Population ageing and government revenue: It is not all bad news

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Population ageing is one of the biggest challenges to public finances (Rawdanowicz et al., 2021). It is expected to necessitate a sizeable increase in public spending on pensions and health care. Such spending pressures could be mitigated by structural reforms or cost reductions, but in their absence large increases in tax revenue would be needed to stabilise public debt (Rouzet et al., 2019; Guillemette and Turner, 2021).

In contrast to the existing literature which focuses on government spending, in our latest paper (Crowe et al., 2022), we shed light on the consequences of population ageing for government revenue in OECD countries. We do this in a framework consistent with the OECD long-term model (LTM) (Chalaux and Guillemette, 2019; Guillemette and Turner, 2021). We show that if the labour and capital income shares in GDP remain constant and pension income increases in relation to GDP, the tax revenue-to-GDP ratio is likely to increase slightly via higher revenues derived from the taxation of pension income and of associated consumption. However, this will not be enough to cover the total increase in government spending due to population ageing.

In view of these results, countries still would have to reduce spending or raise taxes and implement structural reforms to boost labour force participation and growth, if they do not want public debt to increase. Policy options will be constrained by countries' current levels of overall taxes and

debt, and political economy considerations. Countries with high tax revenue and debt may need to favour spending reductions. In contrast, countries with low taxation and debt may envisage raising taxes and increasing borrowing. In practice, a combination of these strategies, which reflects a country's social preferences, could be desirable to limit negative effects associated with each option.

The modelling framework

Building on the recent analysis of the consequences of ageing populations on government spending and long-term GDP in the LTM (Guillemette and Turner, 2021), we analyse implications for government revenue. In the baseline scenario, the labour share in GDP remains constant, consistent with the Cobb-Douglas production function employed in the LTM.

Our model's general approach is to project shares of the main income components in GDP, which constitute the main income tax bases, and apply calibrated effective tax rates (ETRs), which are assumed to remain constant, to obtain projected government revenue from income taxes and social security contributions (SSCs). The resulting disposable income of households is used to project household consumption (based on constant calibrated saving rates) and then consumption taxes, again based on a constant calibrated ETR.

The proposed framework, while admittedly stylised, has the advantage of ensuring accounting consistency between the assumed split of nominal GDP into labour and capital income shares (the primary allocation of income), taxes and social benefits — including pensions (which are part of the secondary distribution of income) — and household consumption (uses of disposable income). Thus, the model can indicate the orders of magnitude of the impact of selected aspects of population ageing on budget balances.

Given the model's assumptions, population ageing affects tax

revenue mainly via income taxes and SSCs on pensions and via taxes on consumption out of pension income.

The results

The increase in government tax revenues resulting from higher aggregate pension income projected in the model is significant in relation to the size of the pension spending pressures, but by far not enough to solve the fiscal challenge. On average, the additional revenue covers around a quarter of the expected increase in government spending on public pensions; the latter accounts for less than 40% of the total increase in public spending due to population ageing (see figure).

In most countries, more than half of the extra tax revenue is generated from indirect taxes due to growing consumption out of pension income and thus growing consumption tax revenue. In these countries, the coverage ratio correlates positively with the ETR for consumption taxes.

The general smaller importance of direct taxes stems from the fact that ETRs for current taxes and SSCs on pensions are usually low and below the respective ETRs on labour income. Lower ETRs on pensions are due to favourable treatment, exemptions from taxation, and the progressivity of personal income taxation (as average pension income is usually below average wage income). Still, the coverage ratio is large in several countries where ETRs related to current taxes paid by households on social benefits are particularly high (e.g. Denmark, Finland, Luxembourg, the Netherlands, Sweden and Switzerland).

Tax revenue from growing aggregate pension income will likely increase

Per cent of GDP, change between 2023 and 2060
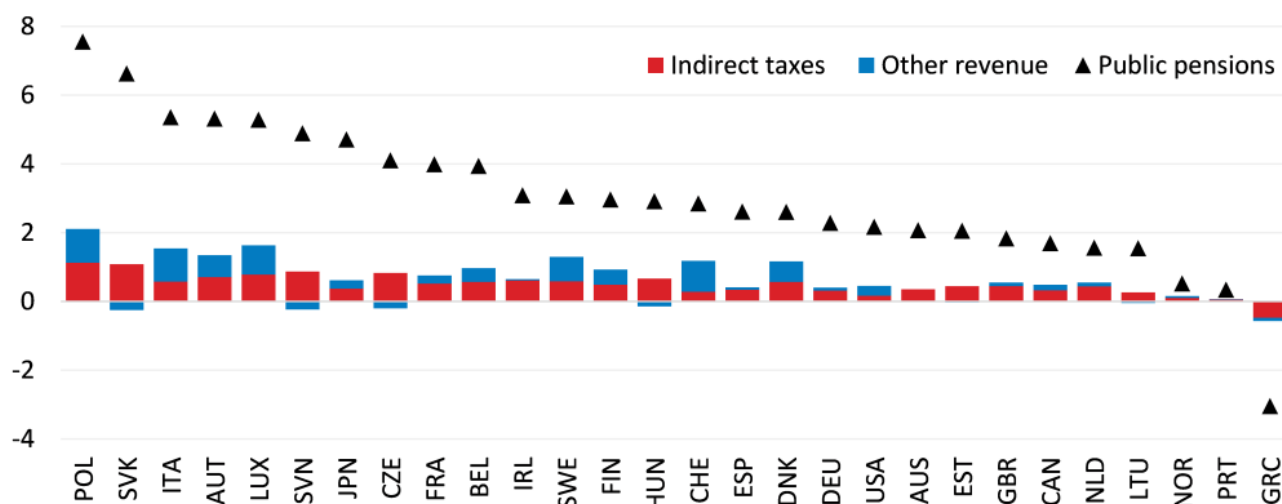
Note: Changes in indirect taxes are mainly driven by taxes related to household consumption as payroll and other indirect taxes do not change in relation to GDP in this exercise. Changes in other revenue refer primarily to changes in current taxes on household income and wealth. They include also changes in social security contributions received by government but, in most countries, this change is rather small. Spending on public pensions is consistent with the long-term model projections.
Source: Crowe et al. (2022), "Population ageing and government revenue: Expected trends and policy considerations to boost revenue", OECD Economics Department Working Papers, No 1737, OECD Publishing, Paris.

Robustness checks

Given the stylised nature of the model, the results should be treated as indicative of potential magnitudes rather than precise projections. While the results are robust to alternative constant ETRs calibrations, there are other aspects of the model that could affect the results. They are discussed in the paper. Here we mention only two:

- First, the alternative assumption of a modest decline in labour **income shares** does not change net fiscal pressures significantly. Lower labour shares reduce labour-related revenue but increase tax revenue from gross profits of companies and self-employed income (all relative to GDP). The net effect on the tax-to-GDP ratio

is expected to be negative since the taxation of capital income tends to be lower than that of labour income. However, as the LTM specifies pensions relative to the average wage, a fall in the labour share also reduces the increase in public spending on pensions relative to GDP. On net, fiscal pressures are expected to be slightly higher in the scenario with a modest decline in the labour share compared with the baseline scenario in two-thirds of the analysed countries, and marginally lower in the remaining countries.

- Second, while **saving rates** in the model are assumed to be constant over time, they are likely to differ across age cohorts (which can be related to income level and type) and result in a time-varying aggregate saving rate given expected changes in population and income structures. For instance, the saving rate can fall for people transitioning from employment to retirement if they maintain similar consumption level and their pension income is lower than previous wage income. However, savings may not be affected if older people receive higher capital income. Similarly, if the consumption of older people declines proportionally or more than income during retirement, their saving rate could remain unchanged or increase. Available Eurostat household surveys suggest that saving rates tend to decrease with age in several EU countries, but the opposite is true in other countries. Other studies show that on average, the elderly does not decumulate wealth in the United States (Auclert et al., 2021) and in Europe (Horioka and Ventura, 2022). Maintaining wealth could be explained by precautionary or bequest motives, but reasons for cross-country differences in age-specific saving rates are not clear. Thus, although assuming the same saving rate for all age cohorts may not be a realistic assumption, the alternative is not obvious. If the saving rate for the older population would be lower than for the working-age population,

consumption tax revenue would be somewhat larger than in the case of a uniform saving rate. However, sensitivity tests indicate that this assumption does not affect the model simulation results significantly.

References:

Auclert, A. et al. (2021), *Demographics, Wealth, and Global Imbalances in the Twenty-First Century*, National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w29161.

Chalaux, T. and Y. Guillemette (2019), "The OECD potential output estimation methodology"*, OECD Economics Department Working Papers*, No. 1563, OECD Publishing, Paris, https://dx.doi.org/10.1787/4357c723-en.

Crowe et al. (2022), "Population ageing and government revenue: Expected trends and policy considerations to boost revenue", OECD Economics Department Working Papers, No 1737, OECD Publishing, Paris, https://doi.org/10.1787/9ce9e8e3-en.

Guillemette, Y. and D. Turner (2021), "The Long Game: Fiscal Outlooks to 2060 Underline Need for Structural Reforms", *OECD Economics Department Policy Papers*, https://doi.org/10.1787/a112307e-en.

Horioka, C. and L. Ventura (2022), *Do the Retired Elderly in Europe Decumulate Their Wealth? The Importance of Bequest Motives, Precautionary Saving, Public Pensions, and Homeownership*, National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w30470.

Rawdanowicz, Ł. et al. (2021), "Constraints and demands on public finances: Considerations of resilient fiscal policy"*, OECD Economics Department Working Papers*, No. 1694, OECD Publishing, Paris, https://dx.doi.org/10.1787/602500be-en.

Rouzet, D. et al. (2019), "Fiscal challenges and inclusive

growth in ageing societies", *OECD Economic Policy Papers*, No. 27, OECD Publishing, Paris, https://dx.doi.org/10.1787/c553d8d2-en.