

Population ageing and sub-central governments: long-term fiscal challenges and tax policy reform options

Céline Colin and Bert Brys

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Abstract

Population ageing and sub-central governments: long-term fiscal challenges and tax policy reform options

The population in OECD countries is ageing rapidly, which will have significant macroeconomic impacts, including on public expenditure and tax revenues. This paper analyses the consequences of population ageing at the sub-central government (SCG) levels and introduces the ‘SCG fiscal vulnerability to ageing’ indicator. This indicator identifies the countries in which SCGs on average are “vulnerable” to the ageing of their population from a fiscal perspective (both from the expenditure and revenue side). The paper posits that the economic and fiscal consequences of an ageing population goes beyond the central-SCG boundaries. Therefore, in order to make fiscal frameworks “ageing-resilient”, countries require a coherent fiscal strategy, which focuses on tax and spending reforms, with a whole-of-government approach that brings together central governments and SCGs.

Keywords: Ageing, demographic change, long-term scenarios, revenue vulnerability, sub-national governments

JEL classification: H20, H71, J14

Résumé

Vieillissement de la population et administrations infranationales : enjeux budgétaires à long terme et réformes des politiques fiscales

La population vieillit rapidement dans les pays de l'OCDE, ce qui aura d'importantes répercussions sur le plan macroéconomique, notamment en termes de dépenses publiques et de recettes fiscales. Dans ce document, les auteurs analysent les conséquences du vieillissement de la population à l'échelon infranational et présentent l'indicateur de vulnérabilité budgétaire des administrations infranationales face au vieillissement de la population. Cet indicateur permet d'identifier les pays dans lesquels les administrations infranationales sont, en moyenne, « vulnérables » au vieillissement de leur population du point de vue budgétaire (tant en ce qui concerne les dépenses que les recettes). Les auteurs partent du principe que les conséquences économiques et budgétaires du vieillissement de la population concernent tout à la fois l'administration centrale et les échelons infranationaux. Par conséquent, afin de faire en sorte que les cadres budgétaires soient en mesure de s'adapter au vieillissement, les pays doivent se doter d'une stratégie budgétaire cohérente, qui se concentre sur les réformes fiscales et budgétaires, en mettant en œuvre une approche gouvernementale intégrée associant administrations centrale et infranationale.

Mots-clés : Vieillissement, changements démographiques, scénarios à long terme, vulnérabilité des recettes, administrations infranationales.

Classement JEL : H20, H71, J14

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Population ageing and sub-central governments: long-term fiscal challenges and tax policy reform options

By Céline Colin and Bert Brys¹

1. Introduction

Populations are ageing rapidly across advanced economies and many emerging market economies because of rising life expectancy and declining fertility. While in 1950 only 8% of the population in OECD countries was older than 65, this share will increase to 17% by 2020. Over the same period, the share of people younger than 25 will decline from 43% to 31% of the population. United Nations projections show that these trends will continue and that by 2100, 31% of the population in OECD countries will be older than 65 and the share of people younger than 25 will have dropped to 25%. The old-age dependency ratio, defined as the number of people aged 65+ as a percentage of the number of people in the 20-64 age category, will jump from 30% in 2015 to more than 50% in 2050 on average across the OECD. The ageing of the population will be particularly strong in Germany, Italy, Japan, Greece, Portugal, Korea, Spain and Slovenia.

The ageing of the population will have a significant macroeconomic impact, although the views in the literature of the impact on the level of the interest rate, consumption and inflation, saving and investment, and economic growth vary significantly (Lu and Teulings, 2016^[1]; Goodhart and Pradhan, 2017^[2]). There is, however, consensus on the direct impact of the ageing of the population; it will result in higher old-age spending and a fall in the share of the working-age in the total population (OECD, 2019^[3]; Rouzet et al., 2019^[4]).

Ageing of the population will result in additional old-age expenditure. On average across the OECD, projections indicate that public health and long-term care (LTC) spending could increase by up to, respectively, 6.3 and 1.3 percentage points of GDP by 2060 (OECD, 2019^[3]; Rouzet et al., 2019^[4]). Demographic change will also be the main driver of public pension expenditure in the future: pension expenditure is projected to increase in the majority of G20 countries by 2060. Countries will also face higher old-age care spending and they might face increases in other types of expenditure such as local transportation and community services for elderly people.

The ageing of the population will affect spending of both central and sub-central governments (SCGs). The extent to which SCGs will be affected by ageing, and the opportunities they face to mitigate the corresponding impact, cannot be seen in isolation from the ageing-related expenditure challenges at the central government level. The degree to which SCGs will be affected by the ageing of their population also depends on the size and types of spending that SCGs are responsible for.

¹ This paper was prepared for the OECD Network on Fiscal Relations' Workshop on Ageing and Long-term Challenges across Levels of Government. The authors are thankful for comments received from Network delegates – notably Austria and Belgium's – as well as David Bradbury, Sean Dougherty, Peter Hoeller, Gioia de Melo, Michael Stemmer and Sarah Perret. The authors want to thank especially Dorothée Rouzet for her insightful suggestions. The authors also want to thank delegates from the OECD's Working Party No. 2 on Tax Policy and Tax Statistics of the Committee on Fiscal Affairs for their useful feedback and comments.

For instance, SCGs may run or sponsor pension plans for their civil servants. This may create ageing-related challenges especially when these funds are pay-as-you-go or only partially funded defined-benefit systems. Under-funded pension liabilities might require structural reforms in order to prevent SCG pension liabilities becoming a drag on other types of SCG spending or will require SCGs to significantly increase taxes.

In addition, the ageing of the population will reduce direct tax revenues as a result of the decrease in the number of people that are active in the formal labour market. As tax systems in OECD countries are tilted towards taxes on labour income, the drop in the workforce will reduce personal income taxes and social security contributions (SSCs) significantly. A reduction in direct tax revenues may lower the capacity of central governments to continue providing transfers and grants to SCGs. It may strongly affect SCG funding in countries where the personal income tax (PIT) is an important source of SCG revenue.

In many countries, the financing of the welfare system will be put under severe pressure over the decades to come. This will be particularly the case in countries where pension, health and long-term care systems have a large pay-as-you-go component. The drop in labour supply may induce businesses to shift towards more capital but may also result in an increase in average wage levels, which may offset, to some extent, the negative direct revenue impact of ageing.

The ageing of the population occurs simultaneously with the automation and digitalisation of the economy. Technological innovation can offer solutions to a reduction in the labour force. However, it might put government budgets further under pressure, as the automation of the economy will imply a shift in the tax mix away from taxes on labour, which are often levied at high rates, towards taxes on capital which are often levied at lower rates.

In order to assess the extent to which countries and their SCGs are affected by the ageing of their population, this paper introduces the ‘SCG fiscal vulnerability to ageing’ indicator. This indicator identifies the countries in which SCGs on average are “vulnerable” to the ageing of their population from a fiscal perspective (*i.e.*, both from the expenditure and revenue side). It consists of a ‘SCG expenditure vulnerability’ and a ‘SCG revenue vulnerability to ageing’ indicator. As is the case with any indicator, the assumptions upon which the SCG fiscal vulnerability indicator are based could be further refined, in particular if more and better data were to become available. Indeed, more work is necessary to improve the scope and timeliness of data for sub-central levels of government.

In particular, the SCG fiscal vulnerability to ageing indicator focuses on averages across SCGs but does not differentiate between SCGs within a given country. Ageing, however, might vary across regions within a country, and so will SCG vulnerability to ageing. Ageing might be more pronounced in rural than in urban areas, for instance, and certain regions within a country might be ageing considerably faster than the national average. In fact, ageing may exacerbate existing divergences in economic trajectories across regions because it may, for instance, induce young active workers to move away from regions that are ageing rapidly. Hence, the vulnerability indicators presented in this paper are likely to mask significant differences within countries and even in the countries where, on average, SCGs are not vulnerable to the ageing of their population, there may still be regions and communities that will face ageing-related challenges.

The aim of this analysis is to encourage central and SCGs to analyse the implications of ageing within a fiscal framework and to make their fiscal framework “ageing-resilient”. The economic and fiscal consequences of an ageing population goes beyond the central-SCG boundaries and requires a coherent fiscal strategy, which focuses on tax and

spending reforms. SCGs have an important role to play in structural reforms to make welfare systems resilient to the ageing of their population. In order to be effective, those reforms require a whole-of-government approach that brings together central government and SCGs. This paper therefore concludes with recommendations for tax policy reforms at both the central and SCG levels, and puts forward options for adjustments to the fiscal relations between levels of government.

Because of data limitations, the scope of the analysis has focused on a selection of OECD countries (in particular, EU countries). The analysis does not necessarily apply to all OECD countries (such as the United States). Moreover, the analysis has used data that was available for as many countries as possible, but did not include country-specific factors in relation to the ageing of the population. As a result, the country results should be interpreted with care and should be complemented with additional analysis before country-specific conclusions and recommendations can be drawn from the indicator presented in the analysis. Finally, there are other factors that might mitigate the impact of the ageing of the population that are outside the scope of this analysis, such as the impact of migration, competition amongst SCGs to attract population (through the tax system or other public provisions, etc.), policies to increase fertility rates or social security reforms.

2. Population ageing will increase government expenditure while putting downward pressure on tax revenues

The fiscal implications of ageing are shared, both in terms of expenditure and revenues, across all levels of government. SCGs are financed partly through grants and transfers from central governments, and old-age public expenditure responsibilities are often assigned across different levels of governments. As a result, a discussion of the fiscal consequences of population ageing for SCGs needs to go hand-in-hand with a discussion on the impact on general (i.e. combined for central and sub-central) government.

Old-age expenditure will increase significantly in most OECD countries

Ageing will create direct pressure on public finances through additional pension, health and long-term care expenditure. These expenditure categories already account for a third to a half of primary expenditure in OECD countries (Guillemette and Turner, 2018^[4]). Previous projections (2013) indicated that health care expenditure for OECD countries would reach 9.5% of GDP in 2060 (in a cost containment scenario, i.e. assuming that policies act more strongly than in the past to rein in some of the expenditure growth), to 14% of GDP (in a cost-pressure scenario, i.e. assuming no stepped-up policy action to slow down the increase in spending) (Maisonneuve and Martins, 2013^[5]). New projections (2018) indicate that health expenditure will increase by about 4.75 percentage points of GDP between 2018 and 2060 in a cost-pressure scenario (Figure 1), and public pension expenditure by about 0.75 percentage point of GDP. Significant variation can be observed across countries.

Declining employment rates will further increase pressure on public finances (Figure 1). Maintaining “other” primary expenditure (i.e. primary expenditure excluding health and pensions) constant on a per capita basis means that government finances are sensitive to the employment rate in their country, as tax revenue is increasing in the level of employment whereas expenditure is linked to the size of the population and decreasing in the employment rate (through lower unemployment benefits, for instance). This introduces an additional channel through which public finances respond to demographic developments and also means that structural reforms that boost employment – i.e., reforms that increase

the participation of people in the working-age category – have an additional benefit on the fiscal position of countries.

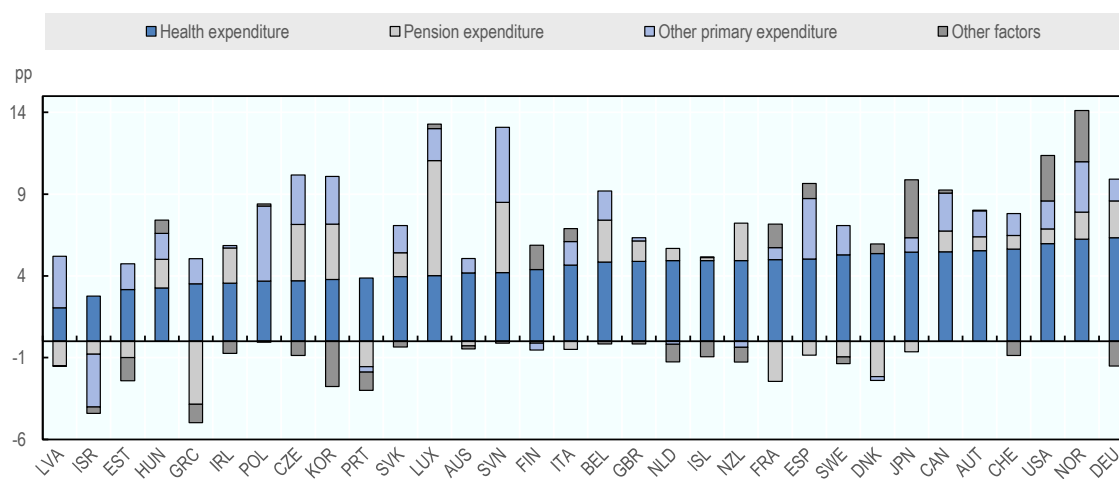
The decrease in fertility rates might put downward pressure on young-age public expenditure, but this drop is projected to be relatively minor compared to the increase in old-age public spending. For instance, while infant and maternal health care expenditure might decrease (Creedy and Morgan, 1992^[6]), education expenditure in the European Union is projected to remain stable on average by 2070 (European Commission, 2018^[7]).

Structural reforms could alleviate fiscal pressures. For instance, reforms in the health sector could mitigate health cost inflation and labour market reforms increase labour market participation. Health cost containment scenarios, for instance, would reduce the increase in health spending in about two-thirds of countries (Guillemette and Turner, 2018^[4]). Whether such strategies will be implemented in practice given a political economy setting where the median voter is getting older remains an open question.

Structural reforms to deal with ageing pressures will require a whole-of-government approach that not only involves central government but also SCGs. This will be particularly the case in countries where SCGs have responsibilities in the areas that require reform, such as the labour market and the health system.

Figure 1. Increases in public health expenditure will be significant

Change in tax revenue necessary by 2060 to stabilise public debt ratios at current levels, in percentage points of potential GDP



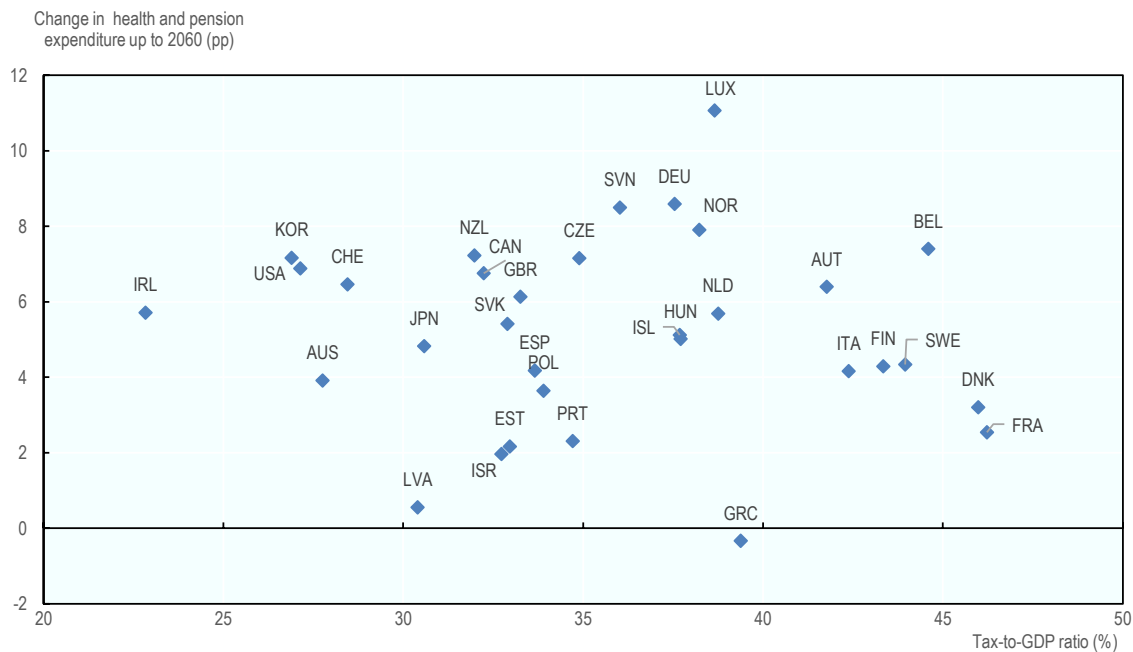
Note: The scenario presented in this figure seeks to stabilise the gross debt ratio at its initial value (i.e. the projected value for the last year of the OECD Economic Outlook horizon). Health expenditure projections correspond to a ‘cost pressure’ scenario. The ‘other primary expenditure’ category mostly captures the impact of changes to the employment-to-population ratio. The ‘other factors’ category mostly captures the initial gap between primary revenue and the level that would stabilise the debt-to-GDP ratio, but also changes in GDP growth rates over the projection period. The data used for these projections might have changed since the publication of the report in 2018 (for example, in Canada the actual increase in pension benefits has been smaller than the data used for the projection).

Source: Guillemette and Turner (2018^[4]).

There is a broad consensus in the literature that labour market activation policies are crucial in managing the ageing of the population. Countries should ensure that their senior workforce remains healthy, that workers have the right skills to remain productive and that they face financial incentives to remain in the labour market. Labour market policies to activate the unemployed and improve the labour market participation of specific groups in the population that are currently under-represented in the labour force such as youngsters, women and immigrants, are an integral part of a policy that makes welfare systems in the OECD ready for the ageing of their population. The potential for labour activation policies to mitigate ageing-related costs varies across countries. The potential will be particularly high in countries where labour market activation rates are currently low.

Countries that have a high tax-to-GDP ratio will find it challenging to finance additional old-age expenditure merely by raising more taxes (Figure 2). High tax-to-GDP countries that will face high additional old-age expenditure, such as Austria, Belgium, Germany, Luxembourg, Norway and Slovenia might be particularly vulnerable to the ageing of their population. Increasing the tax burden further to pay for the old-age expenditure, without implementing more structural reforms, might lead to significant economic distortions. These countries therefore face the strongest incentives to introduce structural reforms to prepare for the ageing of their populations.

Figure 2. Countries with a high tax-to-GDP ratio and with a significant increase in old-age expenditure face the strongest incentives to introduce cost mitigation measures



Note: 2017 data for the tax-to-GDP ratios.

Source: Revenue Statistics; Guillemette and Turner (2018^[4]).

Population ageing will put downward pressure on tax revenues and will lead to changes in the tax structure

Population ageing will reduce revenues from PITs and SSCs

Population ageing lowers revenues from labour taxes (PIT, SSCs and payroll taxes). The drop in the number of people that are active in the labour market will reduce labour supply and therefore the labour income taxes that will be paid. As pensions will be typically lower than the labour income that was earned during a worker's career, ageing will result in lower PIT revenues even in countries where pensions are taxed under the PIT. In Figure 1, this labour supply effect is captured by the "other primary expenditure" estimations.

Several factors may mitigate the drop in labour income tax revenues. A healthy ageing population will not only result in more retired people, but also in an increasing share of older workers in the labour force (because of demographic factors such as the fact that a large share of the workforce has reached an older age, but also to a lesser extent, because some older workers prefer to continue working at an older age rather than retiring, or phase in later retirement age in some countries). As wages rise with age in some OECD countries, the increase in the average age of workers in the labour force will result in higher labour tax revenue, which can help pay for the additional old-age expenditure. This effect will only be temporary, however, and will stop when the relatively larger baby boom generation will have fully retired. Nevertheless, this may offset somewhat the negative direct tax revenue impact of the ageing of the population. Ensuring that older workers continue to be active in the labour market is therefore an important policy objective in order to pay for the ageing of the population.

Higher salaries can contribute to offsetting the drop in labour income taxes as a result of the reduction in labour supply. Future generations are expected to be more productive and, as a result, will earn higher wages and pay more labour taxes. A drop in labour supply as a result of the ageing of the population will increase competition for workers, which is expected to increase the wage level. It remains uncertain, however, to what extent automation, which will reduce labour demand and might put downward pressure on wage levels, will neutralise this effect. On the other hand, automation may increase productivity and therefore allow for higher wages. The impact of automation will also vary across types of professions and skill levels and the interaction with the ageing of the population remains an open question (Nedelkoska and Quintini, 2018^[8]). Moreover, the extent to which higher wages will mitigate the increased cost of ageing will depend also on whether public pensions will increase with the average wage level or, possibly, only with inflation.

Countries where pensioners pay PIT and health SSCs, either levied as a percentage of their pension or as a lump-sum contribution, might be less vulnerable to the fiscal challenges as a result of a decline in the labour force. Indeed, countries that allow for the deduction of (public and private) pension savings from taxable personal income but tax the pension received under the PIT may be in a better position to smooth the revenue costs as a result of the ageing of the population. Similarly, countries that do not implement a SSC ceiling may benefit more from the possible increase in the wage level as a result of ageing, although an increase in SSCs paid might eventually result in higher benefits that have to be paid.

However, pensions are typically lower than the income earned during a worker's working life, which implies that the marginal income tax rates at which pensions are taxed are typically lower than the rates at which the pension savings were deductible. Tax deferral might therefore lower the net present value of tax revenues for government. Moreover, tax

deferral is also more beneficial to higher incomes if they can deduct private pension savings at high marginal tax rates.

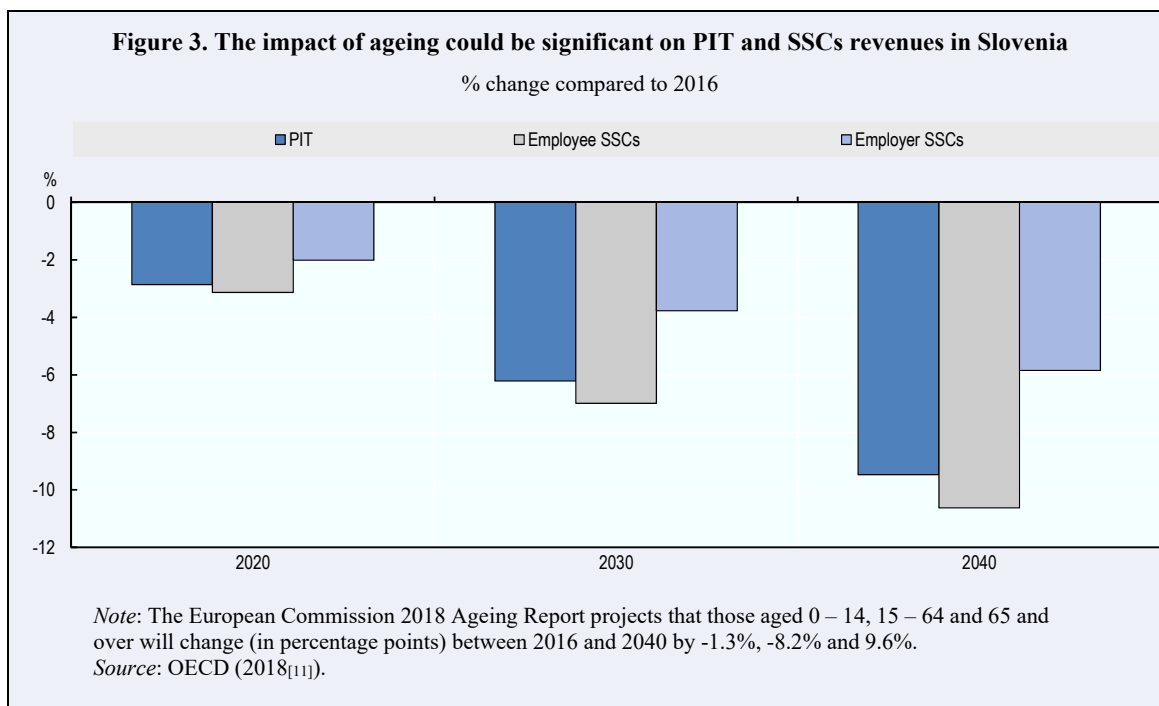
Analysis using micro data shows significant drops in tax revenues as a result of population ageing. The simulations, however, show that the drop in tax revenues would be significantly lower if wages rise in response to the drop in labour supply (Dolls et al., 2014^[9]). Recent country tax policy work on Slovenia shows that the impact of ageing on the SSCs and PIT revenues can be large (Box 1) in the absence of measures that increase labour supply. In Slovenia, the ageing of the population will not only increase public spending (Figure 1), but will also put tax revenues under severe pressure (Figure 3).

Box 1. The impact of ageing on SSCs and PIT revenues in Slovenia

In Slovenia, the population that participates in the formal labour market currently pays the vast majority of SSCs and PIT. Therefore, the projected decline in this cohort, alongside a rise in older workers will have significant negative consequences for the revenues raised from the PIT and SSCs in the coming decades.

In Slovenia, the old-age dependency ratio (defined as the number of people aged 65+ as a percentage of the number of people in the 20-64 age category) is set to rise sharply from 18.7% in 2016 to 25.2% in 2030 and 28.3% in 2040 (European Union, 2017^[10]). Over the same period, there is an expected decline in the working age population from 66.4% in 2016 to 61.0% in 2030 and 58.2% in 2040. Among the taxpaying population, those of working age pay 97% of all PIT, 99% of all employee SSCs and 90% of all employer SSCs (the small amounts of PIT and SSC remaining are paid by those aged over 65).

By applying the projected population changes by age group (in percentage points) to the number of taxpayers in the same age groups in the taxpayer population it is possible to estimate the PIT and SSC revenue loss associated with ageing over the period. This assumes that population changes will correspond with changes to the taxpaying population, that average PIT and SSCs by age group remain constant over the period and stable population growth to 2040. According to the analysis, PIT revenues could fall by over 9% and employer and employee SSCs by over 6% and 11% respectively by 2040 (Figure 3). These revenue declines represent 1.6% of GDP.



Revenues from other taxes might be more resilient to population ageing

Population ageing will also have an impact on indirect tax revenues. Consumption tends to peak when people are middle-aged while consumption is lower for older people (OECD/KIPF, 2014^[12]). Consumption follows a similar pattern as income but it is more constant over time as a result of consumption smoothing behaviour. As individuals enter the workforce, their income and net wealth are both likely to begin to rise. As individuals retire, their income often falls substantially, and their net wealth may decline if they dis-save after retirement (or grow less rapidly because of reduced saving rates) (OECD, 2018^[13]). Consumption tax burdens seem to drop generally for households where the household head is aged 70 or older. Results are similar when presented as a percentage of expenditure, with a significant drop in the consumption tax burden occurring for the oldest households.

The impact of the ageing of the population on savings and consumption, and therefore on tax revenues, is uncertain. Fiscal pressure on the welfare system as a result of ageing might induce middle-aged individuals to increase saving and defer consumption. This will have a direct impact on when consumption taxes will be paid.

Revenues from recurrent taxes on immovable property and corporate income taxes will probably be less affected by population ageing. These two taxes are likely to be the most stable taxes with respect to population ageing, although in the longer run, a drop in the population may reduce investment and therefore CIT revenues² and may lower housing prices and tax revenues because of a reduction in the demand for housing.

² However, on the whole the CIT is one of the least stable tax bases in many countries, as a result of a range of other non-ageing related factors (e.g. due to its pro-cyclical nature and the highly mobile nature of capital investment).

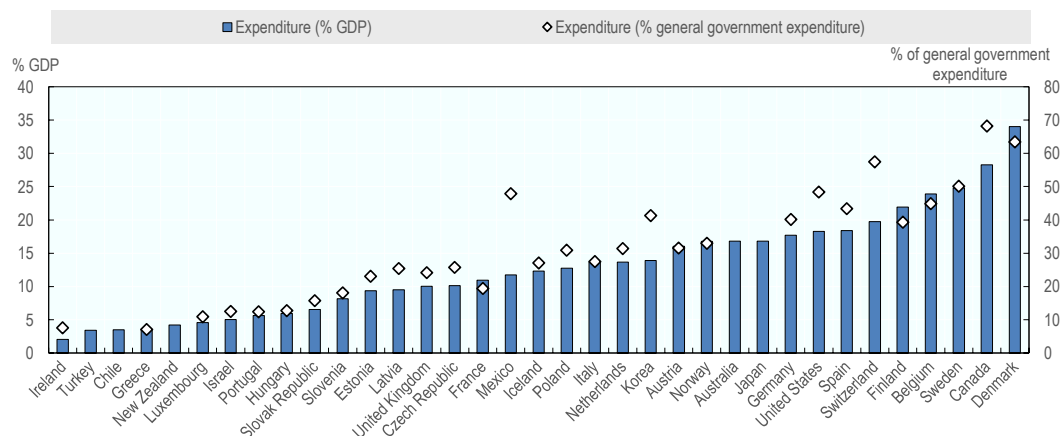
3. Consideration of old-age expenditure trends and potential implications for sub-central governments

Old-age expenditure represent a small share of total SCG expenditure but is expected to increase strongly

On average, SCG (state and local governments) expenditure amounts to about 12% of GDP and represents a third of general government expenditure (Figure 4). In most OECD countries, SCGs are responsible for (partly or entirely) government expenditure on education (including childcare, primary and secondary education), health and social protection. SCGs are also responsible, to some extent, for old-age expenditure, which consists of expenditure on health in relation to old age and old-age social protection (benefits against the risks linked to old age, such as the lack of independence in carrying out daily tasks, reduced participation in social and community life, assistance provided to elderly persons to help them with daily tasks, allowances paid to the person who looks after an elderly person, etc.). Pensions have typically remained a central government responsibility across the OECD.

Figure 4. SCG expenditure varies significantly across countries

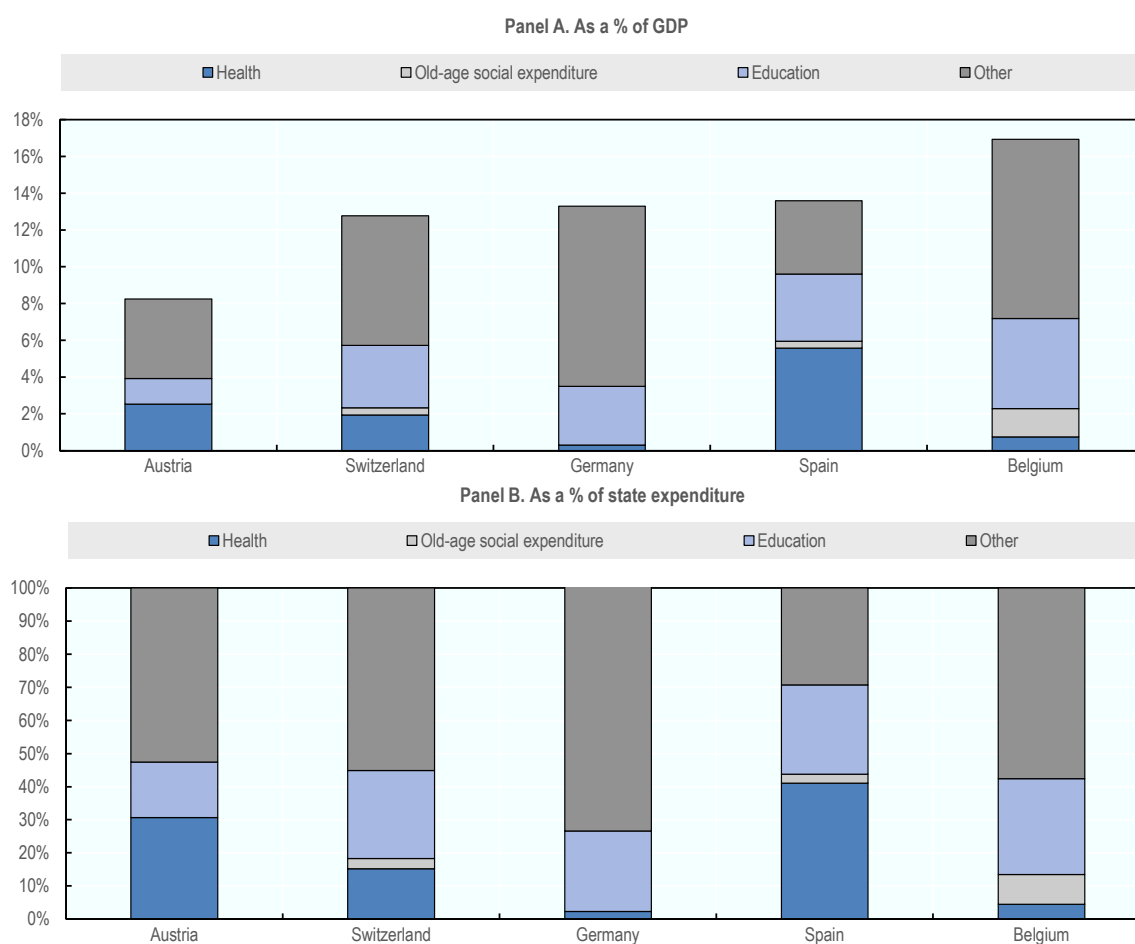
All expenditure, for state and local governments



Note: Data are for 2016, except for Australia and Mexico (2015) and Korea (2012). Data was adjusted to prevent double counting.

Source: Subnational Government Structure and Finance and Oecd.Stat for Australia and Mexico.

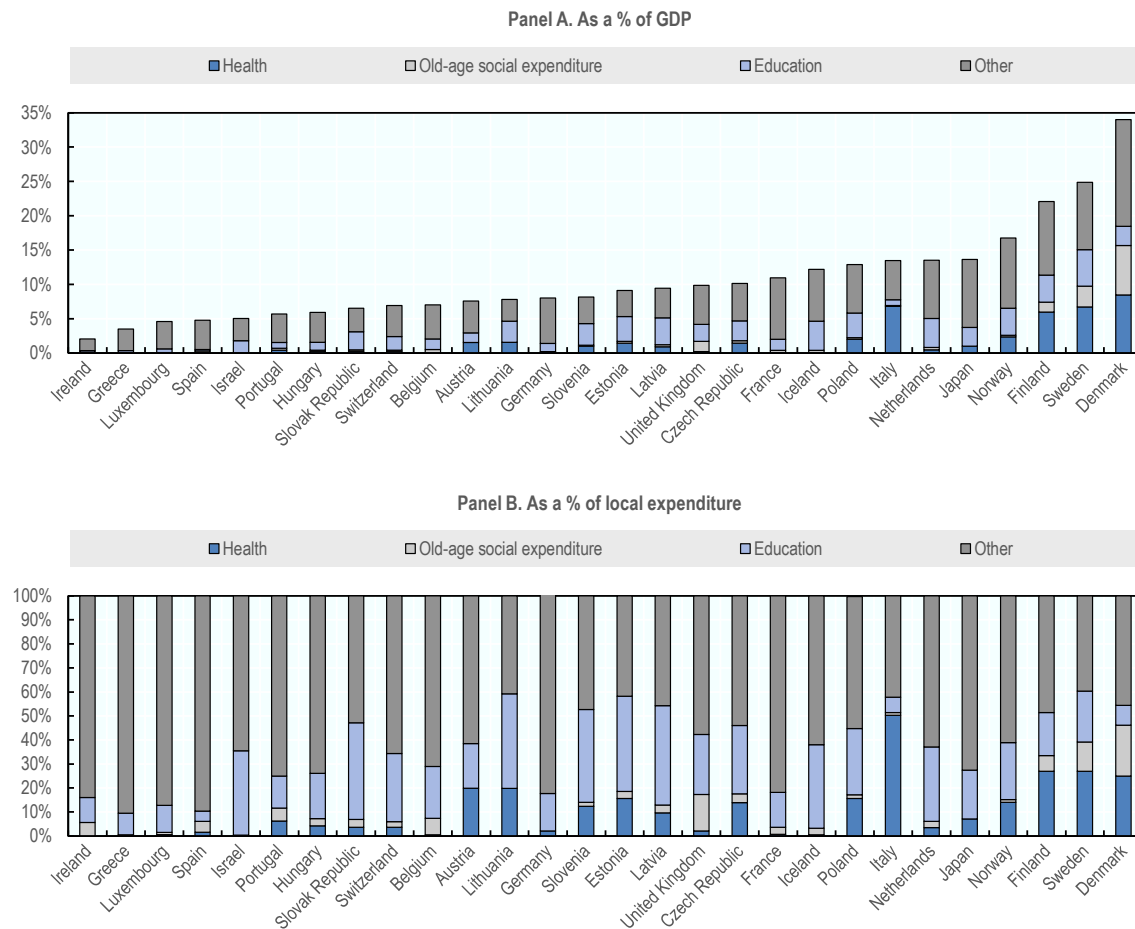
At the state level, old-age expenditure (i.e. health expenditure and old-age social protection expenditure) constitutes 21% of total expenditure on average (2.7% of GDP), but large differences across countries exist. Note that these figures include all health expenditure, and not only health expenditure for elderly people, as no data is available that differentiates between old-age and health expenditure for younger people. These figures are therefore upper bounds. In Spain and Austria, old-age expenditure represents 44% and 31% of state expenditure, respectively (Figure 5, Panel B) while it is only 18%, 13% and 5% in Switzerland, Belgium and Germany, respectively.

Figure 5. State government expenditure in 2016

Note: This figure includes all countries for which data is available in the COFOG database at the state government level (GS1312). Only data for Germany are from Eurostat. Data for many OECD countries, including Australia, Korea and the USA are not represented in this figure due to a lack of disaggregated data in the OECD database. Data for Canada are not presented in the COFOG database. Detailed methodological information by country, including the definition of state level can be found in the “Country Notes” document associated to the database.

Source: Eurostat data; OECD Government expenditure by function (COFOG) database.

At the local level, old-age expenditure amount to 14% of local expenditure (2.2% of GDP) on average, but again large differences can be observed across countries. The highest shares can be found in Italy (51%), Denmark (46%), Sweden (39%), Finland (34%), Austria and Lithuania (20%) (Figure 6, Panel B). Examples of SCGs with responsibilities for specific age-related expenditure include Australia (services to assist older people’s transition from hospital to home), Denmark (elderly care), Estonia (long-term care facilities for the elderly), Finland (social services for old and disabled people) and Switzerland (old-age pension system and invalidity insurance).

Figure 6. Local government expenditure in 2016

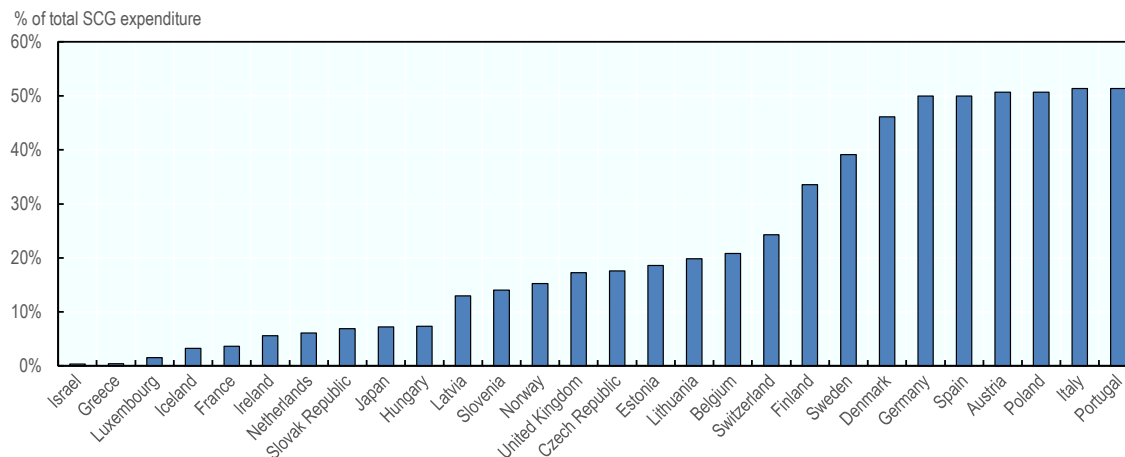
Note: Data for Germany, Poland and Portugal are from Eurostat. Other data are from the OECD database. Data for some OECD countries, including Australia, Korea and the USA are not represented in this figure due to a lack of disaggregated data in the OECD database.

Source: Eurostat; OECD Government expenditure by function (COFOG) database.

When looking at both state and local levels of government, old-age expenditure is a relatively small part of their total expenditure except in a few countries. In Austria, Denmark, Germany, Italy, Poland Portugal and Spain, state and local old-age expenditure reach about 50% of total SCG expenditure. In other countries, such as in France, Greece, Iceland, Ireland or Israel, this ratio is much lower (Figure 7). But, again, these figures are upper bounds as they include all health expenditure, irrespective of whether or not they relate to elderly people.

Figure 7. Old-age expenditure vary significantly across SCGs

Old-age expenditure at SCG levels (state and local), 2016

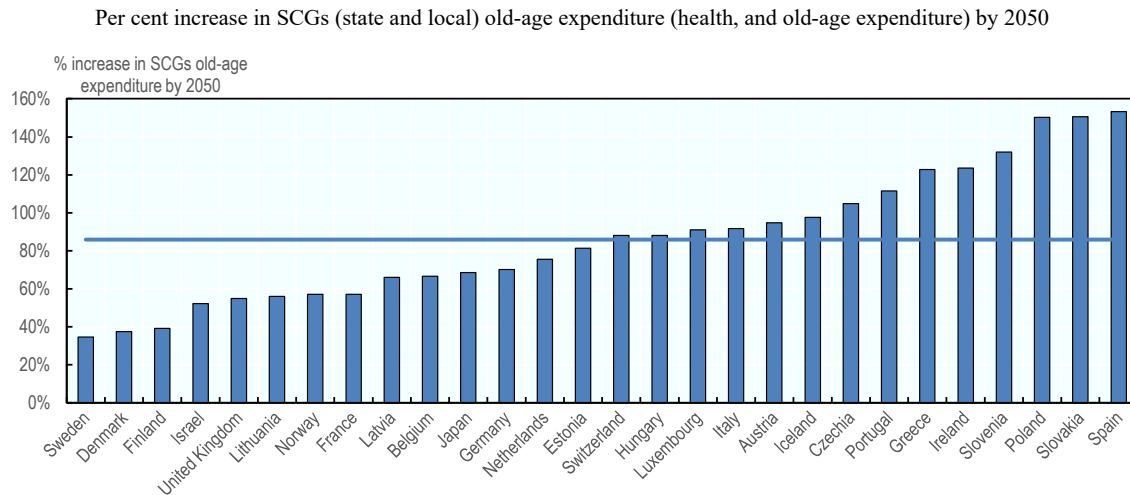


Source: Calculation based on OECD Government expenditure by function (COFOG) database.

SCG old-age expenditure is expected to increase significantly by 2050. On average, old-age expenditure at the SCG level will be 80% higher by 2050 than its current level. Again, large differences exist across countries (Figure 8).

Population ageing might create new types of spending. Demand for elderly-specific services, such as accessible local transportation, community housing and cultural activities might increase. According to the benefit principle, there is a strong case to assign this type of expenditure to local governments although, from a federal perspective, there are also benefits in ensuring that services are similar across the country. These new types of old-age spending are not included in Figure 8.

The increase in age-related expenditure might be (partly) offset by a reduction in education spending or a re-centralisation of health expenditure. For EU countries, the expected reduction in education spending varies between -0.1 and -1.6 percentage points of GDP over the 2016-70 period (European Commission, 2018^[7]). For those countries, the lower SCG education spending can partly offset the increase in old-age related expenditure. Flexibility in expenditure allocation will be necessary for SCGs to reallocate funding between spending responsibilities. In recent years, some countries have re-centralised their health expenditure with the aim to increase efficiency. This has been the case in Denmark, Norway and Poland (OECD, 2017^[14]).

Figure 8. Estimated increases in SCGs old-age expenditure by 2050

Note: The level of old-age expenditure in 2050 is calculated with a proportionality assumption based on 1) old-age expenditure in 2015 for SCGs given the current old-age dependency ratio, and 2) the future old-age dependency ratio. The horizontal bar represents the average in the OECD (86%) which can be considered as an upper band.

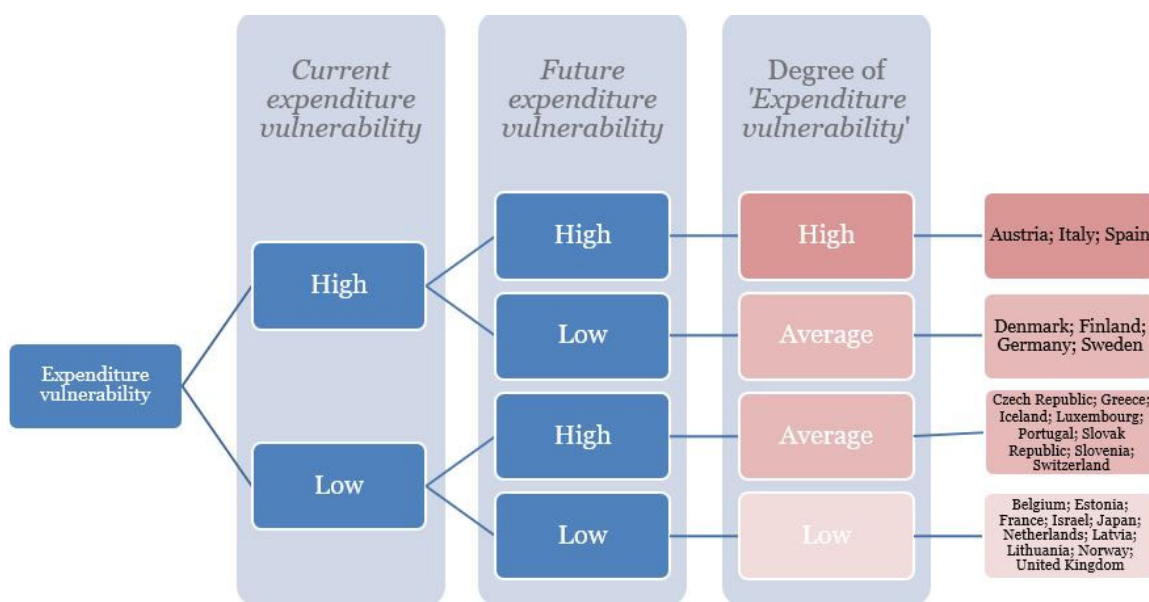
Source: Calculation based on OECD Government expenditure by function (COFOG) database, and World Population Prospects: The 2017 Revision.

The degree to which SCGs are vulnerable with respect to current and future old-age expenditure varies across countries

The vulnerability of SCGs to future ageing-related spending pressures can be gauged by the newly developed SCG ‘*expenditure vulnerability*’ indicator. This concept combines vulnerability with respect to the level of current and future old-age expenditure. SCGs are considered ‘vulnerable’ with respect to the current level of old-age expenditure if current old-age expenditure consists of at least 30% of their total expenditure (but only if total SCG expenditure exceeds 10% of GDP to exclude countries in which 30% of SCG spending reflects a small amount, as is the case in Portugal). They are considered ‘vulnerable’ with respect to future old-age expenditure if the spending is expected to increase by more than 86% (which is the upper-band average increase across OECD countries, see Figure 8). These ‘vulnerability’ thresholds, which can be set at different levels, are used to rank countries.

Based on data availability, Figure 9 identifies the degree to which SCGs in a selection of OECD countries are vulnerable with respect to current and future levels of old-age expenditure. SCGs in countries with high current levels of old-age expenditure that is expected to increase above average are identified as the countries where SCGs are the most vulnerable to ageing. These countries are Austria, Italy, Portugal and Spain. The lowest overall SCG expenditure vulnerability can be observed in Belgium, Estonia, France, Israel, Japan, the Netherlands, Latvia, Lithuania, Norway, and the United Kingdom where SCGs are not responsible for a lot of old-age expenditure (i.e. which is not expected to increase above average).

Figure 9. SCG expenditure vulnerability to population ageing



Note: The country coverage is based on data availability. Current expenditure 'vulnerability' is considered to be high if current old-age expenditure consists of at least 30% of their total expenditure. Future expenditure 'vulnerability' is considered to be high when it is expected to increase with by more than 86% (which is the average increase across OECD countries).

Source: Authors' analysis.

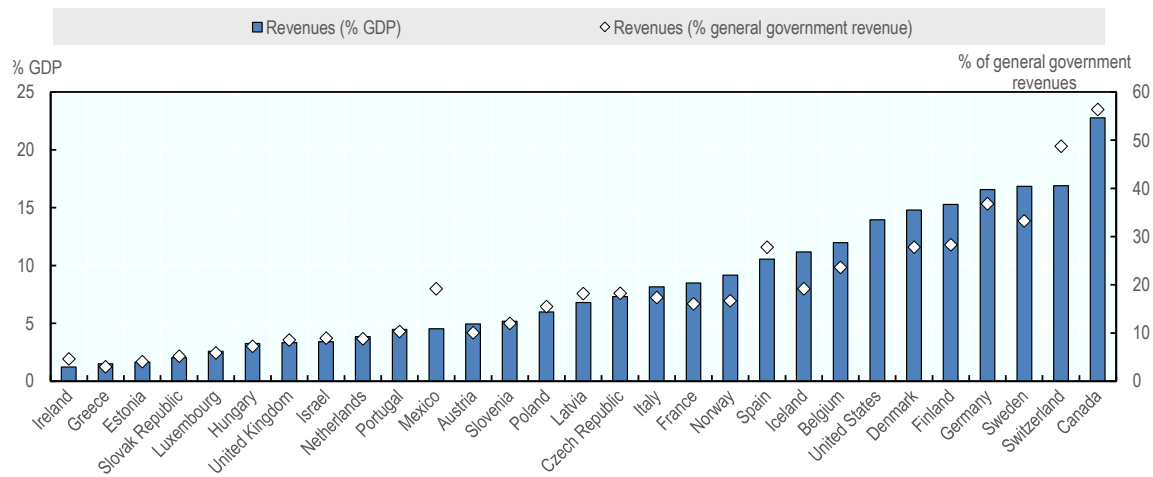
4. Consideration of old-age revenue trends and potential implications for sub-central governments

SCG revenues and financing mix varies widely across countries

While in some countries SCGs receive a lot of revenues, SCG revenues are very low in other countries. In 2016, SCG revenues ranged between 1.2% of GDP in Ireland and 22.8% of GDP in Canada (Figure 10). SCG revenues cover a wide range of sources, including grants from central governments, tax sharing, own taxes and other sources of revenues such as tariffs and user fees, property income and social contributions. Each source of financing has pros and cons.

Figure 10. SCGs revenues vary significantly across OECD countries

For state and local governments



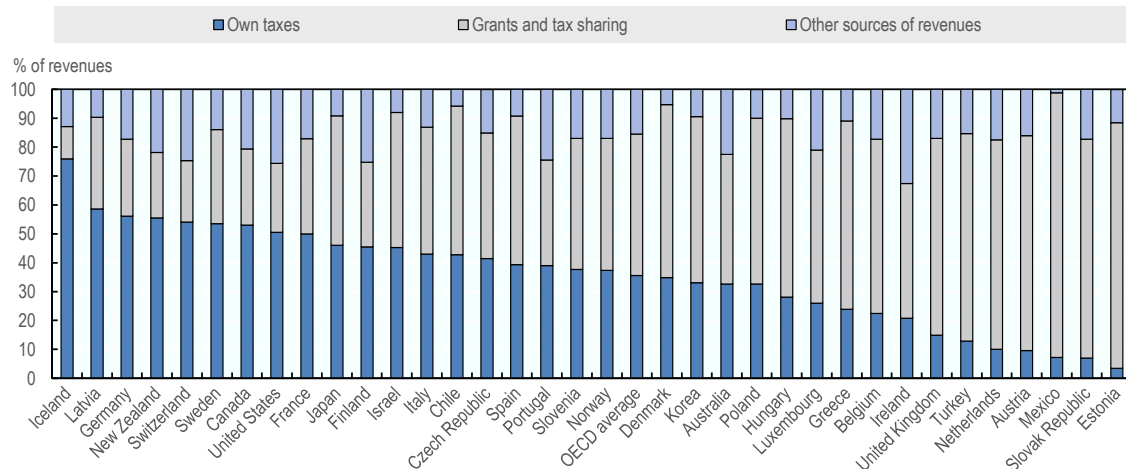
Note: Data are for 2016, except for Mexico (2015). Data was adjusted to prevent double counting. An important consideration is that different sources of information have been used in this paper, resulting in some inconsistencies in the data presented for some countries, such as Belgium.

Source: Subnational Government Structure and Finance.

Central government grants and tax sharing are the most important sources of revenue for SCGs, but there is large variation across countries (Figure 11). SCGs in Mexico rely almost entirely on grants and tax sharing (92% of total revenues), while the share of grants and tax sharing is the lowest in Iceland (11%). On average, earmarked grants represent 60% of total grants.

Figure 11. For most SCGs, grants and tax sharing are the largest source of revenues

SCGs financing mix, 2015



Note: In this figure, tax sharing is included in grants. Following reforms of the National Accounts (2010), some tax sharing arrangements, previously reported as tax sharing, are reported as intergovernmental grants (e.g. in Australia, Austria, Belgium, the Czech Republic). Previously, tax sharing was often classified as tax revenues.

Source: OECD Subnational Government Structure and Finance.

State and local governments across the OECD differ widely in the types and level of taxes they raise. While local governments collect most revenues from recurrent taxes on immovable property, state governments have a more balanced tax revenue mix (Figures 12 and 13). In some countries, local governments rely almost exclusively on recurrent taxes on immovable property; this is the case in Australia, Canada, Greece, Israel and the United Kingdom. In Denmark, Finland, Germany, Norway and Sweden, on the other hand, the PIT is the most important local tax.

Figure 12. Local government tax revenue mix

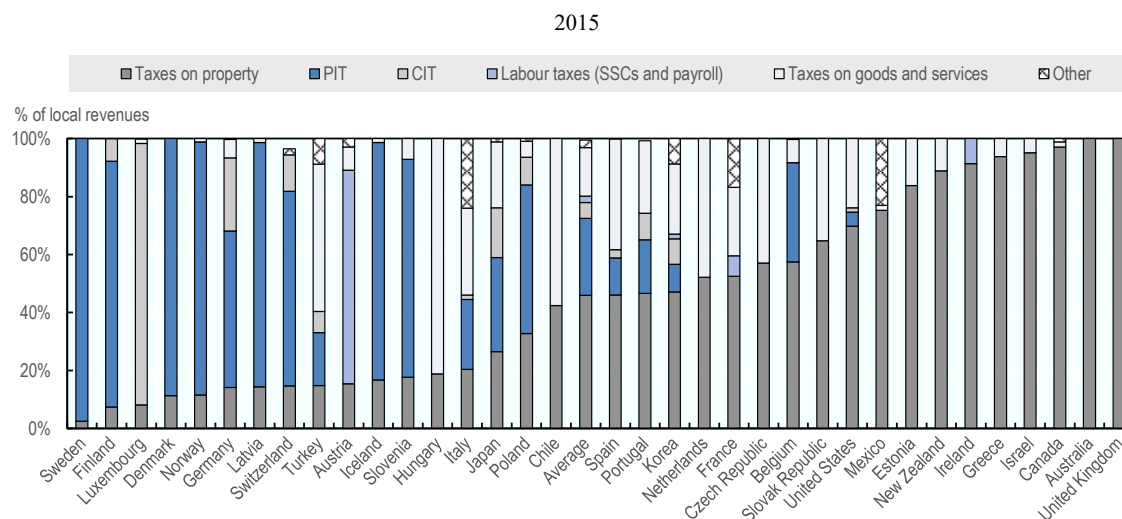
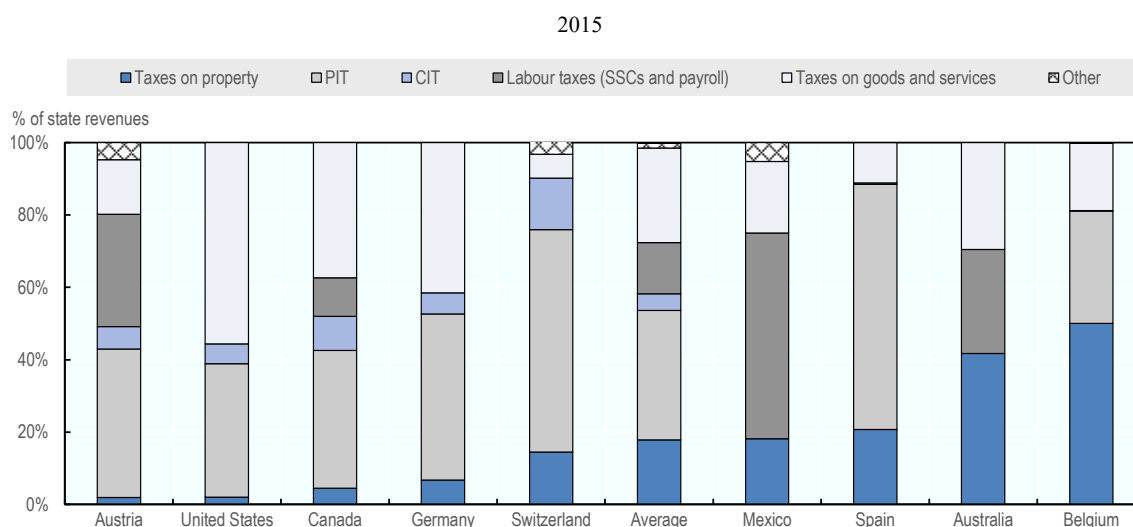


Figure 13. State government tax revenue mix



Source: Revenue statistics.

In many countries, tax sharing is an important source of revenues for SCGs. It accounts for a large part of sub-central tax revenues in Austria, Belgium, the Czech Republic, Germany, Italy, Mexico, Poland and Spain. Most tax sharing arrangements cover taxes such as the PIT, CIT or VAT. Revenues from excise duties, property taxes, and stamp duties are less often shared across levels of government. Tax sharing and intergovernmental grants are often difficult to disentangle. Countries with tax sharing arrangements have a smaller grant system and vice versa, suggesting some substitutability between the two fiscal arrangements.

Tax sharing agreements are based on formulae. The components included in these formulae vary strongly across countries, and demographic criteria are not systematically included. Tax revenues can be shared depending on the SCG fiscal gap (i.e. the difference between spending and revenues the SCG is capable of raising), which means they can be designed to obtain some kind of fiscal equalisation across SCGs. Sharing formulae can be based upon different factors, such as the level of economic activity (e.g. measured by GDP, the share of employees and entrepreneurs, the private sector wage bill), SCG revenues (e.g. tax revenues collected by the SCG, tax revenue per capita, efforts at collecting taxes measured by the level and growth in sub-central government tax collection), SCG expenditure (e.g. number of beneficiaries of a service such as the number of students, current or previous level of spending in a certain sector, progress in delivering a basic benefit package to people), or geographic features (e.g. location of the SCG, presence of natural resources). Some countries also take into account demographic indicators, which are correlated with higher social spending needs.

The degree to which SCGs are vulnerable from a financing perspective to the ageing of the population varies across countries

To gauge the risks that ageing will have an adverse effect on revenues a SCG ‘*revenue vulnerability*’ indicator has been developed. It combines vulnerability with respect to the financing mix, on the one hand, and the types of taxes collected by SCGs, on the other hand.

SCGs within a country are assumed to be ‘ageing-vulnerable’ with respect to their financing mix if they finance their total expenditure more with grants and tax sharing agreements than with own taxes. The following arguments support this assumption. Relying on grants and tax sharing agreements makes SCGs dependent on central government transfers. These transfers can vary over time and may depend on the level of tax revenue raised by central governments, which in itself will be under downward pressure as a result of the ageing of the population. The degree to which central governments are vulnerable to ageing, and the impact this may have on the vulnerability of SCGs, is analysed in section 5.1. Moreover, on average across countries, grants and tax sharing agreements do not systematically take demographic characteristics of the population in SCGs into account. On the contrary, the tax sharing might be linked to the level of income within the SCGs, thereby assigning lower shares of revenue to SCGs with large shares of low-income pensioners.

In certain countries, there might be a case to define the financing mix ‘vulnerability’ indicator in alternative ways. This might, for instance, be the case in countries where grants and tax sharing agreements do not fluctuate strongly with central government tax revenues and include criteria that take the demographic characteristics of the population into account. This is the case, for instance, in Belgium, where the grants received by the SCGs are independent from the level of tax revenue collected at the central government. While it is

true that a high degree of grants in the SCG financing mix might not necessarily affect SCGs in the short run, the analysis assumes that in the longer run the central government revenue challenges as a result of the ageing of the population will spill over to SCGs, irrespective of the current design of the grant system.

The tax revenue ‘vulnerability’ indicator is based upon the SCG tax mix and the extent to which different types of taxes will be affected by population ageing, as described in section 2.2. SCGs within a country are considered vulnerable with respect to their tax revenue if they raise more than 50% of their total tax revenues from the PIT and SSCs.

Within this framework, SCGs are identified as being highly revenue ‘vulnerable’ if:

- They are vulnerable with respect to their financing mix and tax revenue, as is the case for SCGs in Austria, and Denmark. In those countries, SCGs finance themselves strongly with grants and tax sharing agreements (and therefore are dependent on central government transfers), while they raise a significant amount of their own tax revenues from the PIT and SSCs.
- They finance themselves largely through own taxes and in particular the PIT and SSCs, which are strongly influenced by the ageing of the population. This is the case for SCGs in Finland, Germany, Iceland, Latvia, Sweden and Switzerland.

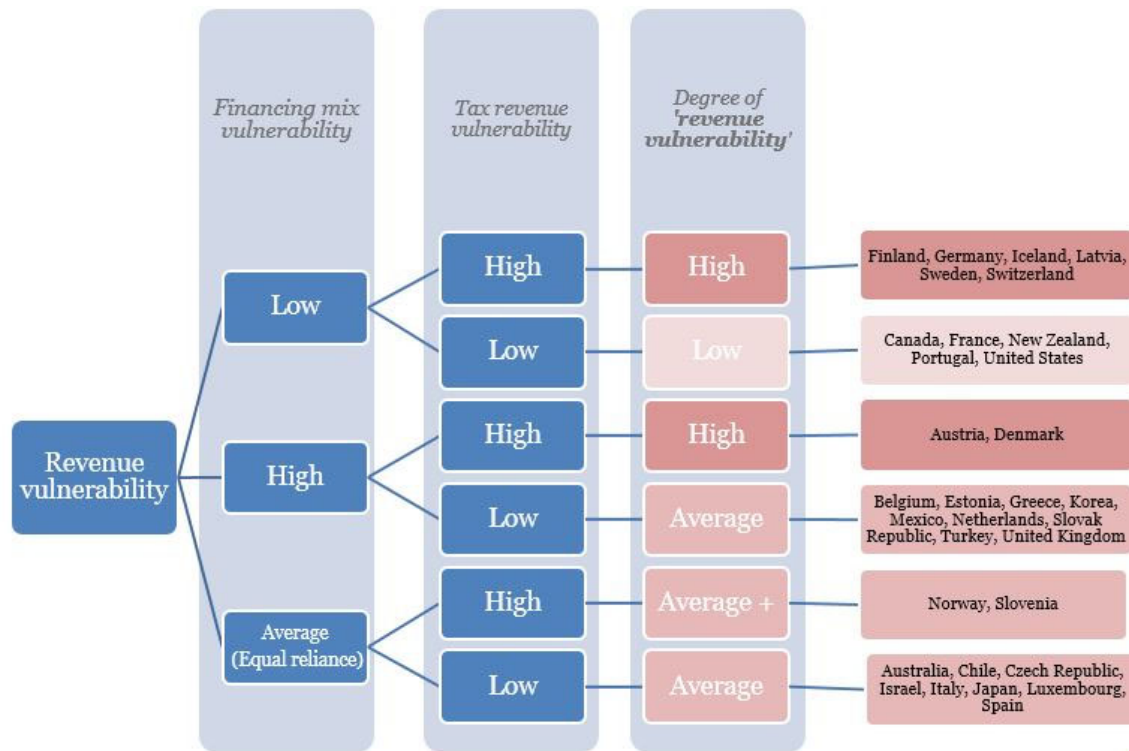
SCGs are characterised as being less revenue ‘vulnerable’ if:

- They finance themselves largely through own taxes, which are more resilient to population ageing. This is the case for SCGs in Canada, France, New Zealand, Portugal and the United States.

SCGs revenue ‘vulnerability’ is characterised as ‘average’ if:

- SCGs are vulnerable with respect to their financing mix but not with respect to their own tax revenue. In other words, they rely a lot on grants and tax sharing agreements (and therefore are dependent on central government transfers), but they collect own taxes, which are more resilient to the ageing of the population. This is the case for SCGs in Belgium, Estonia, Greece, Korea, Mexico, the Netherlands, Slovak Republic, Turkey and the United Kingdom.
- SCGs rely equally on own taxes and grants and tax sharing agreements. This is the case for SCGs in Australia, Chile, the Czech Republic, Israel, Italy, Japan, Luxembourg and Spain. SCGs in Norway and Slovenia are somewhat more vulnerable (i.e. average +) as they are identified as being tax revenue vulnerable.

Figure 14. SCG revenue vulnerability to population ageing



Note: The country coverage is based on data availability. SCGs in a country are 'vulnerable' with respect to their financing mix if they finance their total expenditure more with grants and tax sharing agreements than with own taxes. They are tax revenue 'vulnerable' if they raise more than 50% of their tax revenues from the PIT and SSCs.

Source: Authors' analysis.

5. SCG fiscal vulnerability to the ageing of their population and fiscal policy recommendations

A framework to assess SCG fiscal vulnerability

Whether SCGs in a country are vulnerable to the ageing of their population from a fiscal perspective will depend on the extent to which they are 'expenditure vulnerable' and 'revenue vulnerable' (Figure 15). The previous analysis can be used to identify the extent to which SCGs in different countries are vulnerable from a fiscal perspective to the ageing of the population. As already pointed out, this indicator only reflects the average situation of SCGs in a country and might mask significant differences within countries.

Figure 15. Framework to assess SCGs' fiscal vulnerability to ageing

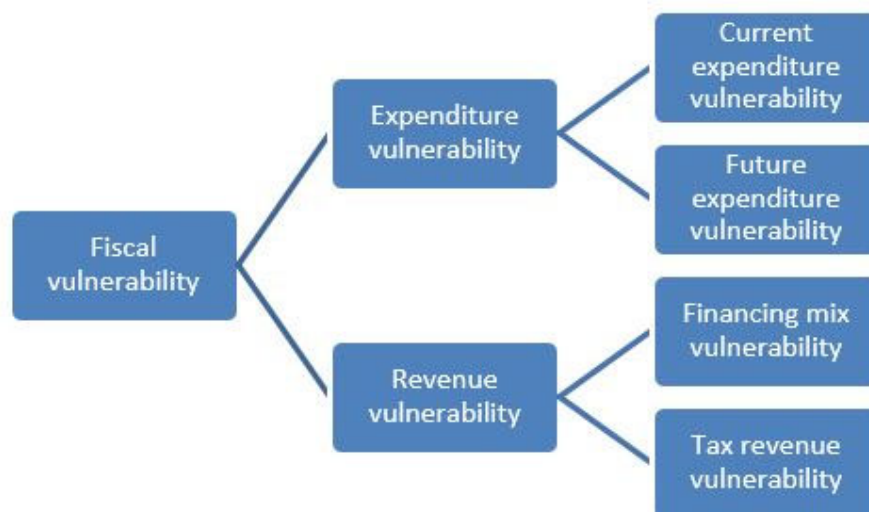


Table 1 identifies the extent to which SCGs, on average across the country, are vulnerable from a fiscal perspective. Several observations can be made:

- SCGs in Austria are highly vulnerable to population ageing, as they show vulnerability both on the expenditure and revenue side.
- SCGs in France seem to be in the best position to face the ageing of their population. They have low vulnerability on both the expenditure and revenue side.
- In Latvia, SCGs are highly revenue vulnerable but they are not expenditure vulnerable, suggesting that SCG ageing-related revenue challenges should remain limited.
- SCGs in Italy, Spain, Denmark, Finland, Germany, Sweden and Switzerland can also be considered as highly vulnerable as they combine high with average vulnerability outcomes on both the revenue and expenditure indicators.
- The other countries are somewhat less vulnerable, on average, but large variation may exist within countries.

The results for SCG fiscal vulnerability could be combined with the challenges faced by central governments. In some countries, general government faces large increases in old-age expenditure on health and public pensions in a setting where the tax-to-GDP ratio is already high. In these countries, it might not be possible to increase taxes further to accommodate higher ageing-related spending without creating large economic distortions. This is the case in Austria, Belgium, Germany, Luxembourg, Norway and Slovenia, where the tax-to-GDP ratio is above 35% and the change in health and pension expenditure is expected to be more than 6 percentage points by 2060 (see Figure 2). These countries have been underlined in Table 1. These countries face the largest incentives to introduce structural reforms to improve the resilience of their fiscal framework to the ageing of their population.

Table 1. SCG vulnerability to population ageing across countries

| | | Revenue vulnerability | | |
|---------------------------|---------|---|--|----------|
| | | High | Average | Low |
| Expenditure vulnerability | High | <u>Austria</u> | Italy Spain | |
| | Average | Denmark Finland <u>Germany</u> Sweden Switzerland | Czech Republic Greece Luxembourg <u>Slovenia</u> Slovak Republic | Portugal |
| | Low | | <u>Belgium</u> Estonia Israel Japan Netherlands <u>Norway</u> UK | France |
| | | Latvia | | |

Note: The country coverage is based on data availability.

Source: Author's analysis.

Fiscal policy recommendations

The ageing of the population will have significant fiscal implications for most OECD countries. Old-age expenditure are expected to rise significantly as a result of higher health expenditure, pensions and old-age care expenditure while, at the same time, tax revenues are expected to fall mainly as a result of the reduction in people who are active in the labour market. The overall costs will be large and require appropriate structural reform measures to mitigate the economic and fiscal impact of the ageing of the population. A wide range of measures could be envisaged, ranging from public pension reform, health cost containment measures, labour market reform, reforms that increase productivity growth and tax reforms.

While more work is necessary to evaluate the impact of population ageing at the SCG level, this paper has introduced a framework that allows identifying the countries in which the SCGs might, on average, be vulnerable to population ageing. Ageing, however, might vary across regions within a country, and so the vulnerability indicators presented in this paper are likely to mask significant differences within countries.

The economic and fiscal consequences of an ageing population goes well beyond the central-SCG boundaries and requires a coherent fiscal strategy, which focuses on tax and spending reforms, of general government as a whole. SCGs have a role to play in structural reforms to make welfare systems resilient to the ageing of their populations. In order to be effective, those reforms require a whole-of-government approach that brings together central government and the SCGs.

Central and SCG tax policy reforms

The design of tax systems needs to be adjusted to finance additional old-age spending and make up for the shortfall in labour income tax revenues. Overall, tax design recommendations that aim at strengthening inclusive growth (Brys et al., 2016^[15]; O'Reilly, 2018^[16]) can help to mitigate the fiscal costs of an ageing population. This section describes some of these tax design recommendations.

Stimulating labour market participation is amongst the main structural reform options that will make welfare systems “ageing-resilient”. There is a broad consensus in the literature that increasing the labour market participation rate will be important to mitigate the costs of an ageing population. This includes increasing the labour market participation of younger and older workers, women, and migrants. In addition to the introduction of non-fiscal measures (e.g. an increase in the statutory and effective retirement age, training and adequate skills policies, affordable childcare provision), most countries continue to face opportunities to implement tax and benefit reforms that reduce tax-induced disincentives to work.

The reduction in labour supply might result in low levels of unemployment and upward pressure on wages. Whether in such a context countries would want to lower PITs and, in particular, SSCs across all types of workers and income levels remains an open question. Reforms that lower labour taxes are costly and might further exacerbate the downward pressure on tax revenues. Instead, it might be more effective to introduce measures that are targeted at specific groups of workers in order to increase their labour market participation rates at minimal revenue costs.

The tax policy implications of an ageing population cannot be seen in isolation from the impact of automation on the labour market. Automation may reduce labour demand and wages, in particular for certain types of professions and skills. This effect may therefore offset the impact of the ageing of the population on wages and may put additional pressure on direct tax revenues. On the other hand, automation may increase productivity and therefore allow for higher wages.

However, it is not only the demand and supply of labour but also its quality that drives economic growth and productivity. Workers that are healthy are more productive and will stay in the labour market longer. Well-designed sin taxes (on alcohol, cigarettes, etc.) are therefore part of a tax system that makes welfare systems resilient to the ageing of their populations.

Instead of raising PIT and SSCs rates, countries should aim at broadening the tax base. Taxes on labour already represent a high tax burden in many countries. As ageing will result in a drop in revenues from the PIT and SSCs, countries may be tempted to consider increasing the rates to make up for the drop in revenues. Raising the rates further would however discourage labour supply and economic growth and put a disproportionate burden on younger generations. This would not be optimal tax policy, particularly in the countries where tax wedges are already high. A base broadening approach would be a better option in those cases.

Different SSC base broadening measures can be envisaged. Countries should ensure that they levy SSCs on different forms of non-standard work (Milanez and Bratta, 2019^[17]). In addition, countries could consider levying SSCs on capital income at the individual level, as is the case in France. Countries may also want to evaluate whether they would want to levy health SSCs on pension income. The general rationale for imposing SSCs on earned income but not on pensions is that SSCs buy an entitlement to future benefits and, therefore, pensioners should not pay twice. However, health SSCs do entitle workers to health insurance in the year when the contributions are made. Hence, in countries where health SSCs are spent when they accrue but are not (partly) saved to finance future health spending, an argument exists to levy health SSCs on pension income.

A drop in revenues from SSCs as a result of the ageing of the population may require a partial shift in the funding of social welfare funds away from SSCs towards general

taxation. Stronger arguments exist to finance the redistributive component of social security payments (e.g. basic and minimum pensions) partly or entirely through general taxation. However, the arguments are significantly weaker for shortfalls in the earnings-based components of welfare payments, as this may result in a regressive transfer from the general population towards higher-income pensioners.

Funding social security with general taxes will have an impact on budgeting requirements. In order to provide additional funding, Ministries of Finance typically require social security funds to present a detailed budget that stipulates how much funding is required and how this tax money will be spent. This link between taxation and budget practices, within an ageing context, is left for future work.

A well-designed PIT treatment of pensions, including third pillar pensions, can reduce countries' vulnerability to population ageing. While the taxation of private pension schemes differs across OECD countries, they tend to be the most tax-favoured form of saving (OECD, 2018^[13]). Most countries encourage retirement savings by providing very generous tax regimes for private pensions. As societies continue to age, and public pension systems come under increasing strain, there remains a case to maintain these concessionary tax regimes. These tax privileges should be designed such that they are taken-up by large groups of the population, and not only by richer households who would save for a pension also in the absence of the tax incentive. However, the tax treatment of voluntary private pension savings should be considered in a coordinated way with the financial advantages and generosity of public pension systems. For example, where public pension provision is substantial, there may be less need to incentivise private pension savings through the tax system.

In theory, countries that provide a tax deduction for pension savings face strong arguments to tax the pension (when it is received) under the PIT. The upfront deduction (i.e. expenditure treatment) of the contributions will effectively result in a marginal effective tax rate of 0%. In fact, if the pension is taxed at a lower rate than the PIT rate at which the pension savings were deductible, the METR is negative and government effectively subsidises those pension savings. Moreover, the deferral of tax revenue, while costly for governments in the short run as they forego current tax revenues, might allow countries to smooth PIT revenues over time and therefore to pay for the costs of an ageing population. But, as previously pointed out, tax deferral may lower the net present value of tax revenues as the tax rates at which pension savings are deductible are typically lower than the tax rates at which the pension is taxed.

However, changes in the taxation of pensions might be difficult to implement in practice, in particular because pensioners no longer have the opportunity to work and save more in light of the changes in the tax rules. Moreover, ability-to-pay considerations might have to be taken into account as well. The introduction of a PIT on pensions might require increasing the pensions that are paid in order to prevent that pensioners face a significant drop in purchasing power.

Finally, the ageing of the population strengthens the standard argument in favour of levying recurrent taxes on immovable property instead of property transaction taxes. Effective tax rates on housing are particularly high for pensioners in countries where transaction taxes are high (OECD, 2018^[13]). High property transaction taxes might prevent pensioners from downsizing their home and to buy a smaller house that offers services which are more aligned with the age of the owner. High transaction taxes might also prevent owners to free up cash that is invested in the house.

Adjustments to the fiscal federalism framework

Increased old-age expenditure might put pressure on the SCG fiscal frameworks that countries have put in place. A sound SCG fiscal framework requires that SCG expenditure responsibilities are adequately matched by SCG revenues. This would prevent the need to reduce other types of spending as a result of increased old-age spending.

Increased old-age expenditure might induce SCGs to use their own taxing powers more effectively. For instance, it may induce SCGs to levy more recurrent taxes on immovable property. In general this is considered as a growth-friendly tax reform. SCGs should ensure that such reforms remain fair and do not impose a disproportionately high tax burden on low-income households. Moreover, general government may want to ensure that tax reforms at the SCG level maintain the overall coherence of the tax system, both in terms of design and in practice.

Population ageing might create new types of spending such as local transportation for the elderly, community housing, cultural activities for the elderly, etc. As this type of spending is local in nature, the benefit principle suggests that this old-age spending could be assigned to SCGs. Additional spending requirements would of course require corresponding adjustments to SCG revenues.

Increased spending flexibility might allow SCGs to shift funding from spending items that are less in demand towards additional old-age expenditure. For instance, flexibility in spending decisions would allow SCGs that face a decrease in demand for education to shift some of their resources to finance additional old-age expenditure. Demographic changes might also create opportunities for SCGs to organise certain spending (like education) more efficiently. SCG fiscal frameworks should not create institutional hurdles against opportunities to increase government efficiency and the quality of spending. The call for increased flexibility might be strongest if changes in spending priorities would vary across SCGs within a particular country. Political economy arguments, on the other hand, call for limitations on SCG spending flexibility. Indeed, the young do not vote but pensioners do, which may create political incentives to shift spending from, for instance, education to old-age expenditure.

Strong arguments exist to adjust grants and tax sharing agreements in order to take into account the demographic characteristics of the population. This would be useful in countries where the majority of SCGs face ageing-related challenges, but also in countries where ageing varies considerably across SCGs and the redistribution between regions and local communities across the country needs to be strengthened.

However, procedures to change sharing formulae can be complex, as they are often laid down in laws and require parliamentary approval. Moreover, instead of using earmarked grants, central governments could partly shift towards the use of block grants, which are usually considered to be more efficient. Central and SCGs could also decide to co-fund certain old-age expenditure items of projects or programmes, either on a temporary or a permanent basis.

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