A large proportion of those in the middle quintile and a small share of those in the highest quintile also receive social assistance. Welfare programmes in Sri Lanka have typically been untargeted, benefiting a broad cross-section of the population, regardless of income status. The World Bank (2002) estimated that 40% of the poorest households were excluded from the government’s main poverty alleviation programme. Figure 30 below corroborates these earlier findings.

Figure 30: Targeting of government transfers



Source: Derived from CFS data, CB, 1996/97

2.6 Social indicators of elderly welfare

Social indicators such as marital status and household structure can provide useful insights into the changing fabric of society and the changing patterns of vulnerability. Table 13 shows the percentage of elderly residing in households of differing size. The data suggest that only a very small minority of elderly men and women live on their own (approximately 1.5%). The majority of the elderly (approximately 9%) in 1996/97 lived in households of 3 or more people.

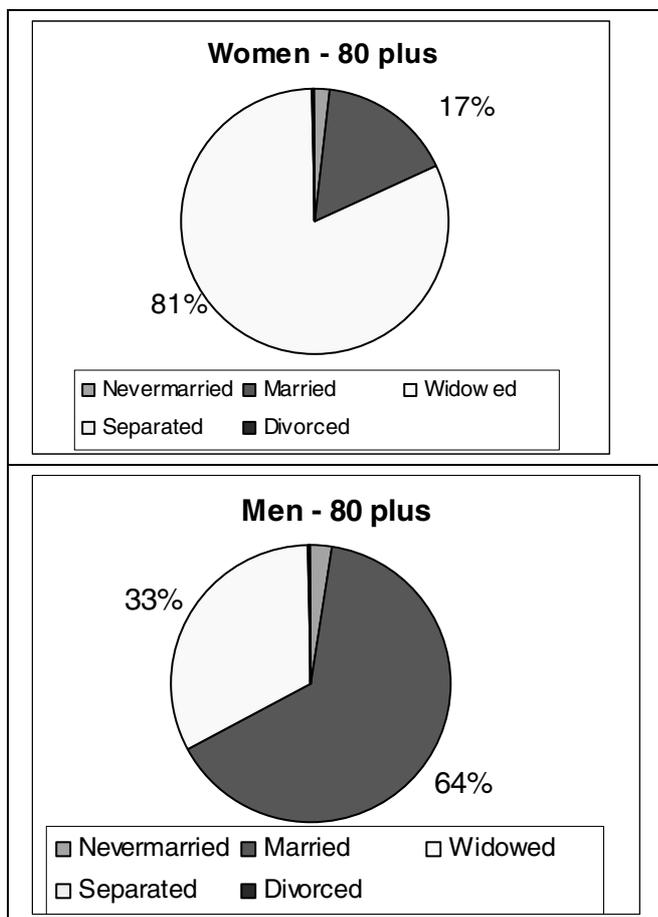
Table 13: Household structure of elderly

Household Size	% Share	Cummulative %
1	1.3	1.3
2	8.9	10.2
3	16.3	26.5
4	17.9	44.4
5	20.1	64.5
6	17.8	82.3
7	10.1	92.4
8	4.0	96.4
9	1.7	98.1
10	0.8	98.9
10+	1.1	100.0

Source: Derived from CFS data, Central Bank, 1996/97

Significantly higher proportions of women are widowed, in comparison with men, as Figure 31 illustrates. 80% of women aged 80-plus compared with 33% share of elderly men. This disparity is attributed to two factors; the tendency for women to marry men older than themselves, and the greater longevity of women. These statistics highlight the greater vulnerability and exposure to economic hardships of elderly women, whose welfare levels are likely to be even more at risk in the absence of family support.

Figure 31: Marital status of elderly men and women



Source: Derived from CFS Data, CB, 1996/97

2.7 Conclusions

The poverty incidence of households with elderly people is typically lower than the national average, and for the young elderly (55-65) significantly so. In contrast, the poverty profile of households with children is significantly higher. If policies are to target the poorest effectively they should aim to increase the incomes of the latter group. The elderly predominantly reside in multiple-person households, with multiple income sources, and many remain economically active in later life. These factors collectively explain their economically advantageous position. Although this is the situation now, the poverty incidence in future may be expected to change as the ranks of the very elderly expand. This does not imply that the elderly do not experience poverty or do not require the provision of social safety nets. The analysis has not attempted to measure the depth of poverty. Conceivably, elderly people, who fall below the poverty line, may do so by quite a significant margin. In addition, the above analysis assumes that resources are shared equally among household members. Again, the elderly may command significantly fewer resources than the average household member. Further data analysis at the level of the individual and for consumption data would be needed to verify such patterns.

Statistics on marital status highlight the strong gender dimension of the ageing process. A large incidence of the very elderly are women, the majority of whom are widowed. Ageing will be an event with disproportionate implications for women, not only because of their greater numbers when very old, but because they currently constitute the majority of those without formal coverage in low-income countries. The systematic evaluation of the social and economic welfare levels of different groups is therefore an important exercise to inform policy priorities and ensure that resources are effectively deployed in a manner that targets those most in need, and is not guided by self-interest groups, political expediency or pre-conceptions of who the poor are. Policy development for the aged in many industrial countries has been strongly influenced by lobbies defending the interests of people, who typically command greater political and financial resources relative to other groups. Such activism, although important in raising the profile of those genuinely excluded has at times been at the expense of considerations of economic efficiency and equity. With the elderly electorate increasing its share over time, governments will need to ensure that their decisions are consistent with their stated objectives and a thorough situational analysis of who the poor really are.

Chapter 3: Retirement Systems – Adequacy, Coverage, Fiscal Sustainability and Poverty Impact

3.1 Introduction

Pension reform is often a complex and sensitive subjects however, its importance for a country's overall economic development should not be overlooked. Retirement systems which are appropriately designed, managed and financed can have significant pay-offs for economic growth, in addition to the better recognised and acknowledged effects on welfare and poverty. Earlier debates on pension reform focused exclusively on welfare considerations; however more recently the debate has also accommodated the importance of economic growth effects of pension design and reform.

The broadening of the role of pension's policies in supporting economic development stems from their observed implications in many sectors of the economy. Pension reform can have direct and indirect effects on labour markets, the financial sector, and government finances, in addition to augmenting savings and investment. For example, pension policies can have direct effects on labour market mobility, labour force participation and the cost of labour. Contractual savings, in the form of pension and insurance funds, can boost domestic savings and generate the financial resources necessary for large-scale investment in economies that typically lack access to international finance. Pensions can also influence macroeconomic stability by creating significant fiscal liabilities for the government. These liabilities can be implicit in the form of pay-as-you-go pension schemes or explicit where the government draws on pension reserves to finance government expenditures.

3.2 International policy debate

The optimal design and management of a pension system in the sense of maximising growth and alleviating poverty have been articulated by various international organisations, but most prominently in recent years by the World Bank. The ILO has historically been an important advocate of social security and policy advice in earlier years. In some areas these institutions have witnessed a convergence of policy advice, most notably on the importance attached to multi-pillar approaches. However, in other areas significant differences in views persist. The Bank's pension model gives supremacy to the role of the private sector in the management of pension reserves, whilst the ILO model promotes state provision as a mechanism to enhance social solidarity. Views regarding the appropriate financing of pension liabilities also differ.

Both institutions unanimously advocate the adoption of multi-pillar approaches for the design of an optimal pension system. The World Bank's (1994) pension plan articulated in its *Averting* publication has three 'tiers'. The first tier acts as a social safety net, redistributing income via the tax system to the lifetime elderly poor. The first tier is mandatory and the responsibility of the public sector. Benefits can be means-tested or provided on a universal basis. The second pillar is the principal vehicle for savings. The Bank favours a mandatory second pillar that is fully funded and links contributions to benefits. Pension funds under the second pillar are privately managed but publicly regulated. The underlying rationale for the design of the second pillar is to facilitate savings and boost capital accumulation and financial sector development. The model therefore separates the redistributive function from the savings function. The third pillar is a voluntary pillar, based upon occupational and personal savings plans, providing additional protection for those who want more income in retirement. The most controversial aspect of the model has been the second pillar, particularly the emphasis given to the linking of contributions to payments and the management of funds by the private sector.

The ILO model (ILO, 1998) gives considerably less importance to the role of the private sector in the management and financing of pension assets. In contrast to the Bank's three pillars approach, it has four 'tiers'. The first tier is equivalent in design and function to the Bank's first tier. The key differences lie in the management and financing of the second tier. The second tier is an unfunded defined benefit system and is managed through the government's social security system. The ILO model, therefore, identifies the public sector as a key player in the management and financing of workers' pensions. Workers contribute on a collective basis in an effort to pool and diversify economic, income and longevity risks mutually.

The third and fourth tier can be either voluntary or mandatory and managed by the government or the private sector; however, the key distinction relative to the other two tiers is that they are funded. These tiers have similarities to the Bank's second pillar in terms of encouraging private savings although, unlike the Bank, they do not constitute the dominant vehicle for income security in old age. The ILO model was adopted in several OECD countries during the pre-war and immediate post-World War II era, reflecting the dominance of the ILO in the international dialogue on pensions at that time.

The Bank's solution to the impending ageing crisis clearly focused on the need for systemic pension reform. Such an approach was in stark contrast to the ILO, which had identified ageing as an emerging problem but had interpreted the response as requiring substantial, but mainly parametric, adjustments to existing entitlements to provision (ILO, 1998). More recently the preference for systemic reform as a necessarily fiscal solution to ageing has become less accepted. The Bank has now acknowledged the need to be more flexible in its approach in relation to the funded/unfunded debate. Conventional wisdom has acknowledged that the financing of the pension system is irrelevant in terms of responding to changes in a country's economic dependency ratio. Whether or not a system is PAYGO or funded, the appropriate response to ageing will require at some point changes to pension system parameters. These parametric reforms include changes in the benefit-formula, the level of contributions, and years worked through raising of the retirement age, either individually or in combination.

A criticism levelled at both institutions has been the tendency for policy advice to prescribe a single one-size-fits-all model. The validity of the respective models should be evaluated in terms of individual country circumstances. Countries with a strong financial sector and government regulatory capacity may opt for a pension system more similar in design to the Bank model. Significant transaction costs associated with private sector management should not be underestimated; approximately 30 to 50% of premium payments are absorbed in administration and marketing costs. Other countries whose financial systems may be less developed and where government regulatory capacity is weak might prefer to adopt a model consistent with that prescribed by the ILO with its emphasis on public sector management ensuring that appropriate safeguards relating to the investment of public funds are in place.

3.3 Sri Lanka's retirement system

The retirement system in Sri Lanka consists of a combination of fully funded and pay-as-you-go (PAYGO) schemes covering both formal and informal sector workers. Collectively these schemes cover approximately 25% of the working age population, implying that a large proportion of that population remain without formal social security coverage. Although not comprehensive, the level of coverage is high by South Asian standards; compare, for instance, pension coverage of 10% in India and 7% in Bangladesh.

The largest pension scheme in Sri Lanka is the Employees' Provident Fund (EPF), which is a fully funded defined-contribution scheme covering workers in the formal private sector. In an effort to extend pension coverage, the government introduced voluntary pension schemes in the mid-1980s for informal sector workers, and these schemes currently operate on a partially funded basis. Expansion of social security coverage to the informal workers has been unsuccessful in many

countries, including Sri Lanka, partly because of logistical difficulties in the collection of payments, but also because of the high incidence of non-payment resulting from the contributors' low incomes and inability to pay.

A PAYGO system operates for public sector workers, with benefits related to final salary and years of service. Currently all schemes are employment based and managed by the government, on behalf of both public and private sector workers. Formal retirement schemes, as currently designed in Sri Lanka, are therefore contingent upon individual (or one spouses') participation in the labour force. Given the emphasis on funded contributions, the current retirement system corresponds more closely with to the World Bank model. The main pension tier – the EPF – is a defined-contribution scheme, with employers and employees making joint contributions into individual accounts. Departing from the Bank's private sector approach, accumulated pension reserves are administered and managed by the Central Bank on behalf of workers. Currently Sri Lanka lacks a first tier in the form of a universal or means-tested pension, and this leaves a large segment of Sri Lanka's population without formal social security coverage in old age.

The linking of benefits to contributions which is so prevalent in Sri Lanka's retirement system has been a growing feature of pension reforms in other countries, notably in Latin America. The rationale for funding has been motivated by enhanced fiscal sustainability, financial sector development, reduced evasion, and fiscal transparency. However, despite these many potential benefits, these economic advantages are not automatically achieved.

The positive attributes of funding have been undermined in Sri Lanka by the government's monopolisation and use of EPF funds to finance the budget deficit. Absorption of EPF funds in this way has effectively converted the fully funded scheme into a PAYGO one. Below-market interest rates paid on fund balances has constituted an implicit tax on members, creating incentives for evasion which, in the long run, can undermine the ability of the fund to provide old age income security to members. Retirement obligations of EPF members in future have to be financed from general taxation or additional borrowing. If the latter route is adopted this is likely to add to Sri Lanka's sizeable domestic debt burden (currently 100% of GDP), with consequences for inflation, economic growth and the competitiveness of the economy. Also financing of the government's pension obligations through increased borrowing will become increasingly difficult, given the government's commitment within its macroeconomic policy framework endorsed by the IMF to reduce the fiscal deficit in the coming years.

Funding is not without its limitations. The absence of risk-pooling amongst participants to mitigate longevity and income risks is a major drawback. To some extent this can be mitigated by the purchase of annuities, although currently a market for annuities in Sri Lanka does not exist. Funded schemes – particularly those based upon individual accounts as found in Sri Lanka – limit the level of redistribution towards low-income workers and non-contributors.

The following sections will describe the principal components of Sri Lanka's retirement income system, namely in the formal sector:

- the Employees' Provident Fund (EPF) covering workers in the formal private sector
- the Public Service Pension Scheme (PSPS) covering public sector workers
- the Approved Private Provident Funds (APPFs) covering private sector workers who have opted out of the EPF,

and in the informal sector;

- the voluntary schemes for farmers, fisherman, and the self-employed.

The discussion will review current schemes in relation to coverage, income adequacy, fiscal sustainability and investment performance.

3.3.1 Current retirement schemes

Employees' Provident Fund: This is the largest retirement savings scheme in Sri Lanka. Workers and employers are required to make joint contributions equivalent to 8% and 12% of gross earnings respectively. Contributions are credited to notional individual accounts held in the name of the worker, and interest is credited at the end of each year. The Central Bank is the principal custodian and investment manager of the fund. Although beneficial from an administrative point of view, this arrangement has created a conflict of interest in the management and use of funds. The Central Bank is the principal financier and issuer of government debt, and to date a substantial proportion of the EPF fund (98%) has been invested in government paper with a long-term rate of return below market rates.

Public Service Pension Scheme: This is a mandatory non-contributory scheme covering workers in the public sector. The scheme has now been closed to entrants since 2002. The PSPS is supplemented by a mandatory contributory survivors and disability plan - the Widows and Orphans Pension Scheme (WOP).

Voluntary schemes (Farmers, Fishermen and Self-Employed Scheme): These schemes were established by successive Acts of Parliament in 1987, 1990 and 1996 respectively to provide social security cover for low-income workers outside the formal sector. The schemes collectively cover approximately 80% of all informal sector workers. To qualify for a pension, members, under all schemes, are required to make contributions for a minimum number of years, varying according to the age of enrolment; qualifying years are lower but annual payments higher the older the age of enrolment. Due to the high incidence of default, the administrators have extended grace periods to allow members to repay outstanding contributions. Despite such provisions, the default rate has not declined significantly.

Additional social security benefits are provided to benefit in addition to the standard old age pension. A survivor's pension and death gratuity are available to the spouses of deceased members, and disability benefits are paid in the event of permanent or partial disablement. These extra benefits, financed from the main contributions, provide an additional and important source of livelihood security for participants. Empirical work by the ILO suggests that the informal schemes which have been most successful in extending coverage - particularly to low-income workers - have been those where contributions are low and where benefits reflect the priority needs of self-employed workers - typically health care, but also survivors and invalidity insurance (ILO, 2001:58). Low income workers typically place a premium on a mix of benefits that can provide both short-term and long-term livelihood security.

Approved Private Provident Fund (APPFs): Legislation introduced in 1995 allowed employers to opt out of the EPF and establish private provident funds. By 1998, 164,000 individuals had enrolled in the 204 APPFs, with a total asset base of Rs 25 billion. The average APPF account balances were higher than the average EPF balances, reflecting the higher average income and contributions of the members. To date, only 5 APPFs have failed, representing a small fraction of the total number of individuals covered (0.5%).

3.4 Coverage by retirement scheme

Employees' Provident Fund (EPF): The EPF covers workers in the formal private sector. It was estimated that 2.9 million workers were eligible to join the scheme in 2001. By the end of that year the EPF had a total of 1.9 million active accounts, representing a coverage rate of 65 per cent of the eligible population. The remaining 35%, eligible but not covered, are likely to be workers engaged in irregular or casual employment whose employers have been able to evade enrolling them. Evasion and non-payment are likely to become growing problems as the proportion of casual and contract workers steadily increases. Between 1986 and 1997, for example, the proportion of casual workers in the labour force increased from 28.6% to 33.3%. Greater enforcement on the part of the

EPF authorities and awareness-raising activities to educate workers about their labour rights will be needed to minimise further evasion. Of those covered, 30% were women and 70% were men, confirming the current gender bias in Sri Lanka's formal social security system.

Public Service Pension Scheme: This is a non-contributory scheme financed from general taxation. Eligibility extends to all permanent workers in the public sector – currently a total of 750,000 workers (equivalent to 10.7% of the total labour force). Coverage of those eligible is currently 100%. The PSPS is supplemented by a mandatory contributory survivors and disability plan – the Widows and Orphans Pension Scheme (WOP). In 2002, pension payments were made to 400,000 pensioners, 100,000 of whom were widows.

Farmers and Fishermen Pension Scheme: Total enrolment under the Farmers scheme was 675,000 members in 2002, out of an estimated eligible farming population of 1.9 million⁷ – representing a coverage rate of 65%. Of those enrolled 33% were women, and 66% men – broadly reflecting the gender composition of farmers in the labour force. The fishermen's scheme has enrolled a larger proportion of its eligible population; however, those enrolled were predominantly men. Approximately 48,000 members out of an estimated fishermen community of 61,000 were enrolled by 2002, representing a coverage rate of 79% (see Table 14).

Self-Employed Pension Scheme: Approximately 65,000 self-employed workers had enrolled by 2002. Analysis of LFS data indicates a coverage rate of 8% of those eligible (equivalent to 815,000 workers). The high incidence of default – estimated to be 30% of those enrolled – reduces the effective coverage to around 5%. The low coverage is explained in part by the reluctance of self-employed workers to enrol, but also by their inability to pay the combined worker and employer contributions.

3.4.1. Summary of coverage by scheme

Sri Lanka's working age population (excluding the North and the East) was estimated to be 12 million in 2002. Of these between 6.2 and 6.4 million workers were eligible to join one or other retirement scheme operating in the country – suggesting an eligibility of 54% of the working age population. Of those eligible to join a scheme, 3.5 million had enrolled, representing a coverage rate of 36% of the working age population. However, due to the high level of default, the effective coverage is lower than this percentage would suggest.

The default rate based on sample survey analysis was estimated to be between 50 and 70% of those enrolled. Therefore, approximately 2.8 to 3 million of those enrolled are actively contributing. This represents an effective coverage rate of around 25% of the working age population (see Figure 32 and Table 14).

⁷ Estimate of the farming population based on persons whose primary occupation falls into ISCO-88 categories 6110-6139 based on analysis of LFS 2000 data (all survey rounds).

Figure 32 a) Eligibility of WAP

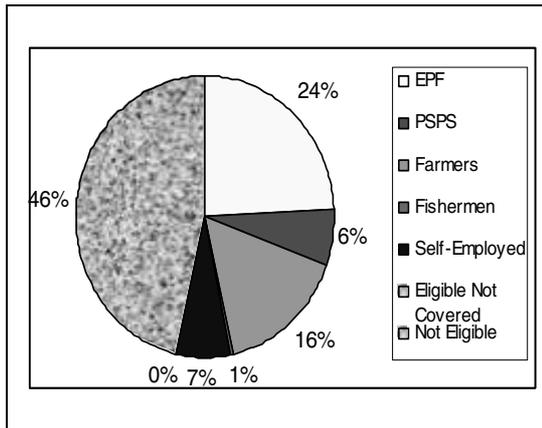
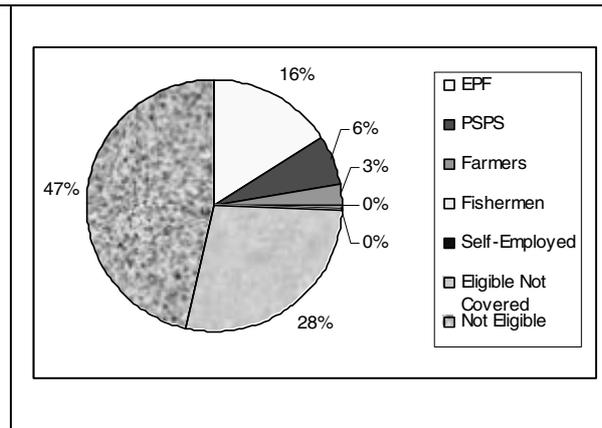


Figure 32 b) Effective coverage of WAP



Source: derived from LFS and CFS data sets, 1997

Table 14: Eligibility and coverage by scheme

	Membership (000s)	Eligible Workers (000's)	Coverage (as % of eligible)	Effective Coverage (as % of eligible) ^a	Effective Coverage (as % of WAP) ^b
EPF	1,900	2,900	65	65	16
PSPS	750	750	100	100	6
Farmers	675	1,900	36	18	
Fishermen	48	61	79	39	0
Self-Employed	75	815	8	4	0
Total	3,438	6,416	54	47	25

Note: a. Effective coverage factors default rate
b. WAP = Working Age Population (15-65 years)
Source: LFS, CFS, SLIS survey data (2000, 1997, 2001)

Table 15 provides a breakdown of eligibility by gender. It is evident from the data that a significantly larger proportion of men are eligible (67%) relative to women (33%).

Table 15: Breakdown of eligibility by gender (%)

	Male	Female
EPF	70	30
PSPS	64	36
Farmers	67	33
Fishermen	100	0
Self-employed	77	23
Total	67	33

Source: Derived from LFS, 2000 (all quarters)

3.4.2 Who are not covered?

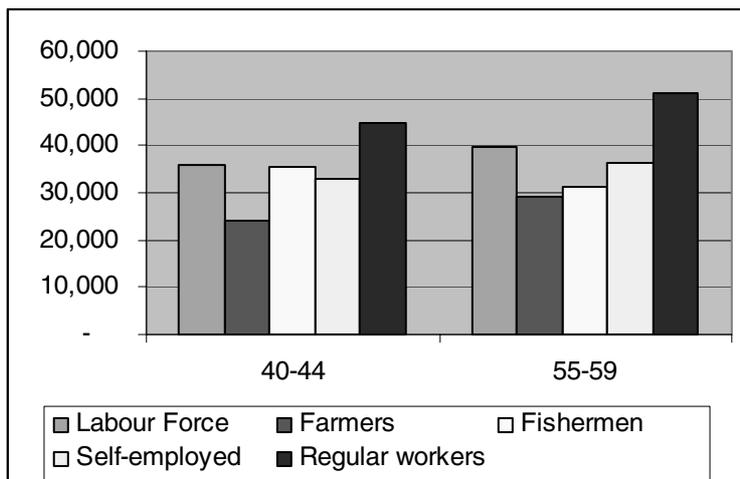
The above analysis suggests that 75% of Sri Lanka's working age population, or 8.5 million people, are not covered by a pension or provident fund scheme. For policy purposes, gaining a better understanding of those not covered is valuable, particularly if the government's stated policy objective is to extend access. Intuitively, a large proportion of those without coverage are likely to

be outside the labour force, given the employment-based nature of the current systems. Individuals without coverage principally fall into two categories:

- **Not eligible:** Of those without coverage 65%, or 5.5 million individuals, were not eligible to join a scheme. A large proportion of those not eligible were outside the labour force. Using LFS data, approximately 90% of those not eligible (5 million people) were outside the labour force, the vast majority of them (70%) being women engaged in domestic work.
- **Eligible not covered:** 35% of those without coverage, or 3.3 million people, were in fact individuals who were eligible to participate in a scheme, but had not done so. Non-participation was principally related to default or non-enrolment. It was estimated that 12% of those eligible but not covered were defaulters, whilst the remaining 82% had not enrolled in the first instance.

A large proportion of those within the second category – eligible but not covered – were identified as farmers and private sector workers. Non-enrolment can be explained by the income status of such workers. Analysis of LFS data reveals that farmers have lower average incomes as compared with other occupational groups (see Figure 33). Farming incomes are known to exhibit less stability and to be subject to greater variation than other occupations. Many of those engaged in agricultural activity have no cash income owing to their status as unpaid family workers. These factors explain why large numbers of farmers eligible to join have not done so. The high incidence of non-enrolment among private sector workers is explained by evasion on the part of employers.

Figure 33: Comparison of income by occupation (2000)



3.5 Adequacy of retirement income

The number of individuals covered is only one dimension of the sufficiency of a country's retirement system. The level of benefits derived is equally important. Most schemes in Sri Lanka do not provide sufficient income for retirees, owing to a combination of the following factors; insufficient nominal contributions related to low incomes, insufficient years of contributions, and the absence of formal mechanisms to index-link pensions to wages or prices.

3.5.1 Employers Provident Fund

The level of benefits derived from the EPF is linked to the level and years of contributions. In 1993 a member's average account balance was Rs.41,896. If converted into a 20-year no-cost annuity,

this would be expected to generate a monthly income of Rs.461. Without alternative sources of income, pensioners would face a retirement in poverty (the poverty line is equivalent to Rs.606 per month in 1993 prices). By 2002 average balances were Rs.148,175 equivalent to a monthly cash flow of Rs.1,632 if converted into a no-cost 20-year annuity (see Table 16). These figures suggest that average account balances have grown rapidly over the last 5 years, reflecting the cohort effect described in Chapter 2.

Table 16: EPF statistics 1993-2002

	Active Members (000's)	Total Balance (Rs. Mn)	Average Account Balance (Rs.)	Monthly Annuity (Rs.)	Poverty Line (Rs.)
1993	1,490	62,425	41,896	461	606
1995	1,553	81,500	52,479	578	768
1998	1,790	167,470	93,559	1,030	1,067
2000	1,913	222,933	116,536	1,283	1,291
2002	1,984	293,980	148,175	1,632	1,562

The replacement rate defined as the expected level of retirement income as a share of final or average lifetime wages, can be calculated, based upon a hypothetical set of parameters. This exercise can give an indication of the level of income a retiree can expect as an EPF member, on the basis of an uninterrupted history of payment and a positive rate of return on their investments. Calculation of replacement rates is sensitive to the level and years of contributions, the expected growth of wages, interest rates and the passivity ratio (which measures the proportion of years spent in work relative to the years in retirement). We can assume the following parameters: a fixed contribution of 20 % of wages, from age 18 years to 60 years; a real investment return of 2% on fund balances; real wage growth equivalent to 2% per annum; and a life expectancy of 25 years.

The replacement rate based upon this set of assumptions, which are broadly consistent with those prevailing in Sri Lanka, would permit an individual to receive 65% of final salary at retirement, if all contributions were honoured. If the same individual continued to work until the age of 65, replacement income would increase to 89% (see Table 17). These calculations highlight the sensitivity of the replacement rate to the system's parameters – in this instance, the age of retirement.

Table 17: Estimated replacement rate of EPF members

Age	Years of contributions	Account balance	Annuity payment	Average lifetime wage	% Lifetime salary	% Final salary
55		1,356,733	69,492	100,355	69%	49%
57	37	1,485,837	80,675	102,621	79%	55%
60	39	1,695,041	101,603	106,141	96%	65%
63	42	1,924,288	129,555	109,813	118%	78%
65	45	2,089,074	153,861	112,349	137%	89%

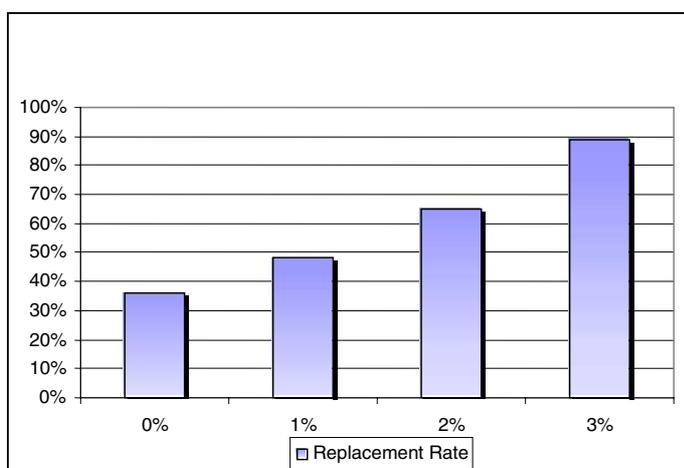
Source: Author's Calculations

Notes: Interest and Wage Growth = 2% per annum; Worker joins labour force aged 18 years

If interest earned on accumulated balances drops to zero (consistent with the long-term rate of return on EPF balances), replacement income would fall to 35% of final salary, leaving all other parameters unchanged. Small changes in real interest rates can therefore have significant effects on replacement income, as illustrated in Figure 34. Investment strategies that do not maximise

investment returns for workers, are therefore likely to have large opportunity costs in terms of forgone retirement income.

Figure 34: Relationship between replacement rate and real rate of return



A similar calculation can be made for the average female worker in Sri Lanka. Based on 2000 LFS data, women worked an average of 23 years. On the basis of 23 years of contributions, with all other parameters unchanged, replacement incomes would equal 18% of final salary (or 22% of lifetime wages). The figures demonstrate the significant gap in formal retirement earnings between men and women. The low replacement rates reflect the low participation rate of women currently in the workforce. What should the desired target replacement level be? The World Bank, as a rule of thumb, recommends replacement rates equivalent to 80% of average lifetime wage or 55% of final salary for low-income countries (World Bank, 1994).

The calculation of a replacement rate intrinsically assumes the ability of pensioners to convert lump sum payments into an annual fixed stream of income or annuity. Currently no facility exists in Sri Lanka for members to convert lump sum funds into annuity payments, as markets for annuities do not exist. Members currently have no option but to invest their money in bank deposits and government paper. The average weighted deposit rate in Sri Lanka has remained positive in real terms, although only marginally so. Over the last 5 years real rates of return on commercial bank deposits have averaged 1% per annum (see Table 18). Although investment returns are low, pensioners at least have some guarantee – unlike others in the public and informal sectors – that the real value of their pension funds and hence retirement income can be maintained.

Table 18: Deposit and real interest rates

	AWDR	GDP deflator	Real Interest rates
1998	9.2	9.21	(0.04)
1999	9.1	4.16	4.92
2000	9.29	7.28	2.01
2001	11.00	13.66	(2.67)
2002	9.22	8.32	0.90
1993-2002	10.87	9.09	1.77
1997-2002	9.6	8.6	1.0

Note: AWDR = average weighted deposit rate

In conclusion, therefore, the EPF has the potential to provide income adequacy in retirement, provided contributions are made over a long period of time (minimum of 40 years) and real interest rates remain positive. These factors are themselves dependent upon wider economic growth and productivity.

3.5.2 Public service pension scheme

Retirement income under the PSPS is based on final salary and years of service. In comparison with public sector schemes in other countries, the percentage of replacement income is fairly generous. For example, an individual can retire on 90% of final salary after 30 years of service. For comparative purposes, a public sector worker in the UK completing 30 years of service would be entitled to 50% of final salary. To qualify for pension rights in Sri Lanka, a minimum of 10 years of service is required, with an entitlement of 40% of final salary. The minimum retirement age is currently set at 55, with a mandatory age of retirement at age 60; however, extensions of service can be granted under specific circumstances on a case-by-case basis.

The PSPS pension is calculated on the last drawn salary rather than the practice in other countries of using an average of the last 5-7 years of employment. Averaging incomes over several years acts to reduce pension payments to high-income earners and also compresses the income distribution in retirement. It also act reduces the fiscal costs to the government. The practice of reducing the commuted pension received, by 2 percentage points short of 30 years is also somewhat less than the international norm, which ranges between 3 to 6% (World Bank, 2000).

Despite the perceived generosity in the pension formula, public sector pensions have rapidly lost their value in real terms, owing to the absence of formal index-linking of pensions to prices or wages. The deterioration in the real value of pension payments has eroded the standard of living of many public sector pensioners and created payment anomalies amongst pensioners over time. The government has made adjustments to public sector pensions on an *ad hoc* basis to increase their real value; however, these adjustments have on average been below the rate of inflation on average (ibid.).

The average pension in 2002 was worth Rs.6,500. However, due to the skewed distribution of pension payments, the median pension payment was nearer Rs.5,500. In 2002, 77 per cent of civil servants earned less than Rs. 5,000, placing them in the second lowest income quintile relative to the population as a whole. A further 92% earned less than Rs.6,000 and 99% earned less than Rs.10,000 (Department of Pensions, 2002). The generosity of the PSPS replacement formula by international standards is offset by the comparatively low salaries paid to public sector workers.

3.5.3 Farmers and Fishermen Scheme

Adequate retirement income is a major problem within informal sector schemes, mainly due to the fact that pension payments are not index-linked to inflation. As a consequence, the pension rapidly loses its value in real terms at the point of and during retirement. For example, a member joining the scheme today aged 18 years would be guaranteed a pension payment equivalent to Rs.4,170 a month when s/he retires. However, at the point of retirement at age 60, assuming a 5% inflation rate, the pension would be worth Rs. 537 in net present value terms (see Table 19). The government has adjusted the pension on an *ad hoc* basis to maintain its real value, however.

Table 19: Impact of inflation on real value of pension

Age at enrolment	Promised monthly pension (Rupees)	PV of pension at age 60 (Rupees)	
		Inflation=5%	Inflation=10%
18	4,167	537	10
25	2,500	453	16
35	1,333	394	36
40	1,250	471	70
55-59	1,000	864	751

Source: Author's Calculation

3.5.4 Self-employed

The lack of formal index-linking of pension payments to inflation also renders the self-employed pension worthless during and at the point of retirement. An individual enrolling at age 18 years would be entitled to a monthly pension of Rs 2,500 when s/he retires at 60. However at the point of retirement the promised pension would be worthless: equivalent to Rs. 322 or 5% of per capita income in 2002 (assuming 5% inflation).

3.6 Fiscal sustainability

The only significant fiscal liability for the government is the PSPS. Fiscal projections contained in Chapter 4 conclude that, under a policy of index-linking to prices, the fiscal liabilities of the PSPS decline rapidly from 1.9% to 0.1% of GDP. However, such a policy implies a significant deterioration in the living standards of many public sector workers and is unlikely to be politically sustainable. If pensions were index linked to wages pension liabilities would increase from 11% to 14% of recurrent revenues by 2050. The increase in costs is attributed to a 35% expansion in pensioner numbers. Despite earlier pessimism the PSPS is not likely to create unmanageable fiscal pressures for the government. Such a policy is considered to be broadly affordable by the government. The implicit pension debt of the PSPS is 102% of GDP in net present value terms – equivalent in size to Sri Lanka's explicit debt burden. If Sri Lanka's tax base expands as anticipated in macroeconomic framework projections, the fiscal costs of the PSPS, even under a policy of full wage indexation, are expected to *fall* as a share of both recurrent revenues and GDP.

On advice from the WB, the government has now closed the non-contributory pension scheme to new workers. The successor scheme is expected to be a contributory scheme similar to the EPF – however, it has yet to be ratified by Parliament. Such a policy is seen, however, as unlikely to generate fiscal savings for the government, principally because these costs will be borne by the government via higher salaries. The policy would otherwise be unsustainable given the large pay differentials between the public and private sectors. Public sector salaries are currently 70% of average per capita GDP, a large proportion of the difference being compensated for by the non-contributory pension scheme. This scheme is perhaps the only remaining incentive for workers to remain in the public sector. Without it the retention of good quality workers would be made more difficult, with consequent implications for public service delivery. The successor scheme is likely to be financed via an increase in public sector salaries, thus implying no net fiscal savings for the government.

Sri Lanka's principal retirement scheme – the EPF – is a contributory fully funded scheme which should not, in theory, experience a funding gap. Although at any point in time contributions may exceed payments and vice versa, the inter-temporal net fiscal transfer is expected to be neutral, as the EPF is designed to be actuarially fair. One could argue, however, that the net fiscal transfer has

been marginally positive, running from pensioners to government because of the implicit tax charged on members' balances resulting from the below-market rates of return earned.

The implicit debt obligation of the informal sector schemes combined is small – in the region of 0.7% of nominal GDP in net present value terms. Detailed net present value calculations are given in Annex 2. The current *de facto* policy of index-linking pension payments to prices increases the government's implicit debt obligations significantly to 20% of nominal GDP at 2002 prices. 90% of these costs are attributed to the farmers' scheme, because of the higher enrolment numbers. Fiscal costs decline to 10% of nominal GDP (2002) in NPV terms when default rates are factored in (see Table 20). The lack of actuarial expertise in the management and administration of these schemes is a significant impediment to the optimal design of pension programmes.

Table 20: NPV pension debt as % of nominal GDP (%)

	Non-Inflation Indexed	Inflation Indexed	Inflation Indexed – with Default
Farmers	0.7	17.7	8.8
Fishermen	0.0	1.3	0.6
Self-Employed	0.0	1.1	0.7
PSPS	102	102	102
Total	102.7	122.1	112.3

Source: Author's Calculation

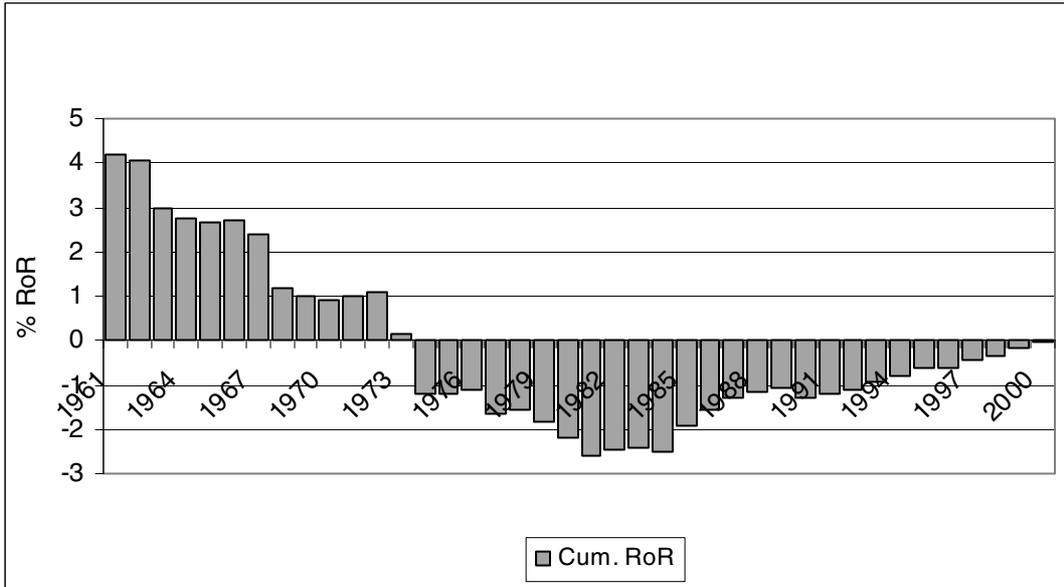
The government's implicit debt obligation of all the schemes combined is estimated to be in the region of 112% of nominal GDP (2002) in net present value terms. Of this amount, 90% is attributed to the PSPS. The size of Sri Lanka's implicit debt obligation with respect to pensions is equivalent in size to its explicit debt burden (100% of GDP).

3.7 Investment performance

3.7.1 EPF

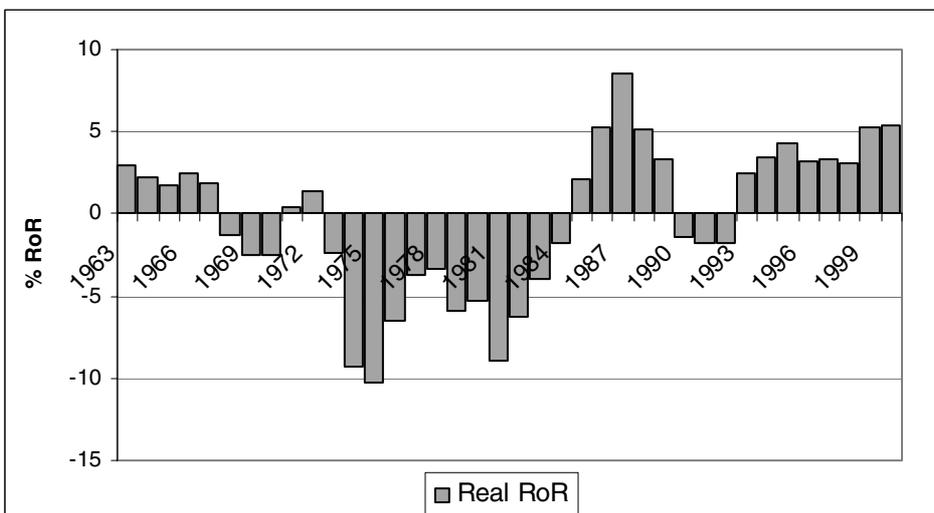
The EPF has been subject to significant criticism with regard to its investment performance, with rates of return on balances claimed to be below market rates. The rate of return on fund balances since 1960 has averaged 0.2% on a cumulative basis, below the rate of economic growth over the same period (see Figure 35) (Ranna-Eliya et al., 2003). These low rates of return can be explained by the government's investment strategy. Historically, over 90% of EPF fund balances have been invested in government paper (securities and loans) at below market interest rates. (see Table 21).

Figure 35: EPF annual rates of return since 1960



Although the government is permitted to invest in private equities and other financial market instruments, diversification into equities has been to date limited to only 0.5% of the total asset portfolio. This reflects not only political incentives in the use of funds, but also constraints in terms of the overall size of the Colombo Stock Exchange (CSE). The current market capitalisation of the CSE is Rs.170 billion-equivalent to 65% of the asset base of the EPF. More recently real rates of return, on a risk-adjusted basis, have improved and are now more consistent with those offered in the market (see Figure 36). These improvements in can be explained by a shift in monetary policy and the introduction in the mid-1990s of debt instruments offering market-determined interest rates.

Figure 36: EPF real rate of return: 3-year moving average



Source: Rannan-Eliya et al (2003)

Table 21: Composition of EPF portfolio 1999-2000

Investment Type	Cost (Rs m)		% allocation	
	1999	2000	1999	2000
Govt. Sri Lanka Loans	151,507	157,155	81.5	73.2
Treasury Bills and Bonds	29,757	52,101	16	24.2
Repurchase Agreement	915	1,622	0.5	0.8
Debentures	2,998	2,639	1.6	1.2
Commercial Paper	23	-	0	0
Trust Certificates	105	82	0.1	0
Equities	611	1,231	0.3	0.5
Total	185,917	214,830	100	100

As mentioned earlier, the EPF does not provide a pension benefit in the form of a regular income stream in retirement. This is currently a major limitation. The absence of a pension, either publicly or privately available, effectively transfers both income and longevity risks to the individual. Private annuity markets, although able to mitigate these risks can only do so at considerable cost to the individual. The ILO (1998) estimates that between 30 to 50 per cent of premium payments are absorbed as administrative and marketing expenses. In addition to the issue of transactions costs, insurance markets, in the absence of effective government regulations suffer adverse selection problems. Public administration can offer a credible low-cost alternative to privately managed schemes. Publicly managed schemes, unlike private individual accounts, can also incorporate an element of redistribution among pension beneficiaries and provide more effective inflation proofing.

3.7.2 Approved private provident funds

Despite the greater investment flexibility, analysis by the World Bank suggests that net investment returns obtained by the majority of APPFs (60%) were below those earned by the EPF (World Bank, 2000). This is partly explained by higher administrative costs reducing net returns, but also by the poor performance of the stock market during recent years.

3.7.3 Informal sector schemes

Insufficient time series data were available to estimate rates of return on fund balances accurately. Preliminary analysis suggests that schemes do confer positive real rates of return to members, somewhere in the region of 1-2%. Administrative expenses are, however, higher when compared with the EPF. This is mainly related to the smaller size of the respective schemes, and the higher transaction costs associated with day-to-day administration. Of the minority fortunate enough to be covered, many are only partially covered in the sense that pensions or lump sum payments cannot provide an income stream sufficient to cover basic needs during retirement.

Absence of index-linking of pensions to a minimum of prices on a systematic basis exposes pensioners to a rapid and real deterioration of living standards. The solution to the income adequacy problem will require the government to index-link pensions to prices or wages, but as a minimum to prices, in order to maintain the living standards of both current and future generations of the elderly. Such policies are evaluated as being affordable by the government.

3.8 Extending access to the poor

For Sri Lanka to expand retirement coverage on a comprehensive basis, it will need to review alternative non-contribution-based systems of social protection. A large proportion of those without coverage are outside the labour force and many of them do not have the ability or the

means to contribute. Inability to contribute can equally result from low or irregular income patterns (typically the self-employed, farmers and fishermen located in the informal sector who experience a seasonal cash-income pattern). Many of those without the means to pay lack cash-incomes and these include unpaid family workers, housewives and students. Attempting to expand coverage through a system based upon contributions is therefore unlikely to result in greater effective coverage. Alternative mechanisms including the introduction of a universal first pillar will need to be reviewed to reach those individuals in these categories.

Charlton and McKinnon (2001) have identified several low- and middle-income countries able – contrary to conventional wisdom – to introduce comprehensive systems of retirement security. For example, Egypt was able to achieve 83% of workforce coverage for its retirement population at a cost of 2.5% of GDP. South Africa has successfully extended its retirement pension to 90% of those eligible in the black community (males over 65 and females over 60). There are many other African examples – including Namibia, Botswana and Mozambique, although in Mozambique pension were provided on a geographically restricted basis.

Empirical work also suggests that even where the pension is not significant in cash terms, a small injection of cash delivered on a regular basis can have significant poverty reducing impacts for the poorest (Charlton and McKinnon, 2001). For example, in the mid-1980s, Guhan found that social assistance pension programmes in Kerala and Tamil Nadu, provided significant additional support for the poorest households, equivalent to 50% of subsistence needs (Guhan, 1994). In addition to the direct effects on individual incomes, recent research in South Africa has confirmed that pensions play a vital role in crowding-in rather than crowding-out intergenerational solidarity (Sagner and Mtati, 1999).

Sri Lanka's attempt to extend access to the informal sector has had varying success. The farmers' scheme was the most successful, owing to the nature of the employment, better administration and its longer establishment. Despite its relatively superior performance effective coverage remains low, however, since default rates have progressively increased. The reasons for default are varied and stem from the inability to afford premium payments, on the demand side to administrative inefficiencies, on the supply side (Silva, 2003). Improvements in administering the scheme, although likely to facilitate payments, are unlikely to expand coverage significantly.

Many of those eligible but not covered are unable to participate, mainly because of their irregular and low income status (e.g. farmers) or lack of cash incomes. Many workers falling into the latter category are unpaid family workers (farmer's and self-employed) who lack the means to make contributions. Many workers in the informal sector will remain uninsured principally because of their low income-earning capacity and their inability to make regular contributions.

Extending mandatory contribution-based systems to those on low incomes may not be an optimal strategy from an economy-wide or an individual welfare perspective (James, 1999). Social insurance contributions, in particular those targeted at low-income workers, effectively reduce take-home pay at a point in the life-cycle when individuals may need more rather than less income. Under such circumstances, individuals may adopt alternative and more affordable coping strategies for old age, including investment in physical assets (housing and land) or the education of their children. Such alternative strategies for old age may generate a higher rate of return on investments in comparison with a regular contribution to a pension (*ibid.*). Many low-income workers experience shorter than expected life expectancy and such contributions, if converted into annuities that amalgamate low- and high-income workers, effectively transfer income from the low to the high paid.

From a macroeconomic perspective, contribution-based retirement systems may undermine the functioning of the labour market. Contributions borne by employers may act to reduce the level of formal employment and encourage informalisation of the labour market. Efforts, to increase the nominal coverage of workers may not, therefore, result in greater effective coverage. The above

analysis would suggest that the limits to expanding employment-based coverage in Sri Lanka have now been reached.

Contribution-based systems suffer from additional weaknesses; principally, they cannot cover those outside the labour force. A large proportion of those not covered by a scheme fall into this category and many of them are women; however, the vast majority of the very elderly are also women. An alternative system of support will be needed to reach these individuals, including the provision of age-related benefits on a universal or means-tested basis. The absence of formal retirement provision should not imply the absence of old age security; poor people adopt alternative coping strategies for their old age. Such systems should be promoted to complement formal systems. Governments in other South East Asian countries (including Malaysia and Singapore) have introduced policies to crowd-in family support. Examples include the provision of financial assistance for individuals with caring responsibilities for parents/elderly persons.

An important development from a social security perspective has been the increase in the number of women in the workforce and the progressive increase in years worked. Such a development should facilitate an expansion of coverage and increase the individual's propensity to make contributions. Labour market policies to expand the participation rate of women should be actively pursued and become an integral part of the government's strategy to extend access to uncovered workers.

3.9 Fiscal costs of extending access

As highlighted in a previous section, Sri Lanka's social security system covers only 25% working age population. The vast majority currently do not have access to retirement income, as protection against the inevitability of old age. In addition, those who are covered are only partially covered in the sense that incomes derived from retirement schemes are insufficient to meet all retirement needs. The expected growth in the elderly population, coupled with the reduction in average family size, is likely to create growing demands for formal retirement provision in the future. Given the expected increase in the elderly electorate as ageing progresses, redistributive policies may become a political inevitability, requiring the government to take pre-emptive policy planning measures now if macroeconomic stability and growth objectives are not to be compromised.

This section evaluates the fiscal costs of introducing alternative types of universal and means-tested benefits. Quantifying fiscal costs is an important first step in determining the affordability of such policies. As highlighted above, the introduction of universal benefits has had a significant impact in other countries on the poverty head count, even when cash payments have been small. The regularity of the pension income has been reported as reducing feelings of vulnerability, whilst increasing the disposable income of the household and crowding-in (rather than crowding-out) family support.

Government intervention to expand retirement coverage should be informed by the relative effects on poverty. Modelling these relative effects allows the opportunity costs of alternative policy options to be evaluated. In addition, expanding social assistance for specific groups – such as the elderly – should be framed within the context of existing welfare programmes. The Sri Lankan government already has a large social assistance programme targeted at the poor, the recurrent costs of which are equivalent in size to the country's health budget. A large proportion of those covered by the government's principal poverty alleviation programme (Samurdhi) – approximately 75% – are non-poor. The reallocation of resources in a way consistent with schemes objectives could simultaneously reduce the incidence of poverty and generate the necessary resources to expand social security in other areas.

3.9.1 Fiscal costs of a universal pension benefit

The fiscal costs of introducing a universal pension benefit are presented in Table 22. The fiscal costs were derived by multiplying the number of persons above the qualifying age by the pension entitlement. The pension entitlement is expressed as a share of per capita GDP. Alternative indexation assumptions were applied to the fiscal forecast. Demographic data are presented in Table 23. Assumptions applied to the model include:

- indexation of the universal pension to 100 % of wage growth
- pension Benefit = Rs. 1500 in 1998 prices, or 15% of per capita GDP
- qualifying age is set = 60,65 and 70

Table 22: Universal pension benefit: index linked to wages (100%)

Summary costs of % GDP	2001	2015	2030	2050
70 plus	1.1	1.6	2.9	4.2
65 plus	1.7	2.7	4.4	5.9
60 plus	2.5	4.0	6.1	7.7
Summary costs of % revenue				
70 plus	6	9	17	24
65 plus	10	15	26	34
60 plus	15	23	35	44
Pension value				
As % share of per capita GDP	14.5	14.4	14.4	14.4

Table 23: Demographic Data (%)

Elderly as a % of Total Population	2001	2015	2030	2050
70 plus	4	6	11	16
65 plus	7	10	17	23
60 plus	10	15	23	30

The following are some key observations from the above data:

- The costs of introducing a universal pension are expensive and increase dramatically as a share of both GDP and recurrent revenues over time mirroring the expected growth in the pensioner population
- Assuming the qualifying age of 60, fiscal costs increase from a 15% to a 44% share of recurrent revenues by 2050.
- A tripling of fiscal costs mirrors the tripling of the proportion of the elderly in the total population by 2050 (rising from a 10% to a 30% by 2050).
- Recurrent expenditures are significantly lower when the qualifying age assumptions are reduced. For example, recurrent costs fall by approximately 50% if the qualifying age is set at 70.
- Index-linking to wages ensures that the value of the state pension is maintained.
- A universal pension benefit is unlikely to be affordable by the government under the above assumptions

To conclude, a policy of extending universal pension benefits is likely to create significant fiscal pressures for the government over time, principally because of a tripling of the pensioner population by 2050. Raising the qualifying age acts to reduce the fiscal costs significantly, although

the policy still remains expensive by 2050 (equivalent to 24% of recurrent revenues). The higher the qualifying age for the pension the more regressive the policy, potentially. It is generally observed that life expectancy differs by socio-economic status. People on the lowest incomes exhibit lower life expectancy.

The above scenario, however, assumes, perhaps unrealistically, that Sri Lanka's tax to GDP ratio remains unchanged at the 2001 level (equivalent to 17.4% of GDP). As mentioned earlier, a country's tax base as a share of nominal GDP is expected to expand (up to a point) with economic development and improvements in revenue administration. The following simulation assumes a 1% increase in the country's tax to GDP ratio every 3 years. The fiscal costs of a universal pension policy are re-evaluated. The results are presented in Table 24.

Table 24: Universal pension costs: raising the tax to GDP ratio

Summary costs % revenue -2	2001	2015	2030	2050
70 plus	6	7	11	13
65 plus	10	12	16	19
60 plus	15	18	22	24

Assuming a progressive increase in Sri Lanka's tax base, the costs of a universal pension benefit would decline from 44% to 24% of recurrent revenues by 2050 (assuming a qualifying age of 60). These costs, although significantly lower than the fixed tax to GDP scenario, still remain unaffordable by the government, and would result, if implemented, in a significant crowding-out of other budgetary expenditures.

The fiscal costs of a universal pension policy could be reduced by applying a less generous indexation formula. The projection below index links pension's growth to 50% of wage growth. The results are presented in Table 25.

Table 25: Universal pension benefits: index linked to wages (50%)

Summary costs % of revenue	2001	2015	2030	2050
70 plus	6	6	7	5
65 plus	10	11	10	7
60 plus	15	16	14	9
Pension Value				
As % of per capita GDP	14.5	9.9	5.8	2.9

Fiscal costs are significantly lower under a policy of partial wage indexation declining from a 44% (under full indexation) to 9% of recurrent revenues by 2050. However, such a policy results in a rapid deterioration in the value of the pension as a share of GDP per capita - from 14 % to 3%.

Although this policy is fiscally sustainable and affordable by the government, the value of the pension becomes worthless by 2050. An alternative would be to increase the level of indexation to 75% of wage growth, while expanding the tax base as a share of GDP in an effort to limit the government's fiscal liability. Fiscal costs, although higher (equivalent to 14% of recurrent revenues) would allow the value of the pension to be maintained at an acceptable level.

3.9.2 Fiscal costs of a means-tested pension

A policy alternative that would allow the value of the pension to be fully maintained, while considerably limiting the growth of fiscal costs, involves the provision of a pension on a means-tested basis. Although a means-tested benefit limits fiscal costs, it is likely to generate significant disincentives for saving – particularly among low-income workers. The income qualification to receive a state pension should be set fairly high (at least initially) to ensure that savings disincentives are minimised. A high income qualification would also tend to reduce the level of intergenerational income inequality.

The means test could be set at any level. In the present it was set at a level equivalent to Sri Lanka's national poverty line. The poverty incidence of elderly people estimated in Chapter 2 was applied to the demographic data to derive the numbers of pensioners eligible under this policy. Poverty incidence was assumed to remain unchanged at 1997 levels, and was applied to projected demographic data. The poverty incidence of elderly sub-groups, based upon 1996/97 Central Bank survey data is illustrated for different elderly age cohorts in Table 26. Approximately one in five elderly people fall below the poverty line, equivalent to 20% of Sri Lanka's pensioner population.

Table 26: Poverty incidence of elderly sub-groups (%)

Poverty Incidence	
70 plus	20.5
65 plus	19.0
60 plus	18.2

The projected fiscal costs of a means-tested pension are presented in Table 27.

Table 27: Means-tested pension: index-linked to wages (100%)

Summary costs % revenue	2001	2015	2030	2050
70 plus	1.3	1.9	3.5	4.9
65 plus	1.9	2.9	4.9	6.5
60 plus	2.7	4.2	6.4	8.0
Pension value				
As % share of per capita GDP	14.5	14.4	14.4	14.4

Some key observations from the data:

- The fiscal costs of a means-tested pension are significantly lower and are likely to be more affordable by the government. For example, a means-tested pension costs 8% of recurrent revenues by 2050 in comparison with 44% under a universal policy if the qualification age is set at 60 plus
- The pension maintains its value as a share of per capita GDP.
- A means-tested pension can significantly reduce deadweight costs associated with a universal policy (equivalent to the inverse of the poverty head count or 80% of recurrent revenue pension costs).
- If Sri Lanka's tax to GDP ratio progressively increases at a rate suggested earlier, the costs of a means tested pension declines to 4.4% of recurrent revenues by 2050.

In conclusion, a universal pension benefit is unlikely to remain affordable by the government, without significantly crowding-out budgetary expenditures, because of the significant expected growth of Sri Lanka's elderly population. This conclusion still holds even if Sri Lanka's tax to

nominal GDP ratio doubles by 2050. A means-tested pension offers an affordable alternative, although the means test would need to be set at a sufficiently high level if it is not to create disincentives to save among low income workers or the compromise income inequality.

3.10 Quantifying poverty impacts: universal pension versus universal child benefit

If the government is to utilise resources most effectively, in a manner that maximises its growth and poverty reduction objectives, the opportunity costs of alternative policies should be evaluated, where possible. The following analysis quantifies the impact on the poverty head count of introducing universal benefits for the elderly versus universal benefits for children. The analysis measures the poverty head count before and after benefits are provided.

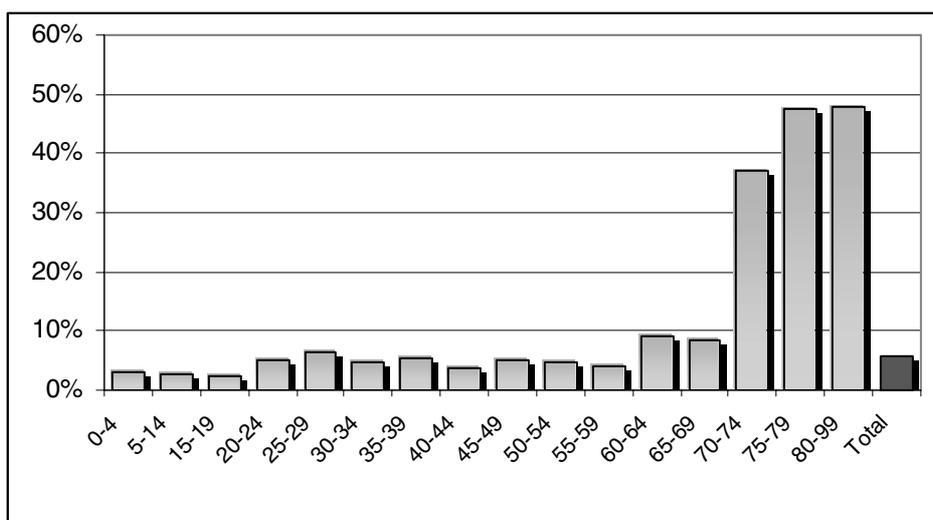
The impact on the poverty head count of introducing a universal pension benefit is illustrated in Table 28 and Figure 37. The policy grants a universal pension benefit equivalent to Rs.500 per month in 1996/97 prices (or 7% of average per capita GDP) to all pensioners aged 70 and above. The impact on poverty incidence is measured using 1997 per capita income data.

Table 28: Poverty head count: before and after USP (%)

	Before	After
0-4	30	29
15-19	25	24
30-34	21	20
50-54	16	15
60-64	16	15
65-69	17	15
70-74	20	12
Total	23	22

Source: estimate based on CFS, 196/97 data

Figure 37: Percentage reduction in poverty head count by age cohort: USP



Source: derived from CFS, CB, 1996/97

The principal observations from the data include:

- a 45% reduction of the poverty head count among pension beneficiaries;

- a reduction of the overall poverty head count for the population by 1 percentage point from 23% to a 22%;
- the policy would cost 3% of recurrent revenues, rising to 12% of recurrent revenues by 2050

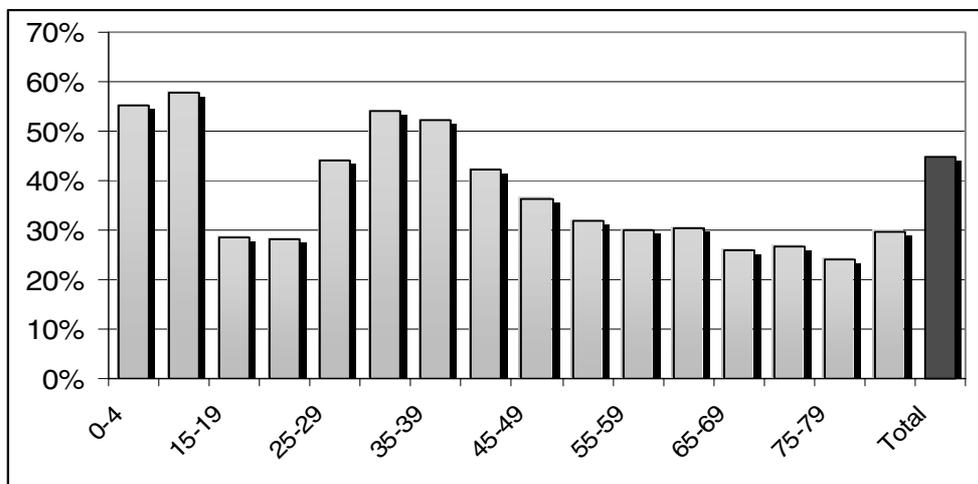
To conclude, the impact on elderly poverty would be significant – equivalent to a 45% reduction in the poverty head count of those aged 70 plus from a 20% to a 10% level. However, the overall impact on Sri Lanka’s national poverty head count is small.

Table 29 and Figure 38 illustrate the poverty impact of a universal child benefit, equivalent in value to the pension (Rs.500 in 1996/97 prices, or Rs.750 in 2001 prices provided) to all children under 15 years of age. The poverty head count is measured before and after benefits are provided, with reference to unequivalised household per capita income.

Table 29: Poverty head count: before and after UCB

	Before	After
0-4	30	13
5-14	32	14
30-34	21	9
50-54	16	11
60-64	16	11
70-74	20	14
75-79	21	16
Total	23	13

Figure 38: Percentage reduction of poverty head count: UCB



Key observations from the above data:

- The introduction of universal child benefit significantly reduces the poverty head count amongst young and old age cohorts.
- The poverty head count of households with children declines by up to 55%, for example, poverty incidence falls from a 30% to a 15% level
- The poverty head count of the population as a whole also declines substantially from 23% to 12% level – equivalent to a 45% reduction of Sri Lanka’s national poverty incidence.
- The fiscal costs are large, however, equivalent to 18% of recurrent revenues in 2001, declining to 11 % by 2050 as the proportion of children declines.

- The introduction of a means-tested benefit could achieve a comparable reduction in the poverty head count, but at significantly lower cost to the government equivalent to 5% of recurrent revenues.

A means-tested child benefit policy represents a more cost-effective poverty reduction strategy for the government. The government could achieve a 10% reduction of Sri Lanka's poverty head count under this policy at a cost of 2-3% of recurrent revenues.

3.11 Conclusions

Retirement schemes collectively cover 25% of Sri Lanka's working age population. By regional standards Sri Lanka's coverage rate is high, but in comparison with its per capita income status this level of coverage is inadequate. To date, the government's approach has been an incremental one. This approach mirrors the development of pension provision in other South-east Asian countries – most notably Japan. Coverage has now stalled in Sri Lanka at 25% of the working age population. Attempting to extend the population coverage further through an employment-based system is unlikely to result in greater effective coverage. Alternative more comprehensive mechanisms will need to be reviewed including the introduction of a redistributive first pillar as recommended by the ILO and the World Bank. Empirical work in other countries suggests that, even where cash injections are small the poverty reduction effects conferred by a universal or means-tested pension benefit can be significant. A universal state pension is generally less expensive than is perceived. The above estimates suggest costs in the region of 10 to 14% of recurrent revenues.

Action to expand social security in a comprehensive manner cannot be deferred indefinitely. It may become a political reality owing to an expansion in the size of the elderly electorate, and will need to be planned carefully if it is not to jeopardise macroeconomic stability and undermine economic growth policies. The tripling of Sri Lanka's elderly population (60 and above) over the next 50 years renders a universal pensions policy unaffordable to the government in the medium to long term. A means-tested benefit offers an affordable alternative. Provided that benefits can be effectively targeted at the poor an equivalent reduction in the poverty headcount can be achieved, thereby eliminating the dead weight costs associated with a universal policy. The means test should be set, initially, at a lower level to limit the incentives to evade formal sector contributions from low-income workers and the effects on the propensity to save.

A universal child benefit was evaluated as having a superior effect on Sri Lanka's poverty head count as compared with a universal pension policy. As explained in Chapter 2, this reflects a higher incidence of poverty amongst households with children as compared with households with elderly. Relative poverty impacts may, however, be expected to change in future as the number of the elderly rises and that of children fall. The relative poverty effects of alternative policies should be monitored to inform policy interventions in order to maximise both growth and poverty reduction objectives.

Chapter 4: Public Sector Pensions Reform: Policy Options⁸

4.1 Introduction

Pension reform is subject to active debate in Sri Lanka today. The policy reforms that have attracted the most political, public and international (donor) interest involve reform of the Public Sector Pension Scheme (PSPS). This is the most generous of all these pension schemes operating in Sri Lanka and represents a large fiscal cost for the government. The second area for reform, which to date has received less public interest, but whose significance will increase as the population ages, involves policy reforms to provide comprehensive coverage via a means-tested or universal type of benefit. The former set of reforms has been motivated by the need to reduce the government's fiscal liabilities, while the latter is motivated by the need to expand the coverage to excluded groups. The following section evaluates the fiscal and political implications of reforming the PSPS. Although not directly related to extending access, the fiscal savings potentially derived from alternative policy options can provide the necessary fiscal space to finance to finance programmes for the non-covered.

4.2 Modelling fiscal projections: the PSPS scheme

Although the scheme is now closed to new entrants, the government will continue to incur the fiscal costs of the PSPS for some time, i.e. for at least the next 60 to 70 years, until the youngest public sector worker eligible under the old scheme graduates from the pensioner pool.

The following analysis presents revised projections of future PSPS costs, incorporating more recent data than earlier projections and additional sets of policy parameters including an evaluation of the fiscal implication of raising the age of state retirement (Rannan-Eliya et al., 1997). A model was constructed to project the pensioner and public sector wage bill from 1998 to 2050. A detailed methodology is contained in Annex 3. The latest 1998 census of public sector workers, obtained from the Department of Census and Statistics, and data from the Department of Pensions were used for the purposes of the analysis. The model was constructed to allow the costs of alternative policy options to be evaluated. Four broad policy options were applied to the data; namely, changes in indexation assumptions; changes the retirement age; changes in the size of the public sector; and changes to the tax to GDP ratio. The results of these simulation exercises are presented below.

4.2.1 Projection 1: Current policy scenario

The cost of the government's pension bill was forecast until 2050. The initial or base projection calibrated the model to be consistent with the current policy framework. The following sets of assumptions were applied to the model:

- indexation of pensions to inflation (inflation=medium)
- public sector size is constant (=2001 frequency)
- GDP growth = medium case scenario (=peace without reform)
- retirement age = 60

The results presented below are expressed as a share of GDP and recurrent costs. The pension is also expressed as a share of GDP per capita to assess its value in the future. In addition to these parameters, the size of the pensioner stock and the government's implicit pension debt in net present value terms was estimated. Results are contained in Table 30.

⁸ Many thanks are extended to Ajantha Kalyanarathne (HPP-IPS) for his statistical analysis support in the construction of the model.

Table 30: PSPS projection: ‘current policy scenario’ (retirement age 60)

	1998	2015	2030	2050
Summary pension costs % of GDP	1.93%	0.97%	0.37%	0.09%
Summary	11.1%	5.6%	2.1%	0.5%
Pension costs % tax revenues				
Number of pensioners	358,228	427,625	470,277	478,551
Pension value – Pension as % of GDP per capita	61%	26%	9%	2%

The following observations can be made from the results;

- Despite a 35 % *increase* in the pensioner population the pension bill falls sharply as a share of GDP from just under 2% of GDP to 0.1% of GDP by 2050. Expressed as a share of recurrent revenues, pension expenditures fall from 11% to a 0.5% over the same period.
- The compression of the government’s fiscal liabilities is principally an outcome of the index-linking of pensions to prices, combined with a positive real GDP. Under current policy assumptions, per capita growth of GDP is projected to grow by 7.7% per annum in real terms.
- The value of the public sector pension as a share of per capita GDP becomes worthless by 2050. The average pension value falls from 60% to 2% of GDP per capita by 2050.
- The implicit pension debt (IPD) in net present value terms is 102% of nominal GDP, equivalent in size to Sri Lanka’s explicit debt burden (approx. 100%)

In conclusion, under the current policy scenario, the PSPS pension bill will become a negligible share of recurrent revenues. Although the above scenario is termed ‘current policy,’ the PSPS does not formally index-link pensions to prices or wages. Despite the absence of a formal indexation policy, the government has up-rated pensions to maintain this real value on an *ad hoc* basis. Although such a policy is fiscally sustainable, it is not sustainable politically and pensions will need at some point to be increased in line with some share of wage growth. If such a policy reform were not introduced, the level of inequality would rise substantially.

4.2.2 Projection 2: Indexation – ‘high cost’ policy scenario

Fiscal costs were compared with a ‘high cost’ policy alternative. Under this policy pensions were index-linked to wages growth. The level of indexation was set at 100% of wage growth, while all other assumptions remain unchanged. To summarise, the ‘high cost’ policy assumptions were as follows:

- indexation of pensions to 100% wage growth (inflation = medium)
- GDP growth = medium case scenario (peace without reform)
- public sector size is constant (=2001 frequency)
- retirement age = 60

The results are presented in Table 31.

Table 31; Indexation: Pensions to wage growth (100%) (Retirement age 60)

	1998	2015	2030	2050
Pension costs % of GDP	1.93%	2.16%	2.37%	2.41%
Pension costs % of tax revenues	11.1%	12.4%	13.7%	13.9%
Number of pensioners	358,228	427,625	470,277	478,551
Pension Values: Pension as % of GDP Per Capita	61%	57%	57%	57%
Implicit pension dept	1998-2050			
NPV as a % of nominal GDP	938%			

The following observations can be made:

- Index-linking of pensions to wage growth results in an increase in the government's fiscal costs from 1.9 % to 2.4% of nominal GDP, and from 11 % to 14% of recurrent revenues.
- The increase in pension costs as a share of GDP and recurrent revenues is related to an expansion of the stock of pensioner (equivalent to 33%) relative to the base year (1998).
- Pension maintains its value as a share of GDP per capita; however the government's implicit debt obligation rises substantially in net present value terms to 938% of nominal GDP (1998 prices).

To summarise, under a high cost policy scenario, fiscal costs increase by 0.5% of nominal GDP and 3% of recurrent revenues by 2050, relative to the base year (1998). The value of the pension as a share of per capita GDP is maintained, making the policy more politically sustainable as compared with the current policy scenario.

In conclusion, a policy of index-linking pensions to wage growth does not create substantial additional fiscal pressures for the government. Additional costs can be broadly assessed to be affordable, even though the stock of pensioners increases by one-third relative to the base year.

4.2.3 Projection 3: Indexation – 50% of wage growth

However, if the government's stated objective is to reduce fiscal costs, a less generous formula could be applied. For example, the pension could be index-linked to some proportion of wage growth. The following projection evaluates the fiscal impact of such a policy. The pension in the scenario below is index-linked to 50% of wage growth. All other assumptions are held constant as above. The key results are presented in Table P.

Table 32: Indexation: pensions to wage growth (50%) (retirement age 60)

	1998	2015	2030	2050
Summary pension costs % of GDP	1.93	1.46	0.96	0.49
Summary pension costs % of tax revenues	11.1	8.4	5.5	2.8
Pension as % of GDP per capita	61	38	23	11
Implicit Pension Debt (IPD)	1998-2050			
NPV Debt % of nominal GDP	214			

Key observations:

- The government's pension bill gradually declines as a share of GDP and recurrent revenues. For example, pension costs decline from 11 % to 2.8 % of recurrent revenues by 2050, and from 1.93% to 0.5% of GDP over the same period.
- The value of the public sector pension also declines as a share of income per capita from a high of 60% to a low of 11% by 2050.
- The implicit pension debt is significantly lower, equivalent to 214% of GDP in net present value terms.
- A policy of partial wage indexation, as expected, significantly reduces fiscal costs relative to a full wage indexation policy. However, the policy substantially reduces the value of the pension as a share of per capita GDP, although at a much slower rate as compared with the 'current' policy scenario. For example, it takes 30 years for the pension value to drop to one-quarter of the level of GDP per capita under a policy of partial indexation, whilst the comparable time-frame under 'current' policy is half this time.
- Such a policy would certainly be more politically sustainable, relative to the current policy scenario, whilst relieving the government's fiscal costs. A policy of partial wage indexation could offer an alternative for the government, and one that would not significantly compromise fiscal or political sustainability. The latter would, however, be sensitive to the extent of wage indexation.
- The above scenarios assume that Sri Lanka's tax to nominal GDP ratio remains unchanged at the 2003 level (17.1% of GDP). This assumption is perhaps unrealistic on the basis that, under the current macroeconomic framework, the tax to GDP ratio is projected to expand by 0.5% per annum until 2006. It is generally observed and accepted that as an economy expands, its capacity to raise tax is enhanced as the administration of the tax revenues improves and the level of monetisation expands in the economy.

4.2.4 Projection 4: Increasing the tax to GDP ratio

The following scenario progressively raises Sri Lanka's tax to GDP ratio over the 2001-50 period. The fiscal cost associated with the 'high cost' policy scenario is re-evaluated. The tax yield is increased at a rate equivalent to 0.33% per annum (or to 1% every 3 years) as before, resulting in an increase in the tax to GDP ratio from 15% of nominal GDP in the base year (1998) to 30% by 2045. Thereafter the tax ratio is held constant. The results are presented in Table 33.

Table 33: Raising the tax yield: from 15 to 30% by 2045

Pension bill:

Pension Costs % of tax revenues	1998	2015	2030	2050
Tax to GDP ratio = constant	11	12	14	14
Tax to GDP ratio = rising	11	10	9	8

Key observations:

- Fiscal costs decline from 11% to 8% of recurrent revenues assuming a policy of full wage indexation and a progressive increase in the tax to GDP ratio.
- Recurrent revenue cost are 43% lower relative to the constant tax to GDP assumption by 2050.

Assuming the tax to GDP ratio expands at a rate equivalent to 1% every 3 years, a policy of full wage indexation of pensions would result in a *reduction* in pension costs as a share of recurrent revenues equivalent to 3% of recurrent revenues by 2050. The projected increase in the tax base is assessed as achievable under a peace scenario. A progressive increase of the tax to GDP ratio

would permit the government to simultaneously maintain the welfare of future pensioners without compromising macroeconomic stability or crowding-out other expenditures in the budget.

4.2.5 Projection 5: Adjusting the retirement age

A reform measure that has attracted much public interest – in an effort to reduce the government’s pension bill – has been to raise the retirement age for the public sector. Such a policy would mirror developments occurring in the private sector where the effective retirement age and years worked have steadily increased in response to rising life expectancy. A static age of retirement, with rising life expectancy, increases an individual’s passivity ratio.⁹ Deferring the age of retirement acts to reduce this ratio (measured as the proportion of years spent in work relative to those out of work) which ultimately augments a country’s labour supply. As expanded earlier, increasing the labour supply is an important antidote to population ageing effects. As the retirement age is deferred, the size of the pensioner stock and hence the pension bill is expected to decline.

Although such a policy reduces the government’s pension obligations in the short run, in aggregate, it is unlikely to derive significant (if any) fiscal savings for the government. This is mainly related to the fact that workers, who would have otherwise retired, continue to receive a wage as employees of the public sector. An increase in wage costs will therefore offset the reduction in the pension bill. Such a result is explained by the non-contributory nature of the PSPS scheme, which is financed out of general taxation.

If the PSPS scheme were a contributory one (either PAYGO, or fully or partially funded), a rise in the state retirement age would act to lower the contribution rate or increase the benefits (of workers and/or employees). For example, under a PAYGO system, a policy to raise the retirement age would reduce the sustainable contribution rate¹⁰. Depending upon the formula for accrual, raising the retirement age may act to increase the pension bill relative to a static retirement age scenario, given that retirement at a higher age would result in a larger commuted pension and a continuation of salary payments up to that point. A policy to raise the retirement age, a contributory system, would therefore need to be accompanied by some adjustment to the accrual rate if fiscal savings were to be derived.

Table 34 models the fiscal impact of raising the state retirement age on both the pension and wages bill. In the model simulation below, the retirement age is increased from 60 to 65. All other assumptions are held constant as under the high cost policy scenario. For simplicity, the tax to GDP ratio is held constant at the 2003 level. To recap, the basic macroeconomic and policy parameters include:

- indexation of pensions to 100% wage growth
- GDP growth = medium case scenario (peace without reform)
- public sector size is constant (=2001 frequency)
- retirement age: 65

The results are presented in Table 34.

⁹ The ‘passivity ratio’ measures the proportion of years an individual spends in work relative to years out of work.

¹⁰ The sustainable contribution rate refers to the contribution rate on public sector wages required to cover the pension bill.

Table 34: Adjusting the retirement age: from 60 to 65 years

Public Sector Wage Bill				
	1998	2015	2030	2050
Summary – public sector % of GDP				
Retirement = 60	5.76	5.68	5.66	5.67
Retirement = 65	5.89	6.32	6.29	6.30
Summary – public sector % of tax revenues				
Retirement =60	33.0	32.7	32.6	32.6
Retirement =65	33.7	36.4	36.3	36.3
Number of pensioners				
Retirement =60	877,107	866,804	866,804	866,804
Retirement =65	877,107	866,804	866,804	866,804
Pension bill				
	1998	2015	2030	2050
Summary pension costs % of GDP				
Retirement =60	1.93	2.16	2.37	2.41
Retirement =65	1.93	1.67	1.95	2.08
Summary pension costs % of tax revenues				
Retirement =60	11.1	12.4	13.7	13.9
Retirement =65	11.1%	9.6%	11.3%	12.0%
Number of pensioners				
Retirement =60	358,228	427,625	470,277	478,551
Retirement =65	358,228	330,584	387,637	411,996
Implicit Pension Debt (IPD)		1998-2050		
NPV Debt % of Nominal GDP (RA=60)		542		
NPV Debt % of Nominal GDP (RA=65)		480		
Combined Costs				
	1998	2015	2030	2050
Summary – PS & pensions % GDP				
Retirement =60	7.70	7.83	8.03	8.08
Retirement =65	7.82	7.98	8.25	8.38
Summary – PS & pensions % of tax revenue				
Retirement =60	44.07	45.14	46.26	46.55
Retirement =65	44.79	46.01	47.52	48.30
Sustainable Contribution Rate under PAYGO (1)				
Retirement =60	34	38	42	43
Retirement =65	33	26	31	33

Some key points to note from the above results:

- Public sector wage costs under a higher retirement-age policy are higher by 0.6 % of nominal GDP and 3.7% of recurrent revenues relative to the base line projection by 2050.

- The pension bill is **lower** under a higher retirement-age policy equivalent to 0.3% of GDP and 2% of recurrent revenues by 2050, relative to the base line projection.
- Combined fiscal costs, i.e. public sector wages and pensions bill, are greater, equivalent to 0.3% of GDP and 1.75% of recurrent revenues by 2050, relative to the base line projection.
- If the PSPS were funded on a PAYGO basis, an increase in retirement age would result in **a reduction** in the contribution rate from 43% to 33% of gross wages by 2050.
- The reduction in the contribution rate – under a hypothetical PAYGO system – is principally linked to a decline in the pensioner population relative to the total labour force (economic dependency)

Although the combined fiscal costs are higher following an increase in the retirement age, economic benefits are conferred in the form of **higher effective labour supply** associated with an increase in both the average productivity level of public sector workers (where we believe productivity and the stock of experience are linked) and years worked. Both factors act to lower economic dependency levels.

To conclude, a policy to raise the retirement age cannot be expected to generate fiscal savings for the government. This is principally because of the non-contributory nature of the PSPS. If the PSPS shifted to a fully funded scheme similar to the EPF, the fiscal costs to the government would fall substantially – the extent of the gains being dependent upon the worker/employer contribution split. If the PSPS was converted to a PAYGO scheme, the fiscal costs would also fall. As demonstrated above, if the government opted for a PAYGO system, raising the state retirement age would reduce the contribution rate by 10% of gross wages by 2050, as the wage bill relative to pension beneficiaries increases.

As already noted in Section 3.6 above, on advice from the World Bank, the government has now closed the non-contributory pension scheme to new workers; its successor is expected to be contributory in a manner similar to the EPF. However, the scheme has yet to be ratified by Parliament. It is felt, however, that such a policy is unlikely to generate fiscal savings for the government. This is principally due to the fact that contribution costs will ultimately have to be borne by government via higher salaries. Such a policy would be unsustainable otherwise, given the already significant pay differentials between the public and private sector. Public sector wages are currently 70% of average GDP per capita. The non-contributory pension benefit is perhaps the only remaining incentive for workers to remain in the public sector and compensates in part for those wage differentials. Good quality workers would otherwise choose alternative occupations and leave the public sector, with implications for the quality of public services.

A credible policy option, to allow a shift to funding without compromising service delivery would, as mentioned above, involve progressively increasing the tax to GDP ratio. The government could then fund an increase in salaries permitting a shift to partial funding, without compromising the retention of workers whilst at the same time limiting fiscal exposure. Increasing the tax yield would not only lower the cost of the pension bill; it would also lower the government's public sector wage bill. Table 35 illustrates the impact on public finances (public sector wages and pensions) of a progressive increase of Sri Lanka's tax to GDP ratio at a rate equivalent to 0.33% per annum (see also Table 36).

Under such a policy the government's public sector wage bill is projected to decline from 33 percent to 18 percent of recurrent revenues by 2050, while the pension bill declines from 11 percent to 8 percent of recurrent revenues.

Table 35: Public sector costs: raising tax to GDP ratio

	1998	2015	2030	2050
Public sector wage bill				
Public sector % tax revenues = 2				
Tax to GDP Ratio = constant	33	33	33	33
Tax to GDP Ratio = increasing	33	25	21	18
Pension bill				
Pension costs % of tax revenues = 2				
Tax to GDP Ratio= constant	11%	12%	14%	14%
Tax to GDP Ratio= increasing	11%	10%	9%	8%

Table 36: Projected growth of tax to GDP Ratio: 1998-2050 (%)

	1998	2015	2030	2045	2050
Tax to GDP Ratio	17	22	27	30	31

A shift to a contributory pension system, similar in design to the EPF, would require worker/employer contributions equivalent to 8% and 12% of gross wages respectively. Assuming the government bears these costs, for reasons expounded above, the government wage bill would be expected to increase by 20% – equivalent to a 6.6% increase in fiscal costs as a share of recurrent revenues. A shift to funding would therefore result in a *net increase* in the government’s fiscal liabilities for at least another 20 years, equivalent to 6.6 % of recurrent revenues, as the government funds both the pensioner bill and the full worker/employer contributions. The fiscal liabilities would decline over time, as pensioners in the old system graduate from the pensioner pool. A shift to funded pensions, therefore implies a short-term increase in the government’s fiscal liabilities.

A progressive increase in Sri Lanka’s tax to GDP ratio would generate fiscal savings equivalent to 15% of recurrent revenues by 2050. Fiscal savings of this magnitude would be sufficient to cover a shift to funding (equivalent to 6.6% of recurrent revenues), whilst still allowing the government’s public sector wage costs as a share of recurrent revenues to fall.

4.2.6 Projection 6: Reducing the size of the public sector

If the government’s objective is to generate real fiscal savings (in cash terms), alternative policy options would need to be pursued. An alternative would be to improve the level of public sector productivity and efficiency progressively in order to permit a reduction in the size of the public sector. Such a policy would take time to implement and would need to be introduced incrementally and as part of a broader set of reforms of the public sector.

The size of Sri Lanka’s public sector as a share of the working age population has declined over the last 5 years. If this trend continues, one should expect to observe a reduction in both the public sector wage bill and the government’s pensions bill over time. Even if Sri Lanka’s public sector remains a constant share of the working age population, rather than declining, fiscal savings would still result due to the expected reduction in the working age population – as expounded in Chapter 1 – owing to ageing. The scenario below models the fiscal impact of holding the size of the public sector as a share of the working age population (WAP) constant at current levels. Earlier assumptions kept the nominal size of the public sector constant at the 2000 level.

The following simulation holds the public sector constant at 7.6% share of WAP – equivalent to the 2000 level. High-cost policy assumptions apply (i.e. wages and pensions are index-linked to wage

growth and the tax to GDP ratio is held constant). The combined costs of the government's public sector wages and pension's bill are presented in Table 37.

Table 37: Combined costs: Public sector and pensions wage bill

	1998	2015	2030	2050
Summary – PS & Pensions % GDP				
Public sector size = frequency constant	7.7	7.8	8.0	8.1
Public sector size = fixed % of WAP	7.7	8.0	8.2	7.5
Summary – PS & Pensions % to tax revenue				
Public sector size = constant	44	45	46	47
Public sector size = fixed % of WAP	44	46	47	43
Frequency public sector				
Public sector size = constant	877,107	866,804	866,804	866,804
Public sector size = fixed % of WAP	877,104	898,811	879,179	766,715
Number of pensioners				
Public sector size = constant	358,228	427,625	470,277	478,551
Public sector size = fixed % of WAP	358,228	428,823	477,848	486,017

Some key observations from the above result are the following;

- Holding constant the size of the public sector as a share of WAP reduces the size of the public sector by 12%.
- The fiscal savings derived are equivalent to 4% of recurrent revenues by 2050 (equivalent to 36% of the government's pension bill in 1998).
- The size of the pensioner population is higher however, under fixed WAP assumptions, relative to constant size assumptions, mainly because of the lagged effect on the pensioner population. The WAP initially expands before it contracts, resulting in a short-term expansion of pensioner numbers.
- Ageing – associated with a reduction in the working age population – is expected to generate fiscal savings for the government equivalent to 4% of recurrent revenues or 0.6% of GDP by 2050.

4.3 Conclusions

Although the PSPS is forecast under the current policy regime to be fiscally sustainable, it is not sustainable politically. Based on current policy assumptions – index-linking of pensions to prices (albeit on a *de facto* basis) – the value of the pension becomes worthless by 2050. The alternative policy option – index-linking to wage growth or some proportion of wage growth – although more expensive, does not create significant additional fiscal pressures. If the government's tax to GDP ratio increases, the fiscal costs of such a policy would continue to decline as a share of recurrent revenues.

The current policy debate has centred on the need to shift to a contributory or a partially contributory system. Although such a policy may at first sight appear to reduce the government's fiscal liabilities, in practice fiscal savings will not be derived. If a shift to funding, whether partial or full, is not accompanied by an increase in the wage bill, service delivery and the retention of skilled staff will be compromised. A credible alternative – to generate fiscal savings – would involve progressively raising the tax to GDP ratio, and/or introducing broader public sector reforms to

permit progressive downsizing. Potential reductions in the share of fiscal expenditure devoted to pensions are estimated to be large under both policy options.

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Annex 1: Data Issues

Data sources and population coverage

Sri Lanka's Consumer Finances and Socio Economic Survey 1996/97, Labour Force Survey Datasets 1992-2000, and Sri Lanka Indicator Survey (SLIS, 2000) were used for the compilation of the economic and social statistics presented in Chapters 2 and 3. The 1996/97 Central Bank survey was the most recent available, covering the 1996/97 includes all provinces and districts in Sri Lanka with the exception of the North and the East. Security issues and civil unrest made these regions inaccessible for the gathering of survey data. The more recently completed indicator survey, funded by the World Bank, provides coverage of the North and East, and data in it was used to supplement the Central Bank's survey data. The majority of statistics in the paper are derived from the Central Bank's 1996/97 data set.

Sample design and estimation procedure

The *Consumer Finance Survey* was conducted in 4 rounds during the period October 1996 to December 1997 covering a sample of 8,880 households, and is the largest household survey undertaken in Sri Lanka. A stratified three-stage random sampling approach was adopted. To reduce sampling bias, households were grouped into 4 geographical zones, taking into account their agro-climatic conditions. Each of the four zones was stratified into urban, rural and estate sectors, forming 12 strata. Colombo city was treated as a separate zone and stratum forming the 13th stratum. The sample of 8,880 households was allocated to the strata in proportion to the number of households in each stratum. Sampling was such that each household in a given stratum had an equal chance of being selected, i.e. random sampling.

Reliability of survey data

Sampling errors – Most computations in the preceding analysis and figures reported in the published *Consumer Finance Survey* are based upon ratio estimates. Although such estimators are biased, they are efficient; the bias becomes negligible with large sample sizes of this kind. Sub-samples within the survey (e.g. zones, sectors and income groups) were deemed sufficiently large to minimise the degree of estimation bias, even at this level. The indicators and estimators derived are fairly robust, providing reliable estimators of population parameters.

Non-sampling errors – These cover non-response, and investigator and respondent errors. Coverage and response rates of households selected within the sample survey varied between 97 and 100% deemed to be a fairly high response rate. Three sources of errors can be identified in relation to response errors, namely (i) errors arising from indifference or lack of co-operation on the part of the respondent (ii) understatement, overstatement or evasion of information, and (iii) memory lapse. Measures introduced to control such non-sampling errors range from the training and selection of suitably qualified investigators to the provision of diaries for respondents. Despite the adoption of these measures, non-sampling errors can not be fully controlled for or eliminated. In addition, certain data sets are likely to be subject to greater non-sampling error relative to others. Data on income are typically subject to greater non-sampling errors as respondents, for personal reasons (for example, the continuation of subsidy payments or evasion of tax), tend to over- or under-state income patterns. The use of three interviews and the reconciliation of income and expenditure data by investigators to correct for discrepancies were methods employed to improve the accuracy and reliability of the data. Despite the safeguard measures adopted, some element of non-sampling error is likely to remain. A separate data cleaning exercise was run on the electronic data sets to eliminate anomalies in data entries.

Household income and expenditure data

Most of the data presented in Chapters 2 and 3 use information collected from the Income Schedule of the Central Bank's *Consumer Finance Survey*. This schedule is one of 7 schedules/survey questionnaires provided to respondents. In addition, data contained in Schedules 1 and 7 relating to demographic and socio-economic characteristics and Savings, Investments, Loans and Taxes, were also used to derive various indicators. These questionnaires combined allowed the compilation of information on income levels, sources of income, income distribution and the poverty profile of the population. The survey collected income by individual income recipient and by spending unit. Information contained in Chapters 2 and 3 provides income indicators with reference to the spending unit rather than the household, as the latter was assessed to provide a more accurate measure of individual welfare.

Definition of income – The income concept used in the survey included all receipts received by a household or spending unit over a reference period of either one month or six months, both in cash and in kind. Money or cash incomes included income from occupation such as salaries and wages, rents, dividends, windfall gains (lottery or gambling) and transfer income. In the case of wage-earners, money income refers to gross salary before deductions for taxes, provident funds and loan repayments. Transfer income was defined as income for which no direct service was performed, and was identified under different categories, such as pensions, government transfers (Samurdhi, food stamps), and transfer income from NGOs, and receipts from friends and relatives both here and abroad. Income in kind included the imputed value of goods and services received as remuneration for employment, such as the value of uniforms, free meals, railway warrants and free living accommodation, as well as the imputed value of owner-occupied dwellings, the value of firewood obtained free of charge and home-grown produce.

The analysis in Chapters 2 and 3 produces per capita incomes using income reported over the six-month reference period. Although the longer reference period has certain disadvantages in terms of introducing larger non-sampling errors (memory lapses and data reporting errors) given the seasonal nature of incomes and employment in Sri Lanka, it was deemed more appropriate in capturing permanent income.

Employment data

The *Labour Force Survey* measures the levels and trends of employment and unemployment in Sri Lanka. Data are collected on a quarterly basis during the same time period in each quarter. The quarterly data sets are based upon a sample of 4000 housing units. Annual data therefore consist of 16,000 housing units. For the analysis, the data for four quarters were pooled. The surveys up to and including the first quarter of 2001 do not cover the Northern or Eastern provinces (consisting of approximately 2 million inhabitants). A list of housing units created for the Demographic Survey of 1994 was taken as a sample frame. Housing units selected were chosen on the basis of random sampling from 265 primary sampling units.

Concepts and definitions

Household – A household was defined to include a person living alone or a group of persons living together and sharing common cooking arrangements. A household might include persons not related to each other such as boarders and servants. Such persons though treated as members of the household, could form separate spending units.

Spending unit – A spending unit is defined as a group of individuals acting as a unit in terms of making joint spending decisions. Those who take independent decisions with respect to their incomes formed separate spending units.

Income recipient - A person who receives an income from any source (employment, transfer, rent, own business, dividends) during the six months immediately prior to the date of the first (of three) interviews, was treated as an income recipient. A person receiving less than Rs.125 during the one month reference period, and Rs.750 during the six-month reference period, was not considered as an income recipient.

Occupation and industry - Occupational groups were classified according to the Standard Occupational Classification for Sri Lanka 1971', based on the 1968 revision of the ILO occupational classification. Industry is classified according to the UN's 1968 revision of the International Standard Industrial Classification (ISIC).

Labour force - The labour force is composed of the economically active population aged 10 years and over.

Economically active population - The economically active population is defined as those persons who are/were employed or unemployed during the reference period of the survey.

Employed persons - These are all household members who during the reference period worked as paid employees, employers, own account workers (self-employed) or unpaid family workers and in family enterprises.

Participation rate - This is the proportion of the labour force that is in the working age population.

Working age population - This is the non-institutional household population aged 10 years or over.

Unemployment rate - This represents the number of unemployed persons as a percentage of the labour force.

Annex 2: Fiscal Costs of Informal Sector Schemes

Farmers' and Fishermen's Scheme

Table A1 and Figure A1, illustrate the net liability to the government of the farmers and fisherman's scheme. Assuming a policy of non-indexation, the net liability to the government is estimated to be Rs. 2781 to Rs. 63,567 per beneficiary – depending on the age of enrolment. The nominal liability created by each new member is equivalent to the difference between the value of contributions and interest income and the value of pension payments (Rannan-Eliya et al. 2003). These costs are relatively small as the pension does not maintain its real value during retirement.

Figure A1 – Net liability per beneficiary by age

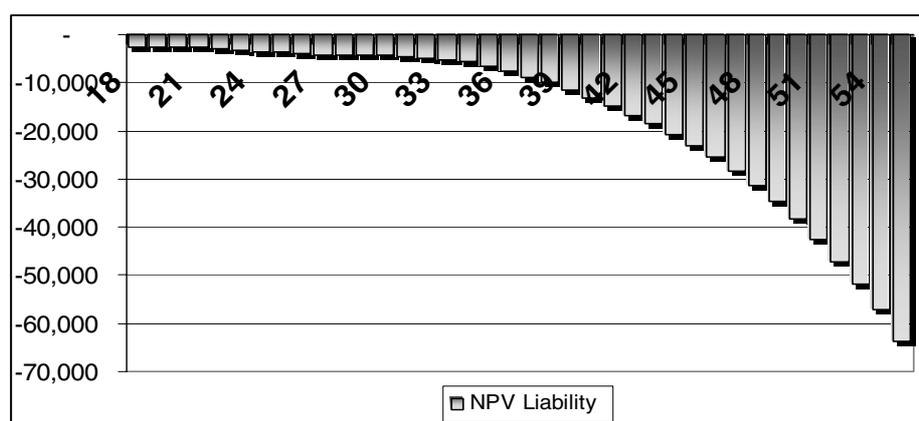


Table A1: Net Liability per beneficiary: Non-inflation-indexed

Real Rate of Return=2%			
Age at enrolment	PV of contributions with interest	PV of pension payments	Net liability Per beneficiary
18	5,769	-9,116	-3,347
35	7,369	-14,745	-7,376
40	7,718	-22,263	-14,545
50	8,502	-50,044	-41,542
55-59	6,212	-74,397	-68,185

Source: Author's Calculation

Notes: Life Expectancy=20 years; retirement= 60 years; inflation =10%; Nominal interest rate=12%

To evaluate the fiscal impact of parametric changes, sensitivity analysis was applied to the data. An increase of 5 years in the retirement age acts to lower the government's fiscal liabilities. For example, an individual enrolling at age 18 and retiring at 65 would generate a fiscal surplus equal to Rs.1695. For members enrolling at 55, the government's net liability would decline to Rs.45,000 per beneficiary representing a 35% reduction of fiscal costs. Conversely, the government's net fiscal liabilities are expected to increase as life expectancy assumptions are raised. An increase in life expectancy of 5 years increases the government's net fiscal liability by 7 and 20% (Rs.3347 and Rs.68,185 per beneficiary).

If the government formally index-linked informal sector pensions to prices (currently the *de facto* policy,) the government's net liabilities would rise substantially equal to Rs.0.23 million and Rs.1.0 million per beneficiary (see Table A2). Index-linking contributions to prices in addition to payments would act to reduce the government's net fiscal liability marginally. Such a policy should

not affect people's ability to pay as contributions would remain constant in real terms, unless, of course, workers suffer money illusion.

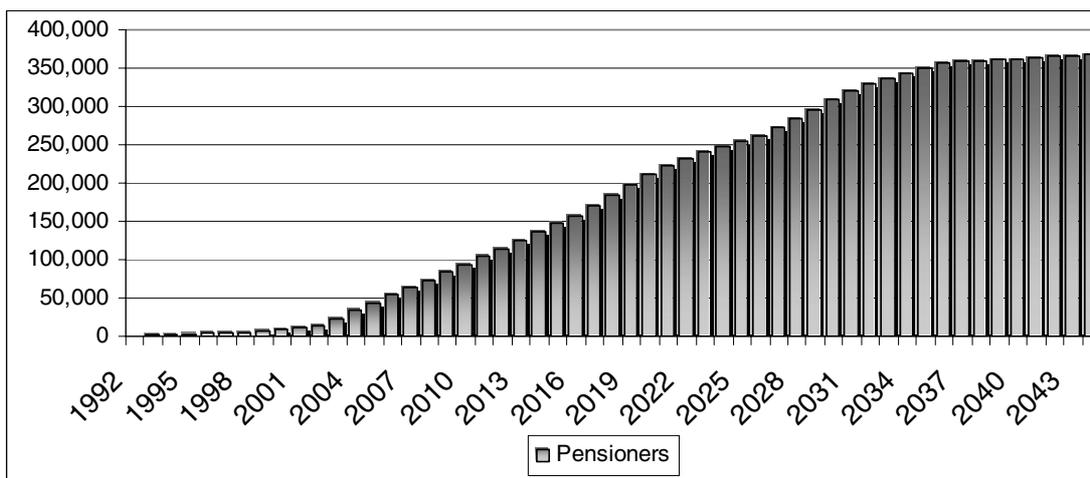
Table A2: Net Liability per beneficiary: inflation-indexed payments

Real Rate of Return=2%			
Age at enrolment	PV of Contributions with interest	PV of pension payments	Net liability Per beneficiary
18	5,769	-1,000,000	-994,231
35	7,369	-320,000	-312,631
40	7,718	-300,000	-292,282
50	8,502	-260,000	-251,498
55-59	6,212	-240,000	-233,788

Source: Author's calculation [assumptions as above]

The government's fiscal liabilities will be expected to grow over time as the stock of pensioners' increases. Figure A2 estimates the growth of the farming pensioner population based on age-wise enrolment data. The pension population is projected to increase from 14,000 in 2002 to 211,500 by 2020.

Figure A2: Projected pension profile of farmers' scheme



Source: Author's projection based on age-wise enrolment data, AAIB

The implicit pension of the Farmers Scheme can be calculated by multiplying the average net liability per beneficiary by the number of beneficiaries in the system. Based upon 2002 enrolment numbers (675,000) the government's implicit pension debt is Rs.10 billion or 0.7% of nominal GDP in present value terms. If the government index-linked pensions to prices its net debt obligation would increase to Rs. 282 billion or 17.7% of nominal GDP in present value terms – see to Table A3. Pension liabilities are significantly lower when default rates are factored in. Assuming a default of 50% the government liability would be half this level.

Table A3: Implicit debt obligation: No defaulters

	Net liability per beneficiary	Total beneficiaries	Total liability (Rs. Mn)	As a % GDP
Non- index- linked	- 15,497	675,000	-10,460	0.7%
Index- linked	-418,676	675,000	-282,606	17.7%

Source: Author's Calculation

Self-Employed scheme

The net fiscal liability per beneficiary under the self employed scheme is calculated in a similar manner as above. Based upon the current stock of members, payments and contributions, the government's net fiscal liability per beneficiary is estimated to equal between Rs. 362 to Rs. 30,576 per beneficiary depending on the age of enrolment, refer to Table A4.

Table A4: Net liability per beneficiary: Non-inflation-indexed

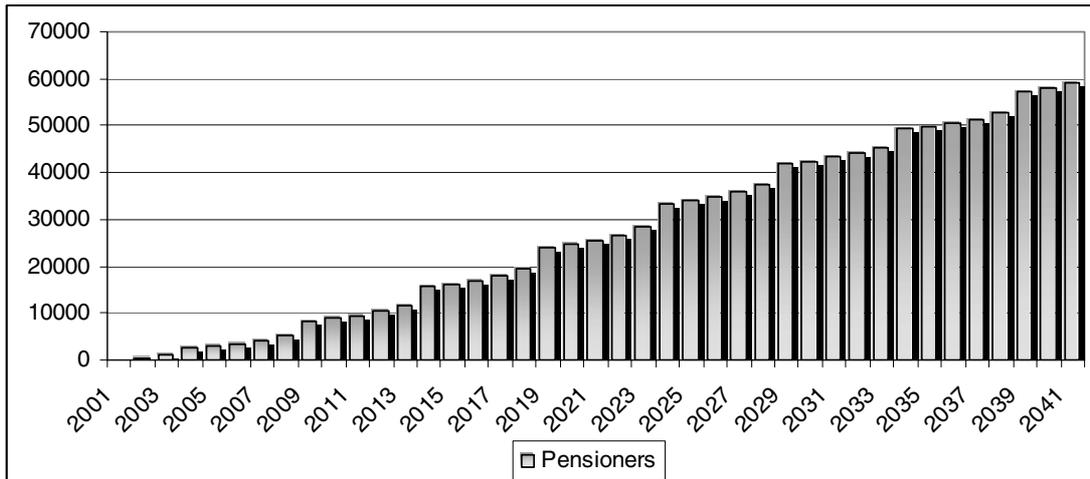
Real rate of return=2%				
Age at enrolment	PV of contributions	PV of pension payments	Net liability Per beneficiary	
18	4,768	-5,130	-362	
35	5,241	-7,260	-2,020	
40	5,465	-10,858	-5,393	
50	5,756	-23,830	-18,074	
55-59	4,313	-34,889	-30,576	

Source: Author's Calculation

Notes: As for Table A1.

The calculation does not index-link pension payments to prices. If pensions were index-linked in this way, the government's net fiscal liability would increase to Rs.115,000 to Rs.555,000 per beneficiary.

Figure A4 projects the growth in pensioner population over the next 40-year period, based upon year-wise enrolment data since 1996. The figures assume no additions to the current stock of self-employed workers. The pension population is expected to grow from 4 in 2001 to 25,000 by 2021, equivalent to an annual average growth of 30%.

Figure A4: Projected profile of self-employed pensioners: 2001-2041

Source: Data based on age-wise enrolment, SSB, 2003

The government's implicit pension debt under the self-employed scheme is equivalent to the stock of members (75,000) multiplied by the average net liability per beneficiary (Rs. 6725). The cost to the government was estimated to be in the region of Rs.507 million or 0.03% of GDP in net present value terms. Under a policy of price-indexing the pension, the fiscal costs to the government increase to Rs.18,000 million or 1.1% of nominal GDP. When the default rate is factored into the picture (estimated to be in the region of 40%) the implicit debt obligation falls to Rs. 10,000 million or 0.67% of nominal GDP in 2002 prices.

Annex 3: Methodology of the PSPS model

The aim of the model was to forecast the government's public sector wages and pension liabilities. The costs of these liabilities are influenced by several factors, some of which are directly amenable to policy, while others are exogenously determined (external shocks impacting on the rate of economic growth). The cost of a country's contingent pension liabilities is influenced by several factors, including the size of the public sector and policies applied to the pension system, including the rate of accrual of pensions, the level of indexation of pensions and wages growth and the retirement age.

As mentioned in Chapter 3, Sri Lanka's public sector pension system has a fairly generous accrual formula with pensions accruing at a rate of 3% of final salary per year of service. Although generous by international standards, the value of the pension is significantly eroded by the lack of formal price indexation during retirement. The model was therefore constructed to allow the costs of alternative policy options to be evaluated. Four broad policy options – or sensitivity analysis – were applied to the data including:

- changes in the size of the public sector
- changes in the indexation assumptions
- changes in retirement age
- changes in the tax to GDP ratio.

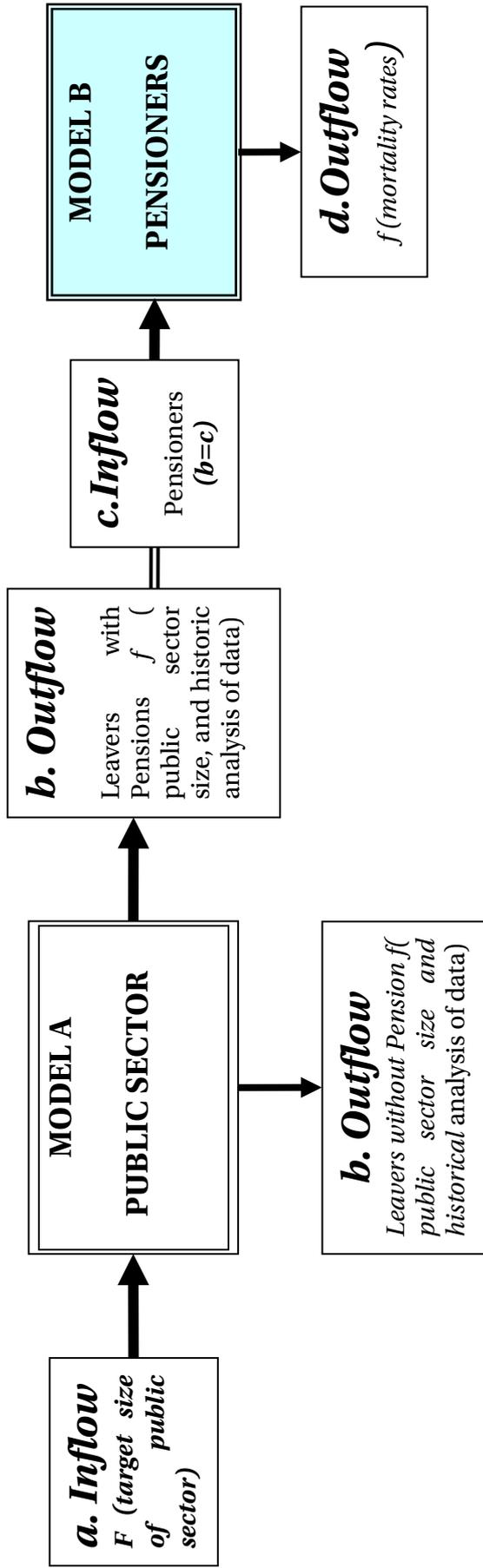
The results of the exercise are presented in Chapter 4. The model should be interpreted as being indicative, in the sense that the projections provide an indication of the magnitude and direction of change rather than precise estimation of future pension costs. The projection horizon runs until 2050.

Model methodology

A simple linear methodology was used to derive public sector wages and pension liabilities. The model adopts a partial equilibrium rather than a general equilibrium approach. Changes in system parameters therefore do not have endogenous effects on other variables e.g. higher worker or government contribution rates do not result in changes in participation levels or recruitment. In reality, such endogenous effects can potentially have large effects for output and other macro variables. However, due to time constraints and data limitations a general equilibrium model was not constructed. Despite such limitations a partial equilibrium analysis still remains valid and useful in providing insights into the relative effects of alternative policy options on the government's future fiscal liabilities. Whether a model is partial or general, the fiscal estimates derived are principally an outcome of the assumptions contained within the model. The interpretation of model results should keep this in mind.

Due to the inter-relationship between the sizes of the public sector and the pensioner population, albeit with a time lag, the model contains two inter-related components. The first estimates the size of the public sector while the second estimates the pensioner population. Outflows of public sector workers translate into inflows into the pensioner pool. Figure A5 illustrates the methodology using a flow diagram.

Figure A5: Inflow-Outflow Diagram of Public Sector & Pensions Model



Model A – Public sector workers

The public sector worker model estimates the future size and costs of the public sector. To derive fiscal costs for the base year (1998), information relating to the age and frequency distribution and also the age and wage distribution of public sector workers was gathered. This information was provided by the Department of Census and Statistics, through their four-yearly censuses of public sector workers (1990, 1994 and 1998 datasets). Additional information – including the public sector wage board index and fiscal data – was accessed from the Central Bank's 2002 *Annual Report*. The base year represents the latest year for which data were available. To derive the wage bill, the frequency distribution of workers was multiplied by wage data disaggregated by age, summed over all age groups (17 to 65 years). The following methodology (applied to the base year) was used to estimate the wage bill in subsequent years.

$$PS_t = \sum_{a=i} \frac{([S_{it-1} - L_{it-1} + NR_{it}] \times [W_{it}])}{a=i} \quad (i)$$

Where:

- PS = Public sector wage bill
- S = Frequency of public sector workers by age cohort
- L_i = Annual leavers by age cohort (*outflow*)
- NR_i = New recruits by age cohort (*inflow*)
- W_i = Wage by age cohort

Inflows – The inflows of workers into the public sector or new recruits were determined as the difference between the target size of the public sector and the number of leavers. The inflow or new recruit variable was therefore derived as the residual. The age frequency distribution of new recruits was determined by time series analysis of public sector census datasets. Figure A8 illustrates the age frequency distribution of new recruits derived from the data. The percentage distribution of new recruits was estimated and applied to subsequent years.

Outflows – The number of leavers was calculated with reference to historic data on leavers derived from the census of public sector workers. A differencing methodology was used to determine the percentage distribution of leavers by age cohort in the model. The frequency distribution of public sector workers joining prior to 1994 was subtracted from the 1998 distribution to derive a frequency distribution of leavers during the intervening period. The percentage distribution of leavers by age cohort was then applied to the base year to derive absolute number of leavers. The percentage distribution was applied to subsequent years to derive forward projections. Figure A9 illustrates the percentage distribution of leavers by age.

Wage data – The public sector wage distribution by age for the base year was derived from the census of public sector workers. Figure A7 below illustrates the wage profile by age for the base year (1998). Wages in successive years were estimated by up-rating wages in the base year by inflation or wage-growth assumptions selected within the model.

Wage bill – The public sector wage bill for the base year (1998) was calculated by multiplying the data on frequency distribution with the wage data for each age cohort summed over all age cohorts for that year. The wage bill for the following year was estimated by multiplying wage data for that year by the new frequency distribution of public sector workers. The latter was derived as the difference between the target public sector workforce less leavers plus new recruits (refer to Equation (i) above).

Model B – Pensioners

The pensioner model estimates the costs of the government's pension liabilities. To derive fiscal costs for the base year and subsequent years, the age frequency distribution of current pensioners

had to be constructed. Information relating to pensioner numbers and pension payments was supplied by the Department of Pensions. Unfortunately disaggregated data on the age distribution of public sector pensioners were not available from the DoP; therefore this series had to be constructed from alternative data sources. The frequency distribution of pensioners was derived from demographic data. The distribution of the former was assumed to reflect the demographic profile of the pensioner population as a whole.

Some adjustments were made to the pensioner profile to reflect the higher expected numbers of public sector pensioners aged between 60 and 65 relative to the 55-60 age group. The pensioner profile departs slightly from the population distribution for these age ranges. For ease of analysis, and given the lack of disaggregated data on pensions by age, all pensioners were assumed to receive the same pension equivalent to the public sector pension bill divided by the pensioner population. Pensions received in successive years were up-rated in line with wages or inflation depending upon assumptions applied within the model. Equation (ii) illustrates the methodology used to derive the pension bill for successive years (Y_{t+1}).

$$P_{t+1} = \frac{1}{a=i} ([P_{it} + NP_{it+1} - MP_{it}] \times [V_{it}]) \quad (ii)$$

Where:

- P_{it} = Pension frequency by age in year t
- NP_{it} = New pensioners by age in year t+1 (*inflows*)
- M_{it} = Mortality rate of population by age (*outflows*)
- V_{it} = Pension payment by age

Inflows - The inflows of new pensioners into the public sector pensioner pool were calculated from outflow data from the public sector worker model. The outflow of public sector workers (leavers) was split into two categories - those who left with a pension (forming the inflow into the pensioner pool) and those who left without a pension. Analysis of public sector census datasets and information provided by the Department of Pensions (on annual pensioner numbers) were used to calculate the percentage distribution of leavers with pensions. Those leavers who had completed a minimum of 10 years of service were defined as those leaving with a pension on the basis that current entitlement policies require the completion of 10 years of service. Those leavers with less than 10 years of service were classified as leavers without a pension. These data were then reconciled with data on annual pensioner numbers provided by the Department of Pensions. The percentage distribution derived was then applied in successive years to public sector outflow data to derive the inflows of new pensioners to the pensioner pool.

Outflows - Outflows of pensioners were those leaving the pension pool due to death. Information on life expectancy data and mortality rates derived from standard international life tables for each age cohort were used to estimate the outflow. Mortality rates were constructed from life table data supplied by the Department of Demography, University of Colombo, the UK's Government Actuary's Department and OECD data available on the internet. Principal life expectancy projections from De Silva (2003) were used for the analysis.

Model Parameters

Figure A5: Age frequency distribution of public sector workers (base year=1998)

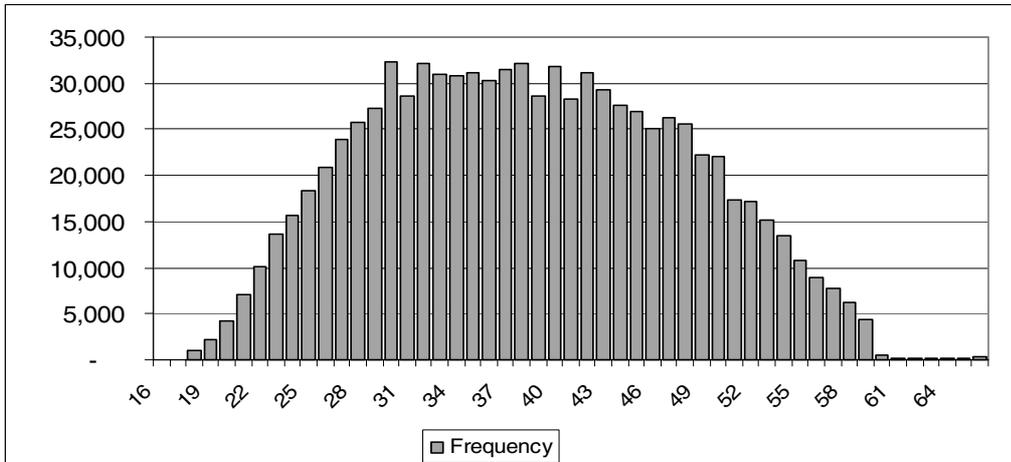


Figure A6: Age wage distribution of public sector workers (base year=1998)

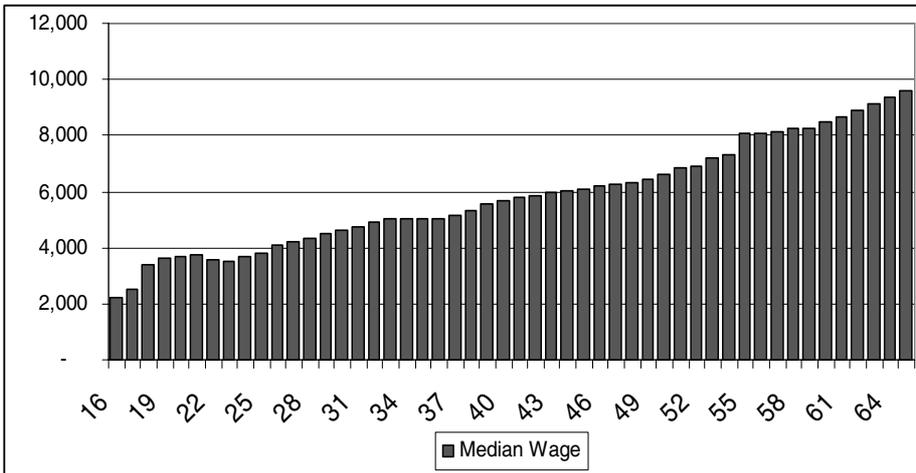


Figure A7: Age wage bill distribution of public sector workers (base year=2050)

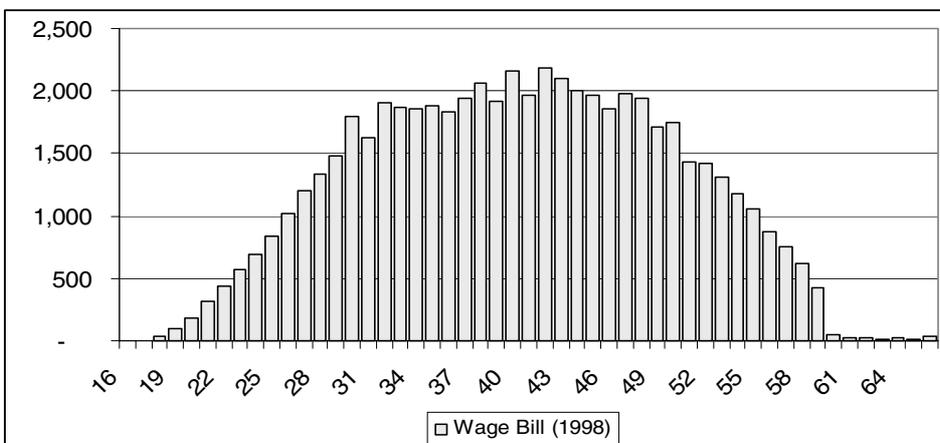


Figure A8: Percentage age distribution of new recruits (base year =1998)

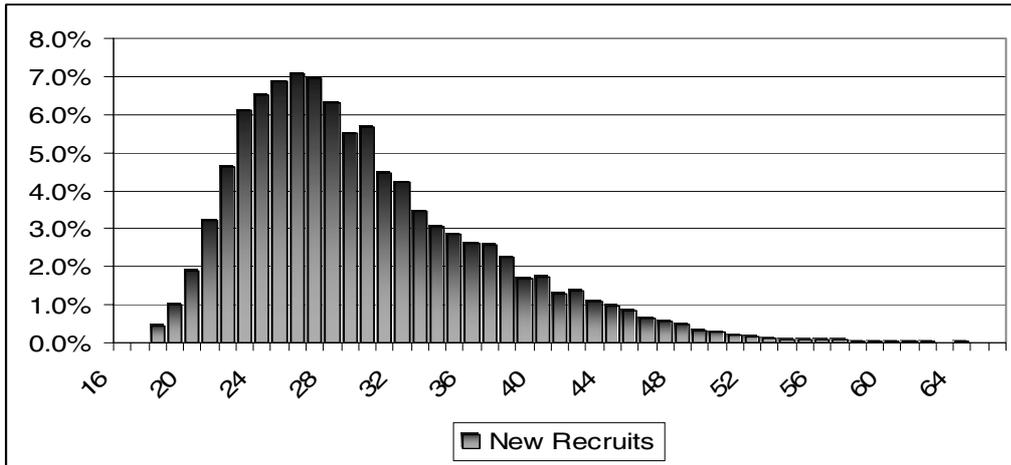


Figure A9: Percentage age distribution of leavers

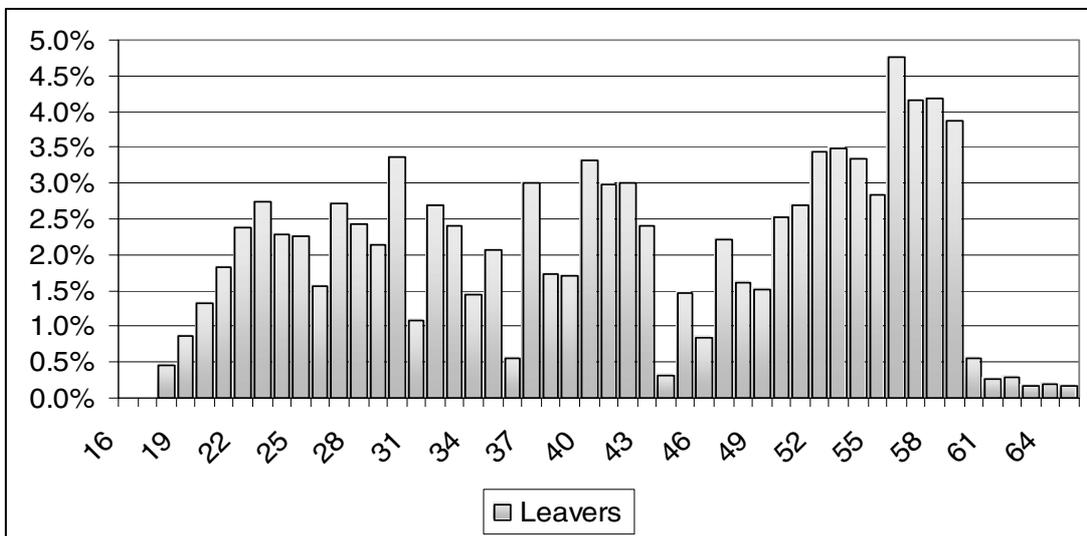


Figure A10: Age frequency distribution of pensioners (base year=1998)

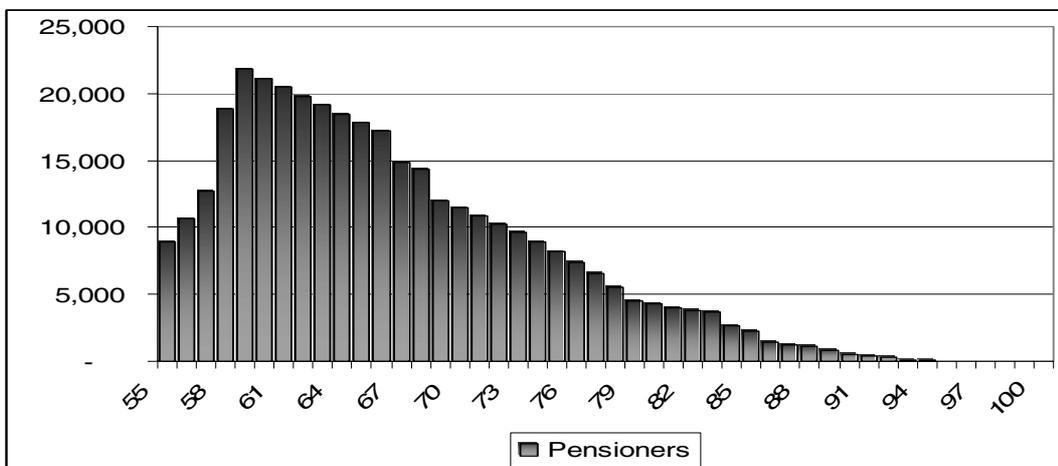


Figure A11: Age frequency distribution of pensioners (base year=2050)



Figure A12: Percentage age distribution of new pensioners

