Part

10

Multi-Government Systems

Chapter 33

Multilevel Government

In great centralised nations the legislator is obliged to give a character of uniformity to the laws, which does not always suit the diversity of customs and districts.

De Toqueville

Assignment of Functions in a Multilevel System ♦ Optimal Size of Sub-Central Governments ♦ Taxation with Multilevel Government ♦ Intergovernmental Transfers ♦ Multilevel Government in Australia

In nearly all countries, government functions at several levels. Even in unitary countries, such as China, France and the UK, there are central, state or regional and local governments. Table 33.1 shows the numbers of governments by tier in two federal countries (Australia and the United States) and two unitary countries (France and the UK) in 2006.

There are significant differences between unitary and federal nations. In a unitary nation, the central government determines the powers and functions of all lower levels of government. It also allocates most public expenditure. In France and the UK, the central governments allocate about 80 per cent of all direct government expenditure—this is all government expenditure other than transfers between governmental units.[1] In a federation, the states that form the federation establish the powers and functions of the central government, usually in a constitution, and generally reserve significant powers for themselves. In the federations of Australia and the United States the central governments allocate about half of total direct government expenditure.

Table 33.1 Tiers of government (2006)

Country	*National*	*State and regions*	*Local*
Australia	1	6 states, 2 territories	673 (560)[a]
France	1	22 regions, 96 departments	36 679
United Kingdom	1	3 devolved state governments	367
United States	1	50 states	87 849

(a) Number of local authorities in 2011 after amalgamations since 2006 (source: Centre for Local Government, University of New England). There have been some further amalgamations in NSW since then.
(b) Source: Twomey and Withers (2007).

[1] The proportion of total direct government expenditures made by the central government is known as the centralisation ratio. It is a common measure of the extent to which a system is centralised.

Nevertheless, similar issues arise in unitary and federal countries. Which level of government can best conduct the various functions of government? What tax powers should be allocated to each level of governments? How should financial relationships between governments be managed?[2]

These issues are discussed in this chapter. We start by discussing how functions should be allocated to different levels of government and the implications for the size of sub-central governments. We then discuss the allocation of tax powers to different levels of government and the related issue of intergovernmental transfers. The last part of the chapter discusses some elements of the Australian multi-government system.

Assignment of Functions in a Multilevel System

As we have seen, the major economic functions of government are macroeconomic management, provision of social welfare, equity in distribution, provision of public goods, policies for other market failures and economic growth.[3] We discuss below the preferred assignment of these functions to each level of government.

Macroeconomic management. In the short run, national output, employment and prices depend principally on the level of aggregate demand relative to the capacity of the economy. Insufficient expenditure leads to unemployment. Excessive expenditure creates inflation. The macroeconomic task is to align aggregate expenditure with economic capacity. Using fiscal policy, government may adjust either its own expenditure or tax revenue to achieve the desired level of aggregate expenditure. Using monetary policy, government determines the money supply or its price (interest rates) to bring about the desired level of expenditure.

Clearly the central government or its agent, a central bank, should control monetary policy. Multiple currencies would be inefficient. Only one authority can control the supply of money or interest rates. Sub-central governments cannot be allowed in effect to print money to finance their services at the expense (via inflation and changes in the exchange rate of the currency) of citizens in other areas.

Central government should also be responsible for overall fiscal policy for several reasons. First, consistent national policy is desirable. If national and sub-central fiscal policies are inconsistent, the central government may and should take countervailing and overriding policies. Second, when resources are mobile, sub-central counter-cyclical policies are unnecessary. Third, most sub-central fiscal policies have limited local effect. Suppose that a regional government spends \$100 million on a project, including \$50 million on local factors of production of which 90 per cent would be otherwise employed in the absence of the project. The initial impact on local incomes equals (\$100 million × 0.5 × 0.10) = \$5 million. In addition, there may be a multiplier (M) effect, given approximately by:

$$M = 1/(1 - MPCL) = 1/(MPT + MPS + MPI) \qquad (33.1)$$

where MPCL is the marginal propensity to consume local goods and MPT, MPS and MPI are the marginal propensities to pay tax, save and import to the local area for each local dollar earned. Allowing typical marginal propensities of say 0.3, 0.1 and 0.5 respectively, the regional multiplier is only 1.1 taking the total benefit to \$5.5 million. Thus, sub-central pump priming is not very effective. These arguments explain why many central governments impose fiscal rules in the form of balanced (operating) budget requirements and constraints on borrowing on sub-central governments (see Sutherland *et al*., 2005).

---

[2] These are the classic issues in the literature known as 'fiscal federalism' (see Oates, 1999). As stressed here, these issues also apply in some degree in unitary countries.

[3] These functions derive from Musgrave's classic proposal that government activity should consist of three key functions: macroeconomic stabilisation, income redistribution and resource allocation (Musgrave, 1939 and 1959).

However, there is alternative view about fiscal responsibilities. If there are significant differences in local unemployment levels and labour mobility is low, regional government deficit-funded expenditure may be justified. As Gramlich (1987) observed, 'judicious use of budget changes by a sub-national government can reduce the variance in state (local) output around its long-run trend value'. If these budget changes materially affect aggregate demand, a central government (or bank) can neutralise the impact by altering interest rates. Thus, sub-central governments may be permitted to determine their levels of expenditure and tax without any significant loss of macroeconomic control.

Social welfare and distributional policies. Central government also has prime responsibility for provision of social welfare and distributional functions for two main reasons. First, only central government can ensure horizontal equity—that like individuals should be treated in a like way across the country. Sub-central governments cannot achieve this because they have different fiscal capacities. Second, substantial sub-central attempts to redistribute income may be counter-productive. A sub-central jurisdiction that taxes its affluent citizens heavily to redistribute extra income to its poorer citizens is likely to end up with few affluent citizens and more poor citizens (as the rich exit and unskilled workers immigrate). This occurred in New York in the early 1970s when the world's richest city nearly defaulted on its financial obligations as a result.

Notwithstanding the limited capacity of sub-central government (especially local government) to redistribute income, many communities wish to support the less able or isolated members of their community. Some support may have positive local externalities. Also, local communities are often better at perceiving local needs and more efficient at supplying them. Laubach (2005) points out that the delegation of substantial executive welfare responsibilities to the states in the United States (albeit financed mainly from Washington) has led to more innovative and effective design of welfare services and there has been little resulting emigration of resources from one state to another. Thus, sub-central governments generally do have a significant role in supporting poorer households subject to the constraint that redistribution does not distort business and household location.

Provision of public goods. Some public goods, such as defence and medical research, provide nationwide benefits. There can be only one level of provision and the efficient level would be determined by national willingness to pay the cost for an extra unit of the good.

Many other public goods, such as police, waste disposal services and recreational facilities, provide mainly regional or local benefits and can be provided in varying levels to different communities. Efficient provision of these goods requires that they satisfy local household preferences.

Typically, these preferences vary (there is demand heterogeneity). Suppose that two communities each have a population of 1000 and that 700 people in one group want a public good (a local park) with a cost of $\$X$ but that only 400 people in the other group want a local park at the same total cost. All others are opposed. If decisions are made by majority rule on a national basis, each group would have a local park; 1100 people would be pleased and 900 displeased. If separate decisions are made locally, one area would have a park and the other would not: 1300 people will be pleased and 700 displeased. Unless there are economies of scale, efficient quantities of local public goods should be provided regionally or locally.

Decentralisation theorem
Given differential preferences and no cost disadvantages, decentralized provision of local public goods increases welfare

This argument is formalised in the **decentralisation theorem**—if preferences for local public goods vary, and there are no economies of scale or externalities, decentralised provision increases welfare by equilibrating output to demand (Musso, 1998). Figure 33.1 shows a local public good produced at constant marginal cost. The demand curves D_A and D_B show aggregate demand for the local public good in two communities, A and B. The efficient quantities would be Q_A and Q_B respectively. If central government provided the same

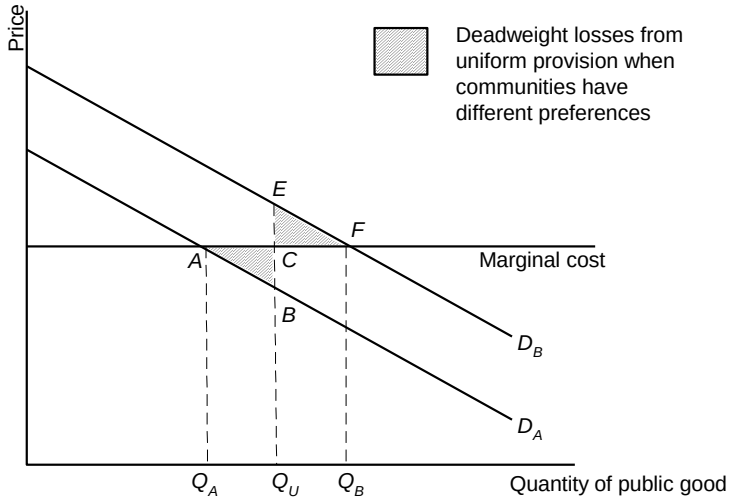


Figure 33.1 Deadweight loss due to uniform provision of a public good

output (Q_U) to the two communities, A would receive too much of the good and *B* too little. The welfare gains from decentralised provision would equal areas *ABC* and *CEF* respectively.

Other arguments for sub-central provision of local public goods are: sub-central government is usually better informed about local preferences; in small communities, costs are more transparent and easier to control; and competition between jurisdictions increases the efficiency of service delivery.

On the other hand, if there are economies of scale in service provision or spillovers between local governments, public goods may be provided more efficiently by large sub-central jurisdictions than by small ones. If economies of scale are extreme, there may be a case for national provision of the public good. Thus, the assignment of functions to levels of government involves principally balancing demand heterogeneity against economies of scale.

Other market failures. Public policies are also needed to deal with other market failures including imperfect competition, externalities and the environment, consumer and worker protection. Assigning policy responsibilities to levels of government follows similar principles to those just discussed. Where markets are national, responsibility would be national; where markets are regional or local, responsibility would be regional or local. Because many firms operate nationally across regional borders, responsibility for competition policy, trade practices and corporation law are usually a central government responsibility. One might also expect that consumer and worker protections would be national responsibilities, though in Australia they are often state responsibilities. On the other hand, many environmental issues are regional or local and would be regional or local responsibilities. However, climate change and national environmental heritage would be central government responsibilities.

Economic growth. Responsibilities for economic growth are again likely to be divided. In an open economy, where capital can move freely in and out, economic growth depends on the productivity of resources rather than on domestic savings. To promote growth, central government must encourage a competitive economy and free movement of capital and technology. Sub-central governments can influence growth by using resources efficiently,

avoiding excessive taxation, investing efficiently in infrastructure and human capital and protecting the productive environment. Indeed, sub-central competition can create economic growth. On the other hand, subsidies to uncompetitive local industry (including preferential local purchasing) or to foreign business seeking a local base divert resources from their most productive use and increase the cost of local purchases. Consequently, they are likely to reduce both national output and local income.

Summary. Central government has prime responsibility for macroeconomic policy, economic growth, welfare programs, regulation of national markets and international trade, and the supply of national public goods. Sub-central governments should be the main providers of all other public goods. This is sometimes described as '**the principle of subsidiarity**': subject to cost considerations, services should be supplied by the level of government that is closest to the users of the service. Sub-central government also has a role in providing some welfare services and in creating the infrastructure and conditions for economic growth

Subsidiarity principle
Public services should be supplied by the level of government closest to the users of the service unless this raises costs unduly

Unfortunately, application of these principles implies that two or more levels of government should be responsible for providing some services, especially where distributional issues and market failures arise. This occurs particularly in the provision of education and health services as well as with some welfare services. Dual provision of services may cause duplication, loss of accountability and increased cost.

Optimal Size of Sub-Central Governments

Given the functions of sub-central governments, what is their optimal size? This is sometimes modelled as a function of the optimal size for provision of local public goods. A common principle is that sub-central governments should be large enough to achieve economies of scale in service provision. However, ideally, the scale of facilities and community size would be optimised jointly.

Consider a hospital. For any given size of community, hospital size (measured say by number of beds) is efficient when the marginal cost of an extra hospital bed per member of the community equals the marginal benefit. A larger community requires a larger hospital. However, as hospital size increases, at some point the marginal cost of increased size exceeds the marginal benefit. Schedule *QQ* in Figure 33.2 shows the optimal hospital size for various community sizes.

On the other hand, for any given hospital size, there is an optimal community size. If a hospital has a fixed size, per capita cost falls with increased numbers in the community. However, service quality falls as crowding increases. For a given facility, the size of the community is optimal when the fall in the marginal quality of service with an extra member equals the marginal fall in per capita cost. In Figure 33.2 the *NN* curve shows the locus of optimal community sizes for various hospital sizes. At point *E*, both hospital and community size are optimal.

This model of community formation implies that optimal community size and service quantity may vary for each service, for health, police and fire services and so on. Assuming no joint costs or scope economies, there would be a large number of local authorities. This results even if individuals have similar preferences. However, separate local authorities for each service is not a practical cost-effective solution. Further, this is a simple model and we need to consider how other factors that might influence optimal jurisdiction size.

Benefits and costs of small jurisdictions

The benefits and costs of small jurisdictions mirror those for sub-central government generally. Small jurisdictions provide for diversity of preferences, are generally more responsive to local preferences and increase the opportunity for innovation and competition.

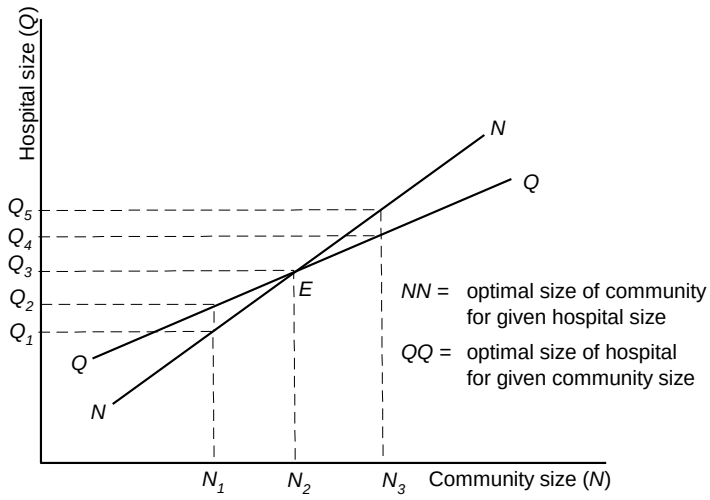


Figure 33.2 Optimal community size and service level

Members of a small community are more likely to be aware of how government spends their taxes and whether the administration is prudent and economical. Small jurisdictions may achieve cost savings by cooperation with other jurisdictions, for instance in provision of waste facilities, or by contracting out services, for example for rate collection. Box 33.1 provides evidence of the closer relationships between citizens and their representatives in small jurisdictions and the cost-efficiency of small jurisdictions.

However, small authorities may have disadvantages. Larger authorities may achieve economies of scale or scope in services and hence lower unit costs. This presumes that the technical advantages of size are not offset by bureaucratic costs and reduced accountability. And, in a dispersed population such as rural Australia, economies of scale in service provision may be achieved only at great inconvenience and travel cost for consumers. Spillovers are another possible disadvantage of small jurisdictions. Goods with positive spillovers to neighbouring communities, for example schools and libraries, may be under-supplied. On the other hand, local government may ignore externalities that harm adjacent communities, such as waste disposal into water systems.

Also, in Australia, it is often argued that state government administration is more effective when dealing with fewer local councils, especially in provision of infrastructure and land use planning.

Box 33.1 Benefits of small local government jurisdictions

In a study of local government in Sydney, Abelson (1981a) found that households in small local government areas received significantly more services from their elected representatives than did households in larger areas.

Abelson (1981b) found that expenditure per capita was higher in low-density areas and in areas with higher rates of population growth. However, there was no evidence of economies of scale. Expenditure per capita did not fall with the size of population.

In a more recent study of local councils in Sydney, Abelson (2015) found differences in expenditure per head were explained by differences in income per head, not by economies of scale.

Abelson (2016) concluded that local preferences are likely to be much better understood and served in smaller governing units and that there was no evidence that larger councils produce significant financial savings.

Evidently, optimal authority size depends on many factors. Diversity of preferences points towards smaller authorities. The potential for economies of scale point to larger ones. Ideally, the benefits and costs of alternative size authorities for each service would be quantified. However, in Australia there have been few studies of comparative service quality provided by different local jurisdictions.

Studies of the costs of local services are more common, but often have limitations. Consultants typically use a production function approach – they estimate the inputs needed to produce services, such as road maintenance, in authorities of various sizes and the associated costs of these inputs. This approach typically finds economies of scale. However, this approach overlooks the x-inefficiency behavioural costs of large units. Statistical studies of expenditure typically use multiple regression analysis to analyse whether per capita expenditure varies with size of jurisdiction. However, expenditure is the product of service levels and unit costs. High expenditure may reflect high service levels as distinct from high unit costs. Thus, it is important to include variables, such as per capita income, that may influence service levels separately from costs.

More discussion of these and related issues can be found in Abelson (2016).

Household choices and local government

In a classic article, Tiebout (1956) argued that a competitive system of local governments could provide an efficient outcome where households would choose the community that provides their desired package of services and taxes and would move if another community offers a preferred package. The Tiebout model (sometimes described as 'voting by the feet') implies that local public goods can be provided as efficiently as private goods in perfectly competitive markets. The equilibrium outcome is Pareto efficient—no one could be made better off by moving to another jurisdiction.

However, the Tiebout model is based on some critical assumptions.

- There are many competing local communities providing a mix of local goods and taxes that households want.
- Households are mobile and can relocate without cost to their preferred community.
- The cost per unit of public service is constant. If there are economies of scale smaller communities may not be able to offer an attractive local package.
- There are no neighbourhood spillovers.
- The costs of local public services are shared equally across all households. There are no cross-subsidies. If services are funded by a proportional property tax rate, the local community must be able to enact exclusionary zoning laws that prevent low-income households entering the community, which would lower the average property price and drive up the tax rate.

Some of these conditions occur in the United States where there are a large number of local jurisdictions and households are relatively mobile. Moreover, some outcomes predicted by the Tiebout model occur. In many US suburbs, households form broadly homogeneous social groups with similar preferences for local public goods. There is tax competition between local jurisdictions and limited local redistribution of income. Also, large differences in public services and tax prices are capitalised into property prices, which is a necessary condition for household equilibrium.

The Tiebout conditions apply less in Australia. There are only eight states and territories and household movement between them is expensive. Around 500 local authorities supply less important services and have little capacity to provide significantly differentiated packages of goods and taxes. The quality of local public services would be a minor factor in most household location choices.

Notwithstanding its limited actual relevance in Australia, does the Tiebout system provide a desirable policy model? If output can be produced at constant unit cost and there are no spillovers, the model provides a guide to efficient supply. A large number of competing local jurisdictions would provide efficient choices over local public goods.

On the other hand, the requirement of the model that a community can exclude households who would pay lower shares for public goods has significant equity implications. Communities would have an incentive to exclude low-income households. If local expenditure rises with population and local taxes are shared in relation to property values, the tax burden of existing residents rises when low-income households enter. Communities could prevent development of low-priced housing by restrictive zoning. The Tiebout model does not address these equity and efficiency issues.

Taxation with Multilevel Government

The fundamental problem with the allocation of taxes to different levels of government is that we have four main objectives but only three main tax bases, namely income, consumption and wealth. Following standard tax principles, the allocation of taxes to the different levels of government should satisfy four main objectives for good taxation:

1. Distributional objectives;
2. Efficiency—the allocation would minimise deadweight losses;
3. Fiscal adequacy—the allocation would provide adequate funding for each level of government;
4. Accountability.

It is difficult to satisfy all four objectives. It turns out that if tax bases are allocated to satisfy distributional and efficiency objectives, most taxes would be allocated to central government. Consequently, fiscal adequacy and accountability would not be achieved.

To achieve fiscal adequacy, the different levels of government may have to share a tax base. If they do not do so, inter-governmental transfers will be required. In this discussion we start from the presumption that governments should have separate tax bases and consider later some implications of shared tax bases.

Fitting taxes to economic functions

The core redistribution function of central government implies that central government should have access to the income tax. As discussed in Chapter 30, this is by far the most effective tax for income redistribution purposes. Taxes on commodities are typically regressive and a poor instrument of redistribution. Targeting luxury goods encourages commodity substitution. Taxes on wealth are usually too limited to achieve a general redistribution function.

Central government should also control corporation tax. This tax should be broadly aligned with personal tax rates to minimise substitution of corporate income for personal income. Centralisation of corporation tax economises on administration costs and minimises tax competition between sub-central governments that can lead to inefficient location of investment.

The macroeconomic functions of central government have slight implications for the allocation of taxes. The rise and fall of tax revenue over the business cycle provide natural stabilisers of the economy. And arguably, monetary policy is the main short-run instrument for macroeconomic policy. If active fiscal policy is used to manage short-run aggregate demand, it is generally easier and more effective to modify public expenditure than to make structural tax changes. Most tax changes, such as changes to income or consumption taxes,

have slow and uncertain macroeconomic impacts. Frequent changes create uncertainty and compliance problems.

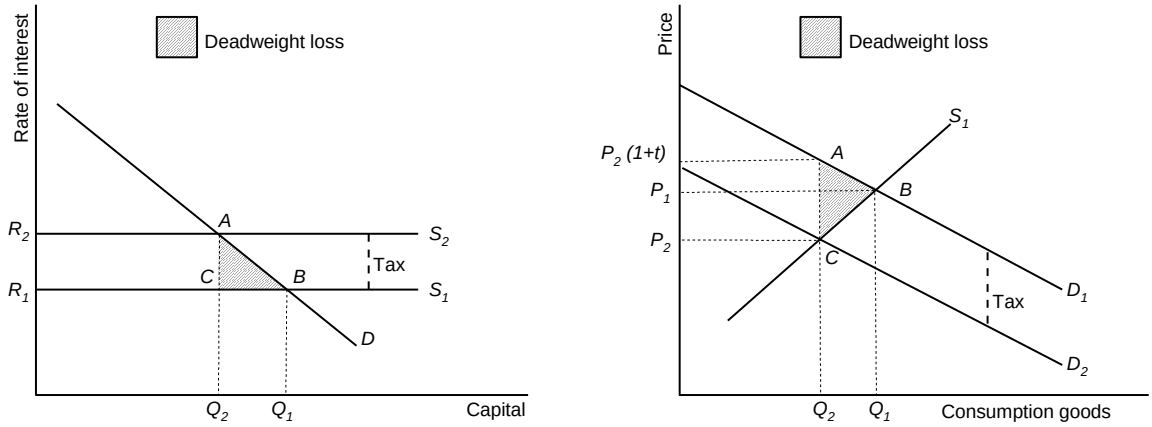
Turning to sub-central provision of local public goods, user charges are an efficient form of revenue for excludable services. However, they cannot be applied to non-excludable public goods and they often provide only a small part of total revenue needs. Given that income and corporation taxes are likely to be primarily central taxes, the issue is whether public goods can be funded by taxes on consumption or wealth?

Sub-central taxes and efficiency

There are two major problems with most sub-central taxes: the mobility of the tax base and spillovers. When tax bases are mobile, or when spillovers occur, decentralised taxes on production or consumption create more DWL than does central taxation. To minimise DWL, an efficient sub-central tax should not change behaviour. This means that it should be levied on relatively immobile factors of production or immobile consumption.

Figure 33.3 illustrates the DWL of sub-central taxes on capital and on consumption. Capital is highly mobile and supply elastic. Panel (a) shows the effect of a local tax on capital that shifts the supply schedule from S_1 to S_2. The demand for capital does not shift. The DWL is the triangle *ABC*. Panel (b) shows the effect of a local tax on consumption that shifts the demand schedule from D_1 to D_2. The supply curve is unchanged. The DWL is again triangle *ABC*. Local firms bear a significant cost as consumers switch purchases to other jurisdictions to avoid the local tax. These DWLs do not occur with a national corporate or consumption tax.

On the other hand, land is an efficient local tax base because land is immobile and the total supply is inelastic. Land tax cannot be escaped and is a reliable tax base. Therefore, a moderate general *ad valorem* tax on land has no DWL.[4] Land tax is easy to administer and helps to ensure fiscal adequacy for sub-central governments. Taxation of property inclusive of structures and land is also quite efficient. Existing structures are immobile. However, if structures are taxed, new capital may be invested in non-land assets or in other areas.



(a) Sub-national tax on mobile capital

(b) Sub-national tax on consumption goods

Figure 33.3 Local taxes on capital and on retail goods

[4] A unit tax could cause a landowner to abandon his land. Also a very high *ad valorem* tax could destroy the price mechanism for land and selective taxes on land can distort the allocation of land.

Tax competition. A common consequence of decentralised taxation is tax competition (a lowering of tax rates) between jurisdictions to attract resources. Tax competition encourages diversity of administrative practices, benchmarking of costs and efficient delivery of services.

However, tax competition can lead to inefficient outcomes. Suppose that two jurisdictions (*A* and *B*) levy a tax on capital, which can move freely between the areas to maximise the after-tax return. To increase local economic activity and its tax base, area *A* may reduce its tax rate. This reduces the tax base in *B*. If *B*'s tax revenue falls by more than expenditure due to the loss of industry, there is a negative externality. Most likely, when setting its tax rate area, *A* ignores this negative externality. Such tax competition may lead to under-taxation of a mobile tax base and under-provision of public goods.[5]

Tax exporting, shifting part of the tax burden on to firms or households in other areas, is another possible source of inefficiency in sub-central taxation. Tax exporting occurs when firms or households can deduct local taxes from taxable income for central government income tax as in the United States. In Australia, taxes on commercial properties are deductible income tax expenses. In effect, local services are funded partly by central government. Tax exporting enables local populations to obtain services for less than 100 per cent of their marginal cost and thus encourages provision of services beyond the efficient level.

Many studies have found that the supply of capital and labour and the location of consumption expenditure are sensitive to local taxes (Inman and Rubinfield, 1996). Chirinko and Wilson (2008) show that US state tax incentives have a significant impact on private investment but is a zero-sum game (there is little effect on total investment) when states reduce taxes in similar proportions. Day (1992) and Tretze *et al*. (1993) showed how labour shifts between regions in response to tax-related changes in Canada and the United States respectively. Wales (1968) showed how small consumption tax differentials influenced cross-border shopping. General equilibrium tax models have shown that these shifts can have significant DWLs (see Jones and Whalley, 1988, for Canada; Morgan *et al*., 1989 for the United States).

Australia has experienced the effects of tax competition. In 1977, to attract more retirees the Queensland government abolished state death duties. In the following years all other states followed suit. In the late 1990s, to attract more share transactions the Queensland government again led the way in reducing stamp duties on share transactions. NSW and Victoria followed within a year. However, tax competition is not necessarily inefficient if it leads to abolition of inefficient taxes or brings prices closer into line with marginal costs.

Vertical fiscal imbalance: fiscal adequacy and accountability

Evidently, central government is the most efficient taxer of the two fundamental tax bases (income and consumption). However, this creates **vertical fiscal imbalance** (VFI). VFI occurs when one level of government, almost always central government, raises more revenue than it needs for its own purposes and another level of government raises only part of what it needs.

Vertical fiscal imbalance
Occurs when different levels of government raise more or less revenue than they need

VFI encourages over-spending, especially by a central government which has excess income and faces weak fiscal constraint. Sub-central governments may also perceive the marginal cost of local services to be low because most revenue is supplied externally and supply excessive local public goods. In the words of James Guy, 'A principle which permits one government to raise money to be expended by another is unsound and is likely to induce a feeling of irresponsibility on the part of the expending authority'.[6]

[5] Similar inefficiencies can arise when jurisdictions use subsidies to attract industry from another jurisdiction.
[6] James Guy (Liberal, Wilmott, Tasmania) during the second reading of the 1946 States Grants legislation.

Another issue is the gradual take-over of services and policies by the central government and the erosion of local powers. Central government may place conditions on the use of grants to sub-central governments and the provision of local public goods that are inconsistent with local preferences.

There are contrary views. Williams (2005) argues that, if central grants to sub-central levels are fixed, sub-central government must raise the marginal tax required to pay for its services. Thus, sub-central government must determine the marginal cost and benefit of its service. Government would be influenced by voter preferences via competition between political parties.

Conclusions on efficiency

These general principles suggest that central government should tax personal income, mobile factors of production (notably capital) and consumption. Sub-central jurisdictions should tax bases with low inter-jurisdictional mobility, notably land and natural resources.

To minimise DWL, government should tax bases with a low sensitivity to changes in tax rates.[7] This implies that sub-central taxes should be based on residence of the worker or consumer rather than on the source of the income (the place of work or consumption).[8] Residences are less mobile than production and consumption. On the other hand, source-based taxes are often more practical than resident-based taxes.

The classic resident-based tax is the property tax, especially the land component. A tax on the capital component of property may cause capital to shift. Income tax is another potential resident-based tax. A sub-central income tax, with a locally chosen tax rate, can be 'piggy-backed' on to a central government income tax. A resident-based consumption tax would require the tax authority to have information on the total consumption of households, wherever purchases are made. In the absence of a general expenditure tax, this is impractical.

On the other hand, source-based taxes on local labour or consumption are practical and, for this reason, often adopted. These taxes are efficient in so far as the labour or consumption are not mobile. Usually local labour is less mobile than consumption. Thus, sub-central payroll taxes have less deadweight loss than sub-central consumption taxes.

However, if sub-central government cannot raise sufficient revenue to service local needs, the tax system does not provide fiscal adequacy. Fiscal adequacy can be addressed by transferring expenditure functions to central government or by allocating more tax powers (or a share of tax powers) to sub-central government. If neither strategy is practical, fiscal imbalance has to be resolved by inter-government transfers.

Equity issues

There are two major equity issues with sub-central taxes. First, sub-central taxes are often regressive—taxes rise with income but less than proportionately. Several studies have shown that local taxes in the United States are regressive (Inman and Rubinfield, 1996). To retain their tax bases, sub-central governments must be attractive to higher income households. Although U.S. and Canadian states have the power to tax income they rarely do so in a strongly progressive way. However, a fundamental tax principle is that tax systems should be judged as a whole. The regressive nature of state taxes is not a problem if the central government takes responsibility for redistribution through the personal income tax.

---

[7] The elasticity of the tax base is the ratio of the percentage change in the tax base attributable to a given percentage change in the tax rate applied to the base.

[8] Resident-based taxes are sometimes called destination-based taxes. Source-based taxes are sometimes described as origin-based taxes.

Secondly, sub-central governments have unequal capacity to provide public services. This is known as **horizontal fiscal imbalance** (HFI). HFI arises because of differences in expenditure needs or revenue-raising capacity (or both). High-income areas can provide higher quality public goods such as schools than low-income areas. Expenditure needs reflect differences in household needs and in the unit costs of services. However, where HFI is a barrier to an equitable supply of local public goods, the solution lies in inter-government transfers rather than in reallocation of tax bases.

Horizontal fiscal imbalance
Occurs when sub-central governments have unequal fiscal capacity to provide public services

Taxation and capitalisation. The argument that sub-central government creates horizontal inequities between households must be treated with caution. If property prices capitalise the value of public services, households receiving fewer services are compensated via lower house prices.

Suppose two communities, *A* and *B*, provide an equal amount of local public goods. *A* contains mainly high-income households and has a low tax rate on property (or on another tax base). *B* has mainly low-income households. To obtain the same tax revenue as *A*, community *B* must levy a higher tax rate on its tax base. If house prices were similar in the two communities, households would move from *B* to *A* and enjoy the lower local tax rate in *A*. Equilibrium would occur only when house prices were sufficiently higher in *A* than in *B* to offset the benefit of the lower tax rate. A similar argument applies if tax rates are the same in the two communities, but area *A* obtains more revenue from its tax rate and provides more public goods than *B*. Again, higher house prices in *A* will offset the greater supply of public goods. In equilibrium, differences in house prices fully offset differences in local taxes or services. There is then no horizontal inequity between similar households due to differences in the supply of local public goods.

This conclusion holds regardless of any attempts by a community to restrict the supply of housing or to exclude low-income households. Exclusion causes house prices to rise to a new equilibrium level. Existing landowners receive a windfall gain, but entrants to the community would pay the higher property price to gain the lower tax rate benefit (assuming no economies of scale in service provision). However, full capitalisation of local taxes and services assumes that households can move between communities without cost in response to differences in taxes and public spending. If there are constraints on household movements, differences in taxes and public services may not be fully capitalised into house prices.

Many studies have found evidence of capitalisation in the United States. Bloom et al. (1983) concluded that 'interjurisdictional property tax variations are between halfway and fully capitalised into house values'. Yinger et al. (1988) also found extensive capitalisation of differences in local property taxes. Other studies have found that property values are higher in school districts with higher per pupil expenditure and higher scores on achievement tests (e.g. Jud and Watts, 1981). Capitalisation doubtless occurs in Australia, but local government provides fewer services and has less impact on household location than in the United States.

Taxing the same tax base

VFI and its corollary, intergovernmental grants, can be avoided if different levels of government can levy taxes on the same tax base. In the United States, the states can choose almost any tax base other than national imports or exports or inter-state commerce. Thus, in the United States, as in Canada, the central government and the states share the income tax base, including personal and corporate taxes. And in the United States both the states and local government tax sales.

When different levels of government tax the same base, they usually have a common definition of the base but may vary the tax rate. The Canadian government requires the provinces to adopt a uniform definition of taxable income but allows the provinces to adopt a variety of tax credits and different tax rates. The uniform definition of the tax base minimises

administration, compliance and other costs that would arise from different definitions of the base. But different tax rates give the provinces flexibility in administering the income tax. As a proportion of the federal tax rate, the personal income tax rate is much higher in the poor state of Newfoundland than in the rich state of Alberta.

Theory suggests that when two levels of government share a tax base, both tax rates and total public expenditure are likely to rise, but these outcomes are not certain. If one level of government raises the tax rate on, say, an income tax base, the base declines with a fall in labour supply. To maintain its revenue, the other level of government must now raise its tax rate on this base. However, in determining its tax rate one level of government does not consider the effect on the tax base of other levels of government. It is therefore likely to raise the tax rate by more than if it were sole owner of the tax base. From a national perspective the tax base is over-used. On the other hand, if central government increases its expenditure when it raises the tax rate, this increase in expenditure may enable sub-central government to reduce its tax requirements and its tax rate.

Evidence on the effects of shared tax bases is limited and mixed. Besley and Rosen (1998) found that when the US government raised taxes on tobacco and petrol, the states also raised taxes. This suggests over-use of the tax base. On the other hand, in a study of 13 OECD countries Godspeed (2000) found that a one percentage point increase in national government income tax rates led to a fall of about 0.17 of a percentage point in sub-central income tax rates. This does not necessarily mean that the tax base is under-used. However, Dahlby and Wilson (1996) argue that sharing tax bases has produced significant tax distortions in Canada.

Sharing a tax base also creates difficulties for equity unless tax rates are harmonised. In 1962, to ensure equity and to control the progressivity of the rate structure the Canadian government required provinces to levy the personal income tax as a percentage of the basic federal income tax. However, over time the provinces were allowed to add tax credits for low-income earners and surcharges to the schedule and, since 2003, to set their own tax brackets and rates. Unless there is full capitalisation of provincial tax differences this could produce significant horizontal inequity across Canada.

Fiscal rules

Finally, it should be noted that some central governments also impose fiscal rules (applying to budgets overall) on sub-central governments. Drawing on a survey of OECD countries, Sutherland *et al*. (2005) found that many OECD governments adopt fiscal rules at the sub-central level to avoid or control unsustainable levels of public spending or debt. The most common fiscal rule is the budget balance requirement (usually for the operating budget). There may also be restrictions on borrowing. These rules are sometimes complemented by limits on tax rates. However, sub-central governments generally retain some tax autonomy. Rules-based controls are rarely applied to expenditure *per se*.

These fiscal rules are common in unitary countries. For example, in the UK, local authorities have very limited tax and expenditure autonomy (Sutherland *et al*., *ibid*. Box 2, p. 13). However, as we saw in Chapter 29, all the states in the United States (except Vermont) also have their own constitutional requirements to balance the operating budget.

Intergovernmental Transfers

Intergovernmental transfers take two main forms: revenue sharing or intergovernmental grants. Revenue sharing provides sub-central governments with a pre-determined share of central government revenue. For example, in Germany the constitution provides for the federal and state governments to share the yield of the major taxes. In a full revenue-sharing model, central government has no power to determine the proportion of revenue to be distributed to lower levels of government or how the distributed revenue is spent.

In practice, most central governments usually have discretion over the amount of revenue provided to sub-central governments. In Australia, Commonwealth legislation requires the Commonwealth government to pass all GST revenue in general grants to the states and territories. However, the Commonwealth determines the distribution of the revenue between the states and territories. Intergovernmental grants are of two main kinds.

General purpose grants. A recipient government can spend general purpose grants as it chooses. No conditions are attached to the grant. These grants are also described as untied, unconditional or block grants.

General purpose grant
A grant with no conditions attached

Specific purpose grants set conditions on how the grant may be spent. The conditions, including policy conditions, may be set out in considerable detail. These grants are also known as tied, conditional or categorical grants.

Specific purpose grants
A grant with conditions attached

Specific purpose grants may be matching or non-matching grants. **Matching grants** require the recipient government to provide a contribution, often on a dollar for dollar basis, for the grant. **Non-matching grants** require no local contribution. We discuss below the aims and effects of these various kinds of grants.

Matching grant
A grant which is conditional on the recipient providing a specified contribution

General purpose grants

General purpose grants have two main aims: to compensate for vertical and horizontal imbalances (VFI and HFI). VFI refers to the general revenue shortfalls of sub-central governments. HFI reflects differences in the fiscal capacities of sub-central governments to provide to public goods. HFI is a function of local expenditure needs and revenue-raising capacity.

Expenditure needs reflect (1) the needs of households of various types and (2) the unit costs of public services. Some households, such as indigenous, non-English speaking or the frail aged, have high needs that may not be reflected solely in income levels. Unit costs may be relatively high because of the conditions of production, such as distance from sources of materials or high labour costs, or because of inefficiency and low productivity. Ideally fiscal equalisation would compensate for unavoidable higher unit costs but not for inefficiency.

Sub-central revenue-raising capacity depends primarily on the disposable (after income tax) income of resident households and businesses and to a limited extent on the capacity of sub-central government to tax non-resident businesses or households. Tax revenue is itself an unreliable indicator of tax capacity because revenue reflects tax effort as well as fiscal capacity. High revenue may reflect high taxes rather than high disposable household incomes.

Effects of general grants. A general purpose grant increases the income of the recipient community. It does not affect relative prices and has no substitution effects. A $10 million grant may be used to increase local public expenditure by $10 million or to reduce local tax revenue by $10 million.

Figure 33.4 overleaf illustrates possible effects of a general purpose grant. This shows consumption of public and private goods on the horizontal and vertical axis respectively. There are two budget lines. The line *AB* shows the initial community budget. The higher line *CD* shows the budget line with the general purpose grant. The convex curves represent community utility (indifference) curves. The initial equilibrium is at point *E*. After the grant, the community moves to point *F* on indifference curve I_2.

Now suppose that the community increases its income to the budget constraint *CD* by increasing export income. If an extra dollar of private income increases public spending by 10 cents rather than by 40 cents, additional income would result in a move from *E* to *G* and the community would achieve a higher level of welfare represented by curve I_3.)

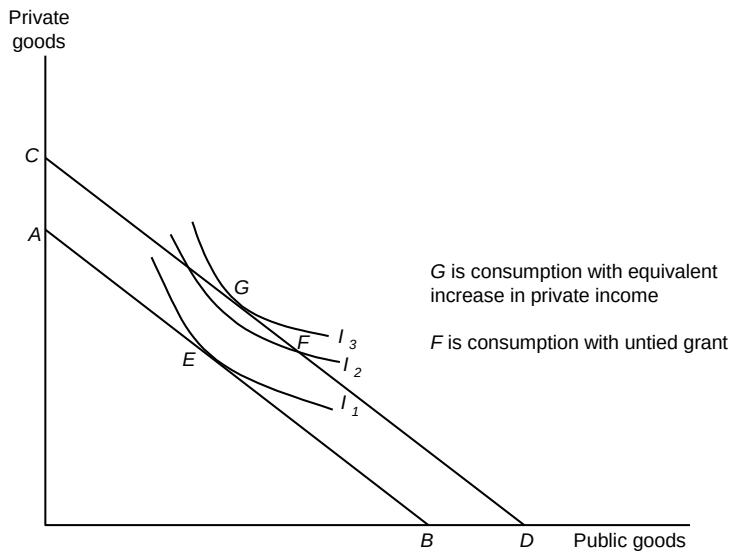


Figure 33.4 Effect of general purpose grants

It is often observed that public consumption increases more with an untied grant than with an independent increase in community income. US studies indicate that a dollar increase in general grants generates 40 cents of public spending while a dollar increase in private income increases public spending by only 10 cents (Rosen and Gayer, 2014, p.524). This is described as the 'flypaper effect'. Money tends to stick where it lands (in the hands of sub-central governments).

Dixon *et al*. (2002) estimated that the flypaper effect has a welfare cost of $150 million a year in Australia. Based on an average allocation of resources to public goods, the states most heavily subsidised by the Commonwealth (South Australia, Tasmania and the Northern Territory) make spending decisions out of line with household preferences. South Australia and Tasmania allocate an exceptionally high proportion of resources to public goods. The Northern Territory provides a normal proportion of public goods despite high unit costs.

The use of general purpose grants for equalisation purposes (to deal with HFI) creates another potential efficiency cost. Equalisation of access to public services requires that additional resources are allocated to high cost areas. This reduces the total quantum of services provided nationally. Moreover, if the grants encourage firms and households to locate or stay in high-cost areas because they do not bear the full costs associated with the location decision, there is an additional DWL due to the inefficient location decisions.

Specific purpose grants

Tied grants aim to ensure that sub-central governments provide the quantity and quality of public goods that they might not otherwise supply. This usually reflects the desire of central government to influence policy or service delivery. This may be viewed as reasonable where central government has prime responsibility for the service and the role of the sub-central government is principally to deliver the service.

The effects of tied grants depend partly on whether they are matching or non-matching grants. We consider first the effects of a non-matching tied grant. In Figure 33.5a the horizontal axis represents consumption of a specific public good and the vertical axis shows consumption of private goods and all other public goods. Receipt of a non-matching grant (*AC*) tied to the specific public good shifts the community's budget constraint from *AB* to

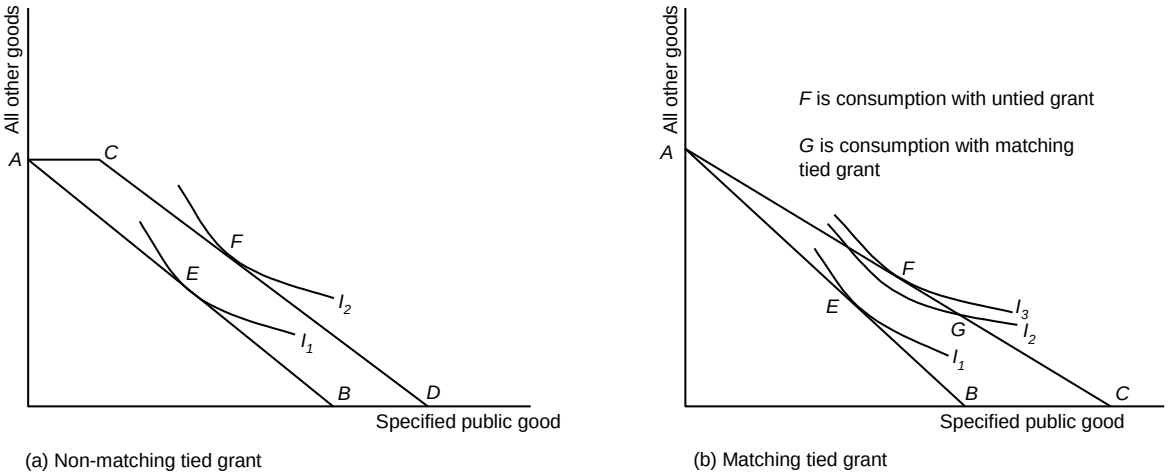


Figure 33.5 Effects of non-matching and matching tied grants

ACD. Importantly, if the non-matching grant is less than the community's desired expenditure on this public good, the grant is effectively an increase in general community income and would have the same effect as a general block grant.

Even if the tied grant exceeds initial expenditure on the local public good, the resultant expenditure may be the same as would occur with an untied grant of similar size. However, if many conditions are attached to the tied grant, they may change how the local public good is delivered.

Panel (b) illustrates the impacts of a matching tied grant. This grant changes the budget constraint from *AB* to *AC*. This changes relative prices and creates a substitution effect as well as an income effect. If a grant is matched on a dollar for dollar basis, the price of the local service is halved and the local community receives twice the output for each marginal dollar it spends on that service. A matching tied grant increases the incentive for the recipient to provide the specified service and is more likely to increase consumption of a specific local service than is a non-matching grant of a similar size. However, even in this case the recipient may increase its expenditure on other local services or reduce taxes, so that consumption of the specified service may shift from *E* to *F*, with little increase in local expenditure on it.

Tied grants often have DWL, especially matching tied grants. The greater the change in consumption from that which would occur with an untied grant of similar size, or from that which would occur with an equal increase in private income in the community, the greater the DWL of the tied grant.

Multilevel Government in Australia

In Australia the central (Commonwealth) government collects over 80 per cent of tax revenues, which gives it a dominant role in nearly all public expenditure and policy decisions. The Commonwealth is the only level of government to levy personal and corporate income tax and sales taxes (including the goods and services tax). Although the states have the constitutional power to levy personal income tax, they cannot do so without the agreement of the Commonwealth, which has the power to withhold other revenue from the states. In 1997, the High Court of Australia ruled that the states do not have the constitutional right to levy sales taxes.

The Commonwealth provides national public goods, such as defence and national economic infrastructure, and social security benefits. Under section 96 of the Constitution, the Commonwealth can also grant financial assistance to any state 'on such terms and conditions as the Parliament thinks fit'. In 2006, the High Court of Australia ruled that the Commonwealth can control not only the activities of corporations but also their relationships with their employees or contractors, thus giving the Commonwealth power over industrial relations.

However, the states and territories are the main suppliers of public services to the community, including law and order, primary and secondary education, most health services, utilities and transport services. Local government, which is a creation of the states, provides mainly local services, such as local roads, parks, libraries and waste services, along with local planning and building controls.

Because of its control over the major tax bases the Commonwealth government raises far more revenue than it spends on its own programs. Although the Commonwealth collects over 80 per cent of all tax revenue, it is responsible for only half of government direct expenditure. By contrast, state and territory governments raise about 15 per cent of tax revenue but account for some 45 per cent of government direct expenditure. This is a high degree of VFI, although not entirely exceptional (Twomey and Withers, 2007).

Consequently, intergovernmental grants have a large role in Australian public finance. Table 33.2 shows the Commonwealth's budgeted grants to the states and territories in 2011–12. These totalled $93.9 billion, equal to 6.8 per cent of GDP. Of this total, about half represented GST revenue, which is distributed as general purpose grants. The distribution is based on the principle of horizontal fiscal equalisation. The Commonwealth Grants Commission (CGC) estimates the per capita expenditure required to provide an average standard of government services in each state and territory and the differences in the capacities of the jurisdictions to raise revenue. This currently has traditionally resulted in a substantial redistribution of GST revenue from Western Australia, Queensland, NSW and Victoria to the other states and territories.

The Commonwealth distributes the other 50 per cent in special purpose (SP) and national partnership payments. The main SP payments traditionally related to national health care, schools, skills and workforce development, disability services and affordable housing. Each set of SP payments is based on a national agreement that sets out the objectives, outputs and outcomes, performance indicators and roles of the Commonwealth and states. National partnership payments are financial contributions to the states to deliver specific projects, often with conditions and a requirement for matching funds.

Some issues in the Australian federal system

The allocation of public functions in Australia is broadly as would be expected, with central government primarily responsible for the macroeconomic and distribution functions of government and state and local governments responsible for the delivery of many public services. However, the exceptionally high level of VFI, due to the uneven distribution of taxation powers between central and sub-central governments, creates several problems.

Table 33.2 Commonwealth grants to the states and territories, 2011-12

Payments	*$ billion*	*% of total*
General purpose grants (GST revenue)	46.5	49.5
Special Purpose Payments	26.3	28.0
National Partnership Payments	21.1	22.4
Other general revenue assistance	1.1	1.2
Total	93.9	100.0

Source: Treasurer (2011) *Federal Financial Relations, 2011-12*, Budget Paper No 3.

One issue is a lack of fiscal accountability, principally of central government which has excess funds to distribute and total discretion over their allocation. These allocations often do not match the preferences of the recipient states and distort the way in which the states would otherwise direct resources. Also, in so far as states receive free money, they may lack expenditure discipline.

Second, large amounts of state bureaucratic resources are devoted to trying to capture the central government's excess revenues.

Third, of the limited set of state taxes, several are inefficient or inequitable. The taxes include payroll, land tax, stamp duties on exchange of assets (mainly property), motor vehicle taxes and taxes on both insurance and on gambling (risk averters and risk lovers both get taxed!). As Abelson and Joyeux (2007) show, stamp duties impose a significant DWL on property transactions. On the other hand, taxes on gambling are efficient in that the demand for gambling is inelastic, but highly inequitable. Land taxes and payroll taxes could be efficient if they were administered at a low rate across a broad base. However, they are often administered in a discriminatory and non-neutral manner with large areas of exclusion or reduced tax rates.

A fourth issue is the Commonwealth's distribution of the block grants to the states and territories. This is based on the recommendations of the Commonwealth Grants Commission (CGC). The CGC estimates the revenue that would allow each state and territory to provide an average level of public services as a function of expenditure needs and revenue capacity. Expenditure needs reflect differences in the needs for services (e.g. a high Indigenous need) and the unit costs of services due, for example, to differences in input costs or remote service provision. The CGC estimates revenue capacity principally as a function of the value of the state's tax base along with its mineral revenues.

There are concerns with objectives and process. A welfare objective of equalisation would normally apply to an individual's total welfare that depends on private income, costs of living and amenities as well as access to public goods. Equalising one element of welfare may reduce overall equality of welfare. Albouy (2010) showed that the large Canadian federal transfers to the Atlantic and Prairie states (other than Alberta) subsidise populations that have equal earnings ability to the populations in the states that are losing revenue. The inter-province wage differentials compensate for cost of living and amenity differentials. The transfers do not increase equity. Rather, they go to low productive areas which are subsequently over-populated.

The CGC process is complex and costly with reports running into thousands of pages.[9] More substantively, it is not clear how effectively the CGC distinguishes between high unit costs of services (which might be subsidised on equity grounds although this is an inefficient use of public resources) and inefficiency in delivery of services (which should not be subsidised). There are also problems with the CGC's calculation of revenue capacity, which is a function of the value of the tax base in each state rather than of disposable household income. The value of the tax base is an unreliable indicator of a community's capacity to raise revenue because it is not necessarily correlated with household disposable income (Abelson, 2011). NSW and Victoria have high value tax bases because property prices are high, but for many households in these states high house prices represent a cost and a reduction in real household income. The CGC methodology results in a large subsidy to ACT households who are the most affluent in the country and have no obvious disadvantages of service provision.[10]

Fifth, the specific purpose and national payment Commonwealth grants often create an overlap of responsibilities and inefficient duplication of services. In education the

[9] The observations here are based on practices up to 2012. At this time, we have not reviewed recent practices.

[10] The major reasons for this result are the lack of access to the payroll tax and alleged high unit costs of administering a small jurisdiction.

Commonwealth subsidises private secondary schools, university students and some tertiary vocational training. The states are responsible for public secondary schools and most tertiary vocational training and universities are run under state statutes. In the health sector, the central government is responsible for medical services, subsidised medicines and nursing homes. The states are responsible for community health, hospitals and independent housing for the frail elderly. This can lead to inefficient cost shifting.

Finally, it may be observed that Australia has a large number of local government authorities. Local governments fund their services mainly by a tax on land values along with user charges and grants from the Commonwealth and state governments. The state governments frequently threaten to reduce the number of local governments, which they have the power to do, arguing that small local governments are inefficient. However, most residents of most local areas strongly oppose any loss of autonomy. In the words of Montesquieu, 'In a small republic, the public good is more strongly felt, better known and closer to each citizen'. This appears to be a common view in Australia and is doubtless the case in many other countries.

Summary

- Nearly all countries must determine the size and number of governments, the allocation of functions and taxes to various levels of government and financial relationships between governments.
- Analysis of these issues draws on many core economic concepts, including public goods and externalities, the role of household preferences, the role of competition and the impacts of transfers on behaviour.
- Central government has prime responsibility for macroeconomic policy, provision of social welfare services, income distribution, regulation of national markets and national public goods. The major role of sub-central government is provision of regional and local public goods.
- Sub-central jurisdictions provide for diversity of preferences, increase competition and innovation and may be more cost conscious. However, inefficiencies may arise due to lack to scale or spillover effects.
- The Tiebout model suggests that with sufficient competition between local jurisdictions, households can move to obtain their preferred service and tax package. However, this is unlikely when choices are restricted and movement costs are high.
- To achieve distributional objectives, central government should tax income. Because of the mobility of consumption, there is also a strong case for central government to tax consumption.
- Sub-central governments should tax bases that have low mobility, notably land and natural resources. However, if sub-central government cannot raise sufficient revenue to service local needs, the tax system does not meet the criterion of fiscal adequacy.
- Sharing a tax base would achieve fiscal adequacy. However, common tax bases tend to be over-taxed.
- When one level of government collects more revenue than it needs, and another level collects less, the imbalance is corrected by intergovernmental transfers. This can be achieved by revenue sharing. Tied grants can have major distortionary effects. Even untied grants can be distortionary via the flypaper effect.
- The Australian federal system has high vertical fiscal imbalance. This gives the central government steadily increasing power over policy and expenditure decisions at all levels. The redistributive process through the CGC has some significant inequitable and inefficient features.

Questions

1. What role, if any, do sub-central governments have in income distribution?
2. What are the advantages and disadvantages of sharing an income tax base?
3. When is tax competition desirable or undesirable? Should sub-central governments compete to attract mobile equity capital?
4. How would you attempt to determine whether the size of local jurisdictions affects:
   i. the costs of services?
   ii. the quality of services?
5. How would you test whether differential tax rates of local jurisdictions are capitalised?
6. How would you determine the revenue needs of poorer sub-central governments?
7. When, if ever, should central government to attach conditions to grants to other levels of government?
8. Who should tax petroleum and mineral rents in a federation? And how should these rents be taxed?
9. Why may horizontal fiscal equalisation increase inequality of welfare?
10. What inefficiencies may result from horizontal fiscal equalisation?

Further Reading

Albouy, D. (2010) *Evaluating the Efficiency and Equity of Federal Fiscal Equalisation*, Working Paper 16144, National Bureau of Economic Research, New York.

Gruber, J. (2016) *Public Finance and Public Policy*, 5th ed. Chapter 10, Worth Publishers, New York.

Musso, J.A. (1998) 'Fiscal federalism as a framework for government reform', pp. 347–395 in *Handbook of Public Finance*, F. Thompson and M.T. Green (eds), Marcel Dekker, New York.

Oates, W.E. (1999) 'An essay in fiscal federalism', *Journal of Economic Literature*, 37, 1120–1149.

Rosen, H. and Gayer, T. (2014) *Public Finance*, 10th ed, Chapter 22, McGraw-Hill, New York.

Sutherland, D., Price, R. and Joumard, I. (2005) *Fiscal Rules for Sub-Central Governments: Design and Impact*, Economics Department Working Paper, No. 465, OECD, Paris.

Warren, N. (2010) 'The Henry Review, State Taxation and the Federation', *Australian Economic Review*, 43, 409–421.

Williams, R. (2005) 'Fiscal federalism: aims, instruments and outcomes', *Australian Economic Review*, 38, 351–369.