

## **Tax Strategy Group**

### **The Implications of Population Ageing for Tax Revenue**

#### **1. Introduction**

- 1.1. The latest demographic projections indicate that the size and composition of Ireland's population will undergo considerable change in the coming decades. In particular, a substantial increase in the number of people aged 65 and over is expected to occur. From a public finance perspective, this 'greying' of the population will pose a range of significant challenges.
- 1.2. In considering these challenges, the focus to date has been on the potential increase in age-related Government spending. For example, a recent report by the EU Economic Policy Committee<sup>1</sup> projects that age-related spending in Ireland will rise by 3.3 percentage points of GDP between 2004 and 2030, from 15.5% of GDP to 18.8%. Expenditure on pensions is expected to account for the majority of this increase, with smaller rises projected in health and long-term care spending.
- 1.3. In contrast, little attention has been paid to the revenue side of the public finances. Given that an explicit relationship between the amount of tax payable and the age of the payer can be defined for a number of tax aggregates including VAT, excise duties, income tax, inheritance tax and stamp duties, it can be expected that population ageing will also impact on Government tax revenues over the longer term. This may occur directly through the narrowing or changing composition of individual tax bases, or indirectly via future policy decisions arising from the need to counterbalance rising age-related public spending.
- 1.4. To balance the debate, this paper provides an illustration of the potential implications of population ageing for tax revenues. The approach adopted attempts to isolate out the 'pure ageing' effect from policy changes by imposing the demographic composition projected for 2030 on the tax structure in place today.
- 1.5. Unfortunately, an age breakdown of tax receipts is not available from the Office of the Revenue Commissioners. The paper thus draws on CSO survey data covering income tax, VAT and excise duties<sup>2</sup>. Combined, these tax heads accounted for more than 70% of the overall tax take in 2005.

#### **2. Demographic Situation**

- 2.1. As is evident from the figures presented below in Table 1, the demographic scenario projected for 2030 differs substantially from the current situation.

---

<sup>1</sup> Economic Policy Committee & European Commission (2006). *The impact of ageing on public expenditure: projections for the EU25 Member States on pensions, health care, long-term care, education and unemployment transfers (2004-2050)*.

<sup>2</sup> Survey data is taken from the *Household Budget Survey 1999/00*, published in 2001, and the *Survey of Income and Living Conditions 2004*, published in 2005. Data from the Household Budget Survey has been updated to 2004 using CSO inflation indices and has also been converted from household to individual level.

**Table 1: Projected evolution of Ireland's population from 2004 to 2030**

	2004	2030	% Change 2004-2030
<b>Total Population (million)</b>	4.0	5.1	+25.8
<i>Number of individuals in each cohort as a percentage of the total population:</i>			
<b>Population aged 0-14</b>	21	17	-19.3
<b>Population aged 15-64</b>	68	65	-4.7
<b>Population aged 65+</b>	11	18	+64.7
<b>Old-Age Dependency Ratio*</b>	16	28	+72.8
<b>Total Dependency Ratio**</b>	47	54	+15.3

NOTE: The figures presented in Table 1 were prepared by Eurostat for the Economic Policy Committee.

\* The percentage of the population aged 65 and over relative to the population aged 15-64.

\*\* The percentage of the population aged 65 and over plus the population aged 14 and under relative to the population aged 15-64.

- 2.2. While the size of the population is expected to increase from 4.0 million in 2004 to 5.1 million by 2030, of greater significance from a budgetary viewpoint is the projected change in its composition. Specifically, Ireland will move from a situation where the population aged 65 and over accounts for 11% of the total population to one in which this cohort will account for 18%. Conversely, the population of working age<sup>3</sup> and the cohort aged 14 and under are projected to fall over time as a proportion of the total population.
- 2.3. A common summary measure of the support burden facing an economy is the size of the working age population relative to the 'dependent' population. In Ireland's case, the projections indicate that by 2030 the old-age dependency ratio will be in the order of 28%; one-and-three-quarter times the 2004 figure of 16%. However, as the proportion of individuals in the 14 and under age group is set to fall - thereby offsetting some of the increase in the 65 and over cohort - the overall dependency ratio will rise less rapidly.

### 3. Age and Tax Liability

- 3.1. If the demographic changes set out above are to impinge on future tax revenues, there must be a systematic difference in the amount of each type of tax paid by each age group. A lower income tax liability can be expected for older people as the bulk of their earnings are derived from untaxed, or low taxed, sources such as pensions and Social Security payments. In turn, lower incomes imply that this age cohort is likely to spend less money in general and to concentrate more of its spending on low taxed goods and services. As a result, reduced VAT and excise duty revenue should be anticipated.
- 3.2. Drawing on CSO survey data, Table 2 illustrates the age-related distribution of average VAT, excise duty and income tax payments.

<sup>3</sup> The working age population is defined here as those aged 15-64.

**Table 2: Average Weekly Tax Payments, by age**

	VAT		Excise Duty		Income Tax **	
	€	% of total*	€	% of total*	€	% of total*
<25	26.18	16.7	11.56	17.0	18.76	5.3
25-34	30.20	19.3	12.60	18.6	78.30	22.3
35-44	26.62	17.0	10.77	15.9	94.47	26.9
45-54	28.11	17.9	12.00	17.7	95.36	27.1
55-64	27.47	17.5	12.62	18.6	53.03	15.1
65+	18.25	11.6	8.34	12.3	11.40	3.2

\* Un-weighted by reference to cohort size.

\*\* The first age cohort is 17-25 for income tax. This category also covers PRSI payments.

- 3.3. For each of these tax heads, it is apparent that the tax liability of the cohort aged 65 and over is considerably lower than that of the other age groups. While this relationship between the amount of tax payable and the age of the payer is most obvious in respect of income tax, it also holds for VAT and excise duties. For example, an average individual aged 55 to 64 pays €27.47 in VAT and €12.62 in excise duty per week, whereas an average individual in the oldest age cohort pays €18.25 and €8.34 respectively.

#### 4. Illustration

- 4.1. To numerically illustrate the potential consequences of population ageing for tax receipts, the projected demographic scenario for 2030 is imposed on the 2004 tax structure. This ‘pure ageing’ approach removes the impact of policy and other changes so that the ageing effect can be analysed in isolation. Table 3 summarises the results.

**Table 3: Projected age-related tax revenue in 2004 and 2030 (% of GDP)**

	<i>Tax yield assuming 2004 population structure</i>	<i>Tax yield assuming 2030 population structure</i>	<i>Projected change due to ageing</i>
VAT	7.3	7.1	-0.2
Excise Duty	3.4	3.3	-0.1
Income Tax	7.3	7.2	-0.1
<b>Combined Revenue</b>	18.0	17.7	-0.3

- 4.2. The above projections reveal that if the age breakdown projected for 2030 were imposed on the current tax structure, the yield from the main tax aggregates would be lower by 0.3 percentage points of GDP. In 2006 terms, this is equivalent to just over €0.5 billion. This change comprises a decrease in the VAT take of 0.2 percentage points, and a fall of 0.1 percentage points in both excise duties and income tax receipts.
- 4.3. As much of demographic change projected for Ireland is set to occur after 2030, the numerical estimate presented here can largely be regarded as a lower bound. By extending the projection horizon to 2050, the fall in revenue amounts to just over €2

billion in 2006 terms. Moreover, this illustration does not attempt to model age-related aggregates for which data is unavailable. Expanding the analysis to account for these additional factors would imply a further lowering of tax revenues into the future.

- 4.4. Nonetheless, it appears that the impact of population ageing on tax revenues, while not insignificant, will be considerably lower than the impact on Government spending. For the most part, this relatively muted revenue effect can be attributed to changes in the age structure of the population that partly counteract each other. Specifically, although there will be relatively more people aged 65 and over in the coming years, there will also be relatively fewer people in the under 25 category. As this younger cohort tends to earn and spend less, some of the growth in the 65 and over age group will be offset by the reduction in the under 25 cohort.
- 4.5. Finally, note that most of the uncertainty surrounding age-related revenue projections follows from uncertainties regarding behavioural parameters such as future income distribution and consumption patterns. Reflecting the 'no change' scenario adopted in this paper, issues such as the extent to which wider pension coverage in the years ahead will lead to higher future pensions, and therefore higher tax payments by retirees are not considered. Likewise, it is implicitly assumed that consumption patterns change as cohorts age; hence those aged 65 and over in 2030 will have the same consumption patterns as those aged 65 and over in 2004.

## **5. Conclusions**

- 5.1. This paper illustrates the potentially negative impact of population ageing on future Government tax revenues. The simple illustration presented indicates that if the age breakdown projected for 2030 were imposed on today's tax structure, the yield from the main tax aggregates would be lower than the present take by 0.3 percentage points of GDP or just over €0.5 billion in 2006 absolute terms.
- 5.2. Such a fall in revenue would place additional pressure on the public finances going forward. Taking the current tax structure as given, a situation will emerge whereby rising age-related spending would have to be financed from declining tax revenues.
- 5.3. In this context, Ireland's ability to safeguard the public finances into the future will depend on the implementation of appropriate and timely policy responses. To this end, a range of Government initiatives have been introduced to ease age-related spending over the longer term. These include the establishment of the National Pensions Reserve Fund and ongoing public service pension reform.
- 5.4. Explicit measures to counteract the projected fall in revenue arising from the shift to an older population have yet to be put in place. However, a number of options are available in this respect. These range from increasing general taxation and the retirement age, to altering the present tax structure so that the system is demographically neutral.
- 5.5. Overall, it will be important to focus policy attention going forward on the revenue side of the public finances as well as on the spending aspects. Doing so will help the Government to respond to the longer term challenges posed by population ageing.