

# Poverty Impact of State Pension Reform on the Elderly: an Analysis of Reform Proposals in the 2007 Irish Green Paper

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## Abstract

This report focuses on the relative poverty rate of Irish elderly, and aims to study the connection between potential changes to the state pension system and such poverty rates. The majority of Irish elderly depend in fact almost exclusively on the state old age or retirement pension as their main source of income, so that such changes are expected to have a noticeable effect. In particular we use data produced by a dynamic microsimulation model (LIAM) to simulate how the poverty rate of Irish elderly in the future might change if some pension reform proposals discussed in the 2007 Green Paper were indeed introduced instead of the current Irish pension system.

## Key words

Pension reform; Poverty; Ageing

### Disclaimer

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## **Abbreviations**

OACP	Old Age Contributory Pension
OANCP	Old Age Non Contributory Pension
RP	Retirement Pension
SPC	State Pension Contributory
SPNC	State Pension Non Contributory
SPT	State Pension Transition
PRSI	Pay-Related Social Insurance
GAIE	Gross Average Industrial Earnings
CPI	Consumer Price Index
PAYG	Pay As You Go
NPR	National Pensions Review
NPPI	National Pensions Policy Initiative
HRP	Home Responsibility Protection (UK)

## 1. Introduction

Pensions and the income of the elderly has been an area of great interest and concern in recent times both in Ireland and internationally due to the expected ageing of the population. In the OECD countries, for instance, the old age dependency rate is expected to double by 2050, to around 40 per cent compared to an average 18 per cent in the 1990s (OECD Social Policy Studies, 1996). In Ireland the old age dependency rate (the rate of the number of people of working age to pension age) will fall from 5:6 working age per elderly person in 2006 to only 1:8 in 2061 (Department of Social and Family Affairs, 2007). This ageing trend represents a challenge for public policy, to try to sustainably deliver sufficient retirement income to those of pension age.

For over two decades, analysts internationally have worried about the sustainability, in particular the cost of state pension systems as a result of the ageing of the population. Numerous reports have been written analysing the situation and developing policy solutions. International organisations such as the World Bank (1994), the OECD and the European Commission have made policy recommendations. In Britain the Pensions Commission (2006) carried out an extensive review of Britain's pension policy, while in Ireland the Pensions Board undertook a National Pensions Review in 2005, and the Department of Social and Family Affairs produced the Green Paper on Pensions in 2007. Ireland's creation of a national pensions fund and increased incentives to take up private pensions are examples of policies that try to address the state pension sustainability issue vis-à-vis population ageing.

However, the sustainability of the pensions system is not the only or even main concern in relation to the system. The level of income of pensioners is an important concern. According to recent (2006) data from Eurostat, 27 per cent of those aged 65 and over in Ireland are at risk of poverty.<sup>1</sup> The Central Statistics Office reports an even higher rate for the same year (34.1 per cent). While there has been a downward poverty trend in recent years, falling from 44 per cent in 2001, this rate is amongst the highest in Europe, with only Latvia, the UK, Spain and Cyprus having higher rates, and it is significantly higher than the EU(25) average rate of 19 per cent.

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<sup>1</sup> This is before social transfers but after retirement, old age and survivors' pensions. These differences between EU and CSO statistics have to do with different definitions of income used by the EU and by national Irish statistical offices. In particular, the EU definition of gross income does not include private pensions income, contributions to pension plans, employers' social insurance contributions, or value of goods produced for own production.

If one looks at incomes before all social transfers, it becomes particularly visible how the elderly fare much worse than the rest of the population. In 2006 their poverty risk before all social transfers was 85.9 per cent, while for the rest of the population it would be around 35 per cent. It appears therefore that social welfare pensions do contribute to reduce income poverty of the elderly by roughly 58 per cent. Indeed, when all social transfers are accounted for in the definition of income used, the Irish population in 2006 would count 17 per cent at risk of poverty overall, but 'only' 13.6 per cent among elderly (an impressive improvement also from 2005 when after transfers poverty for the elderly was 20.1 per cent). This suggests that social transfers are key in explaining the evolution of poverty dynamics over the life cycle. It also suggests that recent Irish redistributive policies have been more effective than in the past, if one for example considers that back in 2001 the national proportion of those at risk of poverty was 21 per cent compared to 44 per cent of elderly. Thus elderly poverty risk has indeed fallen at a faster rate than that of the rest of the population.

The recent improvement in the relative position of elderly has resulted from a strong policy focus in recent times by the government towards increasing the value of the state pension, a policy objective in repeated programmes for government, reversing a trend visible in the late 1980s where levels of the elderly at risk of poverty increased dramatically as the elderly, being a group with low labour force participation, were highly dependent on transfers and unearned sources of income which increased at a slower rate than market incomes of the working population. Their living standards, unlike those of non-elderly working populations, are largely dependent upon past actions and the actions of others, as well as on pension policy rules. In the past, as pensions did not keep pace with fast increases in average wage growth, pensioners' relative incomes substantially decreased.

### *A Life Cycle Perspective*

Our work belongs to the growing body of literature around population ageing and its economic implications. Ageing is a demographic trend affecting both the developed and developing world which consists of falling birth and mortality rates accompanied by longer life expectancy.<sup>2</sup> The result at the population level is a progressively older 'age structure', i.e. a population with more people in the older age groups relative to the younger ones. Assuming that the old tend to depend on the young for their subsistence – through the generation of wealth to finance pension returns, income transfers as well as care – the risk is that raises in the so-called dependency ratios<sup>3</sup> would entail also raising pressures for redistributing resources from a shrinking labour force to a growing share of non-

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<sup>2</sup> For more literature on ageing, see e.g. Falkingham and Johnson (1992), OECD Social Policy Studies n. 20 (1996), European Commission DG ECFIN Special Report 1 (2006).

<sup>3</sup> The old age dependency ratio refers to the ratio of people over 65 relative to all the younger age groups, while the economic dependency ratio refers to the ratio of over 65 who are not in work relative to the ratio of the 15-65 group who are working.

workers, with negative economic consequences (e.g. higher pension and health care costs, lower private and national savings, lower growth, and eventually, higher poverty and inequality). In the OECD countries, for instance, the old age dependency rate is expected to double by 2050, to around 40 per cent compared to an average 18 per cent in the 1990s (OECD Social Policy Studies, 1996). In Ireland the pensioner support ratio (the ratio of the number of people of working age to pension age) will fall from 5:6 in 2006 to 1:8 in 2061, with the dependency ratio rising from 15 per cent to 36 per cent. This ageing trend of course represents a challenge for public policy, which commonly has focused on reforming the pension or the health care systems so as to contain the macroeconomic consequences of population ageing, particularly the resulting rise in expenditures and imbalances for public finances, and to ensure that the elderly receive a sufficient retirement income.

At the individual level, ageing is certainly a positive factor as life expectancy increases. However, it also has important policy implications. In particular, as people live longer, they are likely to experience changes to their life cycle income<sup>4</sup> and living conditions. By living conditions is meant not only the monetary income levels of old people or elderly households, but more broadly the overall socio-economic situation including, for example, housing, health and consumption power which altogether define the quality of life of an older person. These conditions are in fact affected by behavioural changes that might accompany a longer life expectancy, such as the ability to retire later, or the possibility of having to spend longer periods in widowhood. Indeed the micro-economics of ageing focuses on understanding how individual ageing and related lifestyle and behavioural changes affect the dynamics of lifetime income, including different income sources, and most importantly the dynamics of poverty and deprivation in old age, defined not only in monetary but also in so-called 'consistent' terms.<sup>5</sup>

A major point we want to make in this introduction is therefore that, in order to understand the implications of 'ageing', one should look at the interplay of at least two levels, the macro (i.e. the age structure of the population and its repercussion on for example productivity and wages, growth, budgets, etc.), and the micro (i.e. the way people age and the individual events characterising a longer life expectancy). The feed-backs existing between the macro and micro levels might help us explain how future elderly might actually fare.

Indeed, a life time perspective is essential to understand how 'ageing' will affect the living standards of future elderly and consequently of an 'aged' population. For instance, dependency ratios might not

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<sup>4</sup> By life cycle income is meant the expected income for any given age across the individual's life.

<sup>5</sup> The definition of 'consistent poverty' was developed by the ESRI in 1987 and identifies the proportion of people, from those with an income below a certain threshold (less than 60 per cent of median income), who are deprived of two or more goods or services considered essential for a basic standard of living.

look as bad as current projections show if future generations should go through work histories different from current cohorts, i.e. if they should work later and hence be 'dependent' for shorter periods. Indeed, as ageing takes place, Rowntree's (1902) traditional life cycle theory of 'want and plenty' associated with different stages of life (see Falkingham and Hills, 1995:10) might no longer hold. For example, as different events characterise the ageing process, including having had fewer children while having acquired instead a higher education level, some elderly people might find themselves in positions of increased wealth and savings in retirement, thus weighting less on public assistance. At the same time, as fertility and marriage patterns change, they might find themselves more reliant on public care as the family context might no longer provide an informal alternative to old age care.

More generally, the life of an individual will be such that his/her seniority might look different from what we might expect today. Already now, for instance, we observe a number of changes to the life cycle such as longer time spent in education, a more uncertain labour market and different working patterns (e.g. more part-time and fixed-term employment), more likely marriage dissolution, etc. (Falkingham and Hill, 1995). These lifestyle 'micro-level' changes are all likely to take place side by side with population ageing and affect how the latter really impacts future key economic variables.

In sum, there might exist several paths to ageing which might define different and more variable life cycle income trajectories, where age *per se* is no longer a strong predictor (Rigg and Sefton, 2004). Using a dynamic microsimulation model for the UK (LIFEMOD), Falkingham and Hills (1995) found that indeed the alternating periods of want and plenty are no longer so evident a century after Rowntree first talked about them. One important evidence that has emerged is that while there might not be so much variation between age groups (with incomes remaining rather flat after peaking in the middle ages), there might be important variations between subgroups e.g. married versus single pensioners. Again, these variations are associated with personal life cycle events which influence income dynamics as much as the broader living conditions of a person, more than age.

Thus, the crucial question for a pro-active public policy against the negative implications of population ageing is to create incentives and structures which might affect how people age: it is the life course conditions and behaviours of an ageing population that matter more than ageing *per se*.

## 2. Income Position of Elderly in Ireland

In 2004 the Irish population of over 65 years amounted to approximately 11 per cent of the total, with slightly more older women (56.2 per cent) than men (43.8 per cent). Just over half lived in urban areas (51 per cent). The vast majority were home-owners (90 per cent), with 10 per cent living in some form of rented accommodation, either private or local authority. Over one-third lived alone (36 per cent), while 47.4 per cent lived with one other adult; 46 per cent of them were married, 16.6 per cent were single, and 34.7 per cent were widowed. Two-thirds had no formal education or had primary education only, while 4.9 per cent had a third-level degree or above. Finally, 58 per cent responded that their health was good or very good, while 50.7 per cent had a chronic illness.<sup>6</sup>

A number of studies have been carried out to study the economic characteristics of the elderly in Ireland. The relative position of the elderly in 1973 was briefly described in Murphy's (1975) description of the Household Budget Survey. Rottman et al (1981 and 1982) carried out a more detailed analysis of the survey. Whelan and Vaughan (1982) meanwhile used their 1977 survey, together with other sources, to investigate the economic and social circumstances of the elderly. Blackwell (1984) used the 1980 Household Budget Survey to write a report on the incomes of the elderly for the National Council of the Elderly. Subsequently the relative position of the elderly has been indirectly referred to as part of the Economic and Social Research Institute's wider studies into poverty (e.g. Nolan and Callan (1994), Callan et al (1996), Layte, Fahey and Whelan (1999)), and into pensions (e. g. Hughes and Whelan (1996)). As for pension adequacy, the most up-to-date study is Hughes and Watson (2005), while the 2007 Green Paper on pensions has described in detail the nature and source of current pensioner incomes.

The Irish Government's definition of poverty is given in its National Action Plan for Social Inclusion 2007-2016:

*People are living in poverty if their income and resources (material, cultural and social) are so inadequate as to preclude them from having a standard of living which is regarded as acceptable by Irish society generally. As a result of inadequate income and other resources*

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<sup>6</sup> 2003/04 EU-SILC (as described in Prunty, 2006).

*people may be excluded and marginalised from participating in activities which are considered the norm for other people in society.*

This definition of poverty encompasses both material and social deprivation. Such deprivation is mostly, but not exclusively, a matter of income. Income poverty is measured by the Central Statistics Office and refers to a relative poverty measure (at-risk-of-poverty measure). This means having an income that is below 60 per cent of the median income (the median is the mid-point on the scale of incomes in Ireland). In 2006 that was an income of below €202.49 a week for an adult. In 2006, 17 per cent of the population was poor according to this definition (after all transfers). If on top of being at risk of poverty, someone is also regarded as suffering enforced deprivation, e.g. not being able to afford basic necessities such as new clothes, not having the money to buy food such as meat or fish, not being able to heat one's home, or having to go into debt to pay ordinary household bills, then a measure of poverty is used, known as consistent poverty, which is a combined income-deprivation measure. This measure was devised by the Economic and Social Research Institute in 1987 and is built around an 8-key items index. In 2006, 7 per cent of the population was thus consistently poor.

In terms of targets, Ireland adopted its first anti-poverty strategy in 1997. According to CSO statistics run on the Living in Ireland Survey, in 1997 the relative income poverty (at 60 per cent of median income) was 35 per cent overall, approximately the same as in 1994. The numbers in consistent poverty, however, were falling, from 15 per cent in 1994 to 10 per cent in 1997. In the following decade, high economic growth and employment have considerably reduced further the number of people in consistent poverty, particularly among children and the elderly. The proportion of those at risk of income poverty also started to fall, being 20 per cent in 2001.

For the elderly, the consistent poverty measure has been steadily below the population average and declining over time, at 3.7 per cent in 2005 compared to 6.6 per cent in 1998 (mostly affecting older women and those relying on non-contributory or widows pension). However, a different picture is obtained if looking at the relative risk of income poverty, where the elderly have actually experienced a worsening of their situation between 1994 and 2003. In particular, between 1994 and 1997, the poverty risk (measured at 60 per cent of median income) increased from 41 per cent to 59 per cent (CSO, 1997). This was due to the rapid increase in average earnings which have not been matched by similar increases in social welfare. Similar results are shown by, for example, Layte, Fahey and Wheelan (1999).

When focusing specifically on income poverty, plenty of sources confirm that Irish elderly have experienced a drastic increase in their relative poverty risk (under all poverty line definitions) due to the fact that most rely on the state pension and that the latter did not grow adequately in relation to

the boom in average earnings growth. While the poverty risk for the elderly thus peaked in 2000/2001, up to around 40-60 per cent (depending on the elderly household composition, and age), it has considerably decreased from those high levels and the latest CSO statistics (2008) fix it at an average of around 13 per cent.

Another important aspect is to locate the Irish elderly within the more general European context. In 2004 (see Zaidi, Marini and Fuchs, 2006), the median Irish pension amounted to 52 per cent of the median earnings in Ireland, compared to, for example, 78 per cent in Italy, 75 per cent in France or 68 per cent in Sweden (with only Cyprus and Spain being below Ireland). For the same year, the risk of poverty rate for the over-65 age group is estimated in this report to be around 40 per cent, compared to, for example, 16 per cent in Italy and 14 per cent in Sweden (with only Cyprus having a higher risk of poverty than Ireland in the whole EU25).

We now consider more up-to-date data. In Table 1, drawing upon comparative data drawn from the Eurostat database,<sup>7</sup> using the EU internationally comparable definition of income (i.e. equivalised household disposable income evaluated at a poverty line at 60 per cent of median income), we report the relative poverty rate or those at risk of poverty in the EU member states for the period 2001-2006 for those aged 65 or more. The poverty rate in 2006 for Ireland was reported to be 27 per cent, higher than the EU average of 20 per cent.<sup>8</sup> However, although still high, substantial progress has been made, falling from 44 per cent in 2001, the highest in the EU.

In Table 2, we report the trend in age-specific at-risk-of-poverty rates for Ireland from 1995-2006 (before social transfers but after retirement and survivors' pensions). While the overall poverty trend has remained quite static over the period, at around 20 per cent, above the EU level of about 15 per cent, this masks major changes in the age-specific poverty rate. From 1995 to 2001, the poverty rate of those aged 65 and over rose from 19 per cent to 44 per cent. Those aged 75 and over experienced an even more significant change, with the rate rising to 56 per cent. Since that period, however, there has been a reversal of this trend, declining to 27 per cent for those aged 65 and over and to 32 per cent for those aged 75 and over.

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<sup>7</sup> See [[http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=1996,39140985&\\_dad=portal&\\_schema=PORTAL&screen=detailref&language=en&product=REF\\_TB\\_living\\_conditions\\_welfare&root=REF\\_TB\\_living\\_conditions\\_welfare/t\\_livcon/t\\_ilc/t\\_ilc\\_ip/tsdde320](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996,39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=REF_TB_living_conditions_welfare&root=REF_TB_living_conditions_welfare/t_livcon/t_ilc/t_ilc_ip/tsdde320)]

<sup>8</sup> This EU figure is different from CSO poverty rates since the EU has a different definition of gross income on which it runs the calculations, e.g. it excludes incomes from private pensions or the value of goods produced for personal consumption.

**Table 1. At risk of poverty in EU25 (aged 65 or over)**

	<b>2006</b>	<b>2005</b>	<b>2004</b>	<b>2003</b>	<b>2001</b>
<b>Cyprus</b>	52	51	:	52	:
<b>Spain</b>	31	29	30	28	22
<b>Latvia</b>	30	21	:	:	:
<b>United Kingdom</b>	28	26	:	24	27
<b>Ireland</b>	27	33	40	41	44
<b>Greece</b>	26	28	28	29	33
<b>Portugal</b>	26	28	29	:	30
<b>Estonia</b>	25	20	20	17	18
<b>Belgium</b>	23	21	21	23	26
<b>Italy</b>	22	23	21	:	17
<b>Lithuania</b>	22	17	:	:	12
<b>Finland</b>	22	18	17	17	18
<b>Malta</b>	21	16	:	:	:
<b>Slovenia</b>	20	20	:	19	20
<b>Romania</b>	19	17	17	20	19
<b>Bulgaria</b>	18	18	16	14	15
<b>Denmark</b>	17	18	17	21	24
<b>France</b>	16	16	15	11	11
<b>Austria</b>	16	14	17	16	24
<b>Germany</b>	13	14	:	:	12
<b>Sweden</b>	12	11	14	:	16
<b>Hungary</b>	9	6	:	10	12
<b>Luxembourg</b>	8	7	8	11	7
<b>Poland</b>	8	7	:	:	7
<b>Slovakia</b>	8	7	:	:	:
<b>Czech Republic</b>	6	5	:	:	6
<b>Netherlands</b>	6	5	:	7	8
<b>EU25</b>	19	19	18	17	16
<b>EU15</b>	20	20	19	19	18

Source: Eurostat Database (2008) [At risk of poverty rates by age and gender]

**Table 2. At risk of poverty in Ireland by age group**

	2006	2005	2004	2003	2001	2000	1999	1998	1997	1996	1995
<b>Less than 16 years</b>	21	22	22	20	26	22	21	23	25	27	26
<b>16–24 years</b>	20	19	18	16	12	15	17	17	19	18	19
<b>25–49 years</b>	13	14	14	13	17	15	14	15	15	16	15
<b>50–64 years</b>	18	20	22	24	16	18	15	14	13	13	13
<b>65 years and over</b>	27	33	40	41	44	42	34	33	27	22	19
<b>65–74 years</b>	:	:	:	:	35	31	28	28	23	18	18
<b>75 years and over</b>	32	37	45	46	56	56	42	40	32	27	22
<b>Total</b>	18	20	21	20	21	20	19	19	19	19	19
<b>Total (EU15)</b>	16	16	17	15	15	15	16	15	16	16	17

Source: Eurostat Database (2008) [At risk of poverty rates by age and gender]

### **3. The Irish Pension System**

The Irish pension system is in many respects typical of what in the literature is often referred to as the multi-pillar model, with a relatively small mandatory first pillar consisting of a flat (i.e. no earnings related) social insurance system (first tier), and means-tested social assistance (zero tier). The income replacement function (i.e. earnings or contributions related pensions) is left to the voluntary occupational or private system (the so-called second and third pillars). Public pensions are in general Pay As You Go (PAYG), with the private sector providing funded occupational or private pensions to about 55 per cent of all workers in 2005 (up from 52 per cent in 2002). Altogether, the Irish system is in essence a multi-pillar model as illustrated in the figure below.

**Figure 1. The main pillars in the Irish system**

3 <sup>rd</sup> Pillar	Funded	Voluntary
2 <sup>nd</sup> Pillar	Funded /PAYG	Voluntary
1 <sup>st</sup> Pillar	1st Tier Flat-rate PAYG 0 Tier Means-tested PAYG	Mandatory
	Social Assistance	

In this paper, we focus on pillar 1: instruments. In terms of actual benefits, the Irish first pillar includes:

- State Pension Contributory (renamed from Old Age contributory pension, OACP) or SPC
- State Pension Non Contributory (renamed from Old Age non-contributory pension, OANCP) or SPNC
- State Pension Transition (renamed from Retirement Pension)
- Invalidity Pension
- Widow's, Widower's and Orphan's Pensions.

The first (public and mandatory) pillar consists of many different provisions which together constitute the Social Welfare pensions. The basic non-contributory state pensions (zero tier) cover residents aged over 66 whose income is below a certain level according to a means-test, and are paid out of general taxation. The first tier is instead for people who satisfy the contribution conditions and are thus entitled to a flat benefit. In particular, the state contributory pension is for people aged over 66 years (regardless of the employment status), who have paid social insurance contributions before reaching age 56 according to or above a minimum contribution record. Alternatively, the state transition pension (replacing the old Retirement Pension) is available for employees from the age of

65 who have retired and started paying contributions before age 55. This benefit effectively provides a strong incentive for retiring at 65.<sup>9</sup>

The contributory pension corresponds to 35 per cent of gross average industrial earnings (GAIE). There is not much difference in benefit amounts between the means tested and the contributory benefit (nor between retirement and old age pensions), thus revealing that the overall function of the zero and first pillars is mostly to reduce poverty for all and guaranteeing a basic level of consumption rather than fulfilling an insurance function for workers.

Contributions towards a benefit under the first pillar must be paid during working years or they can be disregarded or credited in certain circumstances such as caring for a disabled person or a child, or experiencing illness or unemployment. Contribution rates (shared by employees and employers) are defined in line with many different revenue-level classes, and are paid into a Social Insurance Fund managed by the state. Most of the active population is put in class A, with a contribution rate around 4 per cent of earnings. Below the first pillar, a number of other in-cash and in-kind benefits are provided by the state as part of the social assistance package, e.g. allowances for electricity, for fuel, for certain medication or for those living alone. Above age 70 many of these allowances become universal. Furthermore all benefits can be matched by supplements, e.g. in the case of dependants, those living alone or those above 80 years of age.

In recent years the PAYG contributory benefits are an increasing share of pensioners' income (60 per cent of total public pensions at the end of the 1990s), relative to means-tested benefits. In terms of replacement rates in 2002 the first pillar gave around 31 per cent of pre-retirement earnings (one of the lowest in OECD countries, where the average is 57 per cent).

In 2000 total public pension spending was at 4.6 per cent of GDP. The cost of the first pillar is however expected to increase to a level of around 9-14 per cent of GDP in 2050<sup>10</sup> due to demographic changes alone (with 14 per cent being the most pessimistic estimate from the Department of Finance), pension reforms notwithstanding (i.e. assuming the same benefit levels and overall system rules as we have today). The goal of economic and financial sustainability of the system vis-a-vis demographic change is indeed another stated objective of government.

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<sup>9</sup> The effective retirement age in Ireland has been declining since the 1970s. However, mostly thanks to a rise in older female participation rates from the late 1980s, as well as to a high degree of self-employment, retirement ages among the elderly are still high by EU standards: in 2000 it was 63.4 for males and 60.1 for females, compared to the EU effective average retirement age of 58.

<sup>10</sup> All the summary figures in this paragraph and the next are provided by Natali (2004).

<sup>10</sup> All the summary figures in this paragraph and the next are provided by Natali (2004).

Looking at the composition of pension incomes, over time the contributory state pension has become a more important source of weekly income for a larger amount of pensioners, followed by occupational pensions. Together these income sources account for 75 per cent of the pensioner's average weekly income in 1995 and also in 2000.

In sum, the current Irish pension system follows a multi-pillar model, based on both the policy goal of income replacement for the elderly, i.e. the goal to preserve the acquired living standards after retirement, as well as on the goal of poverty reduction in old age. Together they form the goal of income adequacy in old age, as stated in numerous policy papers such as the latest Pensions Green Paper (2007:3):

*The overall objective of the pensions system ... is to ensure that people have an adequate income in retirement. In relation to Social Welfare pensions, the objective is to provide income and other supports so that pensioners are assured of an adequate basic standard of living. The role of voluntary supplementary pension arrangements is to encourage people to make supplementary pension provision. In this respect, a private pension may supplement the Social Welfare pension as well as other forms of retirement income.*

While the above statement falls short of defining what is 'adequate' income,<sup>11</sup> through the National Pensions Review the government agreed to a target of 50 per cent replacement to be provided by the whole pension system by 2013. It is perhaps fair to say that in essence the mandatory side of the system (first pillar) deals predominantly with poverty eradication, and thus remains well below the stated goal, while income replacement is for the most part left to voluntary mechanisms which cover a still relatively small proportion of the workforce (second and third pillars). Together, these pillars (and related pension policy) must also fulfil two other goals according to the government, namely sustainability and modernisation (e.g. to take account of changing living or labour market conditions such as increased female participation).

Unfortunately, as we will discuss in the next sections, these stated goals stand against a reality where, to date, the income distribution of pensioners in Ireland is rather unequal and the elderly poverty rates are still among the highest in Europe. The Irish public pension system in fact constitutes the bulk of old age income for all quintiles except the top one. More generally, there is considerable variability in pensioners' incomes across the income distribution, with pensioners in the top quintile receiving approximately five times the income of pensioner units in the bottom quintile; furthermore, pensioners' households in the three bottom quintiles provide the bulk of households living in poverty.

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<sup>11</sup> This is indeed the object of current policy debates, which will be illustrated more in the next section.

This large income difference between the top and the bottom quintiles can be explained by receipt of an occupational or personal pension plan rather than by earnings. Such occupational pensions provide retirement income starting from the fourth quintile upwards, covering about one-third of all current pensioners.

In light of this, in the next section we will discuss some proposals (actual as well as hypothetical) for reform of the current multi-pillar pension system. An important point to note already however is that, from a policy standpoint, the division between public and occupational pension is not very clear-cut. Occupational pensions take into consideration the value of any public pension, so changes in the design of one will affect entitlements to the other. Consequently, the cost of social security needs to be viewed as a totality. Occupational pensions are in fact supported by tax relief. Contributions to occupational pensions are tax deductible, while instead income from pensions is taxable. The net effect is to generate considerable tax expenditures for the government. Pension policy in the future will need to take into account such indirect costs stemming from all the pillars together, especially when considering shifting more weight from the first to the other two pillars as a way to allegedly reduce the burden on public finances.

#### **4. Policy Reform in Ireland**

Any pension reform should be designed so as to achieve a balance between different goals. Indeed, these goals might involve trade-offs. For instance, improving the financial sustainability of the first pillar might involve cutting the value of the state pension. However, the latter step would also entail a great cost in terms of, for example, increased poverty among those groups who rely mostly on this type of benefit. What matters here is that pension reforms should be evaluated in their totality, including the effects stemming from their interactions with the tax and benefit system, the demographic trends and labour market assumptions. No single aspect of a reform can or should be considered in isolation.

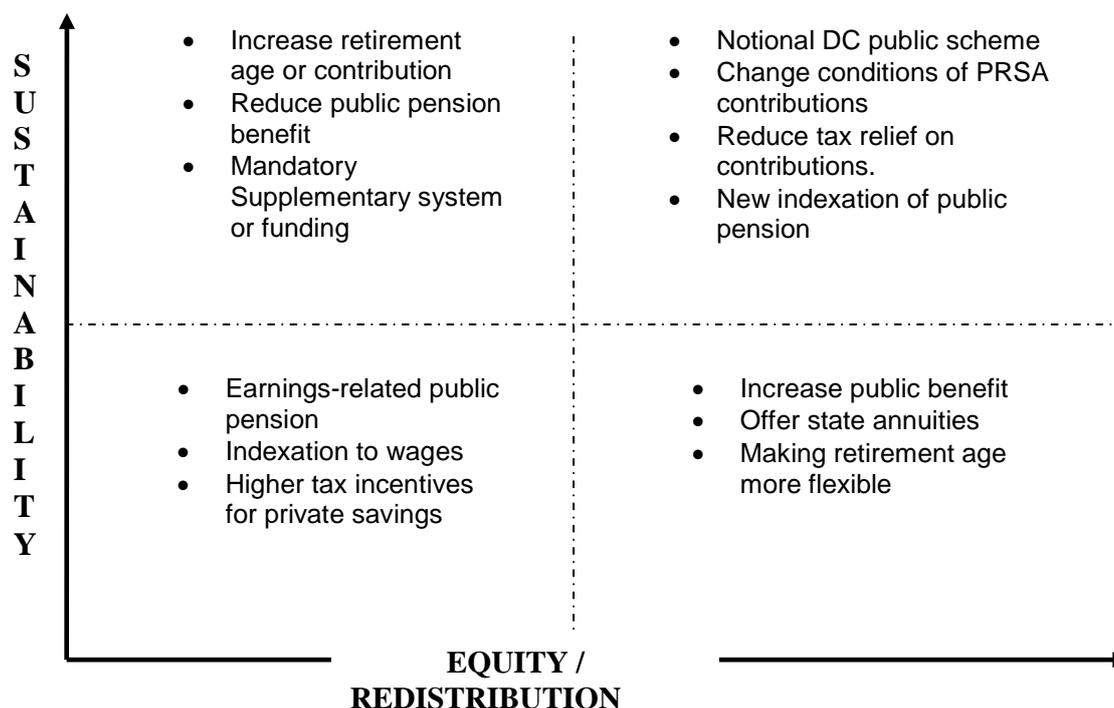
**Figure 2. Pension reforms classified by impact on sustainability vs. equity**

Figure 2 shows a preliminary attempt to classify some hypothetical pension reforms suitable for Ireland in terms of their expected impact on two main goals of pension reform in general, namely sustainability and equity. The two dimensions delimit a space which we divide into four quadrants: from the top left, we classify reforms that are expected to have little or no effect on equity but a good positive effect on financial sustainability; to the bottom right, where we classify reforms which we expect to be good from an equity point of view but less so for sustainability. This is of course a theoretical classification which falls short of any sort of measurement. *A priori*, it might be indeed difficult to establish the real size and direction of a reform on, for example, equity, especially since the actual outcome might be linked to specific details or parameters of the reform in question.

The objective of our analysis is to review the Irish Government's framework to address pensioners' poverty. There are two relevant policy areas at this regard: one has to do with reforming the pension system in ways that increase both coverage and pension incomes, so that fewer pensioners are poor, while the other has to do with setting targets for reducing poverty and social exclusion in general. The welfare of the elderly population will very much depend on how both these areas are functioning and on how they interact.

The National Action Plan for Social Inclusion 2007-2016 aims to cut consistent poverty to between 2 and 4 per cent by 2012 for all and to eliminate it by 2016. There is no specific target for relative income poverty or for the elderly in particular. For the elderly, it emphasises the importance of

maintaining the value of the social welfare pension at a minimum of €200 per week (in 2007 terms), acknowledging that social transfers account for 60 per cent of elderly incomes and can reduce their risk of poverty from 88 per cent to 20 per cent (CSO, 2005). This 'minimum' level of income might be enough to keep people who rely on transfers just above the poverty line but not necessarily prevent social exclusion.

The Irish Government's plans for the pension system are summarised in the 2007 Green Paper. In short, it reinstates those targets already formulated in 1998 by the National Pension Policy Initiative (NPPI) – improving the adequacy of the state pension by reaching a total pension replacement rate of 50 per cent of GAIE by 2013 (i.e. public plus private), as well as increasing supplementary pensions coverage for up to 70 per cent of people above age 30 from the same date. Consideration of compulsory second-tier pensions has been taken but not yet agreed.

The recent pension policy debate in Ireland, in terms of policy objectives, is framed in a number of documents, notably the National Pensions Policy Review (2005) and the latest Pensions Green Paper (2007), which will be reviewed shortly. The main objective of state pension policy has been to deal with issues of improving sustainability, increasing coverage and improving replacement rates to higher and more 'adequate' levels. These goals are addressed through intervention across all pillars.

When focusing on what has actually been already done, as mentioned earlier the issue of future sustainability was tackled in 2001 with the introduction of a national pension fund which collects funding equivalent to 1 per cent of GDP yearly so as to create a buffer which the state will be able to draw from, starting from 2025. This amounts to introducing an element of pre-funding in the first-pillar system, to complement the PAYG, whenever the latter system of financing should not be able to cover the increasing pension costs due to population ageing. In any case, sustainability of the first pillar will depend mostly on the amount of pension benefit offered. For instance, an increase of the basic pension up to 40 per cent of GAIE would mean an extra billion euros by 2050. This would represent a threat to the sustainability of the system. Thus, for future policy to be sustainable, it should consider reform options that would impact less on public finances, e.g. raising the retirement age instead of the benefit level.

The issue of sustainability of the second and third pillar has instead been tackled by, for example, the introduction, in the 1991 Pension Act, of a funding standard, namely a minimum amount of assets that each DB scheme must hold. The funding standard requires that each year DB schemes certify to the National Pension Board that their assets, if they were to wind down at that moment, would cover all their liabilities. In the 2007 Green Paper, several proposals for reviewing the funding standard have been put forward, e.g. changing the wind-up standard. As for DC or PRSA schemes, there are

ongoing discussions (see Green Paper, chapter 11) on introducing new regulatory measures to improve the sustainability of the annuity market, e.g. regarding the appropriateness for the state to become involved in offering annuities. Increases in life expectancy have in fact resulted in a 300 per cent increase in the price of annuities since the 1980s, while returns from bonds (which are normally traded in the annuity markets) have decreased, so that purchasing annuities for DC or PRSA holders has become disadvantageous over time.

As for public pension coverage, in 1994 a Homemaker Scheme was introduced to protect the pension rights of those who are forced to leave the labour force in order to care for a child under 12 or an incapacitated child or adult. This works by disregarding up to 20 years when calculating the average yearly PRSI contributions paid, without however removing the other qualifying condition that a minimum number of total contributions still need to be paid (hence not all carers would qualify for a pension under this scheme). Furthermore, the scheme only covers carers from 1994, so it is not expected to have immediate effect on the income situation of many older people. All in all, there are still around 47,000 people who are not covered today by the social welfare pension.

In order to increase social welfare coverage, the latest Green Paper mentions a number of possible other measures e.g. the need to revise the average contribution qualifying condition for a social welfare pension, as it currently prevents people with large gaps in their work history to meet the requirements for a full-rate contributory pension. More radically, it considers future options such as making membership to social insurance universal.

As for supplementary pension coverage, short of making it compulsory, measures taken recently have mostly to do with tax relief and other financial incentives for employees and employers who contribute to certain private pension plans, while also keeping the system of tax relief equitable. Back in 1999, more flexibility was introduced by allowing a person withdrawing a private pension (but not an occupational pension) to reinvest some of it into a tax-free Approved Retirement Fund (ARF), rather than being obliged to withdraw a (taxable) annuity. In 2003 PRSAs plans were introduced so as to make pension insurance more flexible and portable across employments, with tax-free contributions and also the possibility to withdraw a tax-free lump-sum at retirement. However, take-up of private pension savings has continued to be low, so the Pension Board has recommended that contributions into a PRSA should be matched by an equivalent amount by the state, to encourage low-income groups in particular. In 2006 the Finance Act also dealt with equity measures in the provision of incentives for supplementary pensions. For example, it curbed the amount of tax reliefs to be enjoyed by high-earners, while increasing the tax relief for people on low incomes.

### *The Irish Pension Reform Debate: Key References*

Subject to the problem of an ageing population (although less than other OECD countries) rising pension costs, and rising old-age poverty, Ireland too has been reviewing its pension system over the past decade. The most recent and current debate is best described in the National Pensions Review (2006) by the Pension Board, and the Government's latest Green Paper on Pensions (January 2007). The former, however, expands on previous documents such as the National Pensions Board 1993 and 1998 reports.

Historically the pension debate in Ireland has been focusing on the following questions:

- The income replacement role of public pensions and the desirability (or not) of an income-related state pension
- The possibility of introducing compulsory occupational pension coverage, possibly income-related, thus extending coverage e.g. for women and the self-employed.

The policy measures implemented by the Irish Government between 1999 and 2002 were a close reflection of the National Pension Board (NPB) recommendations presented in its 1998 report, *Securing Retirement Income*. The NPB position can be summarised as being favourable to encouraging a funded, private, second-tier pension provision system which would complement the state PAYG flat-benefit system, and possibly could be made compulsory. The Board was never in favour of developing instead an income-related, second-tier state pension system (i.e. an earning related component to the state pension). These views led to more current policies which encourage the development of private occupational and personal plans, through favourable regulation and tax incentives.

### *National Pensions Policy Initiative*

In 1998 the National Pensions Policy Initiative (NPPI) formulated a pension strategy based on targets:

- Achieving a target income replacement rate in retirement equal to 50 per cent of pre-retirement income and
- Achieving a target private or occupational pension coverage rate of 70 per cent of the workforce by 2013.

These targets would involve the following steps across all the pension pillars:

- Improving the state pension system (first pillar) by delivering a higher flat minimum social security pension of 34-35 per cent of average industrial earnings

- Expanding the funded private pension sector (second and third pillars). This expansion should not be achieved by making private pensions mandatory, but through continuing the policy of tax incentives for both occupational and private pensions
- Introducing some element of funding in the public pension system by establishing a public funding mechanism such as the National Pension Reserve Fund.

### *The 2005 National Pension Review*

A National Pension Review of these targets was carried out again in October 2005 by the National Pension Board (with external contributions from the ESRI, as well as other consulting partners). This review concluded that considerable progress had been made towards achieving the target value for the first pillar, and towards ensuring its sustainability by introducing the NPRF. However, as of 2005, supplementary coverage under the second and third pillars was still insufficient and was a cause for concern, particularly for women, and especially considering that since 1995 the number of people in work has almost doubled. In the view of the Pension Board, this called for urgent reform to the current pension system. The Board presented in its Review a number of hypothetical reforms, with estimated costs and simulated impact on the achievement of the Government's targets, as well as on six more general indicators which include coverage, costs, competitiveness, continuity, modernisation, and redistribution. Some of these reforms have been taken up in the Government's 2007 Green Paper, which sets and defines the most up-to-date Government's pension policy objectives, to which we now turn.

### *The 2007 Pension Green Paper*

The 2007 Pension Green Paper declares the Government's key goals of future pension policy, namely: adequacy, sustainability and modernisation of the pension system. To these ends, it reinstates those targets already formulated in 1998 by the NPPI and in the 2007-2012 Programme for Government (i.e. reaching a pension replacement rate of at least 50 per cent of GAIE by 2013 as well as 70 per cent supplementary pension coverage of people aged over 30 from the same date).

After having reviewed the general situation under the current pension system, pillar by pillar, the Green Paper presents five key options for pension reform, mostly drawn from the National Pensions Review 2005 and the Report on Special Savings for Retirement. Each reform proposal is assessed according to some core evaluation principles, namely (i) Costs, (ii) Adequacy, (iii) Competitiveness, (iv) Continuity, (v) Modernisation, (vi) Redistribution.

The suggested reform options involve delivering improved adequacy through the first-pillar system. Many avenues could achieve this objective. We will describe each of the proposed reforms in Section 5 of this paper. They deal with improving both adequacy and coverage. In general, to improve adequacy would require a progressive increase in the level of basic social welfare pension relative to GAIE (e.g. up to 50 per cent). The cost of an increase in the level of contributory pensions to, for example, 50 per cent of GAIE, could be partially offset by a longer working life (e.g. one year for each decade birth cohort starting from 2016), although this measure might lead to decreased contributions to secondary and tertiary pillars.

This proposal does not include measures to change the value of means-tested pensions, although it is elsewhere mentioned that the latter could be also brought up to the same level of the contributory pensions (as most poverty is concentrated among recipients of means tested pensions).

Other options involve enhancing the coverage and performance of the voluntary pillars. For example, increase the current coverage by increasing the amount of incentives offered under the current system, such as a 100 per cent match of contributions into PRSA accounts, or increase the tax relief of personal contributions to the higher rate.

Another option would be to provide a 'soft' mandatory system, where individuals are allowed to 'opt out' of mandatory membership to a pension arrangement, where they would otherwise be required to contribute a certain rate, e.g. 5 per cent, with employers contributing a minimum rate, e.g. 2 per cent, and the state matching the employer's contribution up to a maximum ceiling. The individual could be allowed to access up to 25 per cent of his/her saved fund on one occasion before or at retirement. While this option would raise membership to occupational schemes, mandatory contributions from the employer could raise labour costs while contributions from the state would require a considerable cost to the Exchequer.

A third option would involve setting up a mandatory savings system (with no opting out), with a 15 per cent contribution rate on eligible income to be shared between the individual and the state (i.e. without involvement of the employer), while removing, thus saving, any tax relief to the employee (and the employer). No lump-sum withdrawal possibility would be allowed under this option. This is the only option that could guarantee the coverage targets set by the NPPI, raising current coverage rate by 28 per cent, i.e. bringing it to 80 per cent of the workforce.

These options involve a number of trade-offs with respect to, for example, adequacy versus coverage. Generally, tackling the supplementary pillars does not guarantee an adequate replacement rate unless sufficient contributions are also mandated, and this involves imposing financial costs on

the state which would re-propose the sustainability issue of the current system (or of the reformed system based on a higher social welfare benefit). Alternatively, tackling the social welfare pillar by making it more generous and inclusive (e.g. by extending PRSI coverage through credits to part-time workers, carers etc, or by changing eligibility conditions) would probably ensure better adequacy of replacement rates for middle-income workers, while at the same time might not be sufficient to reduce the poverty gap of certain groups which are particularly vulnerable. Indeed, while being long-sighted in addressing the question of adequate pensions for those who are still far away from retirement, no proposal among those suggested in the Green Paper seems to deal with the issue of reducing poverty for those who are retiring in the near future, and whose working and contributory history is in large part already determined. Those groups conceal pockets of poverty which will be unlikely to disappear under the current proposals.

## 5. Methodology

The purpose of this analysis is to combine both a concern for pension system sustainability as the population ages and a concern for the maintenance of incomes of pensioners, also relative to other age groups. In other words we want to focus especially on the redistributive impact of the pension system in the context of population ageing, from an inter-generational perspective.

In order to analyse sustainability issues it is possible to use macro-economic or cell based models, as for example used in McMorrow and Roeger (2002) or Fahey and Fitzgerald (1997), where one requires information on the future structure of the population and average public pension expenditures. However, the impact of these issues on distributional measures such as poverty or inequality requires more detailed distributional information than what is available in macro- or cell-based models. The distribution of pension incomes depends in fact not only on the age structure of the population, but on the distribution of income sources and the distribution of family characteristics. Given changing employment, pension policy and pension membership characteristics, modelling incomes in retirement requires information on individual employment histories, pension histories and social insurance contribution histories.

Welfare will depend upon family circumstances such as the existence of a spouse and his/her income, which require in turn information on family history, but also incorporating the histories of both spouses. Long-running panel surveys which track this information only exist in a small number of countries such as the USA, Germany or Sweden. However, even these surveys are not sufficiently long-running to simulate pensions. No publicly available data for research purposes exist in Ireland to undertake this analysis. The longest such panel available in Ireland is only eight years. It is questionable as to whether administrative data are of sufficient complexity and detail to undertake welfare distributional analyses in the same way as in some Scandinavian models.

Because of the lack of data availability, we need to simulate data on which to undertake this analysis. Our analysis requires two types of simulated data. In order to simulate current pensioner behaviour we require information about historical trends, and in order to analyse future pension incomes we need to simulate these into the future. A methodology that can be used to do this is known as dynamic microsimulation modelling (see Baroni and Richiardi, 2008). Dynamic microsimulation is a method that synthetically simulates data and policies applicable at the micro level. The model is dynamic in the sense that it simulates data over time and that individual characteristics respond to

previous states. In essence the method simulates a panel dataset, i.e. it simulates, over a lifetime or period of time, components that influence the lifetime distribution of income such as mortality, earnings patterns, retirement decisions etc. See O'Donoghue (2001) for a survey.

While one of the authors had constructed a prototype dynamic microsimulation model for Ireland – the Life-cycle Income Analysis Model (LIAM) (see O'Donoghue, Lennon and Hynes 2009) – this model simulated a synthetic lifetime for a single cohort as if they lived with the characteristics and behaviours of individuals in 1994. To a large extent our work takes the outputs from LIAM as given and uses them for conducting policy experiments. However, the general framework has been adapted to accommodate the needs of pension modelling. Indeed, a pensions simulation model requires increased complexity. It requires multiple cohorts, and it requires future behavioural assumptions to be made. To reflect population trends it also needs population and income projection assumptions.

In general, LIAM benefited from the availability of eight years of micro-panel data in the Living in Ireland Survey. However, significant data cleaning was required. The model also incorporates a simplified tax and benefit system for the calculation of disposable incomes, based on the parameters of the Irish tax-benefit system, and amounts using actual values for the period 1995-2007, holding the final year constant.

The LIAM pension module consists of three parts, corresponding to the three pension pillars: the social welfare, the occupational and the personal pension sub-modules. It creates and updates pension records (public, occupational and private pension) for every individual of working age in the model. The records, if applicable, include a description of the characteristics of people's pension plans, their participation history (e.g. total contributions and years of service), as well as total benefits received upon retirement, disability or death (including benefits received by their spouse and dependants upon the death of that individual).

The LIAM pension module is designed to reproduce as closely as possible the rules and structure of the entire Irish pensions system, and relies on pension information contained in the LII panel, the 2002 QHNS survey, as well as pension parameters taken from the 1995-2007 pension rules. It also makes use of external assumptions, e.g. about earnings growth or annuity prices, and external data for calibration (e.g. the 2002 QHNS).

According to the Irish pension system, individuals retiring at age 65, or reaching age 66, are currently entitled to a retirement or an old age social welfare pension (Retirement Pension and Social Pension, respectively), which can either be contributory or means-tested.

Modelling the means-tested pension is rather straight-forward, since it involves simply checking the means of the claimant according to the means test definition and attributing to that individual a flat rate amount (increased if the individual has dependants, lives alone, is over 80, etc. ). Modelling the contributory pension requires instead estimating the amount of PRSI contributions paid during the individual's working life, or alternatively, during periods of, for example, child caring, which are counted towards accumulating contributions. This information (including the historical data) is collected and elaborated in the LIAM pension module dealing with first-pillar pensions. Subsequently, depending on their predicted occupation, type of employment, etc, each individual is assigned an occupational pension plan, either DB or DC (e.g. public sector workers are automatically enrolled in a DB plan), as well as a certain amount of contributions which go into their estimated 'fund'. Similarly, this is done for estimating who has a supplementary private pension. The supplementary pension module deals therefore with calculating the value of the individual savings upon retirement as well as the person's pension benefit based on certain simplifying assumptions regarding, for example, annuity prices and fund growth rates up until then.<sup>12</sup>

For the sake of exposition, the LIAM pension module can be seen as if it was implemented in two steps. The first step deals with building a complete pension history for individuals in the input data by backward simulation. This requires the estimation of various pension-related regressions on the 1994-2001 panel data LII, in order to back-simulate an individual's pension history before 1994. This step is done prior to running the LIAM model, as part of the preparation of the input data. The second step deals with the forward simulation of pension trajectories after the last survey year (2001). In turn, the forward simulation step also involves a first stage occurring in the pre-programming stage (i.e. before running the model proper), and a second stage occurring during the running of the model.

In both the backward and forward simulation of pensions, several logit functions relating to, for example, the likelihood of having an occupational or private pension are first estimated over the 1994-2001 LII data. Although the same kind of variables are estimated in the backward and forward simulations, the forward simulation involves more complex logit model specifications, as much more individual information is available compared to the backward simulations. Some forward simulation parameters are generated during the back-simulation. These parameters, together with the pension rules, are stored in a file so that LIAM can retrieve them at a later stage, during the simulation.

Coverage by a public pension (whether contributory or means-tested) is entirely done within LIAM, i.e. there is no prior work that needs to be done at the pre-programming stage. As part of the labour

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<sup>12</sup> Currently the occupational and private pension modules are under revision, so we will focus our outputs on incomes from the State pension only.

market sub-modules in LIAM, public pension rights are accounted for in every year of simulation by keeping track of the individual's work characteristics, determining his/her PRSI type, and the amount of contributions paid. First, individuals are assigned a PRSI contributory class on the basis of their employment type and earnings. Then, their PRSI contributions are updated and counted (yearly) so that the total amount and the yearly average are stored for each person. If the individual has reached age 65 or 66, the conditions for a contributory or means-tested Old Age or Retirement pensions are checked, and if met, the pension amount for that person is calculated (including dependant additions). If someone dies before reaching retirement, his/her contribution rights are 'inherited' by the spouse. If someone dies after retirement, the pension reverts to the surviving spouse.

LIAM assigns automatically the highest value of the state pension. In other words the model currently does not taper the benefit amount, depending on the type of benefit and related average contribution condition. This might tend to overestimate the amount of social welfare pension received. It then calculates any applicable addition to the base amount. The benefit amount corresponds to the actual Irish maximum pension benefit (weekly) for every year until 2007. From 2007, the amount is kept at the 2007 level plus a yearly growth factor of 2 per cent.

Coverage by an occupational or private pension is a more complex process. The key stages of the occupational pension simulation are (i) determination of whether the worker has occupational pension coverage this year, given his/her employment status last year and given also any possible occupational change since then, (ii) determination of which pension plan the worker belongs to, and how many contributions are paid into it, (iii) upon retirement, disability, or death, calculation of the actual benefit received by the worker or his/her spouse or dependants.

Occupational pension membership is usually strictly tied to one's employment status. The Occupational Pension Model therefore is placed after LIAM has estimated the individual labour market status. Indeed, LII data show that membership of an occupational pension plan depends, among other things, on whether the worker is in the public or private sector, on whether the work is permanent, full-time or part-time, on the industry of employment, on the firm size, on occupational change, as well as on the individual's age and seniority. Therefore we try to include all these variables into our model specification for occupational pension membership, which is run in the pre-programming stage.

A similar estimation exercise is conducted for membership to a personal pension before LIAM is run (as part of the pre-programming stage). Separate regressions are run for individuals who also have an occupational pension, individuals who are in work but without an occupational pension, and the self-employed.

The outputs from all these estimations (for both occupational and personal pension membership) are stored in log files at the pre-programming stage. The actual assignment of individual pension membership (of any kind) is done within LIAM according to those stored parameters plus the conditions which are set in a large excel file supervising all life-time transitions (and a stochastic draw).

For occupational or private pension membership, individual probabilities are first calculated given the stored coefficients with the adjustment of individual effect, plus the stochastic term. The actual membership is assigned to the individuals who have high probabilities. The total is aligned against 2002 external totals by age, sex, and education, so that the proportion of the population who has the membership is reasonable. For every simulation year, the final stocks are thus adjusted to reflect the alignment totals.

Furthermore, the new members need to be assigned to a particular pension plan (DB or DC). People in the public sector with an occupational pension are automatically assigned a DB pension. Everyone else is given a DC plan. Private pension plans are assumed to be all DC. An individual contribution amount is also predicted for DC plan members, on the basis of earnings, age, region, gender, occupation and industry. The underlying regression for the individual's yearly contribution to either an occupational or private pension plan is done in the pre-programmes also, as a function of age, sector of employment, earnings, whether someone is also a member of an occupational or private plan, educational level, gender, and region. For those with an occupational DC pension, we assume that the employer also matches the employee's contribution in equal amount.

For those with a DC scheme, we calculate the total yearly value of the pension fund as the sum of yearly employer and employee contributions (assumed to be shared in equal proportion) and assume a fund growth rate of 1.5 per cent greater than productivity growth.

Clearly, whether a retiree receives a DB or a DC pension, the actual amount received will be a function of both his/her earnings and contributory history, as well as of the financial assets accumulated up until that point (for DC only).

When the individual retires, the participation module sums over the entire life contributions paid into the plan and works out the total interests earned, i.e. the value of that individual pension wealth. At present, the model does not differentiate between different pension savings assets, e.g. stocks, bonds, mutual funds, etc, so it sets an average rate of return calibrated on Irish historical data for pension fund net returns. More generally, when the individual with a DC plan retires, his/her total contributions and returns will be translated into an annuity which will be determined by an exogenous

interest rate and a life expectancy estimate for that individual (currently set at 6 per cent). For the moment our annuity price is indeed fixed and so does not account for differences in life expectancy

As for people who retire with a DB plan, the individual's earning history and the plan rules for now are all that matter for calculating the final benefit. Depending on rules, a certain percentage of the individual highest earnings (or average, over a certain period) is awarded as benefit until the individual's death (and possibly after). In the model, an individual retiring with a DB plan is awarded a benefit whose value is calculated over his/her last salary times a factor equal to the total contributions paid divided by 60 (for the public sector retiree) or by 80 (for the private sector retiree – less generous).

The model deals with the disposition of a pension benefit or pension rights upon the death of the covered person. It is assumed that if the person dies before age 65, the spouse will receive a pension as if the deceased had contributed to age 65, or an annuity based on contributions accumulated into the deceased's fund up to the point of death.

If the individual becomes permanently disabled while in work and is also a member of a plan, a disability payment can be paid in the form of a percentage of the benefit right so far accumulated, until retirement age, after which time the disability benefit will be converted into a retirement pension.

## 6. Policy Simulations

The objective of this paper is to evaluate the impact of state pension options within the Green Paper on Pensions. In other words we assess some of the policies which in the Green Paper go under the objective of improving adequacy and sustainability through the first pillar (i.e. we omit proposals to reform the secondary or voluntary pillars).

In this section we describe the main reform options and discuss the assumptions used to undertake the simulation. The main reform options discussed in the Green Paper which we choose to look at here are as follows:

- Reform A: Maintaining the Current Arrangements (Baseline)
- Reform B: Introducing Universal Pensions
- Reform C: Reforming and Backdating the Homemaker's Scheme
- Reform D: Replacing the Average Contribution Test with a Total Contributions Approach
- Reform F: Changing Indexation/Benefit Amount

### *Universal Pensions*

As outlined in chapter 1, while falling, the 'at risk of poverty' rate of those aged 65 and over in Ireland is high by EU standards. The Green Paper attributes part of the reason for this to 47,000 people being outside of the social welfare pensions system altogether. While coverage is expected to increase over time, in the short-term those who have been excluded from social insurance membership will still have low entitlement to the social insurance pension.

One of the solutions recommended in the Green Paper (and also by the National Pensions Board in 1993) was to make social welfare pensions available universally, based upon a minimum residency requirement. Their proposal took a number of forms:

- A standard rate of payment to all on reaching pension age of say 66 years
- A minimum payment to those without any existing welfare entitlement
- A minimum age-related payment to those without any existing welfare entitlement

In the UK, support has also been expressed for a residence-based (or citizen's) pension, which would pay a pension to anyone over the state pension age who had been resident in the country for a certain period of time. This policy provides an alternative to rising coverage of basic pensions without having to credit periods spent out of the labour force, and more generally it guarantees basic pension

rights which are not linked to labour market participation or to a means test. More people (and especially more women and carers) could thus obtain a more generous state pension in this way. In the Netherlands, where a universal residence-based basic pension is already in place (and where wage indexation also exists), older women indeed have the lowest poverty risk in the EU (7 per cent).

Sweden also provides a residence-based minimum pension scheme, as well as a pension crediting schemes for mothers for the additional income-related pension. Here, the poverty risk for older women is higher (17 per cent), since the residence-based minimum pension amount is low and the credit scheme for the income pension is again linked to the previous labour market history (like in Ireland).

It was argued that this would be quite a major change in the philosophy of the state pension system, moving from an insurance-based to a citizen- or residency-based system. It would also have significant costs, putting pressure on the sustainability of the system as the population ages.

#### *Reforming and Backdating the Homemaker's Scheme*

Another more targeted mechanism than introducing a universal pension is to extend entitlement or credits to PRSI social insurance to wider groups. Increasing membership of the social insurance system means expanding coverage of contribution-related state pension benefits, particularly among less covered groups such as women. Eligibility for these benefits requires in fact having fulfilled a minimum set of conditions in the labour market, e.g. having worked a minimum number of years over the life cycle, or accumulated a minimum number of total (as well as average) contributions. The question of membership to these kinds of benefits is of course more problematic for those individuals who, for one reason or another, have interrupted or patchy labour market histories, such as women who care for children, the sick or the elderly. These people will then have to turn to social assistance in older ages, thus increasing the final costs to the Exchequer.

In Ireland, the coverage of the social insurance system has expanded substantially since the 1950s, when it almost only included full-time private employees and public sector workers. Since then, overall coverage for social insurance benefits has gone up enormously, although some groups have remained excluded, particularly those earning less than the contributory threshold.

When looking specifically at contributory pensions, the NPPI report (2003) sets no targets for state Contributory Pension coverage (SCP) mainly because earlier policies had already managed to draw almost all the entire population into social insurance in the previous decade (i.e. the early 1990s). Since 1998 the proportion of pensioners receiving an SCP has risen to 71 per cent in 2004 and is

projected to reach 98 per cent by 2056 (NPR 2005:38). Some remaining coverage issues at present seem to be concentrated among the lower paid, part-timers, and mostly women.

Prior to 1994 many women's social insurance coverage was indeed reduced as a result of long periods spent out of the labour force, most commonly due to child care or home caring. In 1994 the Homemaker's Scheme was introduced, which essentially introduced a disregard of up to 20 years spent out of the labour force while having caring responsibilities for children aged under 6. In 1995 this disregard was further extended to carers with children aged under 12, or incapacitated. Since a person's social insurance record is calculated by averaging over the total amount of years spent contributing, such a disregard allows women to increase their average yearly contributions and thus raises the likelihood that they will be covered by social insurance. This alone does not guarantee that a woman will reach a high enough average to qualify for an SCP, nor that she will meet all the other qualifying conditions. For this reason, since 1997 qualifying conditions for a minimum pension have been further eased, and pro-rata pensions have been introduced for people with different rates of PRSI contributions. One condition which however still remains is that, unlike in other countries, social insurance credits can be received only if the carer has worked at some point in the past. Credited PRSI contributions are automatically given to those who are already in receipt of various benefits such as unemployment, disability, maternity, and retirement pensions. Those who receive social assistance benefits must instead have worked before and paid at least one PRSI contribution in the previous two years before being eligible.

Overall, it is important that the pension crediting system be generous, especially for women with child-caring responsibility, while at the same time not discouraging work or savings. The Irish system is less generous than other countries when it comes to crediting for periods out of work due to caring. In the UK, for instance, there exists an annual Home Responsibility Protection which protects basic pension rights, so long as the carer receives child benefit, which is payable to families with children up to 16 or 18 years of age if in secondary education, or alternatively some other benefit related to caring for someone full-time throughout the tax year.

Furthermore, in 2006 the UK government White Paper established that, from 2010, the HRP will turn from a policy which reduces the number of qualifying years to one which increases the number of weekly credits instead. Currently up to 20 years spent caring can in fact be disregarded from the total amount of qualifying years for a pension, i.e. 39 for women and 44 for men. Under the reformed system, new weekly National Insurance credits will instead be introduced, providing more flexibility since carers will be able to combine their responsibilities with some paid work and still be eligible for credits (i.e. the carer will no longer need to be engaged full-time, for the whole tax year, in order to

qualify for HRP). Under the new arrangement, the age of children for HRP entitlement will however be decreased to 12 (Ireland's levels). Furthermore, the number of qualifying years for a full basic state pension will be reduced for women, from 39 to 30. Altogether, these reforms are thought to increase the number of people, particularly women, who will benefit from a full-rate basic pension compared to the present, while also providing better labour market incentives.

In Sweden there is also a generous system of credited 'earnings' for child-caring mothers which can be seen also as an alternative to just disregarding years from the calculation of average contributions. A mother will be given the highest supplement among three alternatives, depending on which one is higher, up to four years (for each child). These alternatives will be linked to previous earnings, or to a fixed amount for those without previous working history. On these imputed earnings the mother will pay contributions; hence her social insurance coverage will be guaranteed as well as kept in line with the previous level, if any (i.e. creating less discontinuity in the social insurance records).

The same reform towards a residence-based pension could be considered in Ireland, where older women suffer from one of the highest poverty risks in the EU (50 per cent for women above 75 years). Since women's participation to the labour market in Ireland has been traditionally low, most older women in fact reach retirement without being able to benefit from the Homemaker's Scheme.

The Green Paper on Pensions has considered the possibility of either (a) backdating credits for a period before 1994 or (b) moving from a disregard system where the number of years caring is subtracted from the denominator in calculating the average, to a credits-based system where the number of years caring is added to the numerator. The former reform increases the coverage amongst older women especially, while the latter increases coverage for those with lower membership years and is generally regarded as a more appropriate way of recognising years of caring. Backdating the Homemaker's Scheme will only benefit those who have enough contributions in standard social insurance bands, i.e. those who already have the minimum requirement of 260 weeks. The Green Paper considered a number of different alternatives in relation to (a) above. In our analysis we simulate (a) – by extending eligibility back to 1953, thus benefiting those over the pension age – as well as (b). We also simulate a third possible change, (c), not considered by the Green Paper – extend eligibility to cover periods of caring until a child is aged 16.

#### *Replacing the Average Contribution Test with a Total Contributions Approach*

Currently eligibility for social insurance pensions depends upon a combination of a minimum total number of 260 PRSI contributions (rising to 520 in 2012) and an average contribution rate (varying,

depending on whether one claims old age or retirement state pension between 10 or 24 PRSI credits yearly). The total payment depends also upon meeting the average condition. This average is counted from the first year of insurable service; so an individual who starts working early in a career and has a gap period out of work may have a lower average than someone paying contributions later in his/her career and who thus has paid fewer total contributions. In 1992 a variant was introduced which allows someone to qualify for a full pension if he/she has a yearly average of 48 contributions since 1979. As for the benefit received, there are four payment bands: 100 per cent benefit when there has been an average number of years of payment of 48 weeks or more, 98 per cent where there is an average of 20-47 weeks, 75 per cent where there is an average of 15-19 weeks and 50 per cent where there is an average of 10-14 weeks.

In an analysis of the social insurance database, it was found that less than 8 per cent of State Pension (Contribution) and less than 21 per cent of State Pension (Transition) recipients have an average of 40 or more weeks of contributions over their career, attributed in part to the existence of self-employed (who entered the system in 1988 and for whom the average is counted from this date only) or to time spent overseas. It is also highlighted that in the current system individuals with the same total number of contributions may have different entitlement amounts due to the average condition.

In our simulation below, we will consider the situation of moving to eligibility for a pension where a minimum of 520 contributions is required while the average contribution condition is dropped.

### *Indexation and Benefit Amount Changes*

By indexation we refer to a set of first-pillar reforms which aim to change the public benefit amount, either directly or indirectly (i.e. by adjusting the coefficients which regulate the value of the benefit over time). From a theoretical point of view, changing the benefit in a PAYG system is justified for either a sustainability or an equity point of view. For sustainability, in order to keep the PAYG system balanced, a reduction in the benefit amount is needed if the contribution rate is not to be increased given an increase in the number of pensioners relative to workers. For equity, an increase in the pension amount might be instead called for whenever the PAYG system is not able to keep up the (relative) incomes of the elderly. From an empirical point of view, there seems to be a significant negative correlation between the generosity of the benefit offered and the risk of poverty (Zaidi, Grech and Fuchs, 2006). This is particularly strong for women and for those aged over 75.

Currently, the state pension benefit is set yearly by the Government without any explicit long-term commitment to keep a certain benefit level or indexation method. We have seen earlier how the

adequacy objectives expressed by the National Pensions Policy Initiative (NPPI) in 1998 were to increase the amount of the flat-rate old age pension so as to offer up to 34 per cent of average industrial earnings (GAIE) for the SCP by 2008. In its 2005 National Pensions Review, the Pensions Board suggested an increase in the target SCP up to 50 per cent of GAIE over a 10-year period. These proposals are in response to the fact that the Irish state pension system offers one of the lowest replacement rates among OECD countries (roughly 30 per cent relative to average earnings), which partly explains Ireland's high poverty rates among its elderly (for example, poverty risk for a retired household has increased from 8 per cent in 1994 to 31 per cent in 2003).

In 2005 terms, the SCP had reached around 30.5 per cent of GAIE, amounting to €179.3 per week (single rate). Since then, the Government, which did not accept the NPPI 34 per cent target, set a target of €200 per week by 2007. Overall, increasing the benefit amount to 34 per cent of GAIE would entail straightforward benefits for current and future pensioners, as pointed out by the 2005 NPR. However, the raising costs to the Exchequer of further increases to the first pillar will need to be met through some parallel intervention, e.g. on the contribution side, or on retirement age, as well as through the National Pension Fund. The Green Paper considered two alternative higher levels of the state pension, to 40 per cent and to 50 per cent of GAIE. We look at both these proposals in our simulation; we also consider the option of price increases, assuming a 2 per cent difference in price and earnings inflation, to highlight the implications of using a conservative uprating mechanism.

Other proposals have included reforming the current indexation system (currently, pensions are indexed to prices) especially since the fast growth in Irish earnings has meant that inequality has grown between pensioners and workers. A Benchmarking and Indexation group was indeed set up by the Government in 2001. An important output of this group has been to show the increase in household incomes over the period 1994–2003 relative to changes in the CPI index, the GAIE index, and the SCP. While it is clear that the GAIE index has grown above the CPI over this whole period (53 per cent relative to 32 per cent), it also appears that the (price-indexed) SCP has increased by more than the GAIE through various ad hoc policy interventions (growing by 74 per cent), i.e. despite not being formally indexed to earnings. However, this increase has not been sufficient to match up a 122 per cent increase in net median income, which in other words implies a 122 per cent increase in risk of living below the poverty line (usually evaluated at 60 per cent of median income). This large increase in median income can be explained by tax reforms and higher employment, which have mostly benefit working households. As we know, the income poverty risk has in fact been particularly concentrated among households headed by a retired person living alone, despite other parallel improvements in living standards (i.e. as measured by deprivation indicators, etc.). The worsening in relative income measures for the elderly calls therefore for a revision of the SCP growth rate so as to

keep up with changes in median earnings, or a reform of the SCP away from flat rate towards an earnings-related benefit.

Raising the absolute or relative amount of benefit in Ireland would be justified not only in light of the high poverty and inequality levels registered among its elderly population, but also in view of the fact that this would amount to a relatively smaller cost per person than in other OECD countries – with Ireland spending today the smallest amount per pensioner (only around 10 per cent of GDP per capita compared to 40 per cent in, for example, France, or Germany). Sustainability issues would of course enter the picture as soon as the Irish population would start ageing and by then any form of increase in benefit amount would have to be coupled with other complementary measures which would reduce the overall costs, e.g. allowing the benefit to vary on the basis of when one retires, increasing contributory ceilings for PRSI contributions, etc.

In fact, among OECD countries the most common trend for public pension benefits over the period 1995–2005 has been to decline, with the average pension benefit ratio (relative to average output per worker) projected to decline even further in the future. In most cases, this general trend has been achieved by moving away from uprating current benefits in line with earnings. Most EU countries now fully or partly index pensions in line with prices instead, implying that over time, pensioners' benefits will fall in relation to general incomes as well as their relative position in the income distribution, while the impact on financial sustainability will be positive. It is estimated that to adjust pensions in line with average earnings may in fact cost 20 per cent more than if pensions were indexed to prices. However, there are also some exceptions. In the UK, for instance, the basic state pension has fallen so much behind average earnings after having moved to price indexation in the 1980s, that it is now proposed to move back to earnings-related indexation (Pensions Commission Turner report, 2005). This shift has also been considered so as to reduce pressure on the means-tested pension bill which has been increasing.

## 7. Results: Baseline Projection

The goal of this chapter is to present some results obtained from a 'baseline' run of our dynamic microsimulation model LIAM and compare them with some policy reforms to the state pension.<sup>13</sup> When we refer to the 'baseline' we refer to a model output created by running LIAM for 60 years (starting in 1994), given a number of inputs which are meant to capture the population and economic characteristics of Ireland as we know it today (including its current pension system). A baseline run uses the input dataset and simulates life transitions based both on estimated and some exogenous parameters, in order to generate a future distribution of some key variables.

In Chapter 6 we reviewed a number of possible reforms, either parametric or structural, under consideration for the public pensions pillar and the occupational and private pillars respectively. We have stressed how no single reform will possibly bring about the intended aims. For this, alternative reform 'packages' combining simultaneous reforms to each pillar should be considered. In this chapter we will consider a number of reforms which were suggested in the Department of Social and Family Affairs 2007 Green Paper on Pensions. A substantial amount of analysis has already been carried out on comparing these alternatives. We will contribute to this analysis by implementing some of these proposals (as well as others which have been put forward by different Irish policy or research bodies) into the dynamic model LIAM. This will allow for comparison in terms not only of costs and financial sustainability, but also of distributional and poverty impact.

### *Background Assumptions*

In this chapter we focus in particular on the exogenous assumptions and projections that we use to run a baseline simulation. Our results in fact may be sensitive to what exogenous elements we choose; we intend therefore to show how results might change when some of these exogenous elements also change. The most important external sources of information (i.e. un-modelled inputs) that we need to rely on are: (i) demographic and labour market projections, including future migration levels, or employment in key sub-groups such as elderly or women, (ii) economic assumptions about future growth or productivity levels. Although we do not directly tackle these issues in our model, they indirectly will influence demographics (e.g. migration), labour outcomes, as well as the growth rate of,

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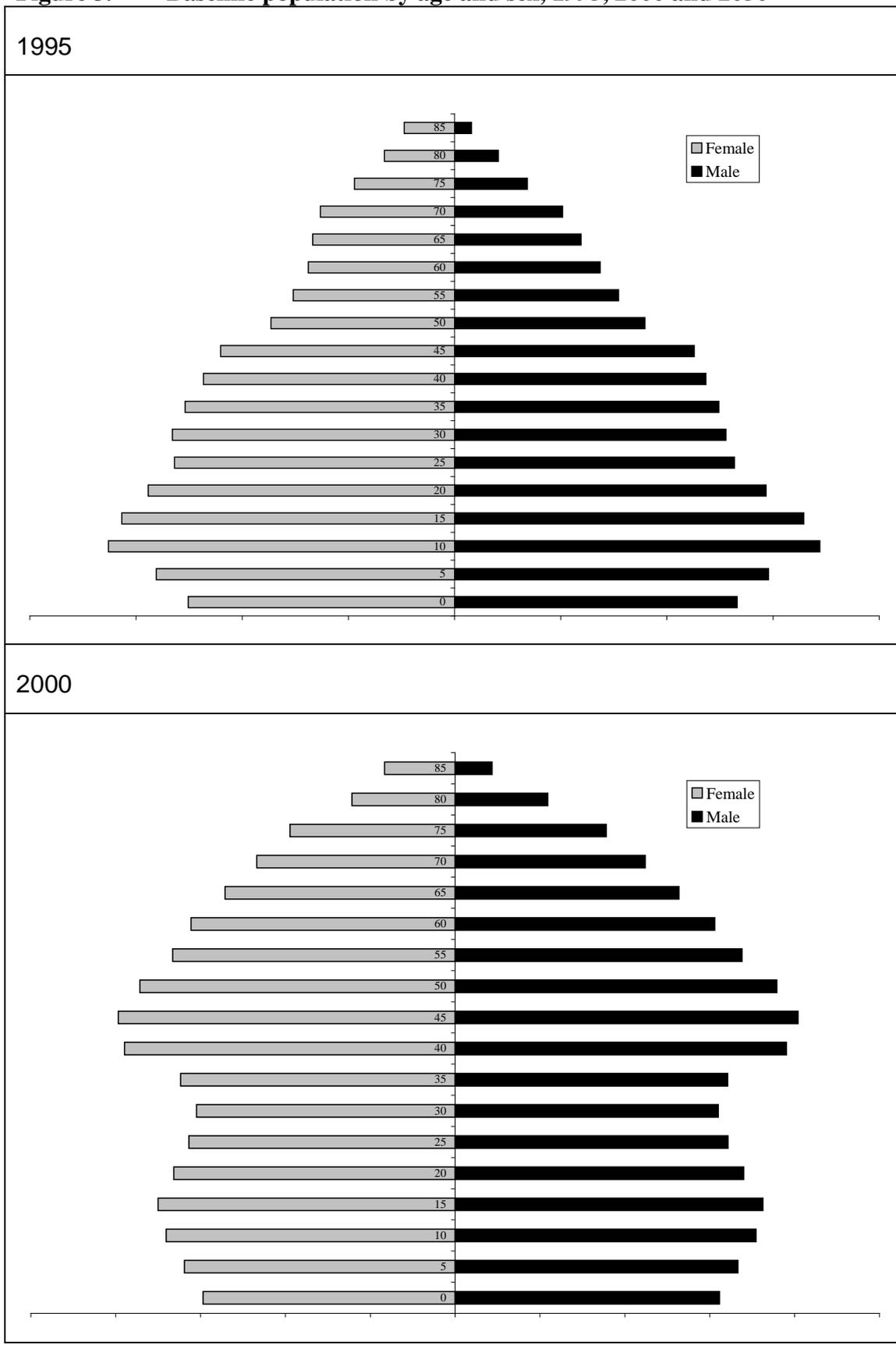
<sup>13</sup> In this chapter we do not address measures to reform the second or third pillar of the pension system, although these are dealt with in the Green Paper.

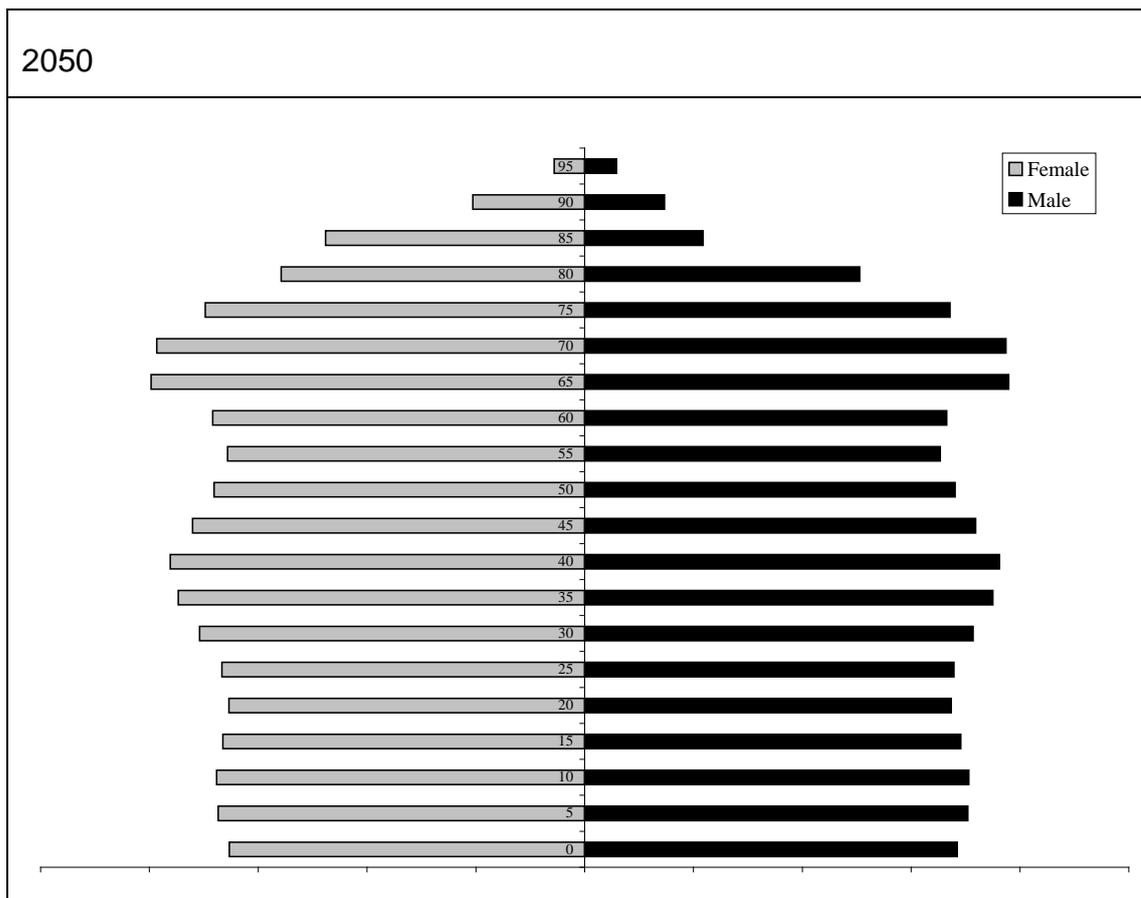
for example, pension assets, wealth and earnings, (iii) up-rating assumptions about changes in monetary values of social benefits, based for instance on past indexation policies. We will discuss some general issues related to point (i) first; subsequently we will illustrate the specific assumptions and projections (i)–(iii) which we have used in LIAM for Ireland.

In this chapter we report results of the baseline projection (i.e. a simulation where we run LIAM on the current system), against which subsequently we will assess the outcomes of the various reform proposals. We will begin by presenting our baseline assumptions, namely the external economic and demographic projections which we use.

We chose the demographic assumptions used in the 2007 Green Paper, which have lower migration assumptions than those used by the CSO in its most recent population forecast. In terms of incomes, we make an assumption commonly used in dynamic microsimulation models, namely that the discount rate, i.e. the rate by which you divide to compare incomes over time, is the same as the growth rate in productivity, which we also assume to be the same as the interest rate. This has the advantage that one can simulate at the same income level and more easily compare incomes over time. However, in further work, alternative assumptions relating to differential earnings and interest growth rates can be considered. We also assume that all tax-benefit parameters grow at the rate of productivity growth, which may be different to what may actually happen.

**Figure 3. Baseline population by age and sex, 1995, 2000 and 2050**





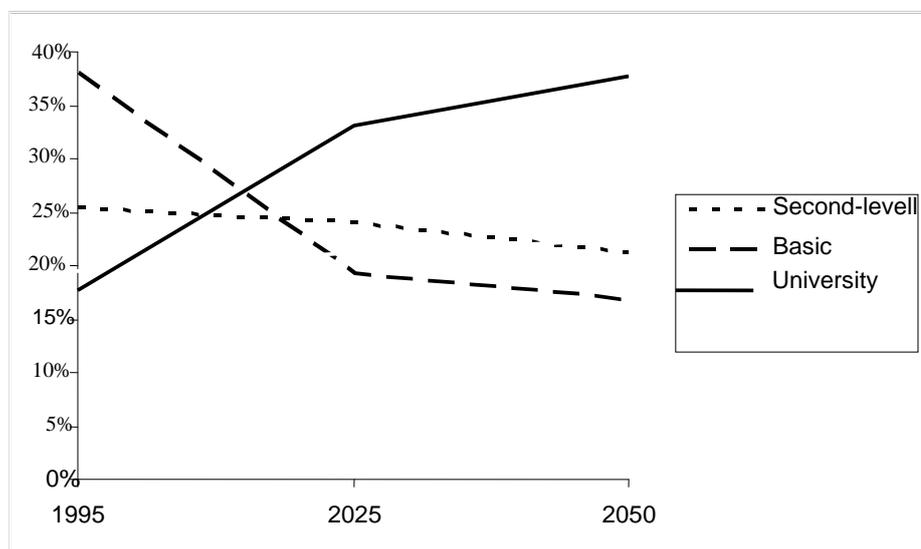
Note there is a difference between income growth and productivity growth. Productivity growth relates to the increase in the earnings per hour worked, while income growth relates to overall growth in incomes (which are the product of hourly wages and hours worked). The latter might be due to the fact that labour supply may increase (e.g. people might work more) while the former might be due to an increase in the average education level in the economy.

The model is simulated taking 1994 as a base year. This is because we have a dataset in 1994 with some historical information (which we need for historical back simulation; see previous sections), but also it enables us to evaluate the performance of the model over the recent history. We start by reviewing our simulated population structure by age and sex, for 1995, 2025 and 2050. We clearly see that at the beginning (1995) 63 per cent of the population is concentrated in the age groups below 35, with only 11 per cent being above 65 years. By 2050, the population below 35 has decreased to 45 per cent of the total, while that above 65 has more than doubled, to 27 per cent. In other words we simulate an ageing population.

While the population is ageing, we also observe a change in its educational composition (see Figure 4), with a remarkable increase in the proportion of people with a completed university degree and a decrease in the proportion with only basic education. In theory, this is an important counterbalancing

factor against the negative economic impact of population ageing, as productivity should increase, although a more educated workforce would also imply higher average earnings which could weaken the relative position of those who are not in work.

**Figure 4. Educational composition of the population, 1995–2050**

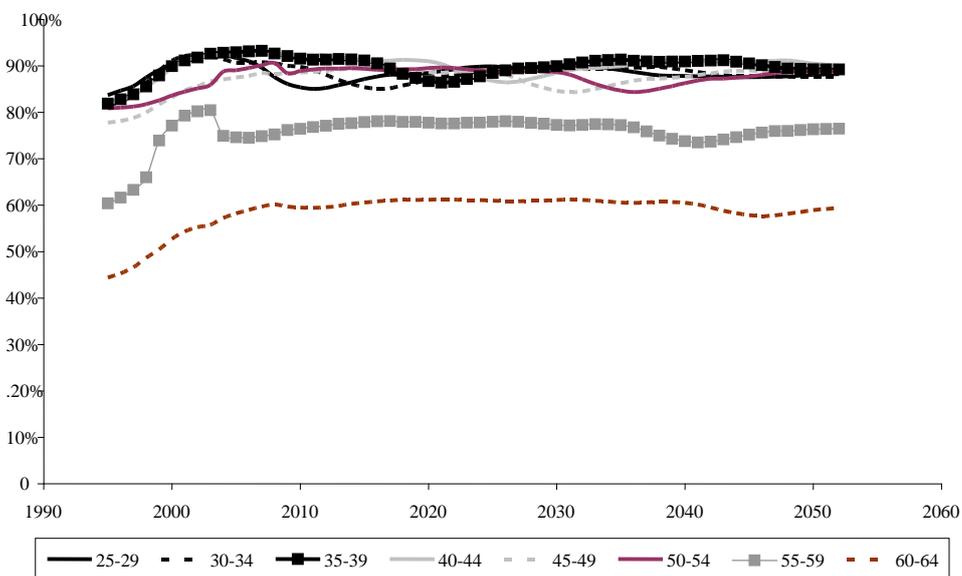


In the figure above, we report the projected employment rate in the economy for males and females by age group over the period 1995–2050. We note in particular the early simulated growth rate of female employment, while future age-specific employment rates are assumed to be relatively flat. This is in line with CSO external labour market projections.

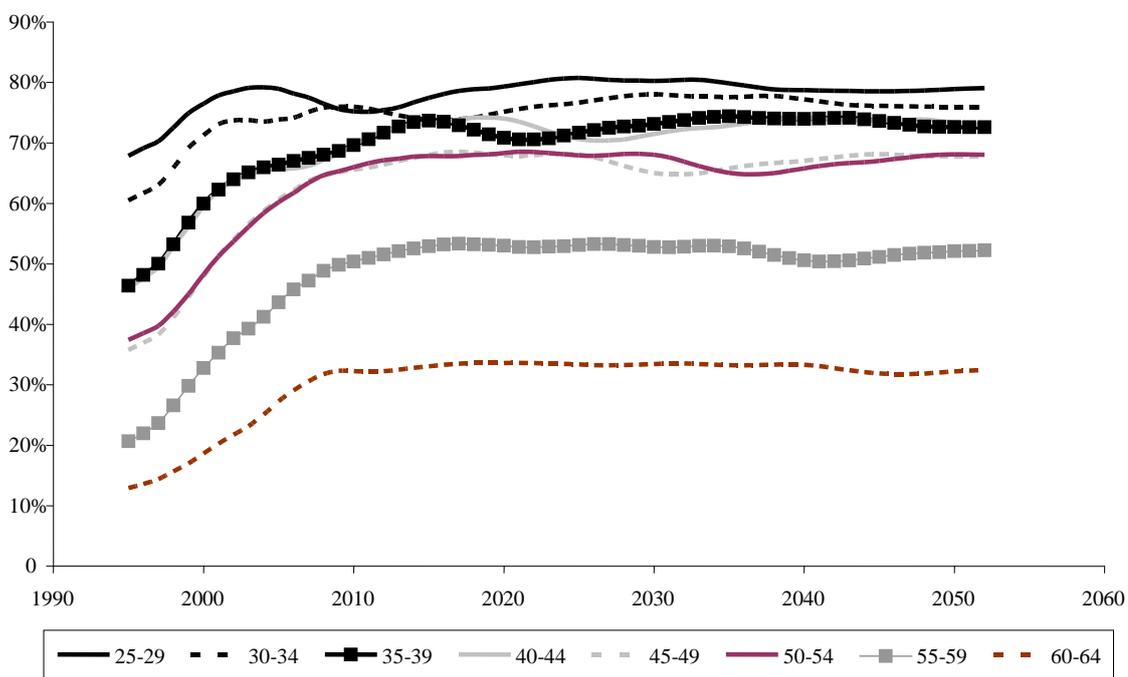
Figure 5 reports the trend in average state contributory pension (SCP) as well as income from the market (i.e. excluding state transfers) for pensioners including private pension, capital and employment incomes, as the pension coverage of the population rises over time and as we see the impact of higher career trajectories amongst women. The figure shows that pensioners have an increasingly higher income stemming from private sources, as the average value of the SCP tends to decrease from 2020.

**Figure 5. Employment rates by age**

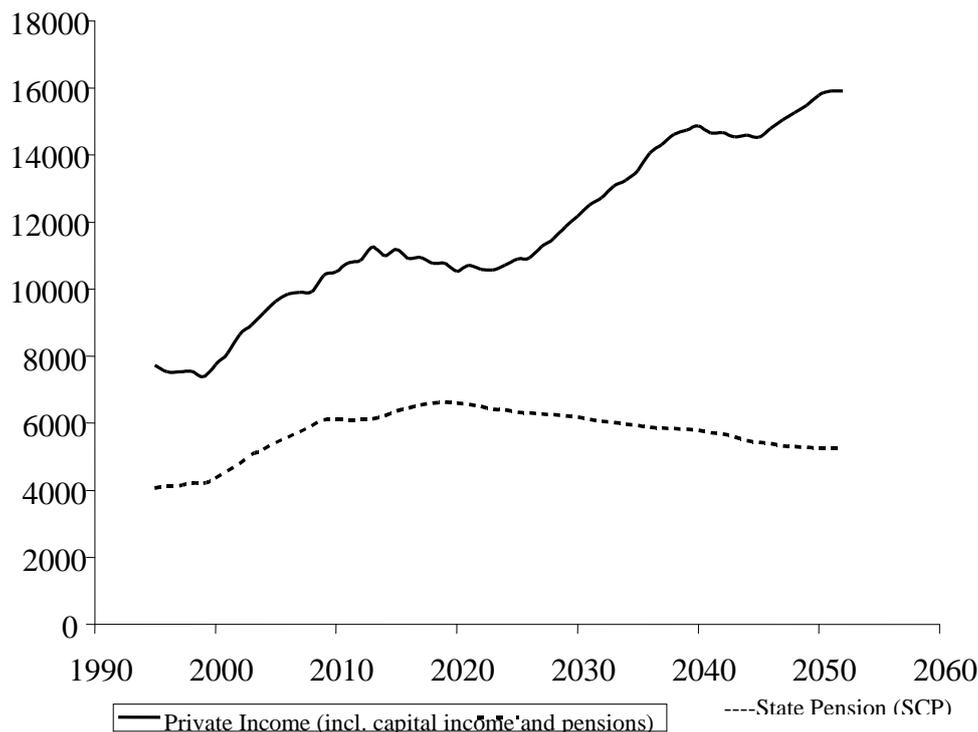
**Male**



**Female**



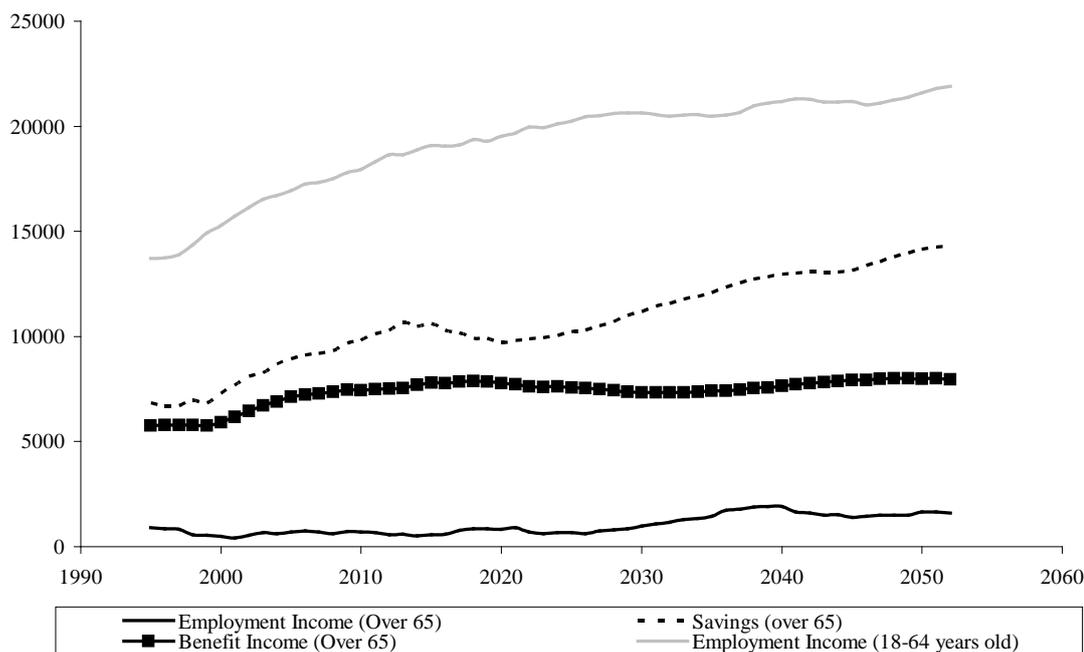
Source: LIAM

**Figure 6. Yearly market income and state pension benefit of pensioners in euros, 1995–2050**

Source: LIAM

Figure 7 confirms this as it highlights a projected higher growth rate in private savings than in state pension income or other benefit income, because later pensioners have higher income from private pensions than earlier generations. Earnings constitute a very small yet slightly increasing share of pensioners' incomes. Overall, total pensioners' benefit income remains roughly half that of workers, when we compare it to workers' average earnings.

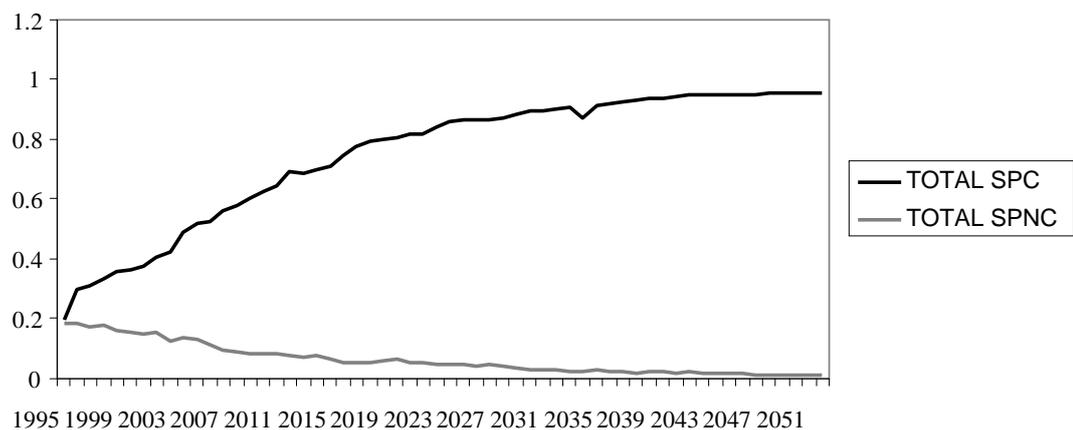
**Figure 7. Sources of pensioner income in euros, 1995–2050**



Source: LIAM

In Figure 8 we report the simulated trend in different (weighted) state pension participation (among the retirees).

**Figure 8. State pension participation of pensioners, 1995–2050**

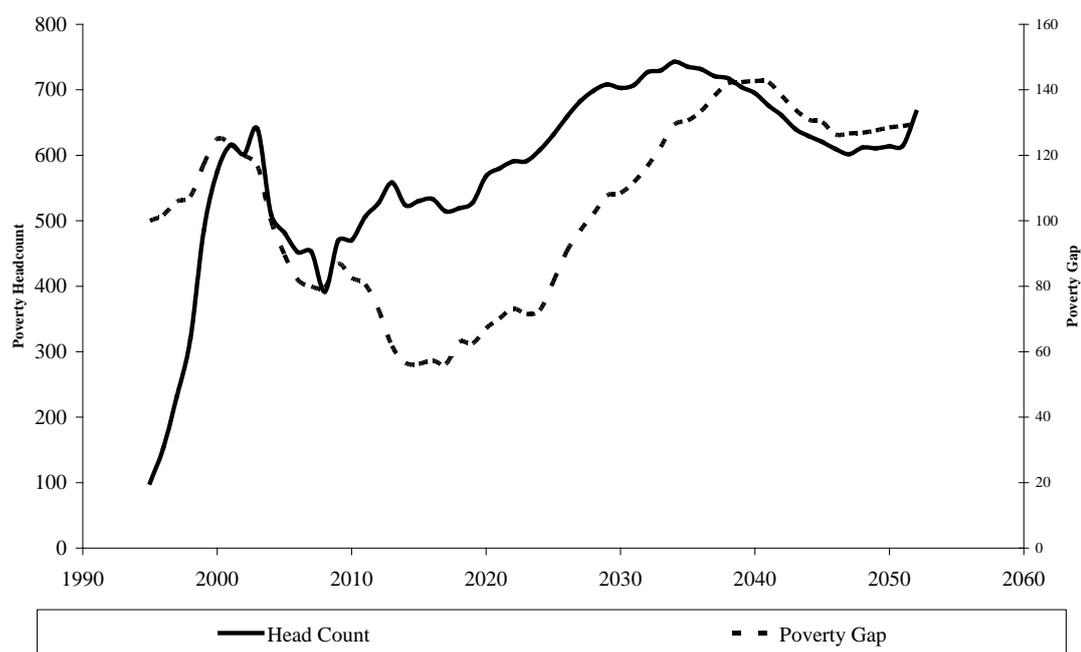


Source: LIAM

Here we see a steady increase in the proportion of over-66 recipients of state contributory pension, to reach almost full coverage by 2050. The number of old age non-contributory pension (SPNC) recipients is instead simulated to go down significantly over time, from almost 20 per cent to roughly 2 per cent by 2050.

Next, we report trends in simulated pensioner poverty. Here we report trends rather than levels, as pensioner poverty is based upon family rather than household income. We use an OECD equivalence scale and report both head count and average poverty gap measures for those aged 65 or over living in a 'poor' household, based upon a poverty line of 50 per cent of median income. The measures are volatile to some extent due to simulations being based upon a relatively small sample size of about 4,000 people in the first year. Future work based upon greater sample sizes will correct for this, helping to smooth results.

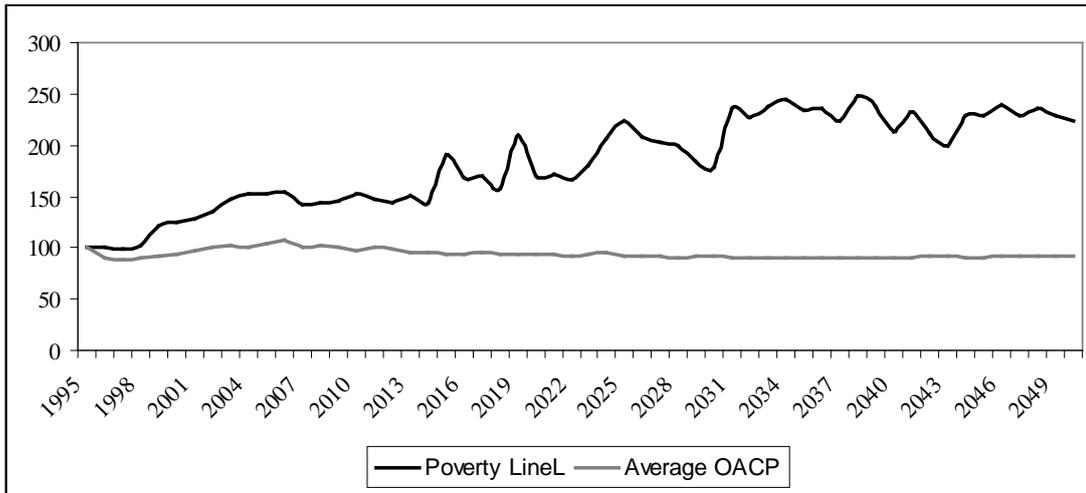
**Figure 9. Pensioner poverty 1995–2050**



Source: LIAM (1995 = 100)

Overall we notice the increase in both poverty gap and poverty head count in the late 1990s before falling somewhat by 2005. However, the general trend is for the poverty head count to raise 4 to 5 times above the 1995 level (set at 100 in the graph). The overall trend of increasing poverty can be simply explained by the fact that there are increasingly more elderly people in the population, and that, although more become eligible for a full-rate contributory pension in time, the poverty line more than doubles over this period while the average SCP barely changes (see Figure 10).

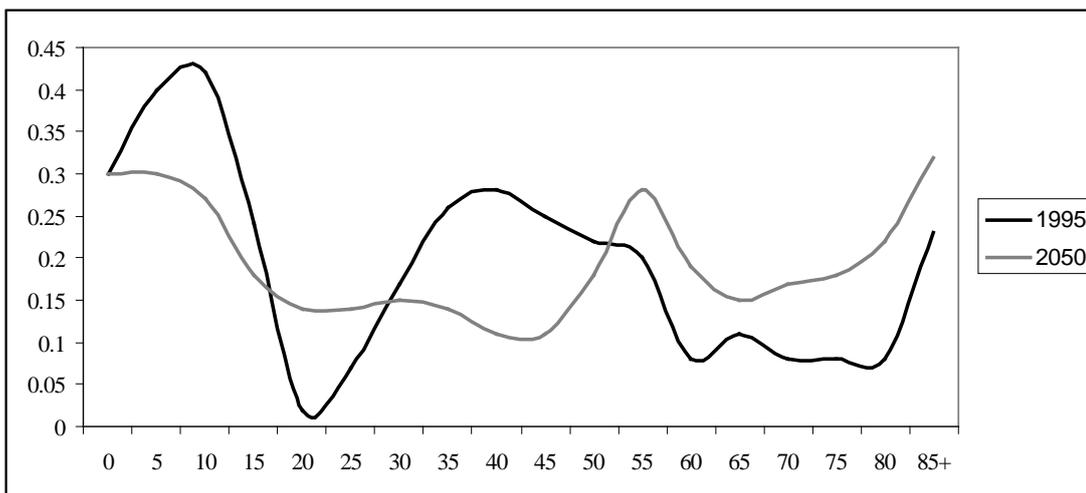
**Figure 10. Growth in average state contributory pension and poverty line (50% median income)**



Source: LIAM (N.B. Growth in 1995 = 100)

This is confirmed if we break down the poverty head count by age groups (Figure 11). Here we see that between 1995 and 2050 younger age groups experience lower poverty head counts (with the exception of the 20–25 group which sees an increase), while the older age groups (55+) see an increase in the proportion of poor, with the 65–75 group moving up from roughly 10 to 20 per cent and the over-80s reaching 35 per cent of poor by 2050.

**Figure 11. Poverty head count by age group, 1995–2050**



Note: Poverty Line set at 50% of Median Equivalised Disposable Income. Source: LIAM

Going back to Figure 10, the poverty gap falls below 1995 levels until 2020, but then it starts climbing again after this date and stabilises at levels higher than in 1995. Overall we observe, up until 2030, a sharp increase in both the number of pensioners in poverty and in how poor on average they are.

From 2030 both measures stabilise but at levels well above those of 1995. The initial improvement in the poverty rate and the poverty gap (between 2000 and 2020) can be due to greater numbers in receipt of contributory pensions. However, higher coverage is not sufficient to compensate for the fact that the poverty line goes up and hence the average distance from the line also increases.

In order to understand these results, we must consider that over time we observe also a change in the educational composition of the population, which pushes up the average earnings and the poverty line. Total income in fact depends on the size of the labour force as well as the average educational level, since wages are modelled as a function of education. Every year income will therefore grow, depending on the growth rate of the population, the growth in the share of people with higher education, as well as an external productivity growth assumption fixed at 2 per cent.

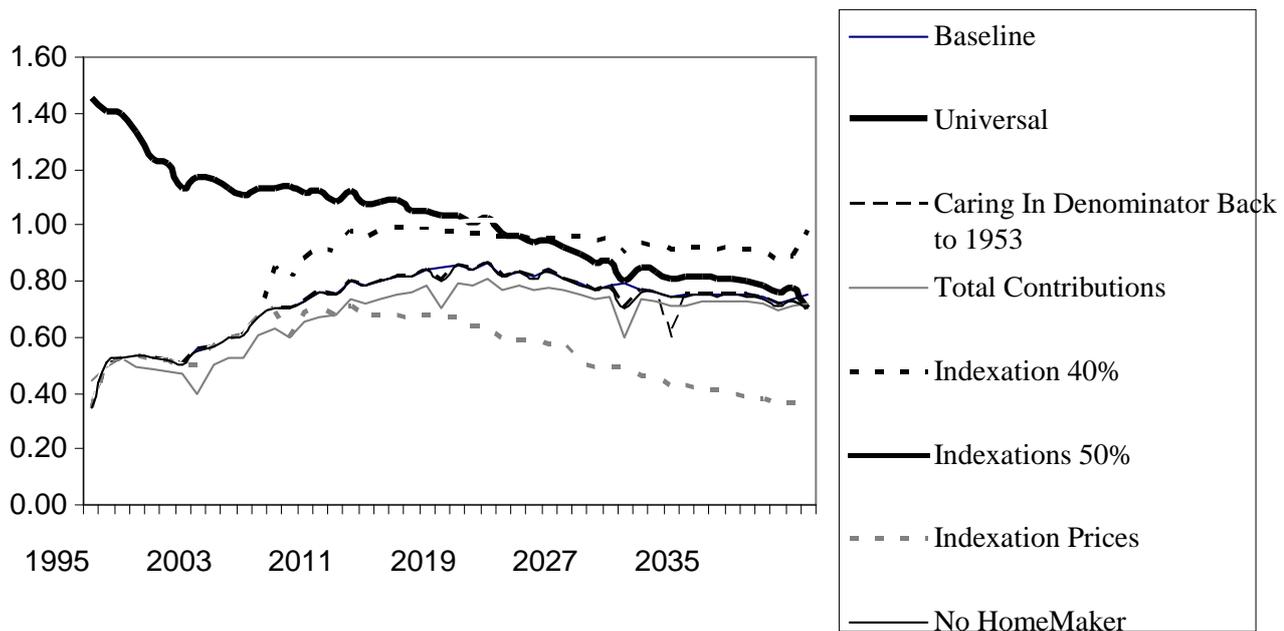
If benefits grow at the fixed productivity growth rate of 2 per cent, and the educational level of the population increases, it follows, everything else being the same, that benefits will grow at a lower rate than incomes and a lower rate than the poverty line (which is a function of income). However, if the size of the working age population goes down, e.g. due to ageing, total income and the poverty line will be affected in the opposite direction (i.e. they will fall). This education versus age composition shift explains temporary fluctuation of the poverty line. Poverty statistics reflect these fluctuations: first down since the pension benefit is temporarily growing faster than income, then up due to educational effect pushing up average earnings, than back down due to a mildly counterbalancing ageing effect.

## 8. Results: Policy Reforms

In this section we report the results for a number of different simulations carried out by LIAM, reporting the poverty impact and the relative cost of different proposals described above.

We begin by first inserting a graph mapping the change over time of the average value of the SCP under different reform scenarios, relative to the poverty line. We will refer to this figure when analysing each specific reform. On the y axis the graph shows how far from the poverty line the average benefit lies (with 1.00 = poverty line).

**Figure 12. Change in average SCP under simulated reforms relative to the 50% poverty line**



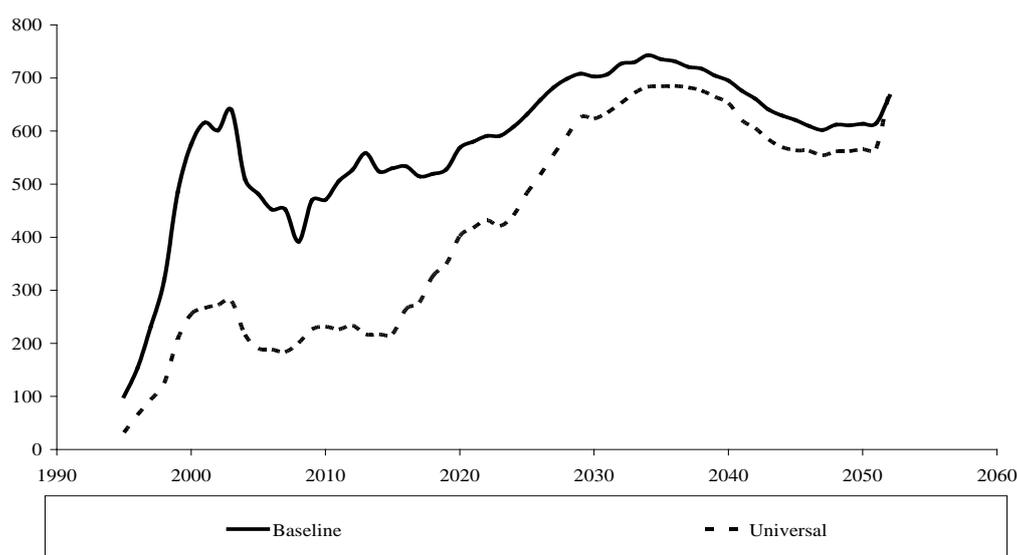
**Figure 13. Comparison of the average weekly SCP under all reforms (in euros)**

### *Reform Simulation 1: Universal Pensions*

In Figure 14 we report the change in the poverty head count due to the introduction of a universal pension. We simulate the universal pension by giving all residents aged 65 or over an amount equivalent to the maximum state contributory pension. As this closes the insurance gap described in previous chapters, we find as expected a fall in the poverty rate. This fall, however, is temporary and

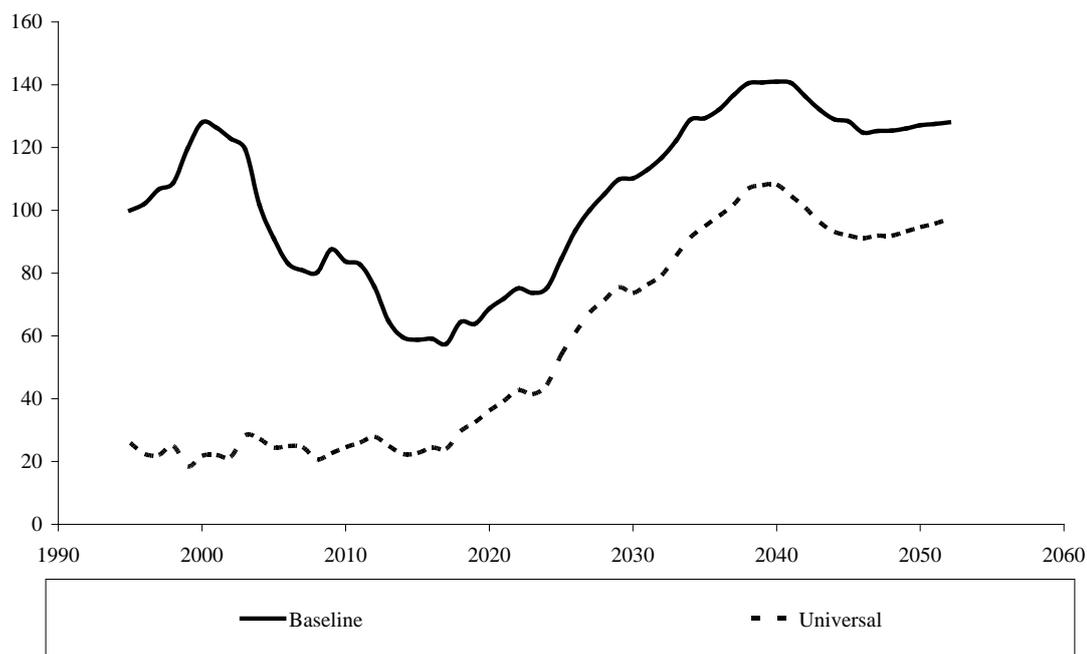
most noticed in the first two decades of the twenty-first century, after which the poverty head count starts to climb up again in the latter years of the simulation as the social insurance system matures. The initial fall is due partly to the relatively higher numbers of people outside of the social insurance system at the beginning of the simulation. Hence the universal pension compensates immediately for this gap. However, as shown earlier, the actual value of a universal pension relative to the poverty line is decreasing in time, going below it from approximately 2015; this acts as a counterbalancing force to the initial improvement and can explain why we see a climb in the poverty head count back to the same levels as in the baseline scenario. This confirms again that poverty rates are driven not so much by low coverage but by the benefit amount relative to the growth rate in education and productivity, which determine a faster growth in the poverty line (net of demographic changes and ageing which alone should bring down the poverty line). In other words universal pension is only mildly effective in the long run to reduce numbers of people in poverty.

**Figure 14. Trend in pensioner poverty (head count), universal pension**



Source: LIAM (Baseline 1995 = 100)

The poverty gap follows a similar pattern to the poverty head count, but the gap remains wider and lower compared to the baseline scenario over time due to the larger payment for those currently excluded from the insurance system (and the fact that everyone is given the maximum amount). It is interesting that in this reform the poverty gap up to 2030 remains lower but also more stable, i.e. no downward trend compared to the baseline scenario, possibly because the improvement in coverage is immediate rather than gradual as in the baseline (so the gap goes down at once and remains at that level until the benefit starts to lose ground relative to the poverty line).

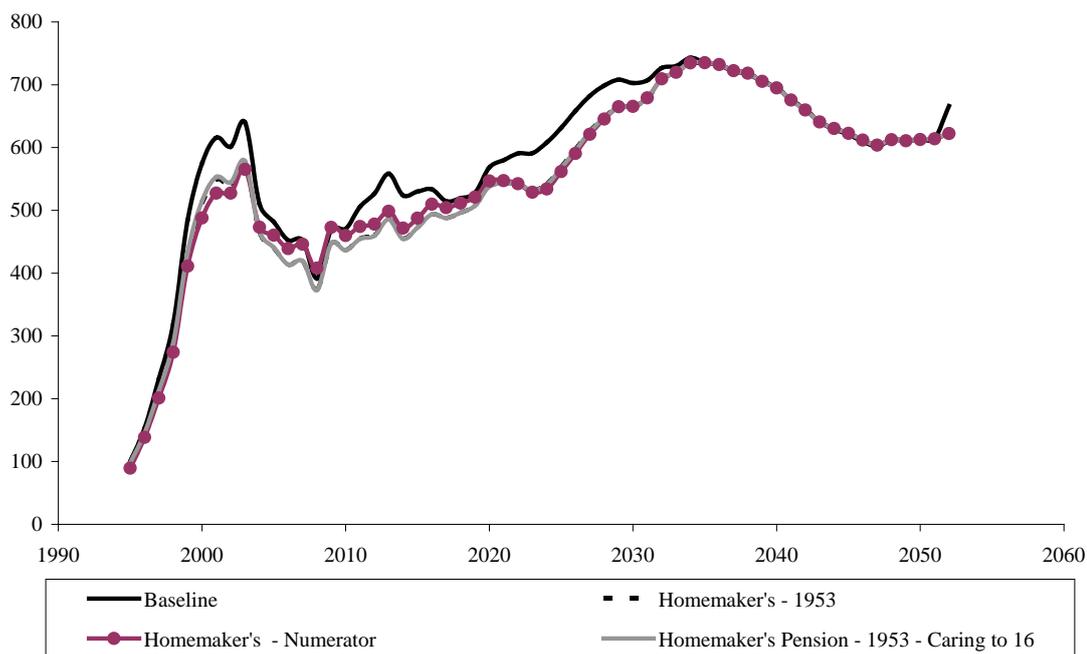
**Figure 15. Trend in pensioner poverty (gap), universal pension**

Source: LIAM (Baseline 1995 = 100)

### *Reform Simulation 2: Reforming and Backdating the Homemaker's Scheme*

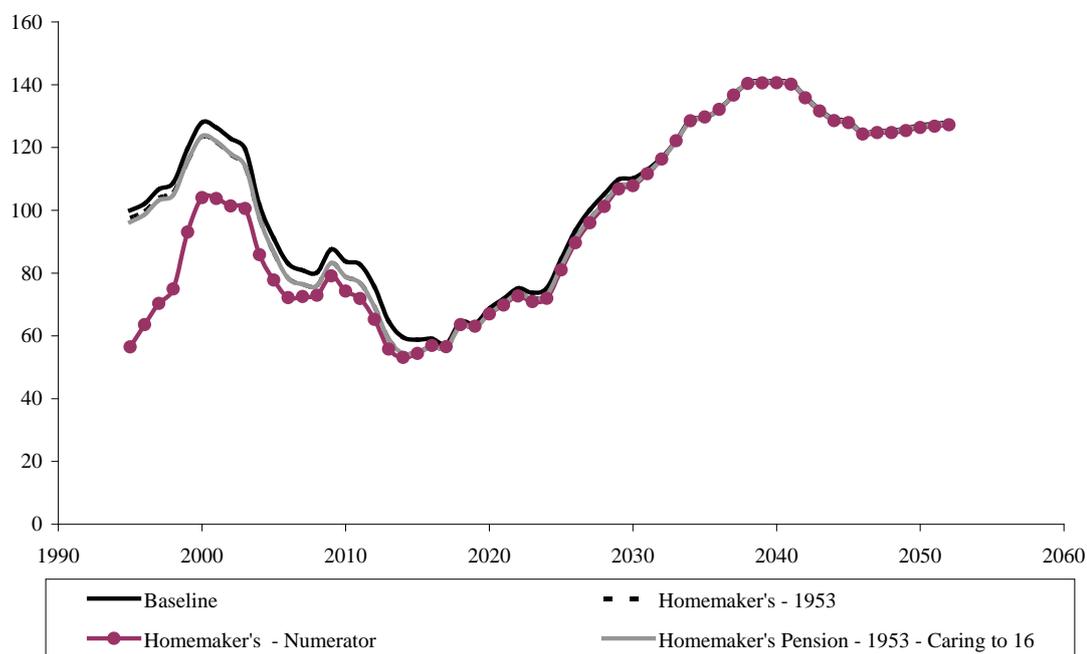
In this section, we consider reforms to the homemaker (contributory) pension. This reform acts on deepening coverage. We explore a number of different policy scenarios. Firstly we compare extending the homemaker's pension to cover caring undertaken back to 1953 (instead of 1994 as it is at present). We then change the method of calculation of the average contribution, from subtracting time spent caring from the number of years in the social insurance system (i.e. disregarding it in the denominator) to adding it to the numerator instead (i.e. making it part of the years counted as actively contributing). In this case we make the assumption also that caring would be extended to 1953. Lastly we extend the possible period of caring for a child to 16 years. The overall effect on the head count is to reduce poverty, although the effect is quite small, in any case smaller than under the Universal Pension option, and does not vary that much across different Homemaker's options. Like for the Universal Pension, the impact on the poverty gap however is greater, as expected, in the earlier years, indicating that extending coverage in this way may have had a stronger impact on poverty, but as overall coverage in the population widens, the impact is less over time. In particular, the strongest impact on the poverty gap is obtained by changing from a disregard to a credit system.

**Figure 16. Trend in pensioner poverty (head count), homemaker's scheme**



Source: LIAM (Baseline 1995 = 100)

**Figure 17. Trend in pensioner poverty (gap), homemaker's scheme**

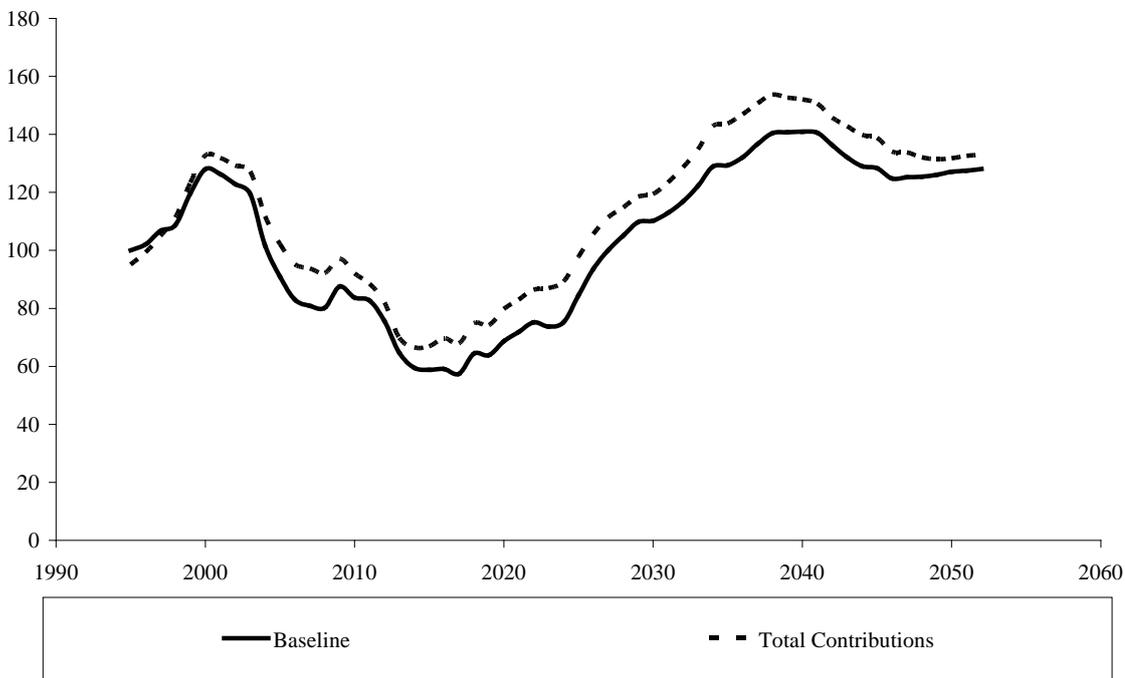


Source: LIAM (Baseline 1995 = 100)

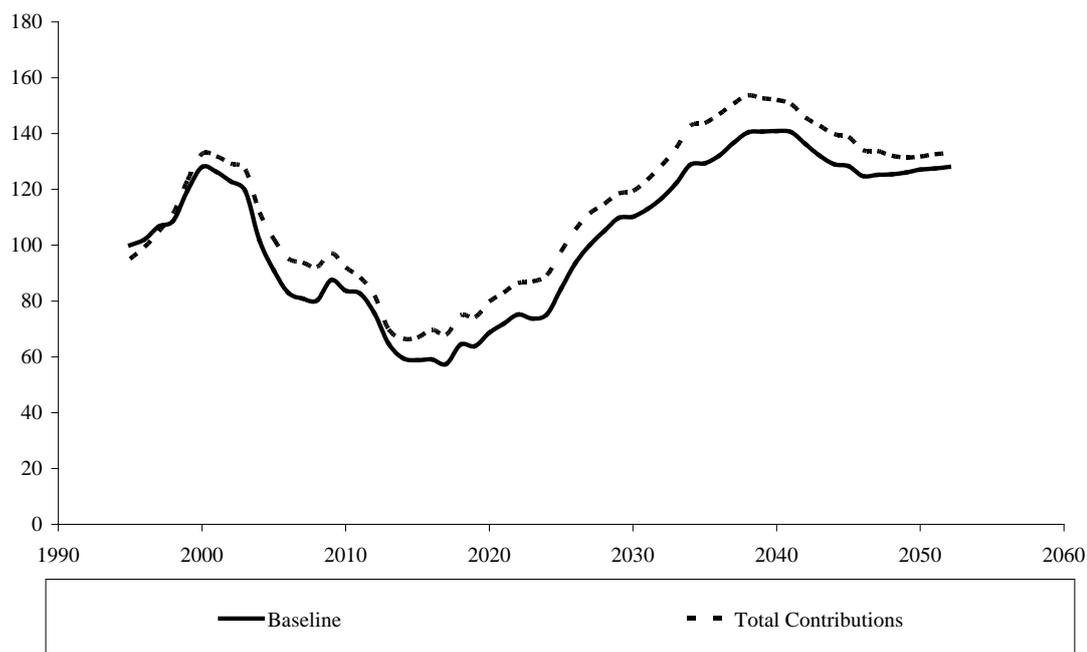
*Reform Simulation 3: Replacing the Average Contribution Test with a Total Contributions Approach*

We now consider the impact of changing the rule for calculating entitlement to a contributory pension from an average to a total contribution approach, where 520 weeks of contributions would be required for entitlement. The net effect of this change would be to slightly increase poverty both in terms of head count and gap. In fact, while on the one hand there would be higher coverage due to the sudden qualification of those individuals who would otherwise have a low yearly average, we would still lose those individuals who qualify today with a total 260 contribution, but who would not qualify any longer in the new system.

**Figure 18. Trend in pensioner poverty (head count), total contributions**



Source: LIAM (Baseline 1995 = 100)

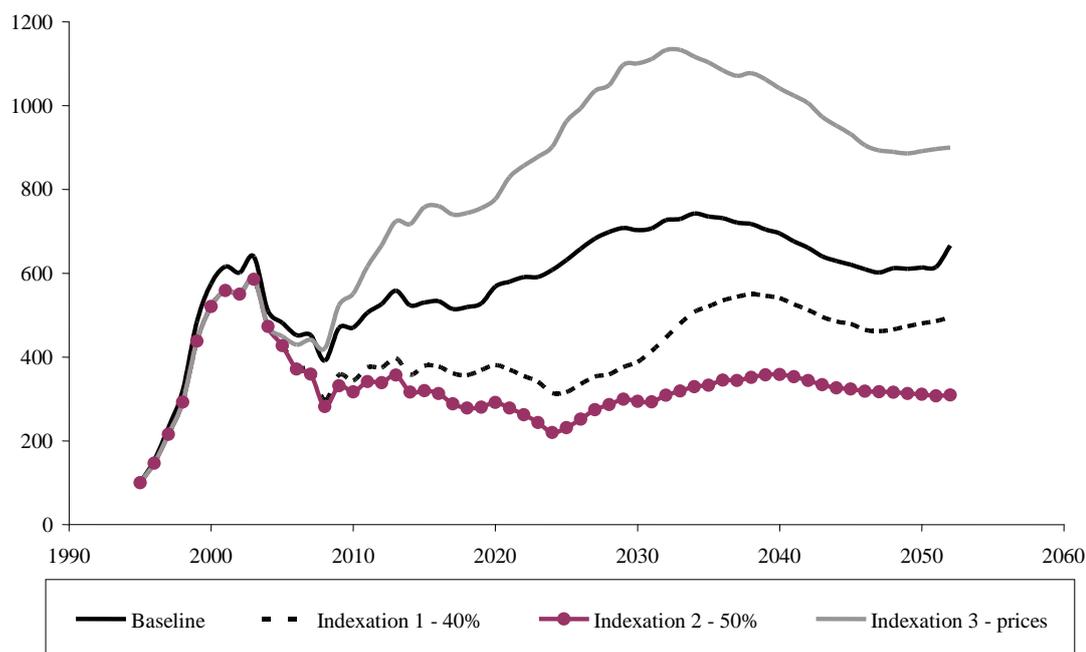
**Figure 19. Trend in pensioner poverty (gap)**

Source: LIAM (Baseline 1995 = 100)

Furthermore, if we compare the average value of the SCP to the baseline under a total contribution reform scenario (as well as that of all other reforms presented in this chapter), we can see that this is one of the few reforms where the average pension over time remains slightly below the baseline value. This might be due to the fact that right at the start of the simulation more people become eligible for an SCP due to the dropping of the average contribution condition, hence lowering the average benefit received. Anyhow it may also explain why we see a slightly higher poverty head count and poverty gap than in the baseline. From the poverty reduction point of view it follows therefore that this is one of the least effective policies.

#### *Reform Simulation 4: Indexation of Social Welfare Pensions*

Lastly we consider the impact of alternative indexation rules, considering in turn the impact of achieving 40 per cent and 50 per cent of average gross earnings (in the Green Paper the suggested reform is 50 per cent), compared with 35 per cent at present. For illustrative reasons we also compare the impact of price indexation, assuming a reduction of 2 per cent year on year from the baseline. This scenario in fact means that wages grow at 2 per cent more than prices, and that the SCP benefit declines relative to earnings by 2 per cent a year. What is striking under both measures is that the impact of relatively small changes in the value of the benefit can have such a large impact on poverty relatively quickly. We particularly see the huge rise in poverty in the price indexation example.

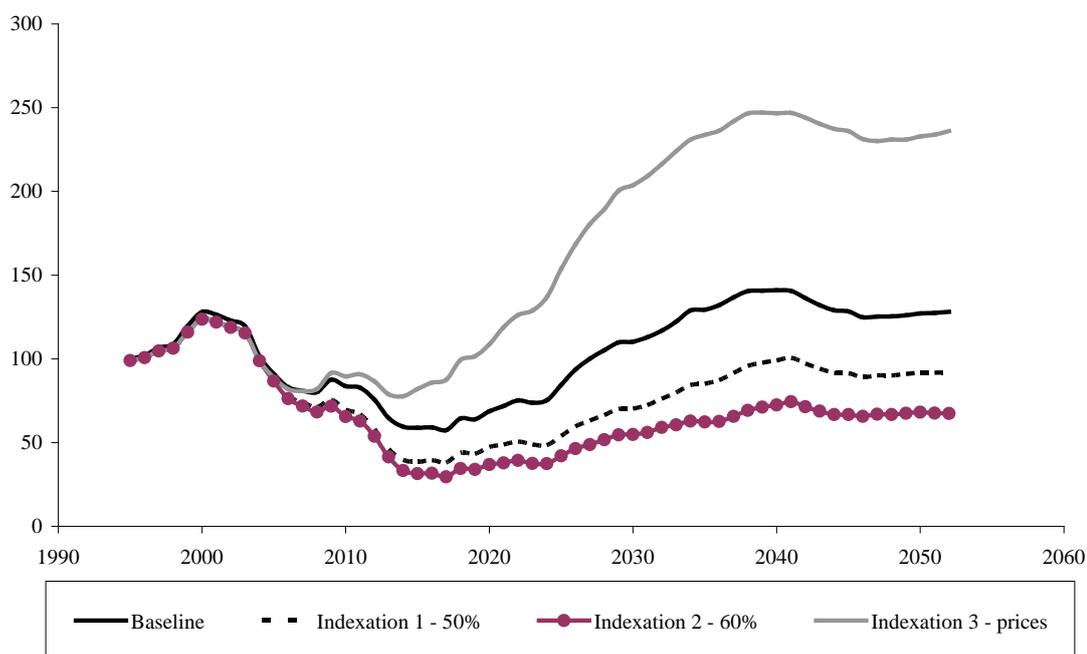
**Figure 20. Trend in pensioner poverty (head count), indexation**

Source: LIAM (Baseline 1995 = 100)

The poverty head count is substantially reduced from the baseline when applying an indexation of 40 and 50 per cent of GAIE. However, it goes up relative to the baseline when using price indexation, as this amounts to a reduction of the SCP by 2 per cent lower than wage growth. Compared to all other reforms, a higher indexation level seems to be the most effective policy measure to reduce the poverty head count among the elderly in a way that also remains stable over time (e.g. if one also compares with the Universal Pension).

As for the poverty gap, the first and second indexations reduce it the most over time (relative to other reforms) after the Universal Pension. This is expected since the average benefit and pensions will become higher.

The next and final section will evaluate all the policies under review from a point of view of costs.

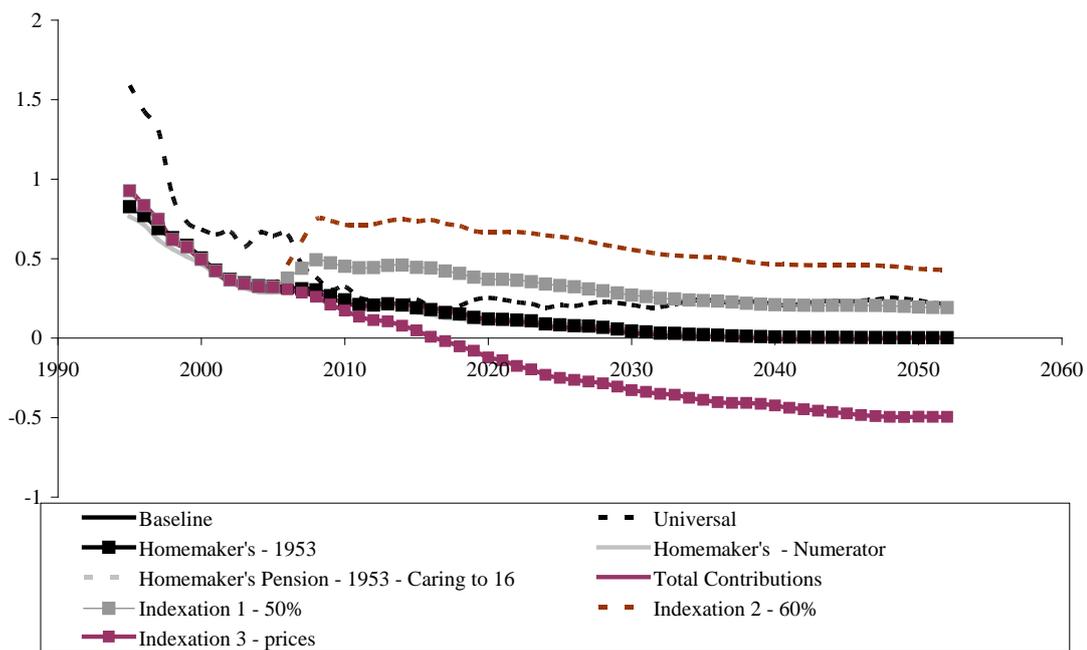
**Figure 21. Trend in pensioner poverty (poverty gap), indexation**

Source: LIAM (Baseline 1995 = 100)

### *Costs of the Simulated Reforms*

All reforms have, at least initially, a cost which is higher than the baseline (which is the horizontal line set at 0). Price indexation is the only reform which, expectedly, ends up costing less than the current system; we saw however that this is also the reform with the worst impact on pensioners. The Homemaker's reforms tend to reach in time the same costs of the present pension system (in particular extending the scheme back to 1953). However, we saw that the impact on pensioners' poverty and inequality is only modest. Universal Pensions are the most costly reform initially, although if one looks at it inter-temporally one sees that this would reach a cost which is around 25 per cent higher than if we were to maintain the current system; this might be the most cost-effective reform in terms of poverty reduction compared to the 2 indexation policies which, although most effective in terms of poverty reduction, would end up costing 50–60 per cent more than the baseline.

**Figure 22. Cost of reform scenarios**



## 9. Conclusions

The motivation for this study has been to illustrate how elderly poverty might evolve in Ireland over time given that, on the one hand, the elderly population is expected to increase and that, on the other hand, the current state pension system, on which the majority of Irish pensioners rely as their main source of income, is already at present unable to keep as many elderly above the poverty line as the EU average. This study considers whether under conditions of demographic ageing, the poverty rates of Irish elderly will get even worse. Indeed, high rates of pensioners' poverty in Ireland have spurred some policy debate around pension reform since the late 1990s; in particular, the latest 2007 Green Paper launches a comprehensive set of reform proposals to the whole pension system, both public, private and occupational, having in mind sustainability as well as redistributive concerns.

The current Irish pension system is a multi-pillar system, with three main pillars (public, occupational and private). The mandatory social welfare pension is meant to fulfil a poverty eradication or redistributive function and yet, offering a flat maximum benefit which amounts to 35 per cent of GAIE, it replaces only 31 per cent of pre-retirement income, the lowest replacement in Europe; furthermore, its value relative to the poverty line has been decreasing over time, from 110 per cent in 1994 to 80 per cent in 2001.

In terms of coverage, in 2005 the contributory benefit covered only 70 per cent of the over-65 age group (with coverage increasing to roughly 90 per cent if including the means-tested benefit). The other voluntary pillars are meant to have an insurance and income replacement function, bringing the final average pensioner's income to approximately 70 per cent of pre-retirement income (if the pension benefit is defined benefit; the replacement rate of a defined contribution benefit depends entirely on contributions paid). In terms of coverage, however, only 53 per cent of the Irish workers in 2005 were covered by a second or third pillar pension, with coverage being particularly low among the younger age groups. Clearly the occupational and private pillars' coverage is currently too low to guarantee an average pension replacement rate of 50 per cent to all, as expressed by the Government's target. Furthermore, given the expected demographic evolution in Ireland, resolving issues of pension coverage and pension adequacy is going to put under pressure the sustainability of the Irish system, with an expected increase in pension costs from 5 per cent of GDP to 12 per cent by 2050.

Using a dynamic microsimulation model, LIAM, we set up to analyse the possible redistributive impacts – in particular the poverty impact among the elderly – that the suggested reforms to the social welfare pension pillar might have. These reforms aim mostly to increase coverage of the public pension as well as higher benefit amounts. We conclude that, while in the short run some temporary improvement compared to the current pension system can be expected, in the long run they will all still result in pensioners' poverty levels being higher than today, unless the benefit amount is indexed to the growth in the poverty line, i.e. to the expected growth of earnings.

The advantage of using such a model is that it allows us to analyse the effects of a policy over time, and the way in which policy interacts with changing demographic conditions and micro behaviours. In fact a dynamic microsimulation model essentially takes individual objects (individuals, households, farms, companies) and simulates the probabilities of various events occurring at various points in time. This way, it generates a synthetic micro panel data for the future, containing the entire distribution of key variables which affect disposable incomes and pension entitlements. Furthermore, it keeps track of linkages between individuals who, for example, belong to the same household, or between households and regions, so that it is possible to use the data for multi-level analysis (i.e. if we need to derive tax or benefit information, we need to be able to track information at different levels).

In order to carry out this analysis, we had to build a specific pension module within LIAM in order to carry out our pensioners' poverty analysis. The module in particular handles both the backward as well as the forward simulation of pension entitlements. Indeed, in order to track pensioners' incomes in the future, we need to have access to full life cycle labour market histories. This is not possible for those individuals who were not 'born' or generated within LIAM, but rather were in the initial data which LIAM uses as input. So we simulate their labour market history, e.g. type of employment, social insurance contributions amounts, etc, all the way back to 1939, in order to be able to calculate the amount of different pensions once they are made to retire in the model. For all those who are born in the model we also need to predict a wealth of pension information, including whether they have an occupational or private pension plan, whether it is defined contribution or defined benefit, and the annuity they would receive upon retirement.

This paper presents the results from a baseline run of LIAM up to year 2050, with a focus on poverty statistics (poverty head count and poverty gap).

Given the current pension system, it shows that, after a temporary improvement due to increasingly higher coverage, by 2050 the proportion of poor over-65s is going to double relative to the 1995 levels, in particular among the very old (over 80). This is shown to depend primarily on the fact that

the old age pension (as set in 2007 and increased yearly by 2 per cent) grows over time much less than average earnings (hence the poverty line increases much more than the average pensioner's income). We also show how this is determined by underlying demographic changes, including an increase in the average educational level, pushing up wages. The increase in state pension coverage is not able alone to mitigate this effect.

Furthermore, the report assesses how poverty statistics change when simulating a number of alternative pension scenarios present in the 2007 Green Paper, all involving some change to the state pension (i.e. we omit reforms such as making occupational or private pensions mandatory). The simulated reforms are:

(i) Introducing a universal pension. This reform increases coverage to 100 per cent of pensioners. Hence, temporarily, the poverty head count is reduced compared to the baseline. Over time, however, poverty converges to the same high levels as under the baseline due to the asymmetrical growth in earnings and the increased coverage of the existing system.

(ii) Reforming the 1994 Homemaker's Scheme so as to (a) extend it back to 1953, (b) increase the age of the child for whom someone is caring from 12 to 16, (c) change the total contribution rule for contributory pension eligibility, from a mere disregard of the years spent childcaring in the total number of years since joining the social contribution system, to including these years in the total years credited.

The poverty impact of all these reforms is modest relative to the baseline, and certainly less than under reform option (i), since they also aim to increase coverage but the targeted group is relatively small compared to (i). In any case option (c) is the one which reduces the poverty gap most as it explicitly gives credits for years spent caring, particularly giving pension entitlement to those who have very few working years prior to caring.

(iii) Abolishing the average contributory condition from the eligibility rule for a contributory pension, leaving only the total contributions condition. From the poverty point of view, this is the worst reform option since it actually increases both the poverty head count and the poverty gap relative to the baseline. This is due to the fact that the losers, who have fewer than 520 contributions but with greater than the 260 contributions at present required to receive the pension, outweigh the winners who gain entitlement due to having too low an average under the existing system. The combination of an enhanced contribution based Homemaker's Scheme such as option (c) above may reverse this result.

(iv) Changing the flat pension benefit indexation to 40 and 50 per cent of GAIE, and alternatively indexing the benefit to prices, assuming that they grow at 2 per cent less than earnings. Higher indexation relative to wages yields the best impact on poverty relative to the baseline, while price indexation yields the worst. In particular, higher wage indexation is the only policy that brings down and keeps the poverty gap below the baseline scenario. However, the higher indexation comes with a higher cost.

Results show that, overall, old age poverty is going to increase in the long run under the current pension system as well as under the proposed reform options to the state pension; this is mainly due to the fact that, over time, under all reform options the value of the state pension benefit is decreasing below the poverty line (with the exception of indexing it to 50 per cent of GAIE, in which case by 2050 the maximum benefit would just about reach the poverty line level).

Most of the proposals for reform are also unsustainable in the long run from a poverty perspective, unless they cover the growing gap between pensions and earnings, i.e. they become indexed to wages and consequently to the growth in the poverty line. In addition, unless the eligibility gap for the higher contributory pension is closed, it may be difficult to significantly reduce in the short to medium term the high poverty rates of those in receipt of social assistance. This, however, would entail pension costs 50 per cent higher than what would be under the current pension system. Introducing a universal pension might offer a compromise solution in terms of tackling lower poverty in the medium term at a slightly lower cost.

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