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Current Challenges in Intergovernmental Fiscal Relations

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Current Challenges in Intergovernmental Fiscal Relations

Luiz de Mello and Teresa Ter-Minassian¹

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Abstract

The global economy is undergoing structural changes that have implications for subnational governments and intergovernmental fiscal relations more broadly. They include increased macroeconomic volatility, population ageing, climate change, and rapid technological change, not least through digitalization. This paper reviews these trends and identifies a range of policy and institutional reforms that may help subnational governments strengthen their ability to mitigate the adverse consequences and better exploit the opportunities created by some of these structural trends. Many of these reform options involve trade-offs that need to be balanced depending on specific institutional, social, and economic contexts.

Keywords: municipal finance, revenue capacity, expenditure needs, fiscal gap

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I. Introduction

The global economy is undergoing several structural changes that have profound implications for subnational governments (SNGs), and for intergovernmental fiscal relations more broadly. These changes include: (i) increased macroeconomic volatility stemming from rising geopolitical fragmentation, conflicts, and other adverse shocks; (ii) population ageing, especially in advanced and many emerging-market economies; (iii) climate change and the related increase in weather-related natural disasters, outbreaks of zoonotic diseases and disorderly migration waves, as well as the needed transition in energy sources; and (iv) rapid technological change, not least through digitalization and the development and propagation of artificial intelligence (AI).

This paper focuses on the state of fiscal federalism through the prism of the challenges that these global trends pose for the subnational levels of government, and for the design and conduct of intergovernmental fiscal relations. Its analysis rests mainly on theoretical and conceptual considerations, validated to the extent possible by evidence from the OECD database on subnational finances.¹

Section II briefly reviews each of the structural trends listed above, focusing on their implications for SNGs in different economic, fiscal, and institutional contexts. Drawing on this analysis, Section III discusses a range of policy and institutional reforms that may help SNGs strengthen their ability to mitigate the adverse consequences of those trends, and to better exploit the opportunities created by some of them. Many of these reform options involve trade-offs that need to be balanced depending on specific institutional, social, and economic contexts. Section IV presents some key conclusions.

II. Implications of key current global trends for the subnational finances

1. Increased macroeconomic volatility

Following the Great Moderation in the late 1990s and early 2000s, the global economy has been buffeted by a series of shocks that have significantly increased macroeconomic

¹ The OECD database is available at <https://www.oecd.org/en/data/datasets/oecd-fiscal-decentralisation-database.html>. The IMF and the Interamerican Development Bank (IADB) also publish fiscal decentralization databases, available at [Fiscal Decentralization - At a Glance - IMF Data](#), and at [Fiscal Subnacional \(iadb.org\)](https://www.iadb.org/en/fiscal-subnacional), respectively.

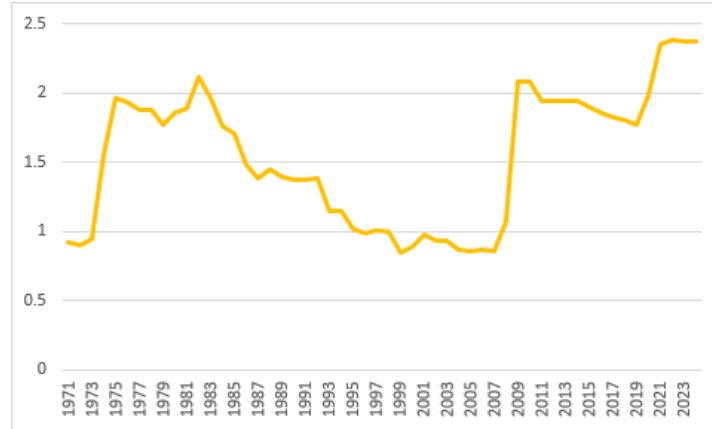
volatility. These shocks have included the global financial crisis of 2008-09, the EU sovereign debt crisis of 2010-13, sharp swings in commodity prices, the Covid19 pandemic, supply chain disruptions, and Russia's war of aggression against Ukraine. These shocks have been reflected in greater volatility of GDP growth, as well as in inflation and unemployment (**Figure 1**). Going forward, even in the (unfortunately unlikely) absence of new major shocks, heightened volatility can be expected to continue due to increased geopolitical fragmentation and possibly the effects of the transition towards a less carbon-intensive economy to meet agreed climate change targets.²

² On the macroeconomic impact of fragmentation, see, among others, IMF (2023), and Alvarez et al. (2023).

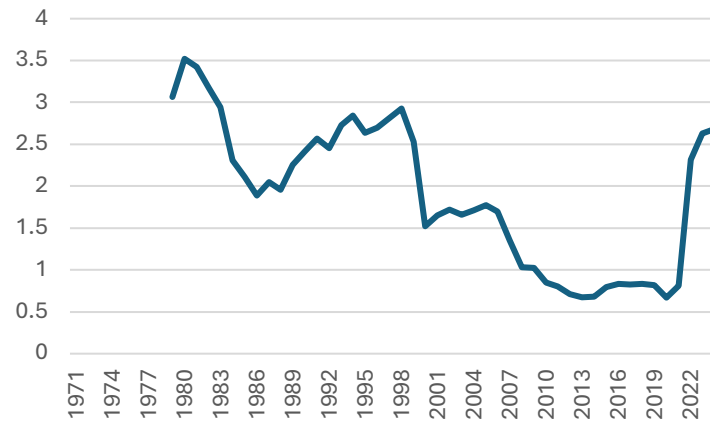
Figure 1. **Macroeconomic volatility**

(rolling 10-year standard deviations, OECD area, 1971-2023)

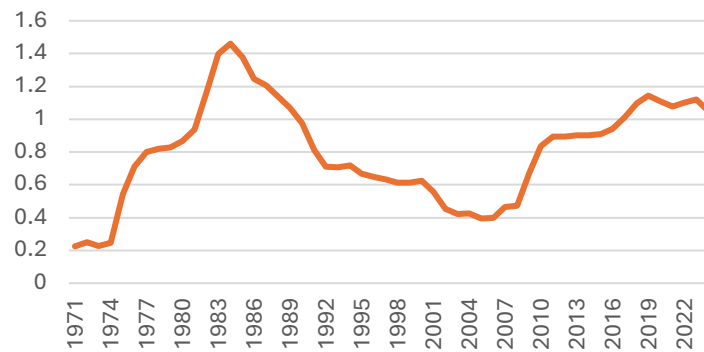
A. GDP growth



B. CPI inflation



C. Unemployment rate



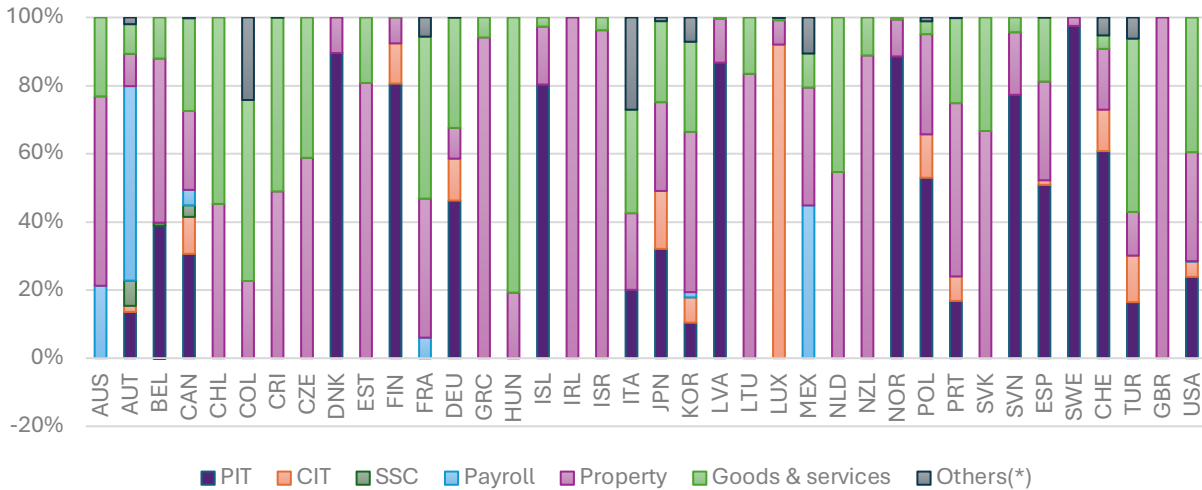
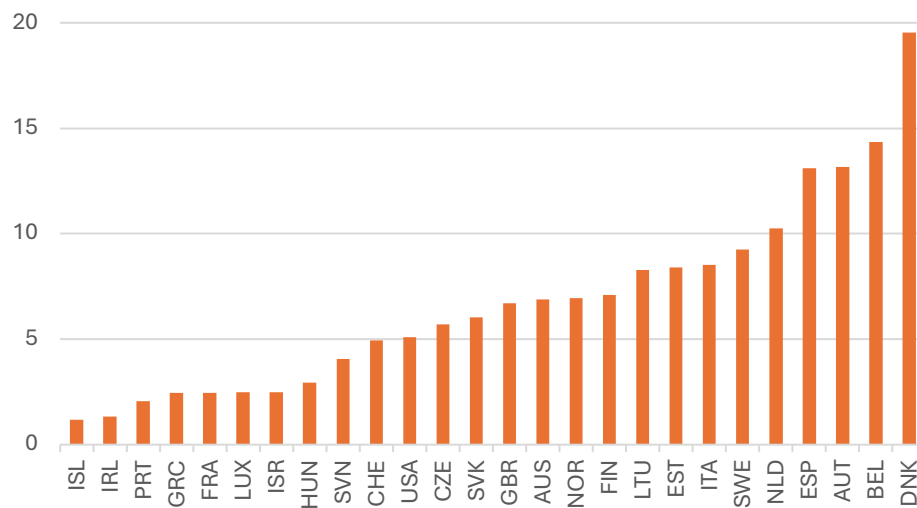
Note: The standard deviations are calculated for an unchanged sample of countries.

Source: OECD *Economic Outlook* database.

Macroeconomic volatility impacts not only the finances of national governments (NGs) but also those of SNGs. The intensity and distribution of its effects on subnational budgets reflect several factors, including the nature of the shock and various features of intergovernmental fiscal relations, such as the assignment of revenues and spending responsibilities across the levels of administration, the design of intergovernmental transfers, and subnational borrowing controls.

Typically, the tax bases assigned to the subnational governments, such as consumption and immovable property (**Figure 2**), tend to be less income-elastic than those assigned to the central government. In several countries, however, subnational jurisdictions also levy own taxes (or surcharges on national taxes) on corporate and personal incomes, which makes their budgets more sensitive to business cycle fluctuations than otherwise.³

³ However, even those SNGs that levy taxes on personal incomes typically do so with less progressivity than NGs.

Figure 2. **Composition of subnational revenues, OECD countries****A. Subnational revenue composition (taxes and social security contributions) (% , 2021)****B. Intergovernmental transfers received by SNGs (% of GDP, 2019)**

Note: The sample of countries varies across panels.

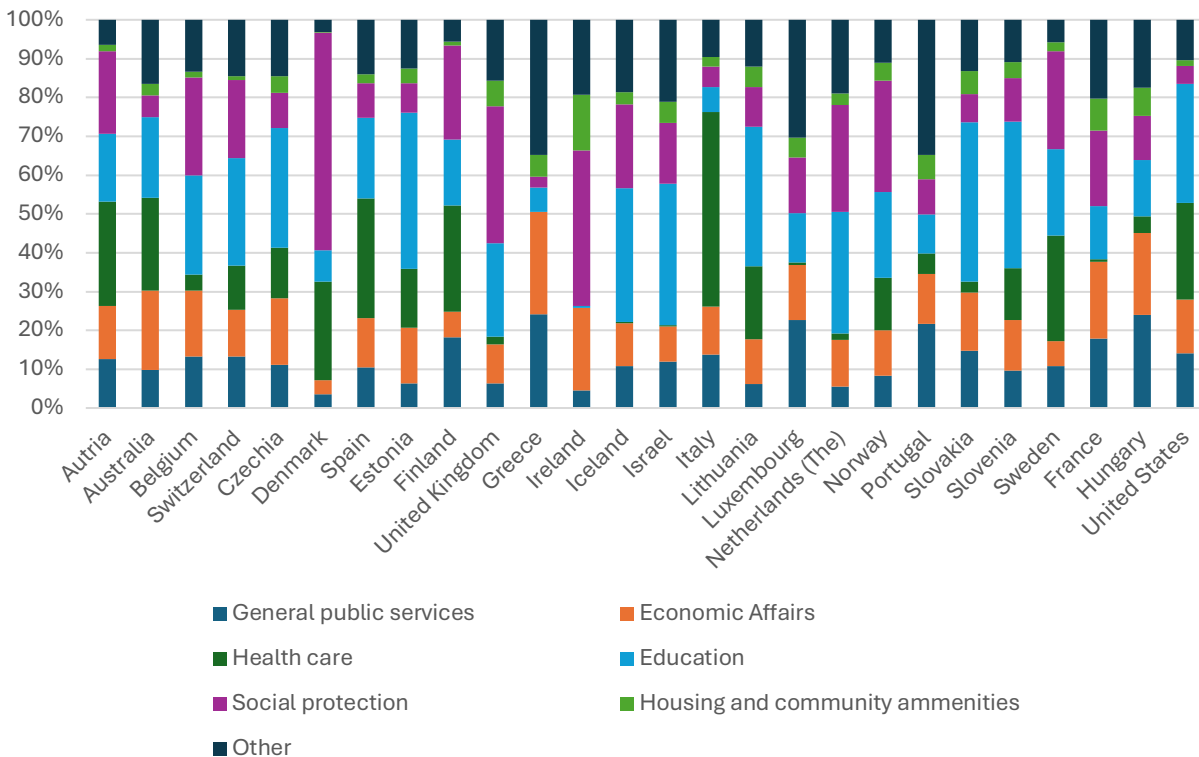
Source: OECD Revenue Statistics and Fiscal Decentralization databases.

Moreover, revenue-sharing arrangements based on proportional formulas, as is common practice in many federations, amplify subnational revenue volatility. This is the case where SNGs receive a share of NG-collected revenue from business cycle-elastic taxes, such as those on personal and corporate incomes. Discretionary grants by NGs are also frequently procyclical, as they are easy candidates for cuts when national revenues are affected by

cyclical downturns.⁴ Therefore, *ceteris paribus*, if SNGs became more dependent on intergovernmental transfers than is currently the case, the more volatile their resources are likely to be.

Even though the transmission of macroeconomic volatility to subnational budgets takes place predominantly through the revenue side of the budget, the assignment of spending functions across the levels of administration also has a role to play (**Figure 3**). This is especially the case in countries where responsibility over social protection, including the management of unemployment insurance, is shared among the different levels of government. This is the case of the Nordic countries, for example.

Figure 3. **Composition of spending across levels of government, OECD countries, 2019**



Source: OECD Fiscal Decentralization database.

Moreover, the design of fiscal rules influences the behaviour of the subnational finances over the business cycle. Where SNGs are required to run business cycle-unadjusted balanced budgets on an annual basis, or are constrained in their ability to run deficits due

⁴ However, during large shocks, like the GFC and Covid19, many national governments increased sharply discretionary transfers to their SNGs to enable them to continue providing essential services and boost public investments.

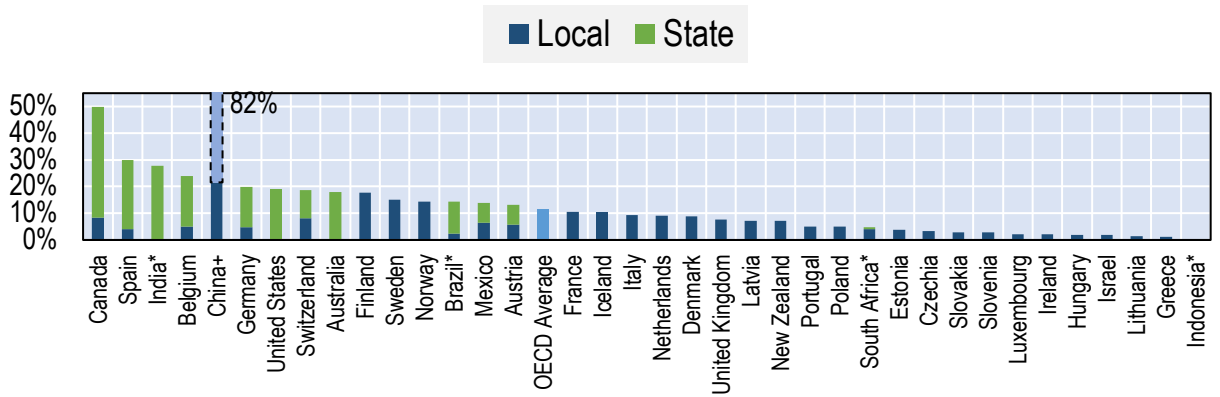
to limited market access, revenue volatility restricts the fiscal space of subnational governments during cyclical downturns. Indeed, the vast majority of countries that use subnational fiscal rules target unadjusted budget balances (Vammalle and Bambalaite, 2021). Moreover, a recent study (Dougherty and de Biase, 2022) finds that subnational fiscal rules have fewer mechanisms (such as escape clauses and correction requirements) to accommodate in a fiscally responsible way the impact of exogenous shocks.

Volatility in price and wage inflation also affects the subnational finances. This is because the bulk of subnational spending is on payroll, purchases of goods and services, and investments, which are particularly sensitive to variations in price and wage inflation. These items are also sensitive to changes in NG policies, as for example, a minimum wage policy.

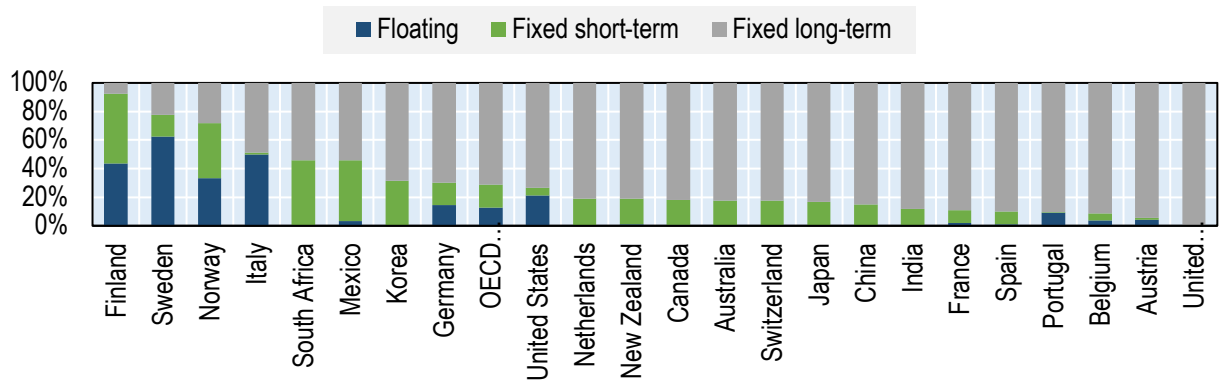
Beyond business-cycle effects on subnational revenue and spending, macroeconomic volatility influences the longer-term sustainability of subnational finances. For example, changes in interest and exchange rates affect subnational finances depending on the level and structure of SNGs' borrowing and debt. This is particularly the case where floating-rate or short-term bonds, as well as foreign exchange-denominated instruments, account for a large share of SNG debt. Subnational debt averaged some 11 percent of GDP (150 percent of own revenues) in the OECD area in 2022, but it varied substantially across countries in both level and composition (**Figure 4**).

Figure 4. Level and composition of subnational debt in the OECD area, 2022

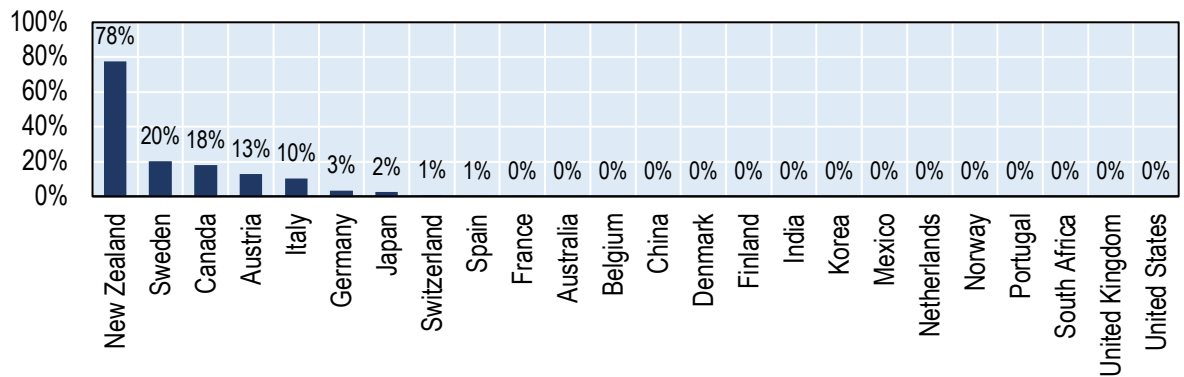
A. Subnational debt (% of GDP)



B. Share of floating-rate and short-term bonds in subnational debt



C. Share of FX-denominated bonds in subnational debt



Note: OECD average refers to the average of OECD countries for which information is available. For Australia and United States the reported figures include state and local governments.

Source: Brochado, Dougherty and de Biase, "Riding the rollercoaster: Subnational debt in turbulent times", OECD Working Papers on Fiscal Federalism, forthcoming.

Increased macroeconomic volatility can raise the probability of materialization of SNGs' explicit and implicit contingent liabilities. In particular, it can increase the risk of the calling of guarantees extended by SNGs to debts of their enterprises or to the private partners in PPPs (e.g. minimum revenue guarantees). It may also make it more difficult for intermediate governments to resist calls for bailouts by local governments under their control that are experiencing financial difficulties during economic downturns or unexpected bouts of inflation.

2. Population ageing

Population ageing will have a substantial adverse impact on the finances of NGs in most advanced and many emerging-market economies in the decades ahead (see, e.g., Congressional Budget Office, 2024; European Commission, 2021; Pessino and Ter-Minassian, 2021; and Crowe et al., 2022). Fewer studies have focused so far on the impact of ageing on subnational budgets (Colin and Brys, 2019; Kim and Dougherty, eds. 2021; Dougherty, de Biase and Lorenzoni, 2022).

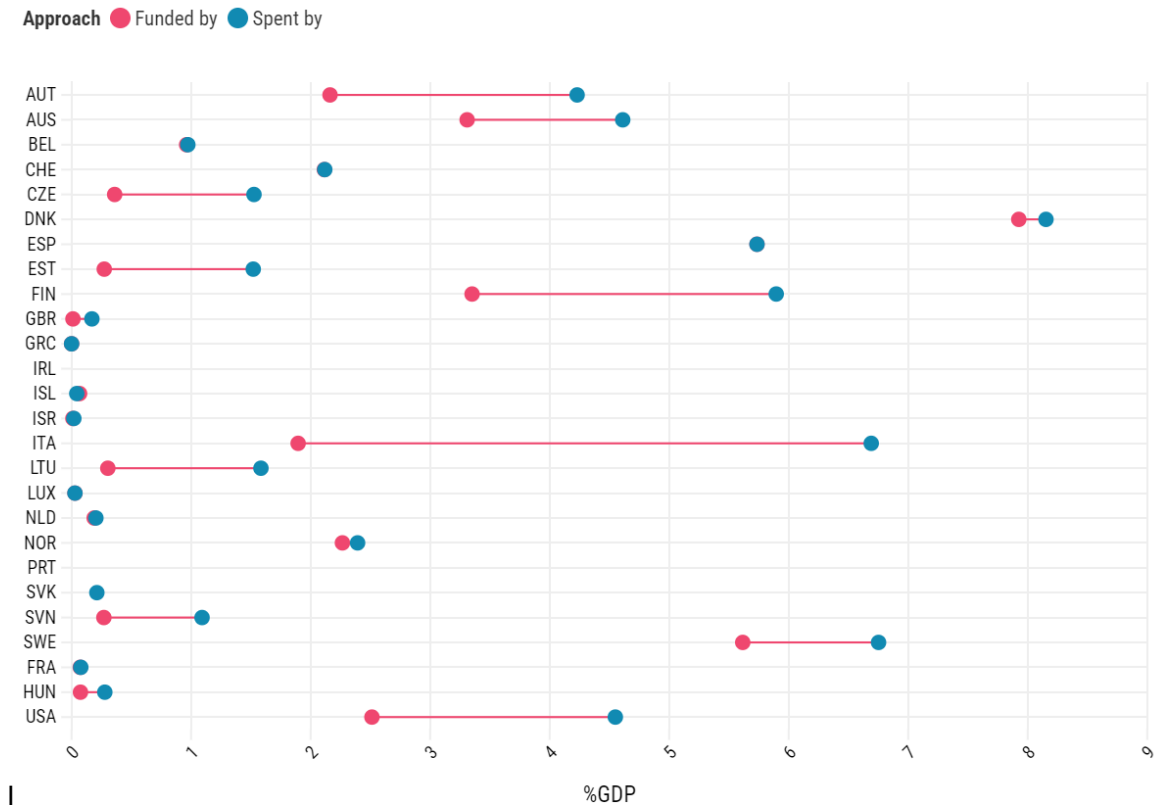
Overall, population ageing will have a bearing on subnational finances because, as noted above, SNGs are responsible for the provision of essential goods and services whose demand is set to evolve in tandem with demographic change, including education, health and long-term care, and housing and urban amenities.⁵ These effects can be expected to vary not only with the pace and spatial distribution of ageing, but also importantly with the role of SNGs in each of these functions. SNGs will also need to absorb the costs of old-age pensions for their own civil service.

The responsibility for delivering and funding public health care is often shared among the three levels of government, but in significantly different proportions across countries. Subnational spending on health care is particularly high in relation to GDP in Denmark, Italy and Sweden, and almost negligible in France and Greece. In most OECD countries, the share of health care spending actually funded by SNGs from their own revenue sources is lower than the respective share in its delivery (Dougherty and Montes, 2023) (**Figure 5**). This divergence, while placing more of the burden of population ageing on the NGs' finances, creates its own challenges for SNGs in health care management, highlighting the

⁵ The OECD estimates that, despite cost containment measures, government (all levels) spending on health and long-term care could rise from just above 6% of GDP on average during 2006-10 in the OECD area as a whole to around 9.5% by 2060 (de la Maisonneuve and Oliveira Martins, 2015).

importance of effective intergovernmental coordination mechanisms in those key public services.

Figure 5. **Subnational spending on health care, OECD countries, 2019**

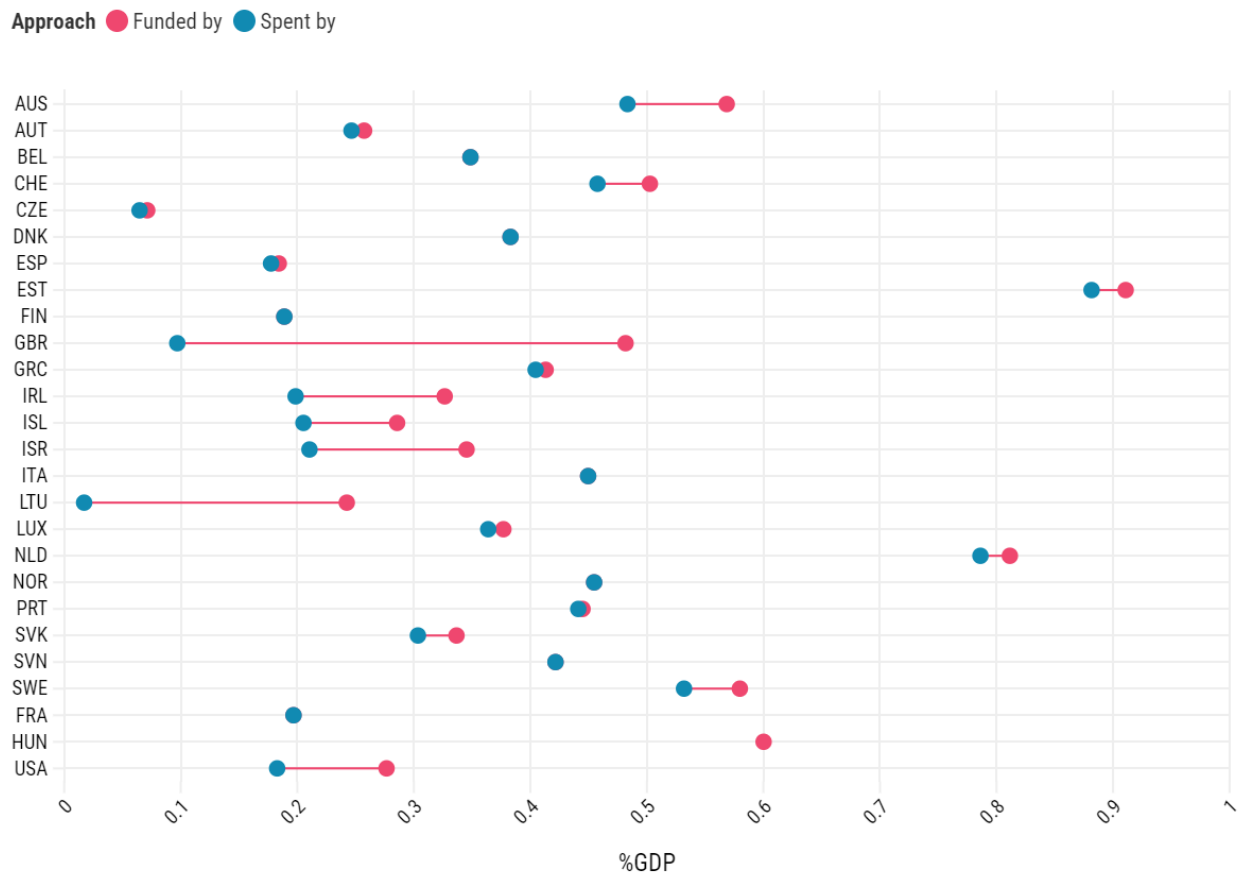


Source: OECD Fiscal Decentralization database.

Public spending on long-term (LT) care has grown much faster than spending on health care, especially in advanced economies, reflecting not only population ageing but also a declining role of informal (mainly family) support systems for the elderly. Government spending on LT care reached the equivalent of 1.3 percent of GDP on average in the OECD by 2019 (Dougherty and de Biase, 2023). The share of SNGs in the delivery of such spending varies across countries, with local governments playing a major role in Denmark, Italy and Sweden; and intermediate governments doing so in Austria, Spain and Switzerland. In most of these countries, SNGs also fund the bulk of LT care spending. Therefore, ageing can be expected to put increasing upward pressure on subnational LT care spending in these countries in the coming decades.

Population ageing will also put pressure on public spending on housing and urban amenities, given the need to adapt existing facilities to the needs of the elderly.⁶ SNGs account for the lion's share of public spending in the housing sector in OECD countries (**Figure 6**). They are often active in the subsidized market segment, by investing in the construction of new properties to be leased on favorable terms to vulnerable social groups; by financing the upkeep of existing properties; or by subsidizing rents in the private housing market. They also often participate in the not-for-profit segment in joint ventures with private-sector developers and managers.

Figure 6. **Subnational spending on housing, OECD countries, 2019**

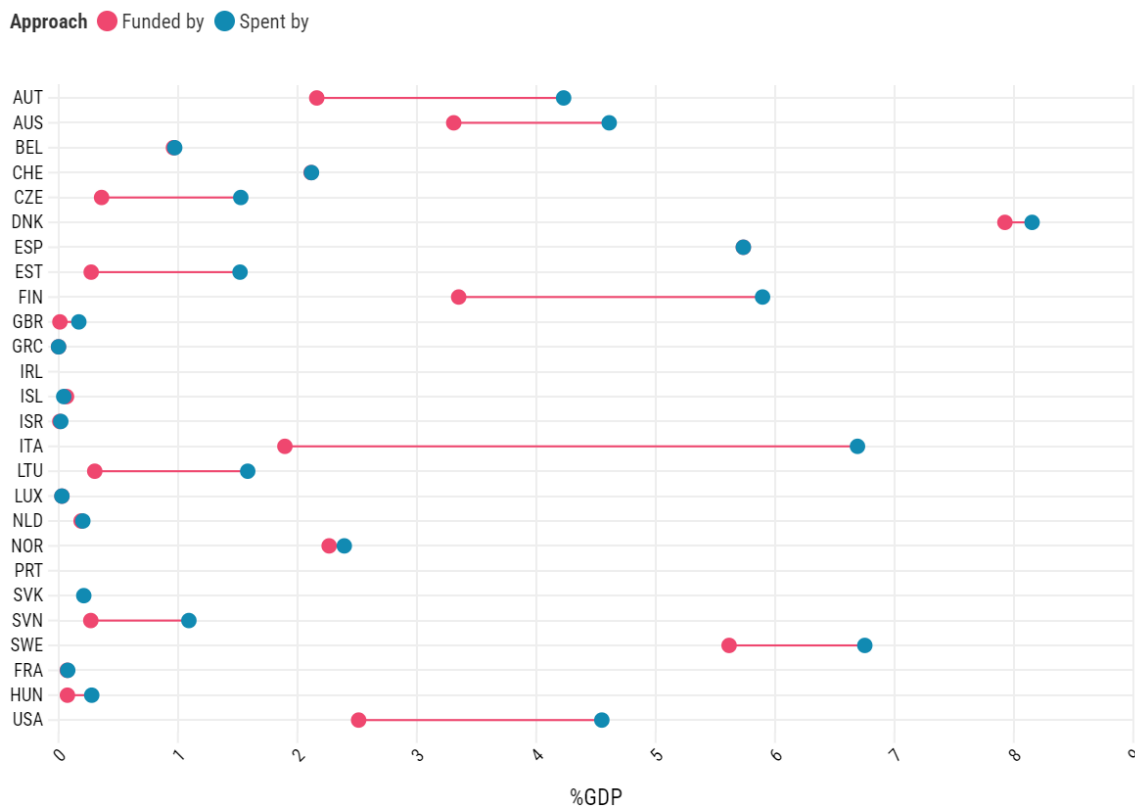


Source: OECD Fiscal Decentralization database.

⁶ While putting pressure on subnational government budgets, demand for retrofitting old buildings and urban amenities for an older population will create opportunities for businesses, which need to be considered when evaluating the net effects of ageing on the local finances.

In contrast, population ageing may alleviate some spending pressures, especially if selected services, such as childcare and primary education, are scaled back in line with falling demand (de Mello et al., 2017). Responsibility for the delivery of education services is often shared among the different levels of government, with local governments responsible for primary and secondary education, and NGs or intermediate governments responsible for higher education. In several OECD countries, however, education is highly centralized. Moreover, even in most of the countries where the delivery of education is decentralized, NGs are responsible for the bulk of its funding, and the degree of autonomy enjoyed by SNGs is limited (**Figure 7**). In ageing emerging-market economies, demand for improved coverage and quality of public education is likely to continue pressuring such spending.

Figure 7. **Subnational spending on education, OECD countries, 2019**



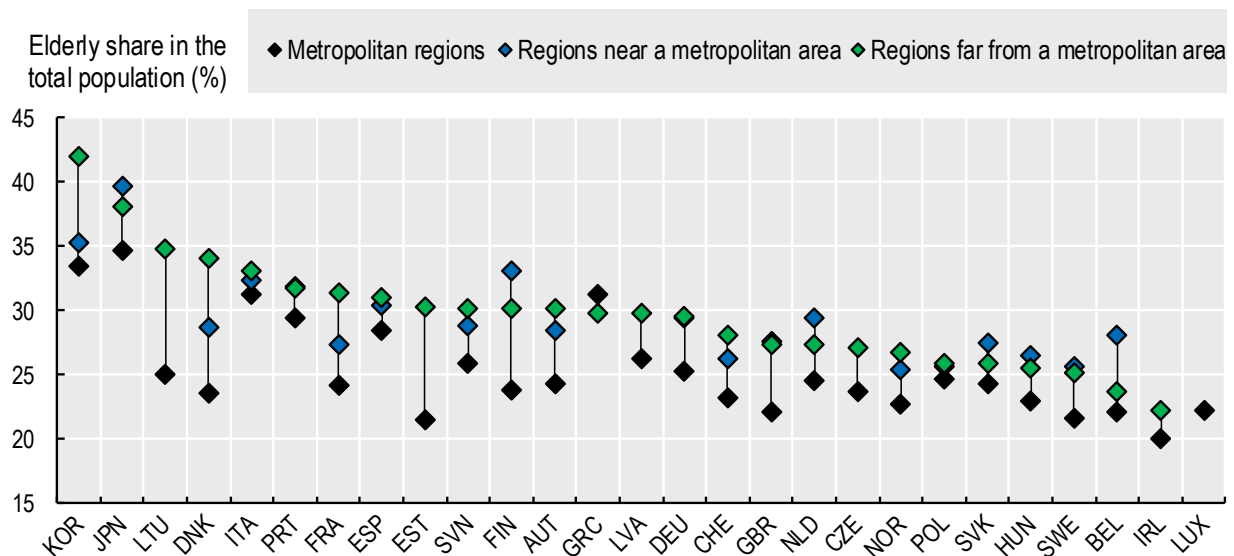
Source: OECD Fiscal Decentralization database.

On the revenue side of the budget, subnational own revenues can be expected to be affected less adversely by population ageing on average, given their dependence on tax bases that are less impacted by population ageing than the national ones. However, individual SNGs significantly affected by outward migration of young people could see also their revenue bases shrink (de Mello, 2021). Shared revenues typically exclude social

security contributions, which are most sensitive to population ageing, but may still be adversely affected by declining wage bills, only partially offset by rising pensions.

Within countries and levels of government, the impact of population ageing will depend on the demographic profile of individual SNGs. Because dynamic urban areas attract labor and talent, they are less likely than remote areas to suffer the negative consequences of population ageing (**Figure 8**). This implies that population ageing will likely have asymmetric effects among SNGs, which pose challenges for the design of public policies and intergovernmental fiscal relations in ageing societies.

Figure 8. **Spatial demographic structure in OECD countries, 2024**



Source: OECD *Regions at a Glance* database.

3. Climate change

Climate change affects the subnational finances because SNGs are important players in mitigation and adaptation efforts, and in the prevention, management and recovery from weather-related natural disasters, pandemics and migration flows. At the same time, the transition to “greener” economies will have asymmetric consequences for the finances of many SNGs over the medium-to-long term, significantly reducing resources for those heavily dependent on revenues from fossil fuels, while creating new growth opportunities and resources for others rich in minerals essential to the green transition, or otherwise favorably located for e.g. wind or solar energy production.

As regards mitigation, SNGs play significant roles in the decarbonization of sectors (e.g., electricity, transport, housing and land use) which are key to meeting the 2015 Paris Agreement goal of limiting global warming relative to pre-industrial times to below 2°C, and preferably below 1.5°C.

Global demand for electricity is expected to increase at a rapid pace in the years ahead, reflecting economic growth especially in emerging-market and developing economies. This makes it all the more important to shift electricity generation away from fossil fuels towards cleaner sources, such as hydropower, solar and wind, and to enhance efficiency in its use. In many countries, intermediate and local governments are involved in the generation and distribution of electricity, most often through enterprises in which they have ownership or controlling interest. Thus, they can influence production, pricing, and investment decisions of their SOEs operating in the energy sector. Moreover, they are generally responsible for street lighting, and in some cases for district heating, as well as for efficiency in the use of energy for the provision of these services.

In the transport sector, despite a projected continued strong rise in passenger and freight travel, major cuts in emissions can be achieved over the next decades through a combination of: (i) electrification of transport systems and light vehicles, and increased use of biofuels and hydrogen in heavy vehicles and aviation; (ii) shifts in transport modes (e.g., increased use of public transport and rail for long-haul transport); and (iii) behavioral changes that could lead to sustained reductions in energy demand. SNGs can promote these changes through: (i) pricing mechanisms, such as explicit carbon taxes and emissions trading schemes (ETS); (ii) regulation and behavioral nudges; and (iii) investments in relevant low-emission infrastructure, including mass urban transport systems and charging stations for electric vehicles (de Mello and Ter-Minassian, 2023).

The decarbonization of residential and commercial buildings is expected to make a growing contribution to the targeted reduction in emissions over the next decades through electrification and policy-driven improvements in energy efficiency. SNGs have an important role to play in this area, because they account for the lion's share of public spending on housing in OECD countries, as shown by Figure 6 above (Philip, L. 2019; and OECD, 2023c). They can directly influence the carbon emissions of the buildings that they own or control, by adhering to high standards for the sourcing and use of energy in new ones, and by retrofitting old ones. Moreover, they can promote the decarbonization of private real estate through their taxation, subsidization, and regulatory policies.

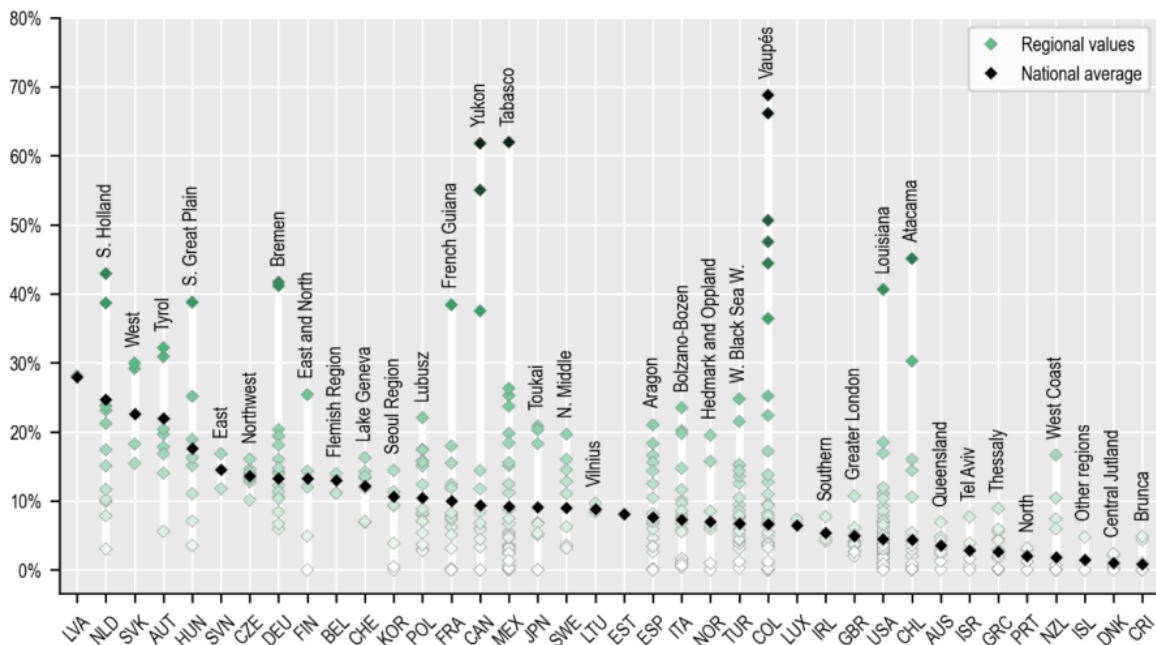
SNGs can also contribute to emission reductions through their activities related to the use of public land under their control. They can do so by limiting or banning the mining of coal and the exploration of fossil fuels in their respective jurisdictions; by safeguarding existing

forests, which are important carbon sinks; by expanding urban green spaces; and by limiting urban sprawl through regulation (OECD, 2023b).

SNGs have an even more important role in adaptation to climate change. Climate change-induced losses and damage vary not only among but also, and often substantially so, within nations. This reflects the diversity of geographic and economic conditions, especially in large countries (OECD, 2022a). For example, exposure to floods varies considerably across and within countries (**Figure 9**). Coastal regions are vulnerable to hurricanes, typhoons and sea level rise; relatively arid regions to droughts; forested regions to fires; urban areas to heat waves and air pollution. The state of existing infrastructure plays a major role in determining the extent of damages from such extreme weather events.⁷

Figure 9. **Regional exposure to flooding**

(population in 2020 exposed to 100-year river flooding)



Source: Maes et al. (2022).

These considerations suggest that place-based policies, well-tailored to the nature, causes and distributional effects of damages induced by climate change, are essential for

⁷ Recognition of the wide geographical variance of adaptation needs underlies, for instance, the EU's Mission Adaptation to Climate Change, whose main goal is to support at least 150 European regions and communities in strengthening resilience to climate change by 2030.

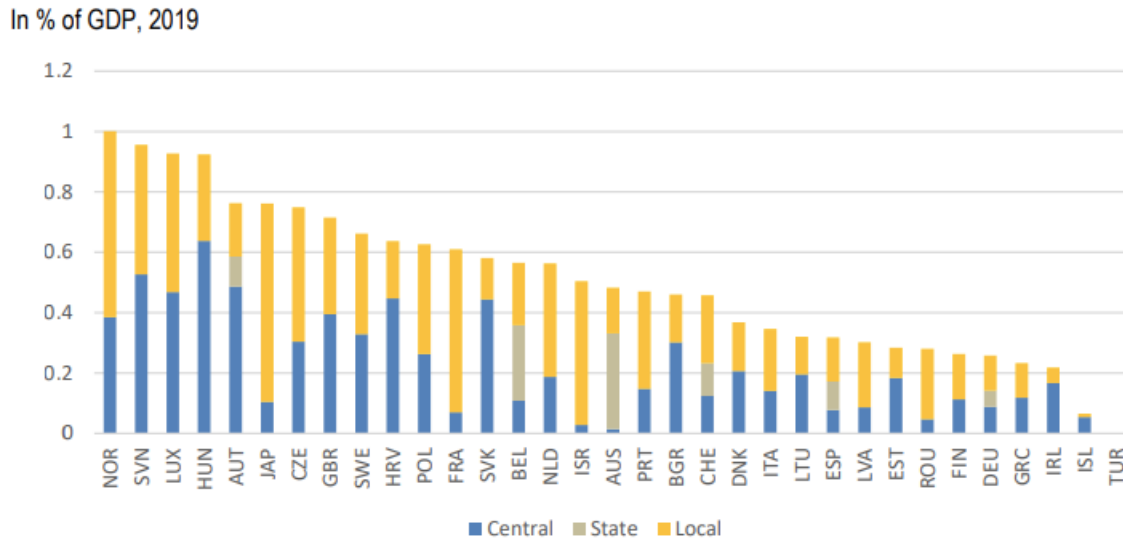
adaptation (OECD, 2023b). Regional and local governments are closest to their respective communities and can therefore bring the benefit of their knowledge of local conditions to the design and implementation of such policies (de Mello and Ter-Minassian, 2023). For their part, intermediate governments, which in many countries have oversight power and responsibility over the local ones, can help avoid negative spillovers and strengthen positive ones from local adaptation policies across their respective regions.

Specifically, SNGs can increase the resilience of the electric grid in their communities to extreme weather events through direct investments, investments by their SOEs, or by regulation of private electricity companies, as relevant in each case. They can also strengthen the resilience of other infrastructures in their jurisdictions (such as ports, levees, bridges and roads) to weather-induced damages through improved maintenance, as well as through new investments, as appropriate in each case. They can help reduce the vulnerability of residential and commercial buildings to fires, floods and high winds, by strengthening and firmly enforcing building codes.

SNGs can also affect land use in several ways. For example, they can shape households' and firms' location decisions (including relocation from disaster-prone areas) through regulation, subsidies, and levies and fees related to climate risks.⁸ They can also provide financial and technical support to farmers in their areas to shift to drought-resistant crops and invest in improving irrigation networks. Deforestation control can minimize the risk of landslides and forest management techniques can reduce the risk of wildfires. Expanding green spaces in urban areas can mitigate the impact of heat waves.

Unfortunately, empirical evidence on the extent and modalities of subnational involvement in adaptation and mitigation policies remains limited to date. Efforts to “green-tag” spending, even at the national government level, have not yet produced comprehensive and internationally comparable databases (Ferreira and others, 2021). In recent years, the OECD has been spearheading efforts to compile a database on climate-significant investments for its member countries, which shows a wide variance in the subnational share of such investments across the area (**Figure 10**). Local governments account for the bulk of the investments (OECD, 2022d; Dougherty and Montes Nebreda, 2023).

⁸ Several countries are taking steps in this area, including Austria, New Zealand, and Romania (OECD, 2024a, 2024b, 2024c).

Figure 10. Climate-significant public investments in the OECD

Note: Climate-significant investment refers to a subset of expenditure, which corresponds to direct investment. This category corresponds to gross capital formation and acquisition minus disposals of non-financial non-productive assets (P5_K2CG or OP5ANP categories in the National Accounts).
Source: own elaboration based on OECD-EC Subnational Government Climate Finance database (OECD, 2022g).

Source: Dougherty and Montes Nebreda, 2023.

SNGs have an important role to play beyond adaptation when climate change-related disasters strike. They are responsible for: (i) the provision of immediate relief to their affected population; (ii) ensuring law and order during natural disasters; (iii) supporting national relief and recovery efforts; (iv) managing the reconstruction of damaged local infrastructures; and (v) identifying good practices that can be shared and used to improve resilience to similar shocks in the future (de Mello and Jalles, 2024). Indeed, for all these reasons the Sendai Framework for Disaster Risk Reduction emphasizes the role of local governments at all phases of a disaster, from prevention to recovery (UNISDIR, 2015).

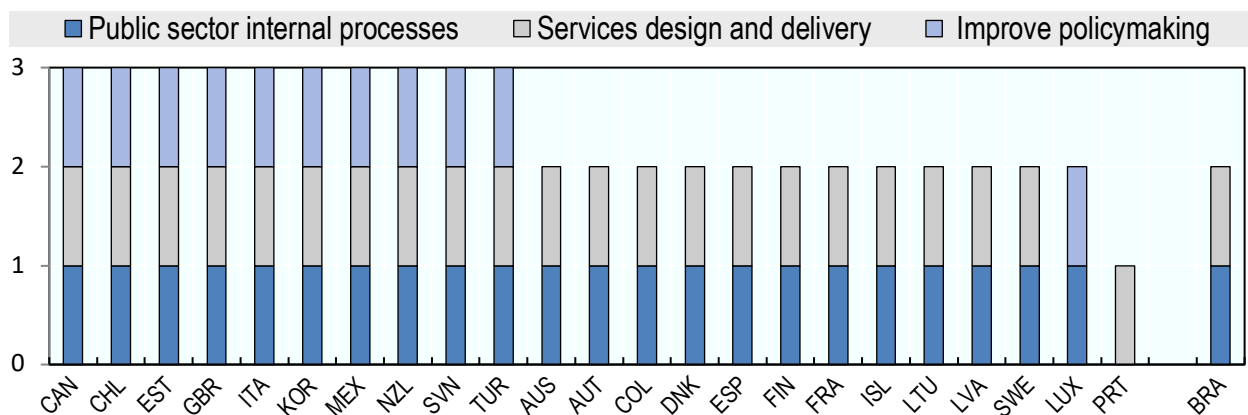
In addition, there is growing consensus that climate change, and more generally environmental degradation (especially deforestation and related increased proximity of wildlife to urban communities) increase the risk of zoonotic diseases, which can spread rapidly across national borders, as did the Covid-19 pandemic. These occurrences can be expected to put increased pressures on subnational budgets, especially in countries where SNGs have substantial responsibilities for the delivery of public health care services. Finally, climate change, and related natural disasters, such as prolonged droughts, are adding to pressures for internal and cross-border migrations, which can be expected to boost spending, especially on health, education, social assistance and public housing, by the SNGs receiving such migration waves.

4. Digitalization and AI

As discussed in detail in de Mello and Ter-Minassian (2020), the ongoing digital transition (which encompasses both well-established technologies, such as 5G networks, the internet of things, blockchains, and big data, and emerging ones such as generative AI) carries substantial potential benefits for the finances of intermediate and local governments. This transformation is also being shaped by the advent of various modalities of Artificial Intelligence (AI), with sizeable transformative potential (**Figure 11**).

Figure 11. **Use of artificial intelligence in the public sector, 2022**

(countries reporting at least one AI project in each category)



Source: OECD *Government at a Glance* database.

There are numerous opportunities for local governments arising from digitalization. Digitalization can facilitate the collection and enforcement of subnational own revenues: consumption taxes through the mandatory use of cash registers and electronic payment systems for high-value transactions; property taxes through the use of geographic information systems (GIS) for the identification and valuation of informal properties, and of large data sets on real estate transactions for the updating of cadasters; and user fees through the use of meters and sensors.

Digitalization can also boost national revenues shared with SNGs through improved enforcement of personal and corporate income taxes and the VAT, and can facilitate the sharing of relevant information between the national and subnational tax administrations, if compatible interfaces of the respective systems are in place. Moreover, digitalization can promote voluntary taxpayers' compliance by reducing its cost, and by increasing taxpayers' perception of the tax authority's ability to obtain relevant information. Finally, and importantly, digitalization can help improve the design of both own and shared revenues by facilitating the collection of relevant "big data" (e.g. on consumer preferences, business transactions, and income distribution).

On the spending side, digitalization can enhance the quality and efficiency of subnational public services in many ways. For example, the use of sensors can improve the delivery of services like mass urban transit, water and sewerage, street lighting, trash management, irrigation systems, and agricultural extension services. The use of smart meters and dynamic pricing of electricity can help alter households' and businesses' patterns of power consumption, increasing energy efficiency. GIS can help pinpoint environmental and health risks in regions and localities. And E-health services and online delivery of education can be especially beneficial in remote or other underserved areas.

SNGs are also making increasing use of digital portals to facilitate citizens' access to relevant information and public services; of electronic payment services for the delivery of social assistance; and of e-procurement (with related increase of transparency and efficiency of purchases of goods and services). And they are increasing the use of social media to communicate with their citizens.

The implementation of well-designed digital public financial management information systems (IFMIS) is key to allowing timely monitoring of SNGs' finances and appropriate policy responses to emerging risks of budgetary overruns, arrears, or significant delays in the execution of spending programs, especially investments. Of course, as emphasized in the relevant literature⁹, the quality of IFMIS reflects that of the entire PFM system: computerizing inadequate budget preparation, execution, accounting, and reporting processes will not generate reliable information on SNGs' finances.

However, digitalization also poses significant challenges for SNGs, whose capacities to deal with them can be expected to vary widely both among and within countries. The most important constraint in many SNGs is likely to be the scarcity of requisite skills, not only in the government leadership and staff, but also in the population at large. Lack of skills breeds, in turn, distrust and resistance to digitalization. Other significant constraints can be posed by inadequate physical infrastructure and the funding needed to improve it. Tackling cyber security risks, and adequately addressing citizen's privacy concerns constitute further significant challenges. Less recognized, but also important, are legal or regulatory constraints, especially in federal or highly decentralized settings, where the risk of domestic regulatory fragmentation is greatest (de Mello and Ter-Minassian, 2020).

Moreover, the digital transition and especially the spreading of generative AI can engender dislocations in economic activity and employment, with adverse repercussions for the

⁹ See, for example, Khan and Pessoa (2010), and Una, Allen and Botton (2019).

subnational finances. The impact of AI on employment and incomes in different countries depends on the extent to which jobs in each area are likely to be substituted by or complemented by AI. This depends in turn on both the nature of the jobs and socio-institutional factors, such as the degree to which human supervision is required by legislation or regulations for the activities being performed through AI. Available research suggests that, in contrast to experiences with prior major technological advances, AI can disrupt not only mainly manual, low-skills jobs but also those with higher cognitive requirements¹⁰. At the same time, it can enhance the productivity of jobs that are complementary to it. However, to take advantage of this opportunity, workers need to acquire new skills in the use of AI technologies.

Developments in this area have implications for SNGs, as the nature of economic activities and jobs typically varies widely within countries. Regions and localities with a prevalence of jobs likely to be substituted by AI are more likely to experience protracted increases in unemployment and related declines in own revenues. They may also have to fund, at least in part, education and training programs to upgrade the digital skills of workers in their communities.

III. Policies and institutional reforms to address the challenges

Policies and institutional reforms can strengthen the ability of SNGs to address the challenges that the global trends discussed above create for their finances. Specifically, such reforms can improve SNGs' resilience to various exogenous shocks and create fiscal space to accommodate the new priority spending needs stemming from population ageing, climate change and digitalization.

This section discusses the main such reforms. It should be emphasized from the outset that many of them require actions by NGs as well as by the SNGs themselves, underlining the importance of strengthened intergovernmental dialogue and cooperation. Several reform options also involve trade-offs that need to be addressed by both NGs and SNGs to ensure desirable outcomes in each country's specific circumstances.

1. Strengthening SNGs' resilience to shocks

a. Macroeconomic shocks

¹⁰ See, e.g., Felten et al. (2021), Pizzinelli et al. (2023), Lane et al. (2023), IMF (2024) and Simons, Turrini and Vivian (2024).

SNGs have options to reduce their exposure to macroeconomic volatility and can take steps to mitigate its impact on their operations. They can safeguard some of their revenues (excise taxes and user fees) from unexpected increases in prices by indexing them to inflation, as some of them already do. They can reduce vulnerability to changes in interest rates by privileging fixed-rate and longer-maturity loans, even if somewhat more expensive than shorter-dated ones. They can avoid foreign exchange risks by eschewing borrowing (by themselves or by their enterprises) in foreign currencies, even if such borrowing is less expensive than that in domestic currency, or at least by limiting such borrowing to levels that they can afford to hedge.

As for the impact of business cycle fluctuations on own or shared revenues, the following steps can be taken to mitigate adverse effects on SNGs' finances. First and foremost, the general principle of assigning predominantly income-inelastic revenue sources to the SNGs should be pursued in the design of intergovernmental fiscal arrangements. Also, smoothing mechanisms could be applied to intergovernmental transfers, by for example basing revenue-sharing formulas on multi-year moving averages, and/or by boosting discretionary transfers to SNGs during cyclical downturns, even if at the cost of increasing SNGs' deficits, and reducing them during booms. SNGs' budget constraints or political economy factors nevertheless make this often difficult in practice.

Moreover, some flexibility can be introduced in subnational fiscal rules to prevent procyclicality, especially in downturns. Appropriate mechanisms for this purpose include escape clauses in the event of recessions or sharp contractions in activity, with clearly specified criteria for returning to the target balance or debt path. Redefining numerical targets in cyclically-adjusted terms would be an alternative in principle, but it is difficult to obtain reliable and timely estimates of output gaps at the subnational level, which makes the use of cyclically-adjusted budgetary targets for SNGs unworkable in practice.

The limitations outlined above have important implications for budgetary management by SNGs. In framing their annual budgets and medium-term fiscal frameworks, SNGs should set aggregate spending limits at levels that, at prudent confidence intervals, ensure that the materialization of macroeconomic risks does not result in deficits that are not financeable, do not comply with applicable fiscal rules, or significantly jeopardize debt sustainability. To determine such prudent levels, they can use deterministic or preferably stochastic scenarios, reflecting relevant past experience. In preparing such scenarios, SNGs should also consider the increased risks of materialization of contingent liabilities entailed by macroeconomic volatility. In many cases, however, a shortage of needed skills

constrains the ability of SNGs to identify vulnerabilities and quantify the effects of macroeconomic volatility on their finances.

Sound budgetary management of subnational fiscal risks from macroeconomic volatility includes the creation of fiscal buffers, such as the rainy-day funds widely utilized by the states in the US. The rules for accumulation, utilization and management of such funds should be clearly specified and linked to reliable cyclical indicators. Budgetary transfers to the funds should be classified as expenditures, and withdrawals as revenues “above the line”. In practice, there is significant variance in the rules governing such funds across the US states (see Box 3 in de Mello and Ter-Minassian, 2024b for details).

b. Shocks from climate change

SNGs’ exposure to losses and damage from climate change is, of course, primarily determined by their geographic location and changing weather patterns. However, SNGs can take a range of steps to limit these damages and the associated risks to their finances.

The first essential step is the identification, analysis and, to the extent possible, quantification of such risks. The analysis should include assessments of both the direct cost of climate change-induced natural disasters --namely, their likely damage to, and loss of, public assets (buildings and other infrastructure) needed for the provision of critical public services-- and the indirect costs related to revenue losses and expenditure pressures to provide relief to the affected population. A regularly updated inventory of public assets, including information on their location, physical conditions, and likely replacement cost, is essential for the ex-ante assessment of the direct costs of disasters. However, governments at all levels seldom maintain inventories of assets at risk, unlike private businesses, which are mandated to do so and can therefore insure those assets (OECD, 2021).

The assessment of fiscal risks from natural disasters has both backward and forward-looking aspects. Past occurrences and associated budgetary costs of the types of disasters more relevant for each SNG are often used for a first estimate of their likelihood and prospective cost. However, this backward-looking information needs to be supplemented by more forward-looking analysis based on relevant scientific information on the distribution of relevant hazards and their evolution over time, as well as physical exposures based on the location of assets at risk.¹¹

¹¹ De Mello and Ter-Minassian (2024) provides a brief overview of various methodologies currently utilized, mostly by NGOs, for assessments of the impact of natural disasters.

This is an area in which both vertical and horizontal intergovernmental cooperation can be most fruitful. Smaller and poorer SNGs have generally less access to the information and analytical capabilities needed for such assessments, and can benefit from support from higher-level governments, as well as from larger or better-endowed governments at the same level. International organizations, including multilateral development banks (MDBs) can also play useful roles in this respect¹².

As discussed in Section II-3 above, SNGs can play key roles in efforts to mitigate and adapt to climate change through appropriate place-based policies in the energy, transport, housing, land use, and public health sectors. Effective vertical and horizontal coordination mechanisms are important to ensure that these policies are consistent with national decarbonization targets, and that they do not create adverse spillovers on other subnational jurisdictions or scope for regulatory arbitrage by the private sector.

As part of their management of increased risks from climate change, SNGs need to assess the benefits and costs of available risk transfer/pooling instruments. These include traditional or parametric insurance for public assets¹³ and requirements for private agents (households and firms) to insure themselves against relevant natural hazards. Among the countries that use extensively private insurance for public assets (at the NG level) are Australia, Costa Rica, France, Mexico, New Zealand and Peru (OECD/The World Bank, 2019). Portugal, Turkey, Japan, and New Zealand provide examples of public insurance mandates for private property owners. Another mechanism for the transfer of risks from natural disasters is the issuance of state-contingent debt instruments (SCDIs) embedding an insurance component that can alleviate pressures on government debt and financing needs when a disaster occurs. These instruments are expensive and therefore have been mainly used so far by NGs but may become more frequent at the subnational level, as the risk of weather-induced disasters continues to rise.

NGs can support subnational risk transfer efforts, especially for poorer or rural SNGs, by providing subsidies or reinsurance for the insurance of public assets, and for the residents

¹² For example, the European Commission is proposing to support SNGs willing to implement its Index for Risk Management (INFORM) to identify hazards, exposures and vulnerabilities, and the World Bank has integrated a Damage and Loss Assessment into its Post-Disaster Needs Assessment (PDNA) tool (de Mello and Ter-Minassian, 2024).

¹³ In contrast to traditional insurance, parametric insurance payouts are based on predetermined triggers, such as hurricane wind speed, rainfall levels or ground acceleration from earthquakes. Parametric insurance contracts have the advantages of lower transaction costs, and greater certainty and speed of disbursement, but their payouts are only loosely linked to the actual extent of the insured disasters when they occur (Cevik and Huang, 2017).

of subnational communities facing especially high and rising costs of insurance against natural disasters.

Prespecified cost-sharing arrangements between NGs and SNGs can provide significant incentives for the latter to adopt effective risk management strategies. Australia, Japan and New Zealand provide good examples of such risk-sharing arrangements (World Bank, 2019). The NG's share could be graduated to reflect equity considerations. For instance, it could be inversely related to the SNGs' level of per capita income or other indicators of their revenue capacity; it could also increase in line with indicators of the severity of the disasters covered. To reinforce their incentive effects, such arrangements could be made conditional on the beneficiary SNG having adopted some prespecified mitigation or adaptation measures.

NGs can also support SNGs' management of risks from natural and public health disasters through technical and operational assistance. International experience with the management of the Covid-19 pandemic (de Biase and Dougherty, 2021) shows the importance of having in place well-functioning policy and operational coordination mechanisms in sectors of shared responsibility when a disaster strikes.

SNGs need to create fiscal buffers to accommodate the impact of natural disasters that cannot be fully mitigated or transferred (de Mello and Ter-Minassian, 2024). A contingency reserve, equivalent to a small percentage of budgeted expenditures, should be included in the annual budget to accommodate the cost of small natural hazards and other unexpected events. Its use should be regulated by the applicable organic budget law. The same law should specify conditions, limits and procedures regulating any transfer of budget lines to accommodate spending needs from the materialization of relatively small shocks. It should also specify any allowed simplification of procurement procedures to facilitate the timely disbursement of the expenditures required by such shocks.

Another tool is the creation of a natural disaster fund. Such funds can be used to finance the expenditures needed in the different phases of a large natural shock, i.e. short-term emergency assistance, medium-term recovery, as well as longer-term reconstruction and improving resilience to future shocks. Many countries have created such funds at the NG level, with varying characteristics and rules regarding accumulation and withdrawals (see Cevik and Huang, 2017 for examples).

Best practices in this area include ensuring careful calibration of their target level, to avoid both under and over-funding; a clear specification of the rules regarding the use of the fund, including procurement regulations, and the accounting of its operations; full transparency; and requiring investment of the unused funds in liquid instruments, to ensure prompt availability when disasters strike. In addition to rainy-day or natural disaster funds, SNGs

can arrange contingent credit lines with financial institutions to ensure a rapid disbursement of funds needed to provide emergency assistance to their affected populations in the event of natural disasters. As with insurance, such facilities, being expensive, should only be used to finance the costs of large shocks.

2. Creating fiscal space for increased subnational spending needs

The analysis in Section II above indicates that, in addition to increasing macroeconomic and fiscal uncertainty and volatility, current global trends -- especially population ageing, climate change and the digital transition -- will create additional current and capital spending needs for SNGs over the next decades. Moreover, the energy transition will adversely affect the revenues and increase some spending needs for SNGs heavily dependent on fossil fuels. The extent and urgency of these additional fiscal pressures will vary both among and within countries, reflecting a host of geographic, economic and institutional factors, but are likely to be significant in many, if not most, cases. The policy and institutional reforms needed to begin addressing them will require political will in both NGs and SNGs, as well as strengthened cooperation among them.

This subsection of the paper briefly reviews a number of funding and financing options to increase SNGs' fiscal space to accommodate these pressures in a sustainable way. These include options to: (i) increase subnational own revenues; (ii) better target intergovernmental transfers to fund priority new spending; (iii) increase the allocative and technical efficiency of subnational spending programs; and (iv) better exploit available fiscally sustainable financing sources. The most appropriate mix of such options would vary across SNGs, reflecting their individual geographic, economic and socio-political characteristics, as well as various features of the intergovernmental fiscal relations system in the relevant country, and trade-offs among different policy objectives.

a. Mobilizing subnational own revenues

The scope for mobilizing additional subnational own revenues varies widely both across and within countries depending on historical, socio-political and economic factors that shape the legal framework of revenue assignments, as well as the incentives and capacities of intermediate and local governments to fully utilize the revenue powers assigned to them. Within each country, substantial differences in own-revenue shares reflect not only differences in the distribution of the tax bases assigned to SNGs across the national territory, but also their varying administrative capacities, as well as political and ideological preferences.

Therefore, the many options for own-revenue mobilization discussed in the literature on the subject¹⁴ can be expected to have different relevance for different types of SNGs in different countries. For example, many SNGs have scope for raising property taxes (by updating valuations or increasing statutory rates), broadening the base of their own taxes on consumption or income, and introducing or increasing user fees and charges for the provision of services to the population. Some of these reform options are fraught with political economy difficulties, including public opinion resistance to increases in property taxation, but they offer options for raising SNGs' own revenue in a manner that does not exacerbate equity-efficiency trade-offs.

In countries where revenue assignments are especially restrictive, intergovernmental dialogue can facilitate the creation of political consensus for the legal reforms needed for the sharing of some additional tax bases, such as personal incomes or retail sales.¹⁵ Of particular interest for the funding of needed subnational climate-related investments is the intergovernmental sharing of taxation powers on emission-generating activities. Various tax and non-tax instruments can yield a “double dividend” by providing a price incentive to reduce such activities while increasing revenues for the budget, at least in the short-to-medium term. They include explicit carbon taxes and emission trading systems (ETS), which, given their administrative complexity, at the subnational level are mainly suitable for intermediate governments and large metropolitan areas; subnational taxes, or surcharges on national taxes, on fuel products or on electricity consumption; and local charges on congestion traffic (see de Mello and Ter-Minassian, 2024 for details). Over time, however, as revenues from such taxes dwindle in the course of the low-carbon transition, other measures will need to be taken to secure funding for permanent increases in spending.

In addition to assigning SNGs adequate taxation powers, NGs have important roles to play in strengthening SNGs' incentives and capacity to better utilize such powers. They can strengthen incentives through policies and institutional reforms (e.g. in intergovernmental transfers and borrowing controls) to harden the subnational budget constraint, which is key to promoting an adequate subnational tax effort (Ter-Minassian, 2015). They may have legal authority (and, if so, utilize it) to constrain subnational tax expenditures, or to set floors for the rates of subnational taxes. They can also act as agents for SNGs in the collection of

¹⁴ See, e.g., Ambrosanio and Bordignon (2006); Bird (2010); Fretes and Ter-Minassian (2015); and Martinez-Vazquez (2015).

¹⁵ Ter-Minassian and de Mello (2016) provides various country examples of reforms of revenue assignments achieved through intergovernmental cooperation.

subnational surcharges on national taxes (as e.g. in Canada for the collection of the provincial portion of the Harmonized Sales Tax).

NGs can also contribute significantly to strengthening subnational tax administrations. Useful steps to this end include intergovernmental agreements on: (i) the use of a common taxpayer ID number; (ii) systematic exchange of taxpayer information (e.g., through the sharing of taxpayer registries); (iii) sharing of income tax returns and/or electronic VAT invoices, when available; and (iv) joint audit and enforcement efforts. NGs can also provide technical, and in some cases financial, support to subnational tax administrations' modernization and digitalization efforts, and encourage the creation of horizontal cooperation fora among these administrations (Ter-Minassian, 2020). For example, in Brazil the NG has supported over several years improvements in state and local tax administration through a program (PROFISCO) financed by the Interamerican Development Bank. At the same time, the National Forum of State Tax Coordinators and Administrators (ENCAT) has been instrumental in the development and adoption of electronic VAT invoices by its members.

b. Reforms of intergovernmental transfers

From SNGs' perspective, the preferable way of obtaining additional fiscal space through intergovernmental transfers would be to increase their share of national revenues or other types of general-purpose transfers from the NG, since such reforms would maximize their freedom of choice in the use of the transfers. For most NGs, however, increasingly tight budget constraints, in the aftermath of the Covid19-induced rise in public debts, and political economy considerations argue against such reforms. A trade-off related to this reform is that it would make subnational budgets more elastic to business cycle fluctuations in activity, which would increase their vulnerability to macroeconomic shocks.

NGs may be less resistant to increasing special-purpose transfers to support subnational spending programs and investments in line with national priorities, such as in mitigation and adaptation to climate change; pandemic prevention and other public health care objectives; and the modernization and digitalization of subnational administrations.

Institutional reforms are likely to be needed to improve SNGs' access to and utilization of special-purpose transfers. Better intergovernmental alignment of spending and investment priorities can be facilitated by well-functioning sectoral cooperation fora.¹⁶ NGs can provide technical support to smaller and less developed SNGs in formulating investment proposals for national cofinancing. Greater use of special-purpose transfers also calls for improvements in: (i) the definition of objectives for the spending programs that these

¹⁶ See Ter-Minassian and de Mello (2016) for examples of such fora.

transfers support; (ii) the selection of appropriate performance indicators; (iii) the availability of timely and reliable information on the budgetary and physical execution of the programs, and their outcomes; and (iv) ex-post auditing and evaluations. These reforms would also help minimize risks of NGs using special-purpose grants for political purposes and would contribute to improving the efficiency of subnational spending (discussed further in the next subsection).

Since, as discussed in Section II above, population ageing, climate change and digitalization can be expected to have asymmetric impacts on the finances of different SNGs in each country, equalization transfers should help offset, at least in part, such asymmetries. However, their effectiveness in this respect depends on their design. For example, equalization transfers cannot compensate SNGs dependent on revenues from fossil fuels for the impact of the green transition unless these revenues are included in the equalization formula, which is often not the case in practice. Neither should transfers fully compensate for these revenue losses, which would likely discourage the needed structural transformation associated with the energy transition. Also, the indicators of spending needs utilized in the equalization formula may not reflect the needs created by the global trends mentioned above. Moreover, since equalization transfers are essentially a zero-sum game if they are capped in aggregate --as is in general and appropriately the case—they cannot be used to create additional fiscal space for the subnational level as a whole, unless the NG is prepared to raise the cap.

c. Improving subnational spending effectiveness and efficiency

SNGs can also create fiscal space through actions to improve the composition, effectiveness and efficiency of their spending. In particular, they can conduct spending reviews to identify scope for downsizing or even eliminating programs of diminishing priority or lower effectiveness and reallocate the corresponding outlays to the new priorities. Spending reviews have become a widespread tool of budget management at the NG level in many countries, and the experience gained from them can be helpful in designing and implementing them at the subnational level as well (Robinson, 2013; Vandierendonck, 2014; and Hoogeland et al. 2024). Spending reviews are most useful when governments have a significant political commitment to reflecting evolving priorities in budgetary allocations; when they do not face substantial legal rigidities/entitlements in the budget process; and when they have appropriate indicators of effectiveness of spending programs.

A particularly relevant obstacle to budget reallocation for SNGs is the imposition on them of unfunded mandates by the respective NGs. The current high levels of NGs' debt, and the pressures posed by population ageing and climate change on their finances create a significant risk that some NGs respond to the pressures by shifting downwards spending responsibilities, or by imposing other types of unfunded mandates on their SNGs. This risk

is especially serious in countries where NGs are facing very tight budget constraints, and in countries characterized by extensive overlapping of spending functions among the different levels of government. Legal and administrative reforms to unbundle concurrent functions into a number of clearly demarcated components can help reduce this risk, as can well-functioning fora for intergovernmental dialogue and cooperation.

The effectiveness and efficiency of subnational spending is often adversely affected by the small size of the jurisdictions. The local level of government, outside large cities, tends to be very fragmented, preventing economies of scale in both the delivery of services and the planning, procurement, and construction of local investments. As discussed above, international experience suggests that the creation of consortia among neighboring small localities to deliver services such as water and trash management and hospital care, and the merging of very small municipalities (as, for example, in Estonia, Latvia, and Norway) can lead to significant efficiency gains (de Mello and Lago Penas, 2013; and Galizzi et al., 2023), as can interjurisdictional coordination in the design and implementation of some infrastructure investments, such as roads.

Sound public financial management (PFM) and public investment management (PIM) systems are a necessary condition for the efficiency of public expenditures at all levels of government. While there is extensive literature and substantial practical experience on the characteristics of such systems (as well as a range of well-honed diagnostic tools) at the NG level, the evidence at the subnational level is relatively scarce.¹⁷ Available studies suggest that weaknesses in PFM and PIM systems are more pervasive and significant at the subnational than the national levels of government, albeit with considerable differences across and within countries. These differences tend to be related to SNGs' size, income levels, and to broader governance features (including whether NGs can and do require minimum standards in their SNGs' budget management, reporting and transparency; and whether they provide support to the weaker ones in meeting these standards).

There is therefore substantial scope for pursuing efficiency gains in subnational spending by strengthening the main ingredients of PFM and PIM systems, including: (i) medium-term planning that is consistent with fiscal sustainability and clearly articulates spending priorities (coordinated to the extent possible with national plans); (ii) orderly and transparent budget preparation and execution; and (iii) sound accounting, reporting, auditing, and evaluation systems. As discussed in Section II above, digitalization can increase the speed and effectiveness of such reform efforts but is not a substitute for the legal, administrative and procedural changes needed to sustainably strengthen the systems. To be effective,

¹⁷ See e.g. Mizell and Alain Dupre (2013) for a survey of subnational PFM systems in OECD countries. See also Ter-Minassian (2016) for a discussion of main weaknesses in PIM systems at the municipal level.

reform strategies need to draw on the findings of detailed diagnostics of the existing weaknesses and their economic and institutional causes (e.g. legal framework; political economy factors; and human resources).

The substantial amount of subnational investment needed for climate change mitigation and adaptation will put a special premium on improvements in the management of green investments in the years ahead. A careful diagnosis of the main existing flaws in the planning, budgeting, appraisal and selection, procurement, execution, ex-post evaluation, and risk management of these investments is an essential first step to develop well-tailored strategies to address such weaknesses. In the last few years, multilateral institutions have been increasingly active in integrating climate considerations in their PFM and PIM diagnostic tools. The most comprehensive such diagnostic to date is the IMF's still-evolving new climate module of the PIMA. The C-PIMA assesses to what extent governments are ready to manage their public investment, with a focus on building green and resilient infrastructures, and provides them with a reform roadmap in that direction. The C-PIMA has been utilized so far only at the national level, but could be adapted for use by SNGs, especially regional governments, and medium and large cities.

d. Sustainable financing options for SNGs

Although the scale of additional subnational investment needs from the global trends discussed in Section II above will vary widely across and within countries, it is unlikely in most cases that those needs could be met solely through the funding sources discussed in the previous three subsections. Moreover, as now widely recognized in the literature, there is a case for financing investment projects that will yield benefits not only to current but also to future generations through borrowing to be serviced and repaid over a number of years. These considerations advise against the use of fiscal rules that require SNGs to balance their overall budgets on annual basis, and several countries have adopted rules (so-called golden rules) that require SNGs to balance only their current budgets, opening room for borrowing to finance investments. In the OECD area, for example, only a few countries, such as Austria, Belgium and the Netherlands, require subnational current and capital budgets to be both in balance, including off-budget funds. Rules requiring overall budget balance at the subnational level are more common in emerging-market economies and developing countries.

However, golden rules also have several drawbacks. Most notable is the fact that they can allow an unsustainable accumulation of public debt; are vulnerable to accounting manipulation; and privilege new investments over the maintenance of existing ones. For

these reasons, many countries have adopted complementary rules, aiming at safeguarding fiscal sustainability, which limit subnational debt or its service.¹⁸

Debt-based rules also involve conceptual challenges, in particular the assessment of a sustainable debt level. The technology for debt sustainability analysis (DSA) has been developed for NGs with much greater revenue-raising capacities than SNGs, and its demands in terms of analytical capacities and data requirements are likely beyond the reach of all but large and advanced SNGs. A particular challenge is how to incorporate into DSAs the (difficult to estimate) growth and revenue-enhancing effects of investments financed by borrowing.

Against this background, it seems likely that in the foreseeable future the constraints posed by fiscal rules on subnational investments in different countries will continue to be largely determined by the degree of the respective NG's aversion to fiscal risk, in turn often reflecting each country's past experience with subnational fiscal crises.

Even in countries with weak legal limitations on subnational borrowing, SNGs' access to market financing is often constrained by other obstacles. The limited control that SNGs have on their revenues is a major impediment. Market participants' perceptions of shortcomings in the PFM and PIM capacities of SNGs also discourage lending to them. Size considerations also play a role in constraining access for smaller SNGs (Yilmaz and Ebel, 2020). For these reasons, market financing tends to be more accessible in advanced economies and for larger regional and local governments.

Those jurisdictions that do have access to financial markets typically resort to loans and the issuance of bonds to finance investments. Loans account for nearly one-half of subnational outstanding debt in G20 countries (Brochado and Dougherty, 2024) and may be granted for general budgetary purposes (including the financing of investments) or to finance a specific project. In the latter case, debt service is typically guaranteed by the revenue stream of the project, rather than by the general revenues of the borrower. Bonds are the second-largest source of financing for subnational investments in G20 countries. Like loans, bonds may be general-obligation ones, backed up by the issuing government's non-earmarked revenues, or project bonds, backed-up by the project's revenue stream.¹⁹

¹⁸ Debt-based rules typically set limits on the ratio of the stock of SNGs' debt to their revenues, sometimes also on the ratio of debt service to revenues. Revenues are defined more or less comprehensively, in some cases being limited to own ones, sometimes also including shared ones and formula-based non-earmarked grants (Vammalle and Bambalaite, 2021).

¹⁹ The US municipal bond market is very large (with nearly USD 4 trillion outstanding debt, and more than 50,000 issuers) with a variety of instrument types, which enjoy exemption from the federal income tax. Subnational bond markets are also well developed in Canada and Japan (the latter under close oversight by the NG, which authorizes new issues).

The last several years have witnessed a rapid rise of bond issues whose proceeds are earmarked for green investments. Green bonds aim to attract especially institutional investors seeking to fulfil environmental goals or mandates.²⁰ NGs account for the lion's-share of issuances of green bonds, but regional and local governments, especially large cities, have become increasingly active. Empirical evidence to date on whether green bonds carry a pricing premium (the so-called 'greenium') compared with plain-vanilla ones is mixed (Cortellini and Panetta, 2021), but there are initial indications that certified sustainability-linked bonds do so. If confirmed by further evidence, this could incentivize issuers, including SNGs, to seek such certification.

Subnational access to financing for investment can be enhanced in several ways, including through additional support by NGs, and by national and multilateral development banks, which already are the main sources of lending to SNGs. Pooling mechanisms can also be used to overcome scale effects and credit risk history constraints in the case of local government borrowing. Such mechanisms are common in the northern European countries, and examples can also be found in New Zealand, France, Japan and India.

Finally, an increasing number of subnational governments, especially but not exclusively in advanced economies, have been seeking to involve private capital in the financing and delivery of infrastructure investments, including green ones, through public-private partnerships (PPPs). The choice between PPPs and direct public procurement should be based on considerations of relative value-for-money and appropriate risk-sharing, rather than just financing conditions.

However, in practice governments at all levels often see PPPs as a way of augmenting the financing available for their investments, or even of circumventing restrictions imposed by fiscal rules limiting or prohibiting borrowing. PPPs entered into without appropriate processes of project selection, risk-sharing arrangements and monitoring of implementation often result in costly renegotiations or even costlier early terminations (Herrera Dappe et al., 2023). These complexities apply to all levels of government, and they are particularly challenging for the subnational jurisdictions, given the technical and manpower capacity constraints they frequently face.

The literature highlights several guidelines to mitigate fiscal risks and maximize the value for money of PPPs (e.g., Moretti, 2021; and de Mello and Ter-Minassian, 2024). They include accounting rules (such as IPSAS32) that do not create inappropriate incentives to choose

²⁰ The first such bonds were issued by the World Bank and the European Investment Bank in 2007 and their cumulative issuance has now surpassed USD 2.2 trillion, according to the Climate Bonds Initiative (CBI).

between PPPs and direct public procurement of infrastructures; “gateway” processes for the approval and monitoring of PPP projects, preferably centered on the governmental unit (ministry or secretariat) responsible for finance and with technical capacity to evaluate project proposals, tenders and contracts, and to assess their fiscal costs and risks; and appropriate frameworks for risk sharing, in line with sound allocation principles, such as the OECD’s Principles for Public Governance of PPPs (OECD, 2012). Guidelines also recommend clear regulations for contract renegotiations, dispute resolution and project termination; adequate disclosure of contract terms and their future (certain and contingent) fiscal costs; and appropriate limits on the stock of guarantees and on annual or multiannual availability payments for PPPs.

IV. Some conclusions

It is clear that several global trends, including geoeconomic fragmentation, population ageing, and climate change are having, and are likely to continue to have, a detrimental impact on the finances of governments at all levels. The net effects of the digital transformation are less clear, as it has the potential to boost revenues and generate efficiency gains in spending, but it will also require substantial investments in infrastructures and human capital for those gains to be realized.

The fiscal impact of these trends is surely greatest at the NG level, albeit with significant differences across countries, reflecting varying geographic, demographic, economic, and institutional factors. There is by now a copious literature analyzing these effects on NGs’ finances in advanced and, to a lesser extent, developing economies.

The SNGs’ finances can be also expected to be affected by these trends, to a lesser extent than those of NGs on average but with even greater variation, as the relevant conditions differ not only across but within countries as well. The main channels of these effects are increased macroeconomic volatility, reduced growth or even outright declines in some types of revenues, and increased spending on health, housing, relief from natural disasters, and the infrastructures needed to mitigate and adapt to climate change, and to take advantage of the digital transition.

A number of policies and institutional reforms are available to reduce the adverse fiscal effects of macroeconomic volatility on subnational budgets, and to create sustainable fiscal space to begin addressing the additional spending needs. The wide variance of the above-mentioned effects across different SNGs requires tailoring the mix, specific design, timing and consensus-building strategy of the policy and institutional reforms to individual SNGs’ circumstances. There is no one-size-fits all strategy in this respect.

Strategies also often involve trade-offs. For example, increasing SNG revenue from shared sources would broaden their fiscal space to meet emerging spending pressures, boosting ex ante resilience to face adverse shocks, but it would also likely make subnational budgets more income-elastic, which increases their exposure to business cycle variations in activity. Also, introducing subnational levies on carbon would strengthen price signals that can accelerate the low-carbon transition, but the associated revenue gains are temporary in nature and cannot be relied upon to address longer-term spending pressures.

One common feature is, however, that most of these reforms cannot be done successfully without the cooperation and, in many cases, the explicit consent of the relevant NG. In particular, desirable changes in revenue assignments, intergovernmental transfers, the distribution of spending responsibilities, fiscal rules and other limits on subnational access to financing, require strengthened intergovernmental dialogue and cooperation. Moreover, NGs can create incentives for SNGs to implement the needed own-revenue raising, spending, and regulatory reforms. In addition, they can provide technical support to improve subnational capacities, through bilateral or multilateral vertical cooperation fora, and by encouraging the creation of effective horizontal cooperation ones.

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