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Evaluating Fiscal Equalisation: Finding the Right Balance

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Abstract

Evaluating Fiscal Equalisation: Finding the Right Balance

Fiscal equalisation refers to the transfer of financial resources to and between subnational governments with the aim of mitigating regional differences in fiscal capacity and expenditure needs. However, the determination of fiscal capacity and expenditure needs is not a straightforward task. OECD countries use widely varying mechanism design approaches in their equalisation systems. This paper compares national approaches, covering the three modes of fiscal equalisation: pure revenue equalisation, revenue/cost equalisation and gap-filling equalisation, describing the distinct impacts of each approach on subnational revenue disparities. A clear inverse relationship emerges between the size of the cost-equalising component within a system and the percentage change in subnational per capita revenue disparities after equalising transfers are applied, although no significant relationship emerges between equalisation and regional convergence.

Keywords: fiscal federalism, fiscal equalisation systems, inter-governmental transfers, regional inequality, public economics.

JEL classification: H76, O38, R31.

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Résumé

Évaluer les systèmes de péréquation budgétaire ou comment trouver le juste équilibre

La péréquation budgétaire désigne le transfert de ressources financières vers et entre les administrations infranationales dans le but d'atténuer les différences régionales en matière de capacité contributive et de besoins de dépenses. Toutefois, déterminer la capacité contributive et les besoins de dépenses ne va pas de soi. Les dispositifs de péréquation utilisés par les pays membres de l'OCDE reposent sur des approches conceptuelles extrêmement diverses. Ce document compare les approches nationales au regard des trois modes de péréquation utilisés, à savoir la péréquation des seules recettes, la péréquation des coûts et des recettes, et la péréquation visant à réduire les écarts de richesse, et analyse l'incidence propre à chacune de ces approches sur les disparités de recettes entre les administrations infranationales. On observe une relation inverse manifeste entre l'importance de la péréquation des coûts au sein d'un système et la variation en pourcentage des disparités de recettes par habitant à l'échelle infranationale après transferts de péréquation, cependant qu'il n'existe pas de relation significative entre péréquation et convergence régionale.

Mots-clés : fédéralisme budgétaire, systèmes de péréquation budgétaire, transferts intergouvernementaux, inégalités régionales, économie publique.

Classification JEL : H76, O38, R31.

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Evaluating Fiscal Equalisation: Finding the Right Balance

by Sean Dougherty and Kass Forman[1]

1. Introduction

1. Fiscal equalisation refers to the transfer of financial resources to and between subnational or sub-central governments (SCGs) with the aim of mitigating regional differences in fiscal capacity and expenditure needs. Fiscal equalisation systems redistribute funds from wealthier governments to governments that face higher per capita costs or lower per capita revenue capacities. Such transfers may take place vertically, from higher levels of governments to lower levels of government, or horizontally, within the same level of government. Distinct fiscal equalisation arrangements first emerged during the 1940s and 1950s in a number of federal countries. Today most OECD countries have redistributive programmes to reduce fiscal disparities (OECD, 2013[1]).

2. Sometimes described as an enabler of fiscal decentralisation, equalisation allows SCGs to provide their residents with similar levels of public services at similar levels of taxation by levelling fiscal capacities across SCGs (OECD/KIPF, 2016[2]). Moreover, equalising transfers are typically, though not always, non-earmarked. This increases the relative fiscal autonomy of jurisdictions that would otherwise have fewer resources.

The central challenge of fiscal equalisation

3. The dual functions of fiscal equalisation – to achieve equality while enabling autonomy – immediately give rise to a key challenge for the policymaker: designing a system that simultaneously allows for differentiated bundles of public goods to be selected according to regional preferences and yet enables comparable levels of public services to be delivered across SCGs. In addressing this challenge, it is important to bear in mind the economic objectives underlying equalisation, such as facilitating regional convergence or mitigating the economic losses associated with interregional disparities which, for example, could arise from within-country migration (Boadway, 2003[3]).

4. Assuming that some degree of decentralisation is welfare-enhancing, equalisation systems that correct for structural differences between jurisdictions can counteract the less desirable effects of competition between SCGs that would distort firm and household decisions (Boadway, 2003[3]; Boadway and Shah, 2009[4]; Kim, 2018[5]). This theoretical formulation may make the task of an equalisation system appear straightforward: to reduce disparities arising from structural differences between regions. However, in practice, significant ambiguity derives from two principal sources: first, the problem of accurately capturing "structural differences" between regions and second, the interaction between equalisation systems and the incentives faced by policymakers in sub-central jurisdictions.

[1] A preliminary version of this paper was discussed at the OECD Network on Fiscal Relations across Levels of Government in 2019, and it has been revised following feedback from that meeting. This paper was prepared by Kass Forman under the supervision of Sean Dougherty (Head of Secretariat). Comments from David Bradbury, Jonathan Coppel, Andrew Reschovsky and Giacomo Antonio Di Fazio (Italian Ministry of Finance) were greatly appreciated, along with input from delegations. The Network is grateful to all countries that participated in the 2019 Fiscal Equalisation Questionnaire.

New insights from the 2019 Questionnaire on Fiscal Equalisation

5. Based on the 2019 fiscal equalisation questionnaire circulated to country delegates of the OECD's Fiscal Network and Working Party No. 2 of the Committee on Fiscal Affairs, this paper presents a cross-country analysis of the mechanisms underpinning fiscal equalisation, their impacts on fiscal redistribution and macroeconomic outcomes, how equalisation systems can be evaluated and reformed and the associated policy implications. New data collected in the 2019 questionnaire on the formulas and factors that determine equalising transfers offer important insights into how countries design equalisation systems and approach the myriad challenges they pose.

6. Key observations from the 2019 survey results include:

- Most equalisation systems *combine* elements of more than one of the three principal modalities of fiscal equalisation: cost, revenue and gap-filling. These are summarized in Figure 1.
- Overall, equalisation systems have a range of impacts on inter-jurisdictional revenue inequality. Systems that have a robust cost-equalising component tend not to realise as great a reduction in inter-jurisdictional revenue inequality. In these cases, the Gini coefficient of per capita SCG revenues may remain the same or even increase after equalising transfers.
- Among equalisation systems that reduce revenue inequality, the Gini coefficient declines by 8 percentage points on average after equalisation. This corresponds to an average reduction in fiscal disparities by nearly one-third after equalisation.
- There is little observable cross-sectional evidence to suggest the extent of fiscal equalisation correlates with an observed reduction in regional convergence.
- Mechanism design approaches to fiscal equalisation centre on reducing the incentive to suppress (or inflate) SCG revenues (or costs). Such approaches often entail the use of a representative tax system or standardised costs to compute equalisation entitlements. In the case of revenue equalisation, certain revenues may be entirely excluded from the assessment of SCG fiscal capacity in order to promote the development of own-source revenues.
- Assessing the impact of cost equalisation presents unique challenges because its effects cannot be captured by straightforward measures of revenue disparity like the Gini coefficient. While cost equalisation aims to facilitate equitable access to public services across SCGs, this outcome is rarely assessed in the context of reviews of equalisation systems. Accordingly, there may be an opportunity to more closely connect cost equalisation to subnational performance benchmarking.
- COVID-19 introduces a special set of challenges for equalisation systems which are not well adapted to responding to emerging, short-term crises (Box 3). Many countries anticipate that despite the asymmetric impacts of COVID-19, equalisation payments will fall because they are tied to elastic revenue streams. In some cases, the asymmetries introduced by the pandemic will not be reflected in equalisation payments for a few years due to the use of lagged variables in the underlying formulas.

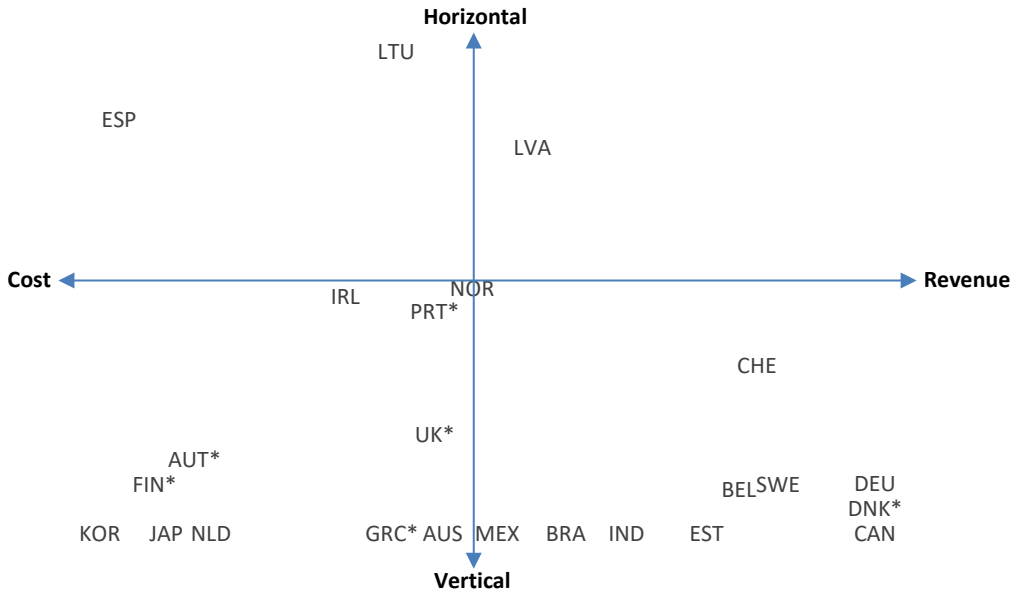
7. Guided by these insights, several good practices emerge which provide a framework for building, reforming or evaluating equalisation systems (Box 1). These build on past policy messages from OECD research on fiscal equalisation that focused on simplification of equalisation formulas to reduce manipulation by subnational governments, the use of representative tax systems (RTS), separation of equalisation from other grants and regular monitoring (Blöchliger and Charbit, 2008[6]; OECD, 2013[1]; OECD/KIPF, 2016[2]).

Box 1. Good practices in fiscal equalisation

- **Regular reviews by an arm's length body, with input from SCGs.** Arm's length bodies devoted to monitoring fiscal equalisation often resemble independent fiscal institutions (IFIs) as described in Dougherty, Renda and von Trapp (2020[7]), with the added function of stakeholder consultation. Representative examples include Australia's Commonwealth Grants Commission and India's Finance Commission.
- **Implementing a representative tax system (RTS) to avoid linking taxation choices to equalisation receipts.** An RTS involves the use of a theoretical tax rate (or set of rates) and tax base, which allows for the transparent computation of a hypothetical per capita revenue level for a given SCG. The RTS is feature common to many equalisation systems and is frequently linked to the average tax rate across an assumed tax base in all SGCs, as is the case in Australia, Canada and Germany for example.
- **Clearly linking equalisation entitlements to SCG per capita income, rather than factors that can be directly influenced by policy choices.** Key to the mechanism design of fiscal equalisation systems is the selection of indicators that depend on structural factors rather than policy choices. Sweden's equalisation system provides a clear example of this practise, relying on per capita income as the primary measure of revenue potential and objective measures of cost such as demographic profiles.
- **Using inter-governmental transfers outside of the equalisation system to achieve well-defined policy goals, while ensuring that equalising transfers remain non-earmarked:** Where indicators may struggle to capture certain cost variations, or fundamental differences between regions make them incomparable, other transfers may be necessary to supplement equalisation. For example, in Australia, the Commonwealth Grants Commission noted that the challenges faced by indigenous communities could not be adequately addressed by equalising transfers alone.
- **Rewarding SCGs for increasing their own revenues while maintaining redistributive systems:** Systems of imperfect equalisation are commonplace, allowing jurisdictions to benefit from increasing their own-source revenues, such as in Ireland. Countries with horizontal equalisation systems, such as Sweden and Germany, allow SCGs with above-average own-source revenue to retain some of their additional tax income according to a progressive schedule.
- **Assessing cost equalisation may be possible via subnational performance benchmarking:** Measuring whether cost equalisation's goal of equitable access to public services is being achieved remains challenging. Italy's sophisticated approach to measurement of public service outcomes may allow for the effect of cost equalisation to be observed. Connecting subnational performance benchmarking to reviews of equalisation may enable richer cross-country comparisons of equalisation.

8. This paper is organised as follows: first, the principal modalities of fiscal equalisation are defined and their characteristics are summarised on a cross-country basis (see Table 1). Second, the impacts of equalisation on revenue and cost disparities are assessed (see Table 3) with a special focus on cost equalisation. Third, the mechanism and design approaches to policy challenges in equalisation are discussed. Fourth, approaches to the assessment and reform of equalisation systems are analysed (see Table 6), including with reference to OECD economic surveys (see Table 5). Finally, conclusions and policy implications are presented.

Figure 1. Visualisation of approaches to fiscal equalisation



Notes: The horizontal axis depicts revenue equalising payments as a percentage of total equalising transfers. The vertical axis depicts horizontal transfers paid by SCGs as a percentage of total equalising transfers. Exact placement is approximate, based on system design. Asterisks indicate placement from OECD (2013[1]).
Source: OECD Fiscal Equalisation Questionnaires 2019 and 2013.

Equalisation modalities

Identifying equalisation modalities

9. There are three principal modalities of fiscal equalisation: cost, revenue and gap-filling, with most equalisation systems combining elements of each. Selected equalisation systems are classified according to these modalities in Table 1. Cost and revenue equalisation systems aim to compensate for differences in per capita costs or revenues across SCGs. Gap-filling equalisation systems aim to bridge the gap between per capita costs and revenues for each SCG, rather than consider either side of the ledger in isolation. Previous OECD research has identified the cost and revenue equalising modalities (OECD, 2013[1]; Blöchliger and Charbit, 2008[6]). The present paper augments this framework with the gap-filling classification.

Table 1. Principal characteristics of selected equalisation systems

Country	Overall classification	Size	Horizontality	Complexity	Equalisation rate
		Equalising transfers % government expenditure	*Horizontal transfers % total equalising transfers*	*Number of equalising transfers*	*Extent to which equalisation fills gap for SCGs below mean fiscal capacity*[1]
Australia	Gap-filling	11.2%	n.a.	1 (GST)	Fiscal relativities fully equalised
Japan	Gap-filling	8.8%	n.a.	3	99% of standardised fiscal need, in most cases
Italy	Gap-filling	0.7%	n.a.	1	60% in 2021, increasing by 5% every year to reach 100% in 2029.
Brazil	Revenue/Cost	2.7%	n.a.	3	
Ireland	Gap-filling	1.7%	48%	2	Topped-up to baseline funding requirement
India	Revenue[2]	52.4%	n.a.	2 (Tax transfer from centre, grants in aid from centre)	n.a.
Germany[3]	Revenue	8.7%	9%	4	60-70%. See Table 2.
Estonia	Revenue/Cost	1.3%	n.a	2	90%
Lithuania	Revenue/Cost	2.2%	100%	2 part transfer (revenue and cost component)	90%
Canada	Revenue	2.1%	n.a.	1	Determined by the size of the fixed funding envelope for the program, which is approximately set to raise provinces with below-average fiscal capacity to the average fiscal capacity.[4]
Belgium	Revenue (National solidarity mechanism)	0.6%[5]	1 special purpose grant to the Brussels Capital Region is funded horizontally[6].	1 + several special purpose grants for the Brussels Capital Region	80%
Norway	Revenue/Cost	1.3%	50%	4	Municipalities[7]: 60% +an additional 35% for municipalities with per capita revenues blow 90% of mean Counties[8]: 87.5%
Spain	Gap-filling	4.0%	27%	4	N/A
Sweden	Revenue/ Cost	4.4%	10% municipalities, 4% counties	2 for municipalities (cost and revenue), 2 for counties (cost and revenue)	For revenue component: 95% for municipalities, 90% for county councils.
Switzerland	Revenue/Cost	2.0%	34%	3	86.5%

Notes: 1. Alternatively, gap between SCG fiscal capacity and expenditure for some cost-equalising systems 2. Cost factors played a comparatively smaller role than income distance in determining equalising transfers during the 14th Fiscal Commission. Income distance is considered a revenue proxy. 3. The vast majority of German equalisation transfers are revenue equalising. The factors enumerated within the questionnaire to determine transfer entitlements concern revenue. 4. A fiscal capacity cap ensures that that the partial inclusion of natural resource revenues does not lead to inequitable outcomes, such as raising the fiscal capacity of a province receiving equalising transfers above that of a non-receiving province. When more than 50 per cent of the Canadian population resides in provinces with fiscal capacity lower than the equalisation standard, the fiscal capacity cap is set at the average fiscal capacity of equalisation-receiving provinces. 5. Regions only. 6. This special purpose grant aims to compensate Brussels for commuters from other regions and is not considered a form of equalisation. 7 & 8. This refers to the revenue equalising component of system. The rate is symmetrical. Municipalities and counties above the mean contribute 60% and 87.5% of their surplus respectively to equalisation.
Source: OECD Fiscal Equalisation Questionnaire 2019.

10. The source of the funds for equalising transfers is typically described as either vertical (from the centre to SCGs) or horizontal (from wealthier SCGs to poorer SCGs) (OECD, 2013[1]). Few equalisation systems are fully horizontal – meaning that they are entirely funded by transfers of own-source revenues between SGCs (one notable example of full horizontality is Lithuania) (Figure 1). Some systems incorporate sizeable horizontal components (e.g. Germany, Sweden, Switzerland, and Ireland), but the majority are entirely vertical. In turn, vertical equalisation systems are often funded by fixed shares of central government revenue streams (e.g. Japan and Korea). In other cases, funding comes from a fixed envelope of central government revenues which grows in line with macro indicators (e.g. GDP in Canada).

Revenue equalisation

11. Revenue equalisation relies on measurements of real or potential per capita revenues (fiscal capacity) to determine equalising grants to jurisdictions. Typically, a representative tax system (RTS) based on cross-jurisdictional average tax rates is applied to an SCG's assumed revenue base to determine its fiscal capacity. In Canada, an RTS encompassing five revenue categories is used to calculate the theoretical revenues that would be raised should a province apply, roughly, national average tax rates across the specified revenue categories. A system of vertical fiscal equalisation then provides transfers from the federal government to provinces whose fiscal capacity falls below the average fiscal capacity of all provinces under the RTS. Australia uses a similar approach to assess revenues but complements the system of revenue equalisation with a comprehensive assessment of costs, based on standardised expenses. In this sense, it is essentially a gap-filling system. Critically, Australia's equalisation system is entirely financed by GST revenues, which are earmarked for this purpose (Coppel, 2018[8]).

12. Some revenue equalisation systems, such as Germany's, are notable for their horizontal element: the transfer of revenues from wealthier to poorer SCGs within the same level of government. A defining feature of horizontal revenue equalisation is skimming, which is the appropriation of SCG own-source revenues above a certain threshold for redistribution via the equalisation system, which effectively operates as a tax faced by governments on their revenues. In the German case, *Länder* with above-average fiscal capacity (essentially per capita revenue receipts) face a "linear progressive skimming-off schedule" which partially reallocates a portion of their revenue to *Länder* with below-average fiscal capacity. Likewise, the *Länder* with below-average fiscal capacity face a similarly progressive schedule prescribing the rate at which their revenues are topped-up. The rate of equalisation declines as fiscal capacity rises towards the average (Table 2).

Table 2. Fiscal equalisation rates in Germany

As % of the average financial capacity per inhabitant

Financial capacity per inhabitant before financial equalisation among the *Länder*	Financial capacity per inhabitant after financial equalisation among the *Länder*	Financial capacity per inhabitant after financial equalisation among the *Länder*, also including general supplementary federal grants	Equalisation rate: portion of difference from average financial capacity per inhabitant compensated
70	91	97½	70%
80	93½	98	67.5%
90	96	98½	60%
100	100		N/A
110	104		60%
120	106½		62.5%
130	109		70%

Source: German Federal Ministry of Finance (2018[9]).

13. As a result, equalising transfers to *Länder* neither allow poorer *Länder* to overtake one another in terms of fiscal capacity nor wealthier *Länder* to fall below one another in terms of fiscal capacity. Equalisation is intentionally held below 100% to stimulate the development of own-source revenues (Federal Ministry of Finance, 2018[9]).

14. Occasionally, the skimming of own-source revenue is so aggressive that the system's equalising effect derives not from the redistribution of funds but from the progressivity of the skimming itself. This is the case in Luxembourg where the equalisation system is partially funded by contributions from SCG own-source revenue (in particular, those accruing from the communal trade tax). These revenues are appropriated for equalisation according to a progressive schedule, with all SCGs contributing the vast majority of their communal trade tax revenue to equalisation and never retaining more than 35%. However, SCGs with lower tax yields contribute less than those with higher yields, which drives the equalising effect. The funds collected are then combined with a fixed share of various central revenue streams and redistributed to municipalities, largely on the basis of population rather than tax revenues.

Cost equalisation

15. Cost equalisation systems aim to compensate SCGs with higher per capita costs relative to other SCGs, such that they do not face an undue burden in delivering a baseline level of public services. Typically, per capita costs are measured using average or standardised costs, based on budget categories, rather than the SCG's actual expenditure. Sometimes, indicators such as geography (e.g. forest cover), poverty rates or surface area are directly integrated into cost equalisation formulas. Such formulas are sometimes highly complex, capturing a wide range of cost factors. For instance, the cost-equalising component of Italy's equalisation system measures thirteen different factors to determine the standardised costs of eight essential functions of municipal government (SOSE, 2018[10]). Many equalisation systems integrate both cost and revenue equalising components.

16. Australia and Sweden provide examples of comprehensive cost equalisation systems. In Australia, dozens of factors covering all aspects of state expenditure as well as the underlying drivers of cost disparity enter into the equalisation formula. This allows the equalisation system to capture much of the variation in per capita funding requirements. In addition, it helps to enhance the policy neutrality of the equalisation system by employing cost variables which generally cannot be directly affected by policy choices. Similarly, the Swedish cost equalisation systems aim to assess structural differences in the per capita costs faced by SCGs through the use of sectoral expenditure models, each relying on hundreds of variables.

Gap-filling

17. Gap-filling approaches to equalisation combine cost and revenue equalisation into a single transfer designed to fill the gap between assessed costs and assessed revenues. The distribution of Japan's local allocation tax exemplifies this approach. An assessment of each municipality's financial need is made, along with an assessment of its fiscal capacity. The local allocation tax is then used to fill the gap between these two quantities. Similarly, Korea's general grant to municipalities aims to fill the gap between standardised financial needs and standardised revenues. Importantly, the system relies on standardised rather than actual values of revenue and cost to avoid perverse incentives.

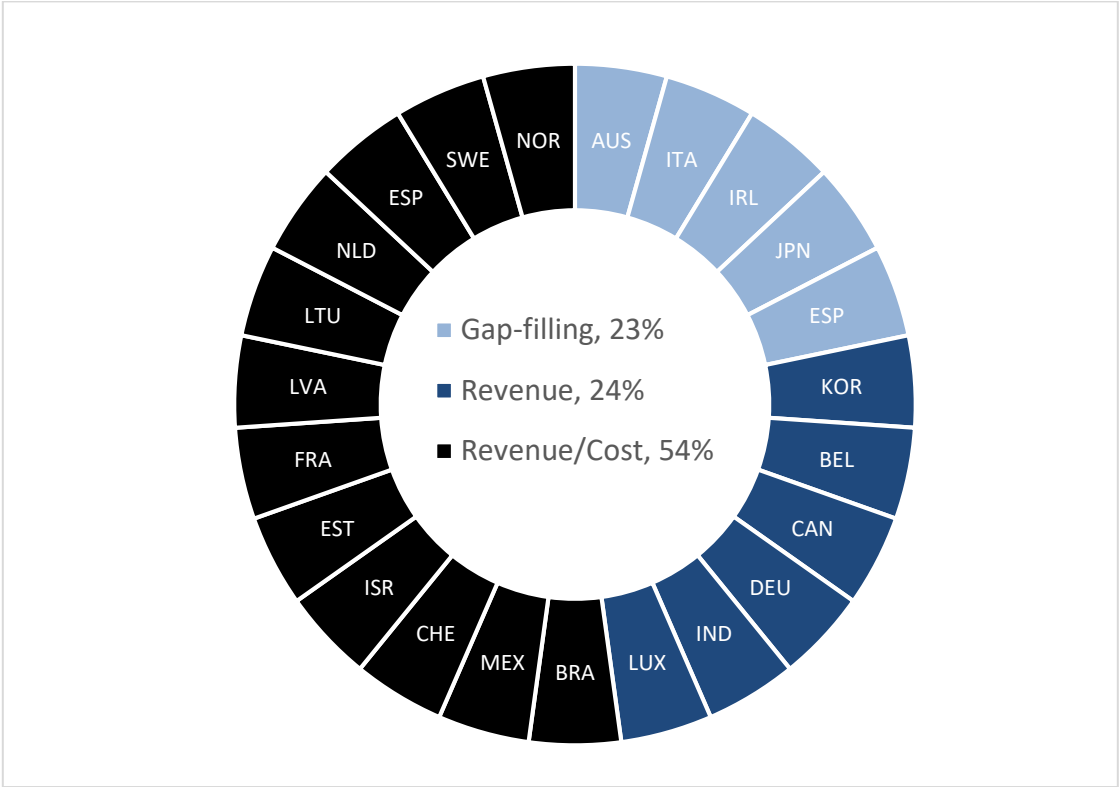
18. An interesting feature of gap-filling systems is that they generally increase the inequality of per capita revenue after the nominally equalising transfers are applied. Because jurisdictions with higher per capita costs receive higher per capita payments, SCGs that initially have above-average per capita own-source revenues may see even higher post-transfer per capita revenues if per capita costs are uncorrelated or positively correlated with per capita revenues. The rise in post-equalisation revenue inequality is also driven by the fact that among gap-filling systems, the majority of the equalising transfers compensate for cost rather than revenue disparities (see Figure 6), with the latter typically illustrating less regional asymmetry (see Figure 11).

In practice, the cost and revenue equalisation modalities are often combined

19. Roughly half of the equalisation systems surveyed combine cost and revenue equalising components, with distinct transfers for each purpose (Figure 2). The other half are split near-evenly between gap-filling systems and those that are exclusively revenue equalising, without significant cost equalising components. Importantly, no system is exclusively cost equalising, free of any measure of fiscal capacity.

Figure 2. Equalisation modalities in practise

Equalisation modalities as a share of respondents to OECD 2019 Fiscal Equalisation Questionnaire



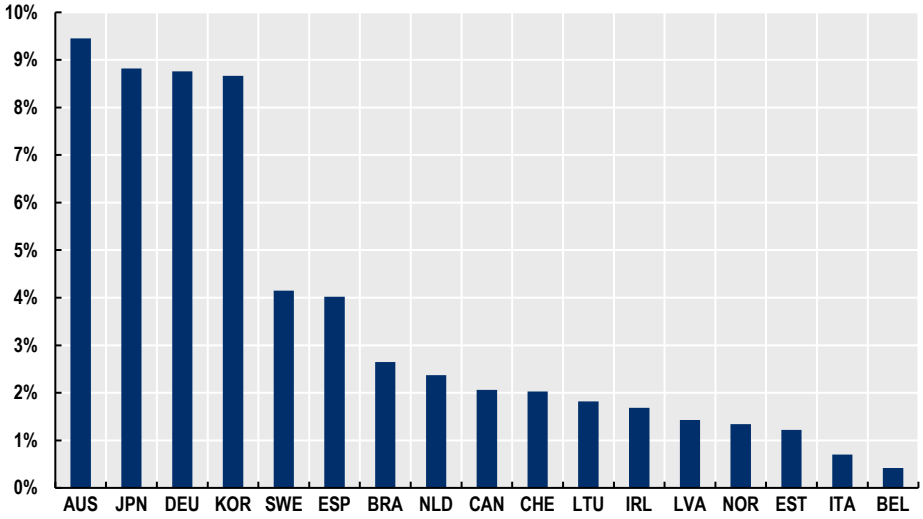
Note: Belgium's classification is based on the National Solidarity Mechanism.
Source: OECD Fiscal Equalisation Questionnaire 2019.

2. The impact of fiscal equalisation

The effect of fiscal equalisation on revenue disparities

20. Figure 3 illustrates the scale of equalising transfers as a percentage of total government expenditure (all levels) across sixteen OECD economies. Among the countries featured, equalising transfers average 3.6% of government expenditure, with Australia having the largest transfers as a share of total government expenditure (9.9%), and Belgium having the smallest (0.6%).[2]

Figure 3. Equalising transfers as a percentage of total government expenditure



Note: Data is from 2017 or latest year available. Only systems of explicit fiscal equalisation are included, other systems of inter-governmental transfers which may include equalising criteria are not included in this figure. The figure for Belgium is based on revenue equalising transfers to regions only.
Source: OECD Fiscal Equalisation Questionnaire 2019.

21. Table 3 illustrates the change in the Gini coefficient of per-capita revenues of SCGs before and after equalising transfers are applied. While for a number of OECD and emerging economies, the reduction in the Gini is substantial, for others it is not:

- For some countries, the reduction in the Gini coefficient is considerable (e.g. Canada, Germany).
- For several countries, the reduction in the Gini coefficient is quite modest (e.g. Brazil, India).
- In a few cases, equalising transfers have almost no impact on the Gini coefficient (e.g. Mexico, Italy).
- In several cases, the Gini coefficient rises (e.g. Japan, Korea).

[2] Note this figure includes equalising transfers to regions only.

Table 3. Effect of equalising transfers on the per capita revenue distribution

Inter-jurisdictional Gini coefficients of per capita revenue

	Before equalization			After equalization			Effect (2016-18)			
Countries	**2005**	**2012**	**2016-18***	**2005**	**2012**	**2016-18***	**Gini change (-)**	**Gini % change (-)**	**Gini change (+)**	**Gini % change (+)**
Federal / Regional										
Australia	0.05	0.07	0.12 +	0	0	0/0.14 +			0.02	17%
Austria				0.02	0.05					
Belgium			0.10			0.10	0.00	0%		
Brazil			0.21			0.18	0.03	14%		
Canada	0.10	0.11	0.08	0.07	0.08	0.04	0.04	50%		
China	0.33	0.31		0.25	0.18					
Germany	0.06	0.06	0.07	0.02	0.02	0.02	0.05	71%		
India	0.46	0.38	0.34	0.37	0.32	0.29	0.05	15%		
Italy	0.21	0.19	0.14	0.10	0.04	0.13	0.01	7%		
Mexico			0.31			0.31	0.00	0%		
Spain	0.15	0.13		0.04	0.05					
Switzerland	0.15	0.17	0.21	0.11	0.11	0.20	0.01	5%		
Unitary										
Chile		0.49			0.14					
Denmark	0.08	0.06		0.04	0.03					
Estonia			0.12			0.09	0.03	25%		
Finland	0.11	0.12		0.03	0.05					
France**			0.20			0.19	0.01	7%		
Ireland			0.18			0.21			0.03	16%
Israel			0.33			0.22	0.11	34%		
Japan	0.20		0.07/0.19 #			0.15/0 #			0.08	114%
Korea			0.13			0.18			0.05	38%
Latvia			0.16			0.07	0.09	56%		
Lithuania			0.20			0.10	0.10	50%		
Luxembourg			0.68			0.10	0.58	85%		
Netherlands			0.23			0.35/0.22 §			0.12	52%
Sweden-Municipalities	0.06	0.07	0.06	0.01	0.01	0.04	0.02	33%		
Turkey	0.22			0.06						
						Mean:	0.08	30%	0.06	48%
						Median:	0.03	25%	0.05	38%
						Count:	15	15	5	5
						Total count:	20	20	20	20

Note: This table represents only the change in per capita revenues before and after transfers. *Most recent year available is 2016-17 for Federal countries, except Mexico, and is 2018-19 for unitary countries except Israel. #Gini coefficient of revenue/cost ratios. +For Australia, the Gini coefficient calculated on the basis of fiscal relativities after equalisation equals zero. The Gini coefficient calculated on the basis of post-equalisation revenue receipts illustrates an increase relative to pre-equalisation receipts due to the gap-filling nature of the system. §For the Netherlands, the effect of revenue equalising grants only is included in calculating the post-equalisation Gini. **For France, Gini coefficients are computed based on the disparity of mean tax revenues received by communes within 11 tranches clustered by population size.
Source: OECD Fiscal Equalisation Questionnaire 2019.

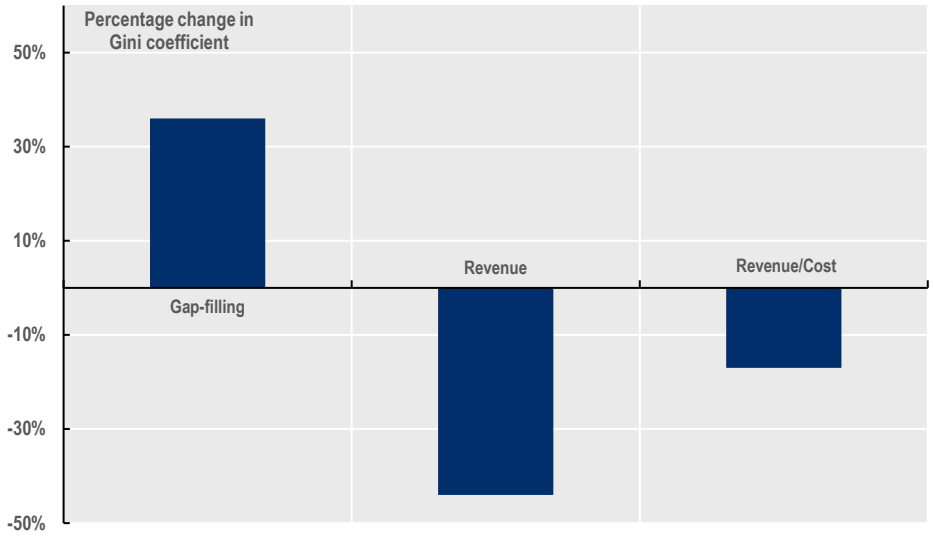
22. It is important to appreciate that Table 3 illustrates only disparities in per capita revenue. These disparities may differ substantially from disparities in per capita fiscal capacity as measured for the purposes of computing equalisation payments. This distinction is critical because measures of pure per capita revenue make no adjustment for SCG tax effort or expenditure need. Indeed, jurisdictions with lower per capita fiscal capacity may partially make up for it through higher tax effort, leading to relatively higher per capita revenue. Similarly, jurisdictions with higher per capita fiscal capacity may choose a correspondingly lower level of tax effort, reducing relative per capita revenue. In the case

of expenditure need, SCGs with nominally high levels of per capita revenue may face even higher per capita costs. In compensating for this, the cost-equalising component of the equalisation system may compound apparent per capita revenue disparities by transferring additional funds to SCGs with above-average per capita revenues.

23. Despite the limitations of per capita revenue as a measure of fiscal disparity, equalisation systems on average still have a perceptible impact on it, with the direction and magnitude of the effect depending heavily on the equalisation modality. Figure 4 illustrates the modal variation in the effect of equalisation on disparities in inter-regional per capita revenues. Purely revenue-equalising systems demonstrate a 44% drop in the Gini coefficient on average, corresponding to a 14 percentage point reduction. Revenue/cost systems – that provide separate transfers to equalise both revenues and costs – demonstrate an average 17% drop in the Gini coefficient or a three percentage point reduction. Conversely, gap-filling systems illustrate an average rise of 36% in the Gini coefficient or a three percentage point increase.

Figure 4. Revenue-equalising systems see the greatest reduction in revenue disparity, while gap-filling systems show a rise in disparity

Average change in Gini coefficient before and after equalisation by modality



Source: OECD Fiscal Equalisation Questionnaire 2019, authors' computations.

24. Such outcomes suggest that the impact of fiscal equalisation cannot be measured in terms of the effect on revenue distribution alone. In cases where countries see a rise in the post-equalisation Gini coefficient (e.g. Australia, Japan, Korea), the equalising effect of their system can only be captured by examining measures that relate fiscal capacity to expenses, like Australia's GST relativities or Japan's fiscal capacity index. Accordingly, the appropriate metric for the effect of a given equalisation system must be related to the design of the system itself. This is particularly true when transfers are driven by variation in cost to a higher degree than variation in per capita revenues such that measures of revenue disparity fail to capture the equalising effect.

25. The broader relationship between fiscal equalisation and regional income disparities appears limited at the cross-country level (Box 2). Though past OECD work has suggested that equalisation may reduce incentives for poor regions to catch up or for households and firms to migrate to more prosperous jurisdictions (OECD, 2006[11]; OECD, 2013[1]), there are important examples of countries that illustrate low levels of regional convergence in the presence of robust fiscal equalisation (Figure 5).

Box 2. Equalisation and regional income disparities[3]

Bartolini, Stossberg and Blöchliger (2016[12]) provide evidence that fiscal decentralisation facilitates regional convergence. However, there is debate as to whether fiscal equalisation, characterised as the natural "companion" to decentralisation (OECD, 2013[1]), hinders long-term development incentives in an attempt to correct short-run disparities in fiscal capacity. Hailemariam and Dzhumashev (2018[13]) use data on Canadian provinces to show that equalisation payments drive increases in unproductive expenditure which slows convergence. On the other hand, Holm-Hadulla (2020[14]) exploits a natural experiment among German municipalities to find that increasing equalisation rates lead to less distortionary taxation choices by local government (specifically a shift from business to property taxes), which could be conducive to growth and productivity.

Model and results

Using country-level cross-sectional data from the 2019 fiscal equalisation survey, we adapted the regional convergence model employed by Bartolini et al. (2016[12]) to examine the impact of the extent of revenue equalisation on regional income disparity in the presence of a control vector. Revenue equalisation was quantified as the percentage change in the inter-jurisdictional Gini coefficient of SCG per capita revenue after equalising transfers were applied. Following Bartolini et al. (2016[12]), for each country included in the sample, the extent of regional convergence was quantified as the coefficient of variation of income per capita across sub-national regions.

Though marginally negative, the effect of increasing fiscal equalisation on regional convergence was found to be statistically insignificant. Supplementary regressions of regional income disparity on other measures of the extent of equalisation also produced insignificant results. Similarly, simple univariate regressions of regional income disparity on the same explanatory variables did not yield significant coefficients. These results are reinforced by a visual inspection of Figure 5, which relates the percentage change in inter-jurisdictional Gini coefficient of revenue per capita after equalisation to the coefficient of variation of regional income per capita. The dispersion of individual countries around the trend line (blue dots) indicates the presence of both high and low regional income disparities at varying levels of fiscal equalisation. For example, Belgium, Switzerland and Germany have similar levels of regional income disparity though Germany has a considerably more aggressive revenue equalisation scheme in terms of the percentage change in revenue inequality.

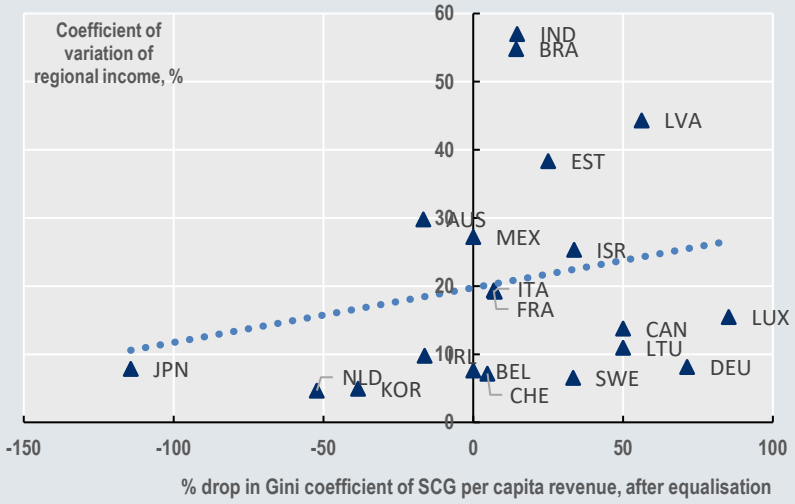
[3] Gursimran Dhaliwal (Mount Royal University) provided support for the data analysis.

Conclusion

Cross-sectional evidence suggests that regional convergence depends little on the extent of equalisation. Low-levels of regional income disparity can be observed across both more and less equalising systems. While these results are preliminary, it is worth noting that despite being insignificant, the coefficients that relate the extent of equalisation to regional income disparity are consistently positive across several measures of the explanatory variable. Future research should use panel data on equalisation systems to further explore the relationship between fiscal equalisation and regional outcomes.

Figure 5. There is no clear relationship between regional convergence and the extent of fiscal equalisation

Regional convergence vs extent of fiscal equalisation



Note: Cross-sectional data obtained for same year as indicated by country in Table 3, roughly 2016-18. The effect of revenue equalisation for Sweden is based solely on equalising transfers to municipalities.
Source: OECD Fiscal Equalisation Questionnaire 2019, authors' computations.

Examining the effects of cost equalisation

The challenge of cost equalisation

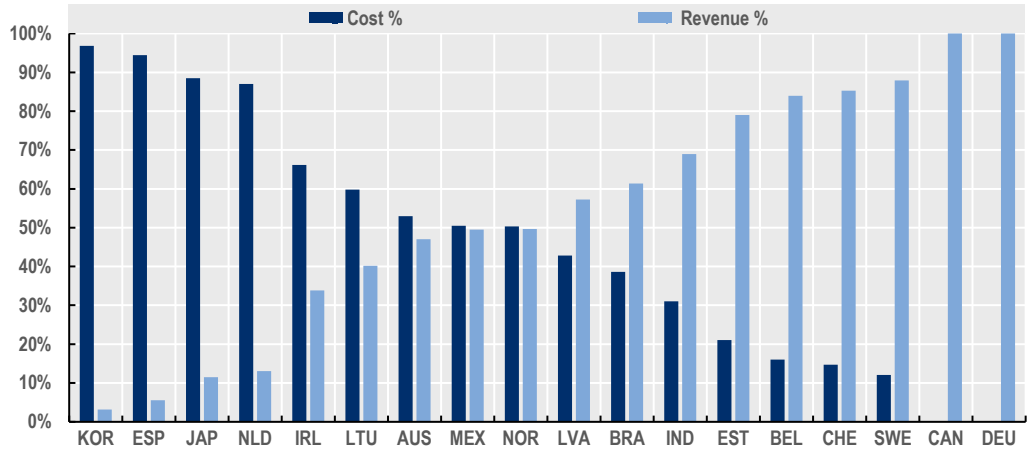
26. Where an equalisation system is purely revenue-equalising, the task of assessing regional disparities is made relatively straightforward: it is fairly easy to quantify the change in disparity of subnational per capita revenues before and after the addition of equalising transfers (Table 3). In contrast, the effect of cost equalisation systems cannot be evaluated via a metric that simply measures the change in revenue disparities. Cost equalisation systems aim to compensate regions for elevated costs and by their nature, introduce a high degree of complexity and special set of challenges for the policy maker (Expert Panel on Equalization and Territorial Formula Financing, 2006[15]).

27. Across the OECD, the extent of cost equalisation varies widely (Figure 6), from systems that exclude costs entirely (e.g. Canada) to systems dominated by compensation for cost disparities (e.g. Korea). Notably, among gap-filling systems (e.g. Korea, Japan,

Ireland and Australia) the imputed[4] cost equalising component of the transfer represents the majority of total spending on equalisation. This suggests that the cost disparities faced by SCGs in these countries exceed their revenue disparities.

Figure 6. Relative expenditure on cost and revenue equalisation varies widely

Expenditure on cost and revenue equalisation % total expenditure on equalisation by country, 2018



Note: This figure depicts the relative shares of cost and revenue equalisation as a percentage of total expenditure on equalisation.
Source: OECD Fiscal Equalisation Questionnaire 2019, authors' computations.

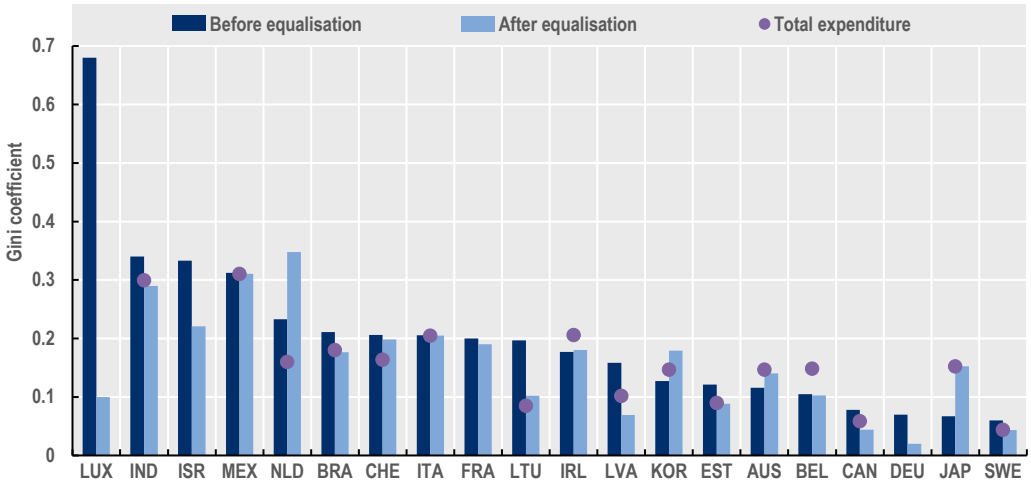
Equalisation systems do not always reduce revenue disparities and when they do, other transfers may counteract their effect…

28. Figure 7 depicts countries' inter-regional per capita revenue disparities before and after equalisation, as well as the inter-regional disparity of per capita expenditure after all transfers. This reveals the central challenge of observing the effect of equalisation systems. In thirteen cases (Belgium, Brazil, Canada, Estonia, France, Germany, India, Israel, Latvia, Lithuania, Luxembourg, Switzerland, and Sweden), equalising transfers reduce per capita revenue disparities. However, in the remaining seven cases examined (Australia, Ireland, Italy, Japan, Korea, Mexico, and the Netherlands), equalising transfers either have no effect on per capita revenue disparities or increase them. In five cases (Australia, Japan, Korea, the Netherlands, and Ireland), revenue disparities rise after equalisation alone. In another seven cases, disparities in per capita final expenditure appear to partially (Brazil, Canada, Estonia, India, Latvia, Sweden) or fully (Belgium) counteract the reduction achieved by the equalisation system. Finally, in two cases (Ireland and Australia), per capita final expenditure illustrates even greater regional disparity than per capita revenue after equalisation, which was already higher than per capita revenue before equalisation.

[4] In order to disentangle the cost and revenue components of gap-filling systems, the hypothetic horizontal transfer necessary to bring to all jurisdictions to average per capita revenue was computed as the revenue equalising component of the transfer. Then, the hypothetic transfer required to bring all jurisdictions to their pre-determined level of financial need was computed as the cost equalising component. The magnitude of these two components was compared to determine the relative contributions of cost and revenue equalisation to the total transfer.

Figure 7. Per capita revenue disparities sometimes rise after equalisation

Inter-regional Gini coefficient of per capita SCG revenue before and after equalisation, 2018



Note: Calculations for Sweden are based on transfers to municipalities only.
Source: OECD Fiscal Equalisation Questionnaire 2019, authors' computations

29. Three observations are immediately apparent. First, equalisation systems do not always reduce inter-regional disparities in per capita revenue. Indeed, cost-oriented equalisation systems may not even consider such reductions to be a prime objective. Second, other transfers from central government or deficit spending by subnational governments may counteract the effects of equalisation, leading to an increase in the disparity of per capita final expenditure relative to per capita revenue after equalising transfers. Naturally, such an outcome may be desirable where variation in certain expenditure needs is not captured within the scope of the equalisation system. Third, the opposing effects of different inter-governmental transfers raises important questions about the coherence of decentralisation. Coherence requires that decentralisation be balanced along the political, fiscal and administrative dimensions with each level of government illustrating broadly consistent levels of competence across policy sectors. Distinct transfers with contradictory effects on SCG fiscal capacity could therefore be indicative of incoherent fiscal relations.

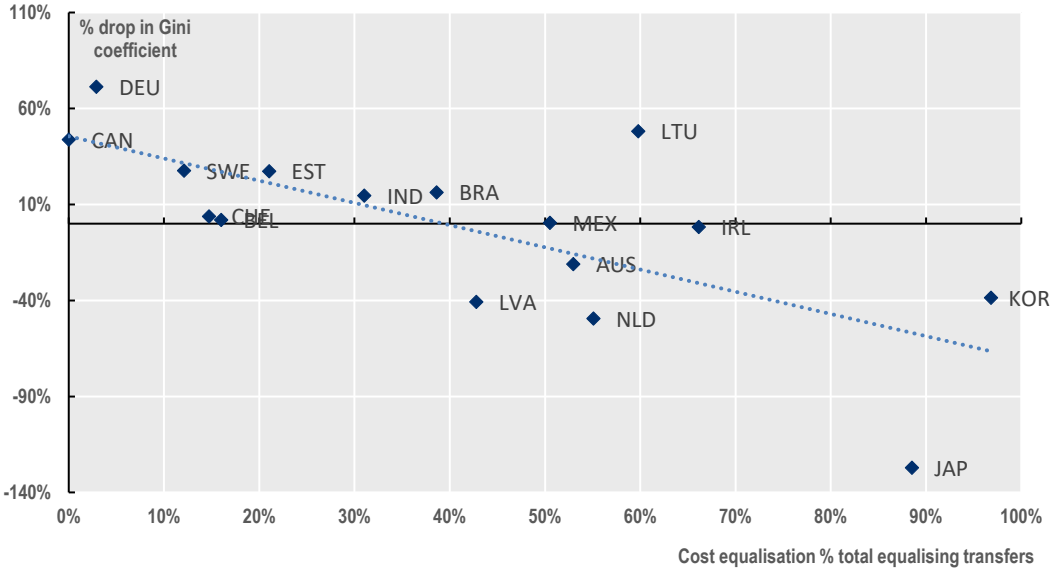
…And this may be related to the disparity enhancing effect of cost equalisation

30. These observations can easily be related to the modalities of equalisation systems (see also Figure 4): with one exception (the Netherlands), all the systems that demonstrate a rise in post-equalisation inter-regional revenue disparity are of the gap-filling type. Notably, these systems are characterised by robust cost-equalisation components that seek to capture variations in SCGs' per capita expenditure needs via comprehensive measures. In contrast, systems that are exclusively or near-exclusively revenue equalising, such as Canada and Germany, demonstrate unambiguous declines in the post-equalisation inter-regional Gini coefficient.

31. The strong, inverse relationship between the share of the cost-equalising portion of an equalisation system relative to total equalising transfers and the system's tendency to reduce inter-regional revenue disparities can be observed on a cross-country basis in Figure 8.

Figure 8. The scale of cost equalisation is positively associated with revenue disparities after equalisation

Cost equalising transfers % total equalising transfers vs. % drop in inter-regional Gini coefficient of per capita revenue post-equalisation

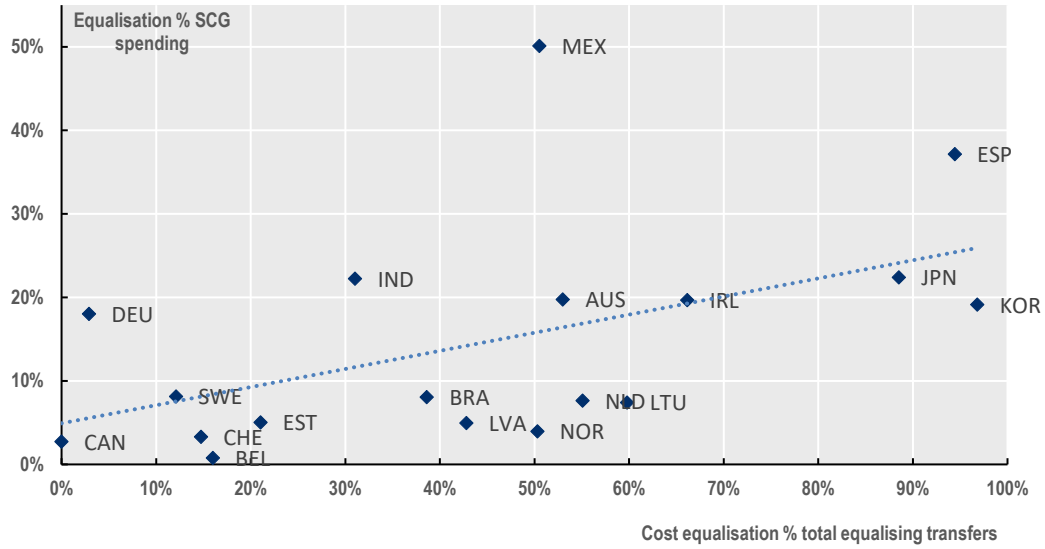


Note: +Norwegian municipal equalisation transfers, *Norwegian county equalisation transfers. Sweden's placement is based solely on municipal equalisation transfers.
Source: OECD Fiscal Equalisation Questionnaire 2019, authors' computations.

32. Figure 8 suggests that the intended effect of cost equalisation systems cannot be observed via a measure of inter-regional revenue disparity. Indeed, the nature of cost equalisation is fundamentally different from that of revenue equalisation, which may necessitate a different approach to measuring its effect. Moreover, the importance of defining a suitable measure to quantify the effects of cost equalisation is reinforced by the fact that cost equalisation may generally be positively associated with larger equalisation systems (Figure 9).

Figure 9. Increased cost equalisation is associated with a larger equalisation system

Cost equalisation as a percentage of equalising transfers vs equalising transfers as a percentage of subnational government spending



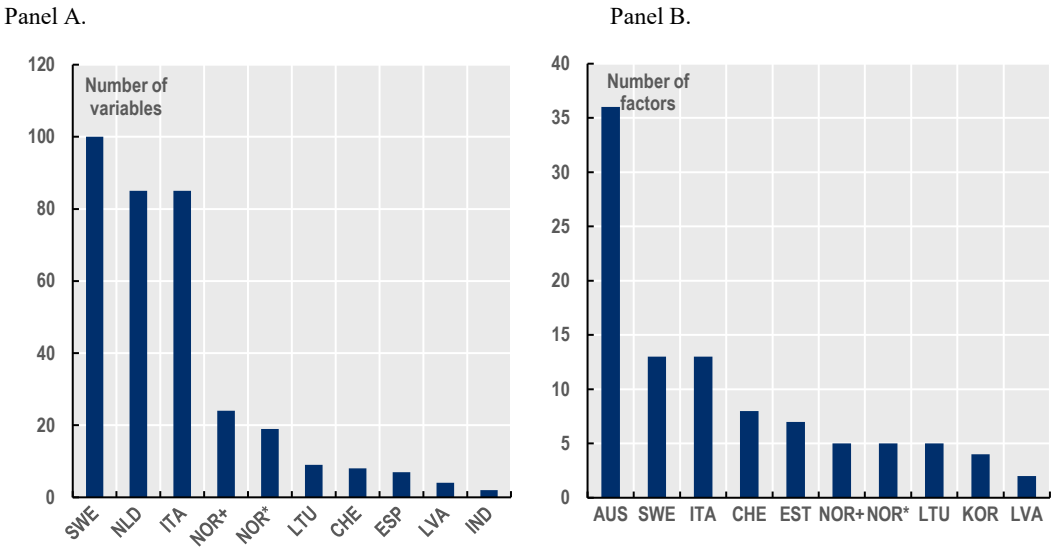
Source: OECD Fiscal Equalisation Questionnaire 2019, authors' computations.

Cost equalisation systems are underpinned by formulas which vary greatly in complexity

33. Cost equalisation systems range considerably in complexity, underpinned by formulas which aim to capture the drivers of cost disparities. Figure 10 depicts the number of variables and factors[5] that enter into these formulas as a broad indicator of their ability to capture the complexity of regional cost variation. It should be made clear, however, that this is not an indicator of their administrative complexity, which is influenced by many factors other than the structure of the formulas themselves.

[5] A factor is a driver of cost disparity, such as a public service or a geographic feature, rather than a variable which enters directly into a formula. Factor are quantified by one or more variables.

Figure 10. Number of variables and number of factors entering into cost equalisation formulas by country



Note: 1.A factor is a driver of cost disparity, such as a public service or a geographic feature, rather than a variable which enters directly into a formula. Factor are quantified by one or more variables. +Norwegian municipal equalisation transfers, *Norwegian county equalisation transfers.
Source: OECD Fiscal Equalisation Questionnaire 2019, authors' computations.

34. Several country examples illustrate the diversity of approaches to cost equalisation. During the period of the 14th Finance Commission, India accounted for the per capita cost variation faced by states using two straightforward variables: forest cover and surface area[6]. This approach has the advantage of simplicity, which may allow for timely and accurate data inputs. However, such an approach may also exclude much of the variation driven by other factors. At the other end of the spectrum, Sweden uses a complex system comprised of 13 different cost models covering diverse functions of government. Australia uses similarly sophisticated methods. Likewise, Italy has adopted an intricate system of cost measurement that employs regression models to connect the extent of service provision with the service's standardised cost. Naturally, such approaches rely on the availability of extensive and high quality data. Latvia, Lithuania, Norway and Switzerland lie in the middle with simpler cost-equalisation frameworks based around a few key variables.

Cost equalisation systems may capture inter-regional variation to a greater extent than revenue equalisation, suggesting there is often greater regional asymmetry in costs compared to revenues

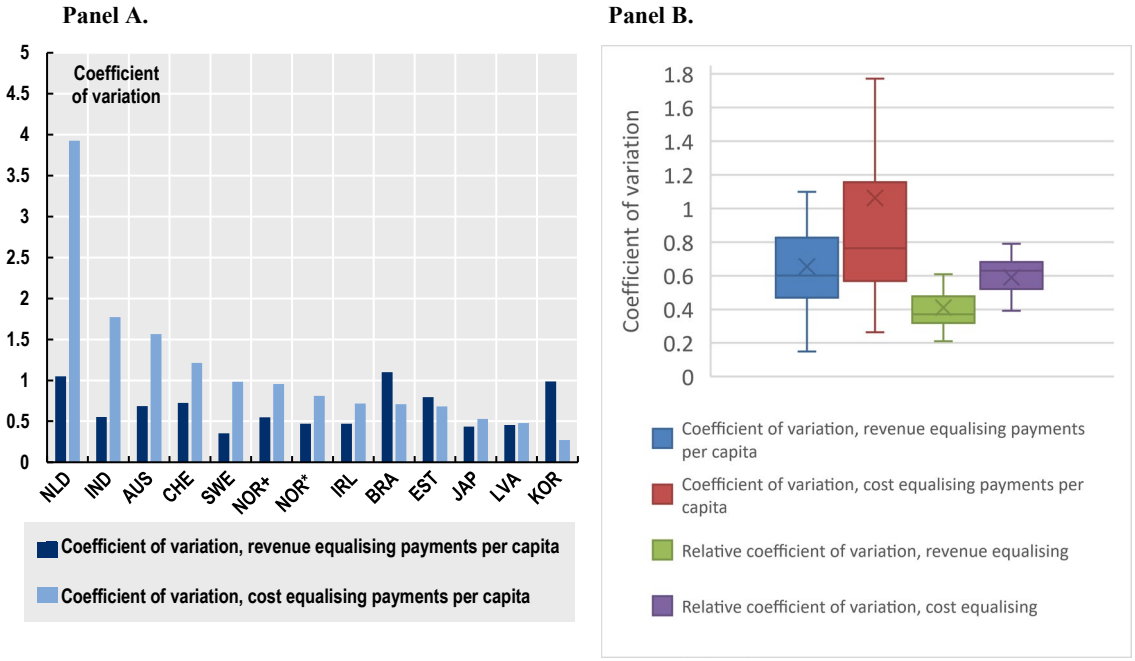
35. Relative to revenue equalisation, cost equalisation tends to be associated with higher levels of per capita variation in equalising payments to SCGs. Figure 11 (Panel A) shows that in most cases (nine out of twelve countries), the coefficient of variation of per capita cost-equalising payments exceeds that of per capita revenue equalising payments. On a cross-sectional basis, the mean coefficient of variation of per capita cost-equalising

[6] These two criteria were maintained in the formula employed by the 15th Finance Commission. There is some discussion as to whether the forest cover criterion should be interpreted as compensation for the cost disability imposed by forest or an incentive to reward the provision of ecological services (Finance Commission of India, 2021[17]).

payments is about 70% higher than that of revenue equalising payments (Figure 11, Panel B). Moreover, when the coefficients of variation are expressed relative to one another for each country, the difference becomes even more apparent with the cost-equalising coefficient of variation on average three-quarters higher than the revenue-equalising coefficient of variation[7].

Figure 11. Cost-equalising payments exhibit greater per capita variation than revenue equalising payments

Coefficients of variation of per capita revenue and cost-equalising payments to SCGs.



Note: All coefficients of variation are computed based on positive per capita payments *to* SCGs. In horizontal systems, contributions to equalisation paid out of SCG own-source revenues do not factor in to the determination of the coefficient of variation. Coefficients of variation for such contributions would need to be computed separately from coefficients of variation for positive payments to avoid a zero or near-zero denominator for the coefficient. 1. The box plots depict the mean, median and quartile values of the coefficients of variation aggregated by cost and revenue. 2. The box plots of the relative coefficients of variation depict the dispersion of the coefficients of variation as a percentage of their sums within each country. 3. Belgium, Canada, and Germany are exclusively revenue equalising, so no coefficient of variation can be computed for cost-equalising payments. +Norwegian municipal equalisation transfers, *Norwegian county equalisation transfers.
Source: OECD Fiscal Equalisation Questionnaire 2019, authors' computations.

36. Several of the systems with higher variation in per capita cost-equalising payments also share highly sophisticated approaches to cost equalisation with models that encompass dozens if not hundreds of variables (e.g. Australia, the Netherlands, and Sweden). In contrast, the systems that illustrate less variation tend to have adopted simpler approaches based on a few select measures that enter into a more basic model (e.g. Brazil, Estonia, and

[7] Certain highly decentralised federations may prove exceptions to the generally higher disparity exhibited in cost equalising payments versus revenue equalising payments. While the Canadian equalisation system does not consider expenditure need, some work has suggested that if it were to account for expenditure need disparities, these disparities would be much smaller than the fiscal capacity disparities between provinces (Gusen, 2012[48]).

Mexico). This suggests that complex measures of per capita cost may capture inter-regional variation to a greater extent than simpler measures that exclude a range of cost factors. The resulting compensation for this magnified variation may help to explain why the share of cost equalisation is often positively associated with larger equalisation systems (see Figure 9).

There is a need for indicators that adequately capture the effect of cost equalisation

37. Greater cost equalisation tends to be associated both with larger equalisation systems as a share of sub-central government spending (see Figure 9) as well as greater post-equalisation revenue disparities (see Figure 8). Meanwhile, cost equalising payments to SCGs tend to illustrate greater variance on a per capita basis (see Figure 11), suggesting costs are often an even greater driver of regional disparity than revenues.

38. The immense complexity and large size of some cost-equalisation systems makes it imperative that their effects be measured on a comparable, cross-country basis. As described in Section 4 , equalisation systems tend to be subject to regular evaluation. Using measures of the post-equalisation inter-regional disparity of per capita revenue, one can observe the extent of their *revenue* equalising properties on a comparable basis, enabling one to determine whether they are achieving this aspect of equalisation. However, the disparity of per capita revenue fails to capture the effects of *cost* equalisation. Cost equalisation is deeply connected to the broader objective of enabling equitable access to public services, beyond simply equalising SCG revenues. Accordingly, any reasonable assessment of their effect should take this into account.

39. Some international examples exist where performance criteria are integrated as an outcome-based measurement of cost equalisation's effectiveness, which could provide a basis for comparing the relative effectiveness of cost equalisation systems in achieving their end goal. Italy illustrates a comprehensive application of performance assessment in the context of fiscal equalisation, using a determination of the *standard level of services* as "an instrument for evaluating both the degree of technical efficiency in the provision of local public services and the adequacy of the quantity of services provided to the specific local needs." However, such an approach is both data-intensive and complex (SOSE – Soluzioni per il Sistema Economico S.p.a., 2014[16]).

40. The 15th Finance Commission of India provides an example of a much simpler form of performance evaluation in its fiscal devolution formula based on demographic performance, essentially measuring relative reductions in total fertility rate, and tax effort, roughly capturing the ratio of per capita own tax revenue of a State and its per capita gross state domestic product (GSDP) (Finance Commission of India, 2021[17]). The first criterion aims to reward state-level success in achieving national demographic objectives and the latter success in increasing the efficiency of tax collection. However, it is important to note that these performance criteria do not provide an outcome-based measurement of post-equalisation service provision.

3. Mechanism design of fiscal equalisation systems

41. The factors and formulas used to determine the amount of the equalising transfer paid to a given jurisdiction lie at the heart of equalisation systems. Systems incorporating revenue-equalising elements tend to rely on a set of standardised revenues to determine fiscal capacity. Meanwhile, cost-equalising systems rely on a diverse range of measures to determine cost variations faced by jurisdictions (see Figure 10).

42. Table 4 identifies the revenue and cost factors used to determine equalising transfers to SCGs. Some systems rely on a broad range of cost and revenue variables to determine the size of the transfer, while others consider only one principal input. Notably, while revenue factors typically relate to a few main revenue streams flowing to SCGs, cost factors can be numerous and diverse. Some countries (e.g. Australia, Italy, the Netherlands) consider dozens of cost factors based on demographic and geographic variables that are known to drive significant variation in SCG per capita expenses.

Representative tax systems

43. A dominant mechanism-design concern for fiscal equalisation systems is the interaction between the determination of the equalising grant and own-source revenue effort. Typically, the fear is that fiscal equalisation systems that reward revenue losses may discourage SCGs from pursuing own revenue collection efforts (and applying the necessary tax rates to the appropriate base to achieve this). Policymakers tend to respond by using a representative tax system (RTS) for fiscal equalisation, that is, an assessment of fiscal capacity based on the hypothetical revenues that would accrue to a jurisdiction were it to apply a certain (often cross-jurisdictional average) tax rate to an assumed tax base. In this way, jurisdictions are compensated for any decline in their capacity to raise own-source revenues rather than for direct falls in revenue itself. For example, Sweden uses an RTS based on municipal tax rates in 2003 as in principle these cannot be influenced by the policy choices of current local governments.

44. While an RTS can help to reduce the impact of an SCG's tax rate and base choices on its equalisation entitlements, certain revenues have a tax base which may be particularly sensitive to factors beyond tax policy (e.g. zoning for property taxes) (de Joode, 2017[18]). One solution is to use a simplified set of taxes within the RTS in order to reduce the SCG's incentive to make policy choices based on equalisation entitlements. Canada's 2007 reform of equalisation sought to do this by vastly simplifying the revenues used to determine SCG fiscal capacity: a set of 34 taxes was reduced to a set of five, which aimed to enhance the policy neutrality of equalisation. Some systems contain more explicit disincentives to depress own-source revenues. Luxembourg's approach to the horizontal aspect of its equalisation system replaces standardised revenues with yield: the ratio of revenues to the tax rate, which acts as a proxy measure of the breadth of the tax base. A municipality's yield determines its contribution to fiscal equalisation, so cutting tax rates without a proportional drop in revenues drives up yield and hence the contribution requirement.

45. Conceptually, *yield* is similar to other measures of *tax effort*, such as the ones employed by India's 15th Finance Commission. The former is the ratio of tax revenues to the *tax rate* whereas the latter is the ratio of tax revenues to the *tax base*. One can consider yield and tax effort as rearrangements of the same identity, $\tau y = g$, where τ is the tax rate, y is the tax base and g is government revenue. From this identity, $g/\tau = y$ returns the yield while $g/y = \tau$ returns the tax effort (Finance Commission of India, 2021[17]).

Both measures depend positively on revenue and negatively on the tax rate or the tax base, respectively. Accordingly, both measures capture the effect of factors such as compliance with taxation, tax avoidance, or the administrative efficiency of tax collection to the extent that these factors affect revenues without affecting the measured tax base or tax rate.

Imperfect equalisation

46. Some jurisdictions (e.g. Belgium, Germany) use an approach that acknowledges the interaction between revenue policy choices and equalising grants by restricting equalisation to a level below 100%. This may be operationalised via equalisation coefficients that set explicit limits on the extent of equalisation. For example, Belgium compensates regions for 80% of the gap between actual per capita revenues and the mean per capita revenue. Lithuania fixes this amount at 90%. In contrast, other countries (particularly Gap-filling countries, e.g. Japan, Australia) aim for a complete equalisation of fiscal capacity relative to expenditure needs. In these cases, the design of the equalisation mechanism typically aims to mitigate any incentive to suppress own-source revenues.

Basing cost equalisation on structural factors

47. Cost equalisation systems pose a more complex challenge, as evidenced by the range of factors that enter into the determination of SCG costs. Again, policymakers typically aim to quantify expenditure needs rather than direct costs. As explained in section 2, sophisticated approaches are sometimes employed to assess need, based on economic or financial data adjusted to reflect certain considerations (see Figure 10). For example, Australia's Commonwealth Grants Commission considers factors ranging from kilometres of road to pensioners. In the Netherlands, a standardised abatement is applied to a diverse set of cost factors.

Regression-based approaches

48. Regression-based approaches to the determination of standardised costs have been implemented in some jurisdictions. Such approaches endeavour to develop a policy neutral estimate of the true relationship between cost factors beyond the control of local government and per capita expenditure. At the state/local level, a model proposed for Massachusetts regressed per capita local spending on nine variables such as population density, age of housing stock and pupils per capita. The coefficients could be interpreted as the dollar change in expenditure requirement when a given cost factor increases by one-unit, with the error term capturing policy choices across jurisdictions. Moreover, only those coefficients with statistically significant values would be included when using the model to estimate standardised costs, with insignificant variables being discarded (Bradbury et al., 1984[19]). Similar, albeit more sophisticated, approaches can be observed in the Italian case, where regression-based analysis models local costs as a function of the optimal quantity of services offered, input prices and external or environmental factors (e.g. surface area) (SOSE – Soluzioni per il Sistema Economico S.p.a., 2014[16]). In effect, the Italian approach augments the Massachusetts model with measures of service output and input costs. Regression models of expenditure need are also employed in the Swedish equalisation system and during reviews of the Australian equalisation system (Commonwealth Grants Commission, 2015[20]).

Table 4. Factors used in computing equalisation entitlements for SCGs

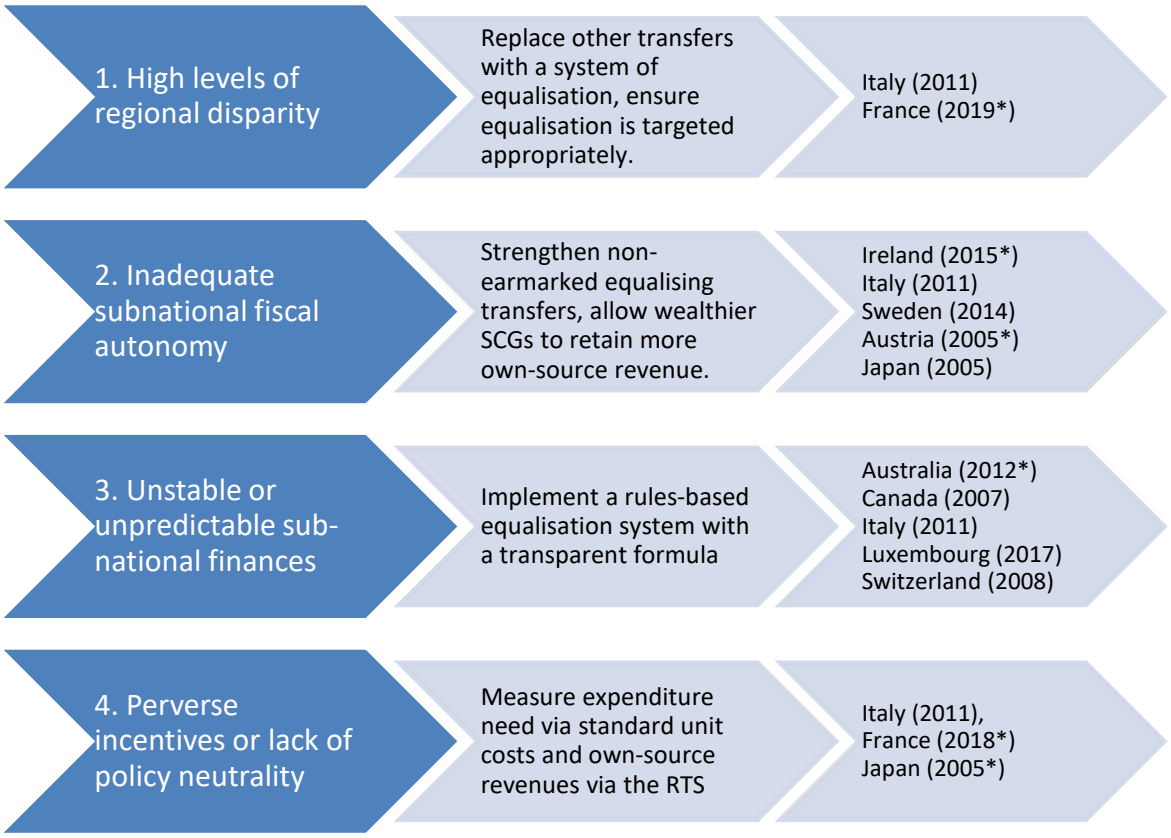
Country	Revenues						Costs
	Income/ payroll taxes	Corporate taxes	Consum-ption tax	Property taxes	Other taxes	Natural resources	Examples of cost factors
Australia	✓			✓ (including land transfer taxes)	✓	✓	Main areas of public service provision (education, health, social protection, etc.), demographic and geographic factors (indigenous status, remoteness, socio-economic status, age, etc.), public sector wage costs, other factors, (net acquisition of non-financial assets, service delivery scale, cross border costs, etc.)
Brazil	✓(Per capita income)						Education transfers: Public daycare, contracted daycare, pre-school, urban primary school, countryside elementary school, urban middle school, countryside high school, vocational education, special education, indigenous education, education of young people and adults. Health transfers: historical cost parameters, epidemiological situation, challenges in setting up health surveillance system.
Japan	✓	✓	✓		✓		Standardised revenues and costs are computed for each municipality. Grants then fill the gap.
Italy	✓(Local surcharge)			✓ (IMU and TASI)	✓		General administrative, management and control functions; local police; education (complementary services); public roads and transport; land management and planning; general social services; and nursery services.
Ireland				✓			
India	✓(Per capita income)						14th Finance Commission: State area and forest cover.
Germany	✓						
Estonia	✓			✓			
Lithuania	✓						Length of local roads and streets; an area of municipal territory; retirement age population; number of children from 7 to 17 years old; number of children from 0 to 6 years old; built up area of municipal territory, other factors.
Canada	✓	✓	✓	✓	✓	✓ (50%)	
Belgium	✓ (Federal personal income tax (PIT) collected in region)						Pertains only to regions (not communities), Brussels Capital Region receives a number of special, cost-equalising grants.
Netherlands				✓			85 cost factors ranging from low-income households and welfare recipients to residential areas to shore length.
Sweden	✓						Service provision, such as pre-school, compulsory school, elderly care, health care and differing costs (wages, heating, etc) are factored into models. For each model, a standard cost for each municipality/county council is calculated, based on a number of different factors.
Switzerland	✓	✓			✓ (Taxable assets)		Geographic factors (average altitude, terrain steepness, settlement structure, low population density) and sociodemographic factors (poverty, old-age, immigrant integration, core city indicator)
Norway	✓				✓(Net wealth, muni-cipal only)	✓	Municipal: Kindergartens, primary and lower secondary schools, child care/child protection, social welfare, elderly care, primary health sector (public health nurse, school health service, psychologist); County: Upper secondary school, county roads, public transportation (buses), boats/ferries, dental health

Source: OECD Fiscal Equalisation Questionnaire 2019.

4. Reforming equalisation systems

Figure 12. Linking motivations for equalisation reform to typical policy responses

Left to right: Motivating factor, policy response, country examples



Note: * indicates that the year provided denotes the year of a recommendation rather than the year of the reform itself.

Motivating reforms to equalisation

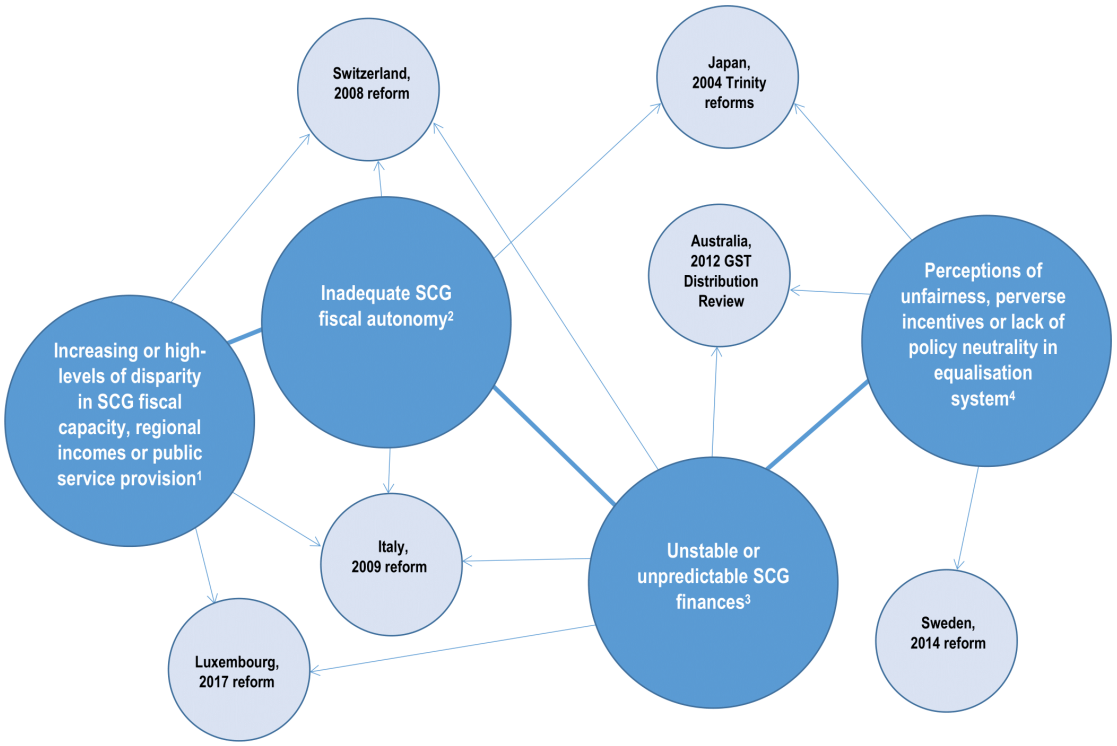
49. Equalisation systems are not static entities, with regular reviews often built-in to their underlying legislative frameworks. Moreover, such reviews may lead to reforms of equalisation systems, sometimes concomitant with broader reforms of fiscal federalism. Japan reviews its equalisation system annually, while Canada adheres to a system of five-year reviews. Australia updates its GST allocations on an annual basis and thoroughly reviews the associated methodology every five years (Commonwealth Grants Commission, 2015[20]). India's Finance Commission convenes every five years, setting the equalising formula for distributing tax revenues to states via a highly consultative process (Finance Commission of India, 2014[21]). In this context, it is critical for the policy maker to consider the design of the review process and the nature of possible reforms.

Several common factors motivate reforms to equalisation systems

50. Several key factors have been identified that motivate the reform of equalisation systems (Figure 13).

Figure 13. Factors motivating reform of equalisation systems

Large blue circles represent motivating factors; arrows link these to country examples indicating where these factors motivated subsequent reforms.



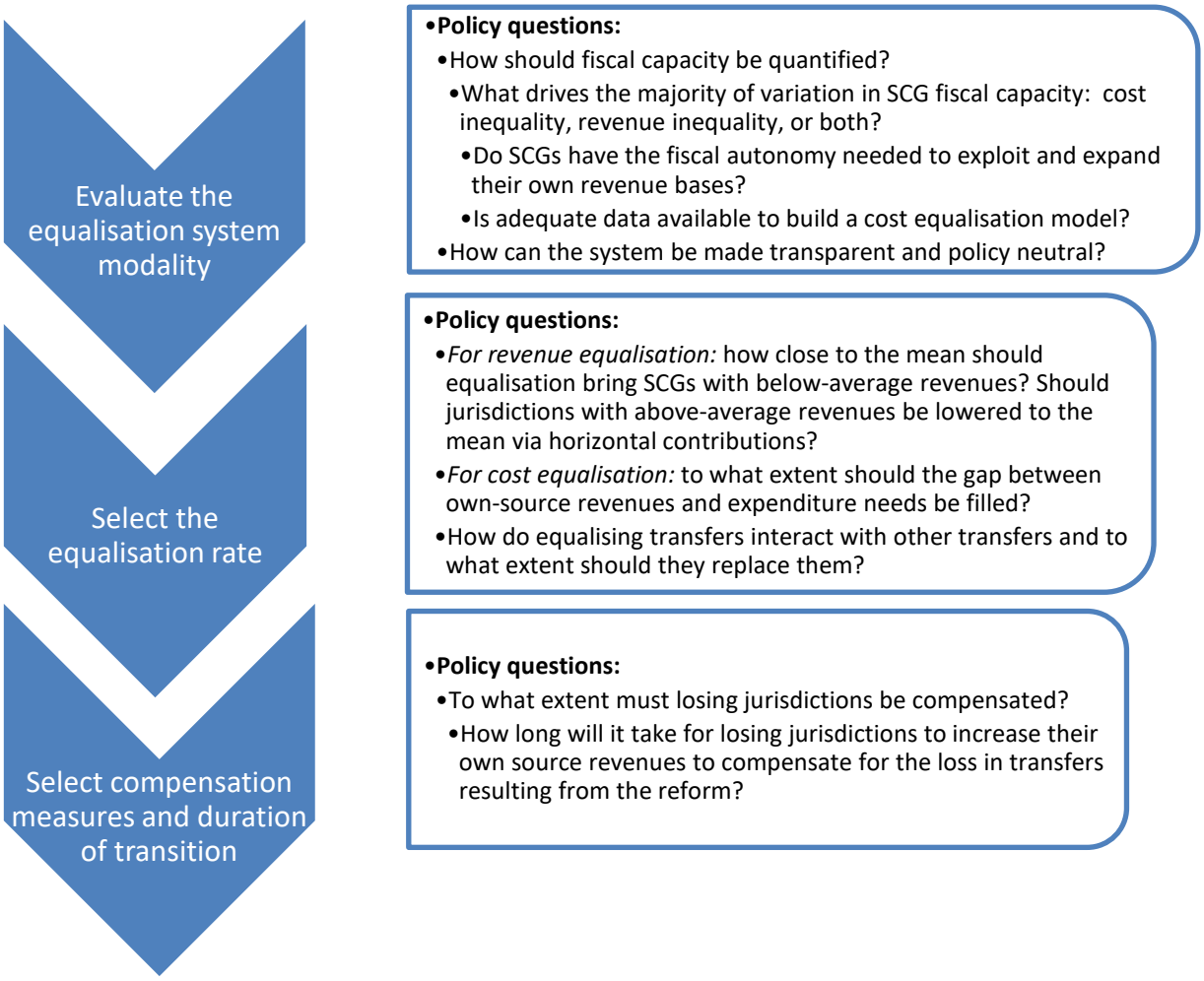
Notes: 1. The primary function of an equalisation system is to correct for inequalities that would otherwise inhibit comparable access to public services across SCGs. 2. Non-earmarked equalising transfers may allow local governments more fiscal autonomy. 3. The formulas underlying equalisation or other transfer systems may undermine revenue predictability for budgeting purposes due to high degrees of complexity or where they take account of volatile revenues. 4. Equalisation systems are sometimes criticised for reducing subnational tax effort or weighing on economic growth.

The process of reform

51. Figure 14 summarizes the questions faced by the policy maker when reviewing and reforming fiscal equalisation systems in order to systematically address the concerns enumerated above.

Figure 14. The process of equalisation reform

Typical question considered during reviews of equalisation systems.



Evaluating the equalisation system modality

Equalisation modality hinges on how fiscal capacity is measured

52. As illustrated in Figure 14, questions of system design are salient during the early stages of an equalisation review. However, the answers vary widely. Countries that choose to quantify fiscal capacity in terms of SCG own-source revenues alone will tend towards a system of pure revenue equalisation (e.g. Canada and Germany). On the other hand, countries that choose to incorporate variation in per capita cost must then choose between a system of distinct cost and revenue equalising grants (e.g. The Netherlands, Sweden and Switzerland), or an integrated gap-filling transfer (e.g. Australia, Japan and Korea).

53. The determination of fiscal capacity, and in turn equalisation modality, tends to hinge on two foundational questions:

1. Do SCGs have sufficient fiscal autonomy such that, were each to have equivalent per capita own-source revenues, each could make the choices necessary to deliver the desired bundle of services for its residents?
2. If not, which other drivers of inter-regional inequality, such as costs, need to be taken into account?

54. In response to the first question, Canada's last review of fiscal equalisation returned with a firm "yes," precluding the adoption of a system of cost equalisation which was seen as needless in the presence of very high provincial fiscal autonomy (Expert Panel on Equalization and Territorial Formula Financing, 2006[15]). Conversely, in the Dutch case, low degrees of municipal tax autonomy were described as a "bottleneck" with respect to equalisation reform (de Joode, 2017[18]), necessitating a compensatory increase in municipal tax autonomy concomitant with any reduction in fiscal equalisation. Moreover, the Netherlands' equalisation system remains heavily cost-oriented (see Figure 6).

55. In contrast to Canada, Australia's equalisation system takes place within the context of an extensive vertical fiscal gap. This means that, in principle, own-source revenues are insufficient to cover state-level costs. Accordingly, as part of each five-year review of the equalisation system, the Commonwealth Grants Commission must undertake a detailed analysis of the structural factors underlying cost inequality between Australian states. This enables the development of policy-neutral cost indicators, which allow for the measurement of fiscal capacity.

Data requirements vary with the design of the equalisation system

56. Data availability is a key consideration when designing equalisation formulas. Australia's Commonwealth Grants Commission has identified the contemporaneity of data as important to ensuring the functionality of the equalisation system (Commonwealth Grants Commission, 2015[20]). This, combined with the vast number of variables that factor into its estimation of expenditure need, makes for a system that is highly dependent on a wide array of timely data and the infrastructure required to produce them. However, as evidenced by the broad variation in the complexity of cost-equalisation models (see Figure 10), this is by no means the only approach. In the guidance of the 14th and 15th Finance Commissions, India's assessment of costs depended on only two variables: state surface area and forest cover[8]. Latvia and Lithuania propose a middle ground, with four and nine cost variables, respectively, entering into their cost-equalisation formulas.

Selecting the rate of equalisation

57. Once the equalisation modality has been determined, the question of the rate of equalisation arises. The rate of equalisation denotes the extent to which an equalisation system rectifies inter-regional disparities. In practice, this rate refers to a coefficient that quantifies how close equalising transfers bring a given SCG to mean per capita revenues (in the case of revenue-equalising systems) or expenditure needs (in the case of systems with a cost equalising component). It is important to remember that, in the absence of offsetting policy measures, this coefficient has two equivalent interpretations: first, it defines the rate at which a jurisdiction is compensated for each dollar lost when its fiscal capacity falls relative to the mean or its expenditure need. Second, it defines the rate at

[8] The Indian Finance Commissions sometimes describe population as a cost criterion, however for the purposes of this cross-country analysis, transfers with an equal per capita impact are not considered equalising since they do not compensate for per capita cost or revenue disparities between jurisdictions.

which a jurisdiction's equalising transfers are clawed-back for each dollar gained when fiscal capacity rises.

58. Among countries that specify an explicit rate of equalisation, this rate typically varies between 60% and 100% (see Table 1). In fact, there is evidence from German municipalities that higher equalisation rates may promote more efficient taxation choices by local government when they face greater clawbacks in the presence of rising own-source fiscal capacity (Holm-Hadulla, 2020[14]). In the case of gap-filling systems, the difference between standardised own-source revenues and standardised costs is generally filled completely.

59. The rate of equalisation is closely connected to the funding source of equalising transfers, particularly where equalisation is fully (e.g. Lithuania and Ireland) or partially horizontal (e.g. Germany and Sweden). In the presence of horizontality, the rate of equalisation reflects not only the extent of compensation to poorer SCGs, but also the contribution rate faced by wealthier SCGs. Generally, wealthier SCGs are allowed to keep some of their additional revenues above the mean in order to promote tax effort and local economic development. For example, Swedish municipalities only contribute to equalisation once their per capita revenues exceed 115% of the standardised mean. In cases where equalisation is purely vertical (e.g. Japan and Korea), it is sometimes funded through an earmarked portion of central revenues. In Japan, equalisation is funded via a dedicated revenue stream consisting of 33.1% of income tax and corporate tax revenues, 50% of liquor tax revenues, and 20.8% of consumption tax and local corporation tax revenues.

60. The extent of equalisation often prompts a lively debate because it is seen as having direct implications for subnational tax effort, and in some cases, economic growth itself. However, it is important to note that such effects are challenging to observe directly[9]. Moreover, some national reviews have concluded that equalisation systems are unlikely to have an adverse impact on economic development. Both Australia and Sweden's last major reviews of fiscal equalisation concluded that there was no discernible evidence of such effects. While Sweden pursued a reform in 2014 that was designed to allow wealthy municipalities to retain more of their own-source revenues, this change was reversed in 2016. Subsequent reviews have focussed on increasing redistribution in favour of rural and remote regions and those with lower socio-economic status.

Equalisation may not supplant all other transfers

61. Equalisation is not always well adapted to replacing all other forms of inter-governmental transfers. Where equalising transfers are dependent on buoyant revenue streams they may illustrate the pro-cyclicality of government revenue more generally. Moreover, the frequent use of lagged variables in their underlying formulas may make them less responsive to emerging crises. For these reasons, sudden events such as the COVID-19 pandemic may require different instruments to mitigate asymmetric impacts (see Box 3). In addition, where an equalisation system replaces other transfers, it may need to adopt indicators that capture the criteria upon which the erstwhile transfers were based. As a result, equalisation formulas may become increasingly complex and difficult to interpret.

[9] For example, the Australian Government's GST distribution review concluded "the current system creates perverse theoretical incentives in some instances, but there is little evidence that they have any effect in the real world. In particular, there is no evidence that HFE acts as a material disincentive to State tax reform" (2012[24]).

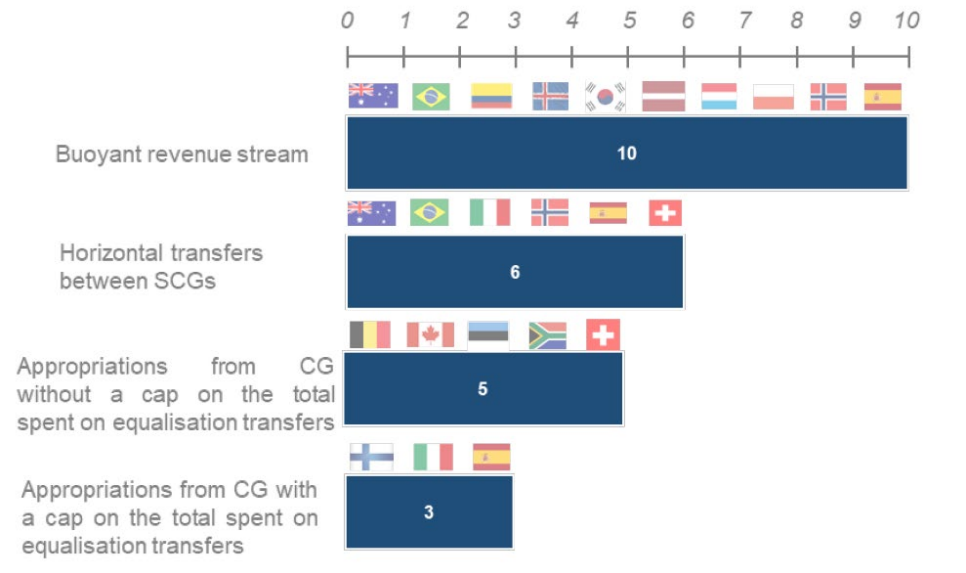
Box 3. Equalisation and COVID-19

Amid the pandemic (May 2020), the OECD's Fiscal Network conducted a rapid survey on COVID-19 and intergovernmental fiscal relations, which included questions on equalisation. The implications of the pandemic may interact with equalisation systems by changing the geographic distribution of the demand for equalising payments and, in principle, an efficient equalisation system could alleviate the asymmetric differences of the current crisis. However, where funds for equalising transfers are tied to dedicated revenue streams or capped at a certain growth rate, the available revenues may shrink as a result of the pandemic, leading to a negative impact on the size of the transfers themselves. Moreover, it is common for countries to link equalising transfers to lagged indicators of fiscal capacity or to a moving average, which could reduce their equalising effects in a time of crisis.

Approximately half of the countries that responded to the survey indicated that COVID-19 had asymmetric impacts across regions (10 out of 21). While a significant portion were not yet able to determine whether impacts were asymmetric at the time of the survey (7 out of 21), only a small minority of countries indicated that they had not observed any asymmetries (4 out of 21). Among the ten countries that observed asymmetry, all observed asymmetric cost increases and nine out of ten observed asymmetric revenue losses. However, when it came to the magnitude of these impacts, the majority of respondents indicated that SCGs' revenues, rather than costs, would be harder hit. Only one country indicated that they anticipated that cost increase would have a greater impact on SCG finances than revenue drops.

Within many equalisation systems, funding for transfers comes from a source that fluctuates with revenue receipts (Figure 15).

Figure 15. Fiscal equalisation funding streams



Note: Only countries that answered the respective question are shown. Poland and Latvia were considered to have a buoyant revenue stream since both mentioned that the equalisation formula involves tax revenue collected.
Source: Based on the COVID-19 Rapid Survey held by the Network in June 2020.

Eight countries indicated that equalisation is at least partially funded by appropriations from central government revenues and six indicated that it is at least partially funded by horizontal transfers among SCGs. Depending on the income elasticity of revenue at the central and subnational levels, transfers funded by central government and horizontal transfers may both be susceptible to contractions in economic activity.

As seen in Figure 16, half of respondents anticipated a fall in total equalising transfers, whereas only one country, Canada, anticipated an increase to one of its two equalising transfers (the Territorial Financing Formula). Overall, this suggests that equalisation systems may have a pro-cyclical impact on subnational finances. Importantly, several respondents indicated that the use of lagged variables when computing equalisation payments means that the effect of the pandemic may not be reflected in the actual sums paid to SCGs for several years (e.g. Australia, Colombia, Finland and Poland).

Figure 16. Impact on total amount transferred by fiscal equalisation

Note: Only countries that answered the respective question are shown. Canada expects no direct effect on provincial equalisation transfers and an increase in payments made via the Territorial Financing Formula.
Source: Based on the Fiscal Network's COVID-19 Rapid Survey in June 2020.

Source: Dougherty et al. (2020[22])

62. In view of this, some countries have taken the approach that equalisation systems should not supplant all other grants:

- The 13th Finance Commission of India highlighted the important role of "grants-in-aid" noting that that they allow for the compensation of "cost disabilities faced by many states which are possible to address only to a limited extent in any devolution formula" (Finance Commission of India, 2009[23]). Moreover, such grants are often aimed towards specific sectors, allowing for targeted investment.
- Australia's Commonwealth Grants Commission noted that equalisation alone "cannot overcome the disadvantage experienced by some indigenous communities. Improving outcomes for these communities will require a concerted effort by Commonwealth and State governments. Where additional measures are required, they would best be undertaken outside the HFE (i.e. horizontal fiscal equalisation) system and excluded from it, so that the HFE system does not frustrate the desired change." Furthermore, transfers to states to address indigenous disadvantage should not affect measured fiscal capacity for the purposes of equalisation (Australian Government, 2012[24]).

- Canada's Territorial Financing Formula, as distinct from its provincial equalisation system, represents a similar consideration. Owing to their particular characteristics, such as extreme remoteness, Canadian territories face higher service delivery costs and a relatively lower capacity to fund them through own-source revenues. As a result, the last major review of Canada's equalisation system recommended that they continue to benefit from a separate system of vertical transfers outside of the provincial equalisation program (Expert Panel on Equalization and Territorial Formula Financing, 2006[15]).
- In Belgium, the Brussels capital region receives a set of transfers outside of the National Solidarity Mechanism, which reflects its unique status as the seat of the European Parliament.

Implementing transition measures

63. Adjustments to equalisation systems typically create winners and losers. This often necessitates a period of transition as changes are phased-in. Such transition periods are typically characterised by concessions along the following two dimensions: (a) compensation to losing jurisdictions as a share of their loss arising from the change; and (b) a transition period of a fixed duration. The first dimension is conceptually equivalent to the determination of the equalisation rate itself. For example, if the equalisation rate is increased from 0.9 to 0.95, a jurisdiction that sees a rise in measured fiscal capacity in the following period will see a greater absolute loss in equalising transfers under the new equalisation rate[10]. However, if the jurisdiction receives compensation to mitigate the difference, the equalisation rate is effectively reduced. The second dimension, the duration of transition, allows jurisdictions to increase own-source revenues to make up for any adjustment to the equalisation they receive.

64. Some recent transition measures have lasted a decade or more in duration and provided substantial protection to losing jurisdictions. In Switzerland, transitional grants arising from the 2008 reform amounted to about 7% of total equalising transfers in 2016. These transfers will be reduced by 5% a year until 2036 when they will be eliminated and they are not paid to cantons whose measured fiscal capacity exceeds the mean (Administration fédérale des finances, 2012[25]; 2019[26]). Sweden paid similar transitional grants to jurisdictions that saw losses arising from its 2014 reform. However, because this reform was reversed in 2016, the sums paid recently have been fairly minor as a portion of total equalising transfers, constituting about 0.1% of total equalisation funds in 2018. Italy's approach to transition saw the old and the new equalisation formulas co-existing for a period of several years, with the percentage of local government funding distributed by the new system increasing every year, rising from 20% in 2015 to 45% in 2018 to reach 60% in 2022. It will then rise by 5% per year, reaching 100% in 2030. Finally, Canada introduced a transitional measure known as Total Transfer Protection (TTP) in the fiscal year 2010-11. It followed the move in 2009 to a fixed funding envelope for equalisation

[10] For example, under a theoretical revenue equalisation scheme, an SCG at 80% of mean fiscal capacity will be compensated to 98% of mean fiscal capacity at an equalisation rate of 0.9 and 99% of mean fiscal capacity at an equalisation rate of 0.95. Should its fiscal capacity increase to 90%, it will be compensated to 99% of mean fiscal capacity at an equalisation rate of 0.9 and 99.5% of fiscal capacity at an equalisation rate of 0.95. The loss in equalising transfers when fiscal capacity increases amounts to 9 percentage points in the presence of an equalisation rate of 0.9 and 9.5 percentage points in the presence of an equalisation rate of 0.95. In the latter case, the SCG must raise more own-source revenue to compensate for the measured increase in its fiscal capacity.

payments which grows at the rate of nominal GDP. The TTP served as a backstop ensuring that no province received less in combined federal transfer payments than in the previous year, regardless of any changes that had taken place. The TPP was in place until 2013-14 (Feehan, 2014[27]; Nadeau, 2014[28]), and amounted to roughly 5% of equalisation payments over the period.

Guidance from OECD country surveys on equalisation reform

65. Where equalisation systems have been examined within the scope of OECD country surveys, several measures have been recommended to respond to the challenges identified in Box 3 (Table 5).

Table 5. Past recommendations on fiscal equalisation from country surveys and related papers

Principal survey recommendations on equalisation

Country	Year	Principal recommendations					
		Cost equalisation should reflect structural measures of cost rather than past or current spending	Make equalisation formula more transparent or simplify it	Adjust formula to reflect demographic changes, such as ageing	Allow SCGs to keep more own-source revenue	Improve targeting of equalisation/ provide special support to poor regions	Increase horizontal equalisation
France	2019	✓				✓	✓
Switzerland	2019			✓			
Sweden[1]	2010		✓	✓	✓		
Italy	2009		✓				
Austria	2005				✓	✓	✓
Japan	2005	✓	✓		✓		

Note: 1. Based on a territorial review
Source: Forman et al. (2020[29]).

Enhance the policy neutrality and relevance of cost equalisation

66. The challenges of cost equalisation are reflected in the recommendations of country surveys. France and Japan, which share robust cost equalisation systems, were advised to separate measures of expenditure need from actual spending in order to enhance policy neutrality. This could include the use of standard unit costs. Additionally, surveys have urged the simplification of equalisation formulas as a way of achieving greater transparency (e.g. Sweden, Italy and Japan). Finally, surveys have noted the need to ensure that cost equalisation formulas capture relevant variables as drivers of expenditure evolve in the face of changing demographics (e.g. Switzerland and Sweden).

Equalisation should be carefully targeted to ensure it is not exacerbating disparities nor undermining SCG fiscal autonomy

67. In some cases, country surveys have noted that equalisation systems are not fulfilling their intended purpose and may therefore be exacerbating disparities or undermining SCG fiscal autonomy. For example, in France 97.5% of municipalities received at least one type of vertical equalisation transfer in 2018 (OECD, 2019[30]) suggesting that the scope of the system had gone beyond the traditional purview of equalisation and subsumed other types of transfers. Moreover, the use of lump-sum payments and indicators based on past tax-raising ability may have been perpetuating

inequalities. In response, improved targeting and the use of horizontal equalisation was recommended, based partially on past OECD work that suggests horizontal equalisation is more equalising per dollar spent (Blöchliger and Charbit, 2008[6]). Similarly, the use of targeted support to poorer regions concomitantly with the introduction of horizontal equalisation was recommended in Austria. In the interest of improving sub-central fiscal autonomy, Austria was also encouraged to allow SCGs to retain more own-source revenues, as were Sweden and Japan.

Table 6. Common reforms to equalisation systems

Outcomes of reforms and reviews of equalisation systems.

Country	Year	Outcome					
		Enhance subnational fiscal autonomy		Implement rules-based systems		Updating and simplification	
		Allow SCGs to retain more own-source revenue/Raise SCG tax autonomy	Replace systems of earmarked transfers with equalisation (non-earmarked)	Move to or retain a system of standardised costs, less influenced by past expenditure	Move to or retain a rules-based, rather than discretionary, equalisation system	Simplify equalisation formulas	Update equalisation formulas
Australia	2015				✓		✓
Canada	2007				✓	✓	
Ireland	2015[1]	✓					
Italy	2009	✓	✓	✓	✓		
Japan	2002	✓	✓	✓	✓	✓	
Luxembourg	2017					✓	
Switzerland	2008		✓		✓		
Sweden	2014	✓					✓

Note: 1. Issued as recommendations by an external report in 2015, endorsed by an inter-departmental report in 2019.
Source: Forman et al. (2020[29]).

Equalisation reform in practice

In practice, large-scale reforms aim to reinforce subnational fiscal autonomy and stability through the adoption of rules-based equalisation systems

68. Table 6 indicates the principal outcomes of major reviews and reforms of equalisation systems. It is important to illustrate how these measures connect to the challenges identified above that motivate their implementation (see Figure 12), by linking motivations for equalisation reform to typical policy responses. In general, reforms centre on defining a clear set of rules in order to enhance clarity and predictability for SCGs.

Italy's comprehensive equalisation reform

69. The Italian case is illustrative of a comprehensive equalisation reform that covers many of the elements observed in other countries. Introduced in 2011, the equalisation system was born out of a broader 2009 reform of fiscal federalism and encompassed a set of measures that aimed to address the opacity that had emerged within local government finance. To deal with high levels of regional disparity, the new equalisation system was designed to replace other transfers which were not targeted based on local fiscal capacity. This simultaneously enhanced subnational fiscal autonomy as the equalising transfers were non-earmarked. To avoid perverse incentives, the system employed standard unit costs

rather than past spending when determining expenditure need. In a similar vein, the use of a formula-based system aimed to increase transparency from the perspective of local governments. In contrast, the former system of transfers tended to be negotiated between levels of government based on historical costs rather than objective allocation criteria (OECD, 2012[31]).

Moving towards rules-based systems

70. As in Italy, other countries' reforms of equalisation have tended towards rules-based systems with fewer discretionary elements, meaning that allocations are based on clearly articulated formulas and set criteria. In comparison with ad-hoc negotiations between levels of government, this can ensure predictability for SCGs (Expert Panel on Equalization and Territorial Formula Financing, 2006[15]). A current reform proposal in Switzerland aims to guarantee a particular equalisation rate to cantons, with funding determined formulaically as opposed to on a periodic basis (Weber, 2019[32]). Likewise, the last major reviews of the Australian and Canadian equalisation systems emphasised the importance of rules-based systems (Australian Government, 2012[24]; Expert Panel on Equalization and Territorial Formula Financing, 2006[15]). Such rules-based approaches, however, may be accompanied by a concomitant reduction in the influence and power of ministries that were formerly responsible for advancing their policy agendas through the disbursement of local government grants. This was the case in Japan where concerns were raised that the reduction in earmarked grants in favour of the equalising local allocation tax would reduce the ability of ministries to pursue policy objectives (OECD, 2016[33]).

Enhancing subnational fiscal autonomy

71. The Italian reform's objective of enhancing local fiscal autonomy can be observed across reviews and reforms of other equalisation systems. For example, Switzerland's 2008 reform aimed to enhance local fiscal autonomy through reducing the use of earmarked transfers in favour of non-earmarked, equalising transfers (Administration fédérale des finances, 2012[25]). Similarly, two recent reviews of Ireland's equalisation system recommended allowing local governments to retain 100% of the property tax revenue they generate locally (Thornhill, 2015[34]; Department of Finance, 2019[35]). While this would enhance local fiscal autonomy, it would also eliminate the horizontal component of the equalisation system, which is presently funded through a 20% share of local authority property tax revenues. Consequently, this would need to be replaced by vertical transfers. Conversely, the Swiss equalisation reform included a renewed horizontal revenue equalisation component amounting to between two-thirds and four-fifths of the vertical component. Finally, Sweden's 2014 reform of fiscal equalisation aimed to allow municipalities that would pay into the horizontal component of the system to retain more of their own-source revenues, in the interest of encouraging local economic development. However, this change was reversed two years later.

72. Japan's "trinity reforms" provide a further study of equalisation reform within the broader context of enhancements to subnational fiscal autonomy, including the use of equalising transfers as a replacement for earmarked grants. In 2004, a revenue transfer of JPY 3 trillion to the local level replaced over one hundred earmarked subsidies. A further JPY 512 billion in earmarked subsidies was bundled into a general subsidy in 2011 (OECD, 2016[33]). Importantly, the principal mechanism by which non-earmarked funds are allocated to local governments, the local allocation tax (LAT), has an explicit equalising function. While policymakers aimed to base the LAT on equalising, policy-neutral criteria that are less influenced by the extent of past infrastructure spending (e.g. standardised unit

costs), critics have noted that the revenues transferred to the local level were not sufficient to compensate for the reduction in grants. Accordingly, some subsequent reforms have focussed on raising subnational fiscal capacity through increases in local consumption taxes (OECD, 2017[36]; Tokyo Metropolitan Government, 2018[37]).

Reforms to established equalisation systems tend to reinforce transparency and relevance through simplification and updating of formulas

Simplifying equalisation formulas

73. The high levels of complexity associated with some equalisation systems, and the formulas underlying them, have at times motivated simplification efforts. In Luxembourg, the principal outcome of the 2017 equalisation reform was the unification of the two former equalising transfers into a single transfer: the *Fonds de dotation globale des communes* (FDGC). The FDGC adheres to a single set of criteria, in contrast with the differing criteria of the two previous transfers. This drove a reduction in post-equalisation disparities since the new criteria were more equalising, and applied more broadly to funds transferred to the local level (Laurent, 2018[38]). Similarly, simplicity was one of the objectives of Japan's trinity reforms, which aimed to favour "objective" cost equalisation criteria applied broadly to a single larger grant as opposed to many, smaller earmarked grants (OECD, 2016[33]). On the revenue measurement side, Canada's experience simplifying its RTS is instructive when it comes to finding a compromise between accurately capturing true fiscal capacity and the excess complexity created by attempts to measure all potential revenue sources (Box 4).

Box 4. Simplifying the RTS: Canada's experience

In 2007, Canada's equalisation system saw a major simplification of the RTS that underlies its determination of provincial equalisation entitlements. The RTS, which had formerly aimed to estimate provincial fiscal capacity based on thirty-three revenue sources, was scaled back to five revenue sources. Prior to the reform, an expert panel looked at a range of options varying from the highly complex RTS then in place, to a simple measurement of per capita provincial income. In the end, the panel recommended a simplified RTS that would assess the hypothetical revenues of each province were they to impose average rates across the assumed base of five major taxes (personal income tax, business income tax, sales tax, property tax, and 50% of natural resource revenues). One the one hand, the panel felt that simply looking at per capita provincial income as a measure of fiscal capacity would fail to reflect the different rates at which economic activity is generally taxed in Canada. In practice, two provinces with similar per capita incomes and typical tax systems would likely raise different revenues depending on the underlying distribution of their economic activity across sectors. Moreover, some provinces could shift their tax burden to foreign firms that pay resource royalties. On the other hand, modelling all revenue sources within the RTS was untenable since measuring the potential revenue of some smaller tax bases was technically convoluted, would require questionable assumptions and could undermine policy-neutrality (Expert Panel on Equalization and Territorial Formula Financing, 2006[15]; Feehan, 2014[27]).

Updating equalisation formulas

74. Complex cost equalisation formulas that depend on dozens or hundreds of variables demand extensive data inputs. While such systems are often the product of years of careful efforts to capture the structural drivers of inter-regional cost disparities, they require continuous updating to ensure that they remain relevant and do not inadvertently perpetuate inequalities. In the Netherlands, this is handled through Period Maintenance Reports (*Periodiek Onderhoudsrapport*) which examine annually whether the amounts municipalities actually spend in designated areas corresponds to the amount that they would be expected to spend for the purposes of distributing the Municipal Fund (de Joode, 2017[18]). In Sweden, a recent review of the equalisation systems suggested that it was failing to address the costs faced by rural municipalities, though it continued to take into account some criteria that were no longer relevant. In response, the review recommended that the equalisation formula be adjusted to better account for geography and demographics, extended to include library operation costs, and perhaps further extended to take account of the costs of voluntary services (Riksrevisionen, 2019[39]). Other ongoing work in the Swedish equalisation system focuses on developing inputs to the formula that would be automatically updated with the most recent data.

75. Australia's equalisation methodology is updated annually and reviewed every five years to ensure that the determination of state-level cost disabilities adheres to four key principles: accurately reflecting what States collectively do, policy neutrality, practicality, and contemporaneity, or ensuring that relative GST shares are appropriate to the year in which they are applied. For example, this may involve modifications to indices that measure remoteness to better capture how remote a city is vis-à-vis the costs it faces. On the revenue side, this could involve phasing in the measured increases in tax-raising capacity derived from natural resource extraction, with the aim of ensuring that those states that have seen revenue increases from natural resources are not unfairly penalised by a concomitant drop in GST share (Commonwealth Grants Commission, 2015[20]).

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