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Defining Regional "Standing" for Cost–Benefit Analysis in Federated Countries*

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Specification of "standing" – whose benefits and costs should be counted – is a crucial step in a Cost–Benefit Analysis. If it is omitted, some relevant costs and benefits may be excluded, or, conversely, wrongly included. The textbook formulation for standing is "the whole of society" for a country, but the literature is virtually silent on the issue at a sub-national or regional level. A strictly state or regional standing can be a problem within federated countries such as Australia or the USA due to conceptual inconsistencies and resulting inefficiencies. On balance, a national perspective is to be preferred, at least as a default option.

Keywords: Cost–Benefit Analysis, standing, regional, federation, Australia.

1. Introduction

There is no "cookbook" for conducting Cost–Benefit Analysis (CBA),[1] but the analytical framework is necessarily based on a series of sequential steps. Like a mathematical proof, its integrity depends on following a consistent line of argument, beginning with the policy objective, alternative means of achieving the objective, and taking into account any legal, physical, or institutional constraints.

An up-front definition of "standing" – whose costs and benefits should be counted – is also an essential aspect of CBA because it ultimately determines the bottom line of Net Present Value (NPV). Because standing is rarely defined explicitly in CBAs, it can mask errors and biases in subsequent steps.

An example of error is the business case for the Canberra tram (Capital Metro Agency, 2014). Increased income tax receipts were counted as a benefit, a mistake due to failure at the outset to clearly define the "standing" of the analysis, in this case the Australian Capital Territory. Because income tax is a Commonwealth, rather than a state or territory tax, the additional amount collected should not have been included unless standing had been defined as a national perspective.

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[1] "Cost–Benefit Analysis" is often used in financial and political circles to mean a budgetary or financial analysis. It is used here in the sense of an economic analysis, sometimes termed a "Social Cost–Benefit Analysis."

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Regional areas can be disadvantaged by bias introduced through specious treatment of standing in urban project evaluations. For example, due to a claimed lack of ready availability of detailed data, state transport agencies do not generally differentiate traffic flows by the residence of passengers (Dobes *et al.*, 2016, p. 78). If foreign or inter-state travellers are more likely to be represented in urban transport projects (such as a freeway from the CBD to an airport), project benefits due to travel time savings may be over-stated. Potential rural projects may thus be disadvantaged compared to urban ones.

The academic literature on standing is rather sparse, and has not attracted serious attention for over a quarter of a century. A short debate did take place in the late 1980s and early 1990s in the *Journal of Policy Analysis and Management* (Whittington & MacRae, 1986, 1990; Trumbull, 1990; Zerbe, 1991). It dealt partly with a range of issues such as the treatment of the proceeds of criminal activity, future generations, and non-human entities. But it also explored the case of externalities imposed by one sovereign nation on another, with America and Canada used as examples.

It is not uncommon for analysts to adopt a national perspective of standing, albeit only implicitly. But analyses of local projects also tend to define standing at a sub-national level like an Australian state or local government.[2] In effect, a town may be treated as an independent economic entity, so that benefits accruing to, or externalities imposed on those residing outside the town are ignored in the analysis.

However, a strictly cadastral interpretation of standing is likely to ignore the reality of institutional and jurisdictional interactions and overlap in federated political and economic systems like those of Australia, Canada, the USA and Germany. The focus of this paper is to examine some of the key implications of applying the conventional jurisdictional approach to sub-national situations. It argues in favour of the adoption of a national approach to defining standing in the case of federated countries, at least as a default position.

2. The Academic Literature

According to Trumbull (1990, p. 201), it was Whittington and MacRae (1986) who first coined the term "standing," as an analogy to the legal concept of *locus standi*. The term standing is now generally used in the economics literature, although Mishan and Quah (2007) inexplicably use the neologism of "accounting stance," and Campbell and Brown (2003, p. 6) have embraced "referent group."

Prest and Turvey (1965), Dasgupta and Pearce (1972), Harberger (1972), Layard (1972), Little and Mirrlees (1974), Sugden and Williams (1978), Pearce and Nash (1981), Gramlich (1981) and Schmid (1989), provided no substantive discussion of the concept of standing prior to the Whittington-MacRae-Trumbull-Zerbe debate, or even omitted reference to it altogether. Even the fourth edition of Mishan's (1988, p. xxvii) seminal book on CBA barely considers the concept. The same was true of various authors after the debate: for example, Brent (2009), Hanley and Barbier (2009), Drummond *et al.* (1997), Freeman (1993), Perkins (1994), Layard and Glaister (1994), Sinden and Thampapillai (1995), HM Treasury (2003), Adler and Posner (2006), Quah and Toh (2012), Jones (2005) and United States Environmental Protection Agency (USEPA) (2010). The Australian Department of Finance and Administration (2006) omits any reference to standing from its 9-step process for CBA, as does Abelson (2012, p. 133).

3. Standing from the Perspective of an Individual Sovereign Nation

Where it exists, interest in the issue of standing has largely focused on addressing costs and benefits from the singular perspective of a sovereign nation or unitary state, often reflected in the term "society as a whole." However, a number of interpretations have emerged, including the following broad principles:

- a strict legal and jurisdictional approach enunciated by Zerbe (1991) considers only the costs and benefits of persons who have a right to access the courts in a country. Because Canadians affected

[2]As pointed out by Luskin and Dobes (1999, p. 151), "properly speaking, benefits accrue to populations rather than to a 'region' or other abstract entities."

by toxic emissions from an American factory, for example, cannot sue for damages in an American court, the cost of the negative externality would not be included in an American CBA.

- a strict jurisdictional delineation is persuasive because citizens of a country share a distinct polity from those of other countries. However, Boardman *et al.* (2011, p. 38) point out that a CBA evaluating a US industry that causes acid rain in Canada could validly include the willingness to pay of US citizens to reduce environmental damage in Canada, albeit with the preferences of Canadians being ignored.
- An extended universalist approach that ignored national borders was proposed by Trumbull (1990), but Whittington and MacRae (1990) pointed out that the approach is unworkable because costs and benefits would be potentially limitless in the absence of definite boundaries.
- Pearce *et al.* (2006, p. 55) addressed cross-border issues by extending standing to foreign countries or persons where the project or policy "relates to an international context in which there is a treaty of some kind (acid rain, global warming)" that imposes legal obligations, or "there is some accepted ethical reason for counting benefits and costs to non-nationals." Internalisation of externalities through agreement at a political level is also raised by Squire and van der Tak (1975, p. 24), who report that, in the case of international rivers, the World Bank expects prior "agreement of the countries concerned on the sharing of water and appropriate compensation for any untoward effects."

Irrespective of these interpretations, there is no unequivocal or objective way of defining standing at a country level. Use of terms such as "society as a whole" leaves unspecified the exact composition of the society in question. For example, should claimants of refugee status, or more permanent residents seeking citizenship be included?

It is also conventional in CBA to accept existing political and legal conditions and constraints as given, unless they are themselves the object of a policy change. Benefits gained as a result of illegitimate behaviour by individuals with standing, for example, are not counted. But it would be unlikely for a country to deny emergency services to foreign tourists, for example, raising the issue of how robust an exclusionary definition of standing should be in an analysis of the benefits of building a cyclone shelter in an area frequented by foreign tourists.

4. Standing in Constituent Regions of Federated Countries

Defining standing at a sub-national level such as a town, region or state, is more complicated than in the case of a sovereign nation. It is a particular problem in the case of federated countries where jurisdictional and economic interrelationships blur the attribution of social costs and social benefits to individuals with standing. Interdependencies between different levels of government mean that specification of a single, categorical welfare perspective may not be easily defined.

Adopting the perspective of a sub-national entity will result in a different calculus of social benefits and social costs to one where standing is defined at the national level. A town that wishes to construct a sports stadium should not include benefits gained by external teams or non-residents if the standing is defined as the town itself. On the other hand, if a national-level standing is adopted, it may not be appropriate to include any additional profits made by hotels or restaurants in the town, because they may simply represent transfers from businesses elsewhere if the sporting event had been held in another town.

Little guidance is available from the academic literature as to which approach to standing – national or sub-national – is preferable in a CBA for a project in a federation. Boardman *et al.* (2011, p. 38) recommend that analysts should ideally conduct CBA "from the national perspective ... [but] may, of course, also conduct a parallel CBA from the sub-national perspective as a response to the narrower interests of their clients." In practice, most consultants, at least in Australia, tend to employ only the approach preferred by their clients.

Musgrave and Musgrave (1976), drew attention to the often messy overlap between political jurisdictions and the provision of services, resulting in benefit and cost spillovers. People can gain from services provided by jurisdictions other than their own: for example, emergency services accessible in a nearby town in another jurisdiction, or access to streets in other cities. Non-equivalence between

taxing areas and benefit regions can also occur "because people and businesses are mobile" (Musgrave & Musgrave, 1976, p. 626). An example is the expenditure embodied in human capital in the form of education that transfers to another jurisdiction if the person concerned moves interstate.

The Musgrave and Musgrave (1976) focus on jurisdictional spillovers offers a basis for defining standing that is preferable to Zerbe's (1991) more restrictive juridical approach. Because Zerbe attributes standing only to those who can sue in a country's courts, it is essentially based on a test of citizenship, or a court's acceptance of legal *locus standi*. But the objective of defining standing for CBA is to determine whose costs and whose benefits should be counted. By focusing on taxation areas and on benefit regions, the taxation/benefits approach better captures the binary nature of the standing concept: we count both those individuals who pay the social costs for a project through taxation, and the social benefits that they and others obtain in return.

5. Non-concordance of Taxing Areas and Benefit Regions in the Australian Federation

Simpson (2007, p. 265) argues that several provisions of the Constitution expressly or implicitly "require the Commonwealth to observe a principle of uniformity in dispensing benefits and burdens." Section 92 of the Constitution declares that "trade, commerce and intercourse among the States ... [shall be] absolutely free," and French CJ in *Fortescue Metals Group* (2013) HCA 34 quoted approvingly from Windeyer J in an earlier case to the effect that:

> ss 90 and 92, taken together with the safeguards against Commonwealth discrimination in s 51(ii) and (iii) and s 88, created a Commonwealth economic union, not an association of States each with its own separate economy.

In terms of taxation areas, however, the Australian states and their local governments have relatively limited revenue-raising opportunities compared to the national government. Their combined tax revenues are only about a quarter of the Commonwealth's collections.

Table 1 presents revenues that are actually available at each level of government. The term "adjusted taxation revenue" equals the taxation revenue collected by each level of government, plus current grants – both those "tied" to specific projects (Specific Purpose Payments), and those that are "untied" – received from higher levels of government, less current grants paid to lower levels of government. The Goods and Services Tax (GST) – representing about 12 per cent of total Australian tax

Table 1. *Adjusted Australian taxation revenue 2016–2017 by level of government[†] ($m)*

Item	Commonwealth	State governments	Local governments
1. Revenue collected	389,797	82,255	17,418
2. Current grants to states	105,620		
3. Current grants to local govt	2		
4. Current grants to multi-jurisdictional sector[‡]	10,164		
5. Adjusted tax revenue[§]	274,012		
6. Current grants from C'wlth		105,620	
7. Current grants to local govt		4843	
8. Current grants to multi-jurisdictional sector[‡]		447	
9. Adjusted tax revenue[¶]		182,585	
10. Current grants from C'wlth			2
11. Current grants from states			4843
12. Adjusted tax revenue[††]			22,263

Notes: [†]Data consolidations may affect comparisons. [‡]The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or where classification of a unit to a jurisdiction is otherwise unclear. The main types of units currently falling into this category are the public universities. [§]Adjusted tax revenue = 1-2-3-4. [¶]Adjusted tax revenue = 1 + 6-7-8. [††]Adjusted tax revenue = 1 + 3 + 7.
Source: Australian Bureau of Statistics (2018).

revenues – is collected on behalf of the states by the Commonwealth and distributed by the Commonwealth Grants Commission (CGC) in an untied manner.[3]

Unless a specific impost like a payroll tax or poll tax is levied by a state or a local government in order to finance particular services or infrastructure, allocation of project costs to the residents of that state alone would be a difficult exercise. Under the system of horizontal fiscal equity, it would be difficult, if not impossible, to determine the actual source of any taxes and therefore who actually bears project costs.

Nor are benefit regions clear cut in the Australian federal system.[4] Various states and territories have pursued a pragmatic approach in order to negotiate better access to benefits for their residents in other states and territories.

It is well known, for example, that Australia's network of incompatible rail gauges resulted from the states exercising their sovereign powers under the Constitution in isolation, but the existence of the *Border Railways Acts* of NSW and Victoria in 1922 is generally less familiar. Mirror state legislation permitted Victoria to extend its railway network into southern NSW to facilitate transport of agricultural produce to more proximate Victorian ports from the Riverina region. Similarly, Victorian Railways operated a line from the Mallee wheat region to Pinnaroo in South Australia for many years in order to access reach Adelaide.

The Cross-Border Justice Scheme is a partnership between Western Australia, the Northern Territory and South Australia. Covering the Ngaanyatjarra Pitjantjatjara Yankunytjatjara (NPY) lands, it allows police, judges, fine enforcement agencies, community corrections officers and prisons to deal with offences that may have occurred in another state or territory. And Hufnagel (2011, p. 339) points out that of the 4100 officers in NSW who have recognised enforcement powers (e.g. as "special constables"), about half are serving police officers from other jurisdictions.

In January 2017, Queensland and NSW announced a cross-border agreement covering regional development, aligning services such as policing, health and local transport as well as national issues such as harmonisation of heavy vehicle regulation. An MOU signed by NSW and the Australian Capital Territory (ACT) in 2016 foreshadowed mutual recognition of occupational licences, improved transport links, health care (including sharing data on NSW residents using Canberra Hospital), tourism development, water catchment management, waste management, and emergency services following disasters. New South Wales even recognises Seniors Cards from the Australian Capital Territory in providing travel discounts. Both NSW and Victoria have Cross-Border Commissioners who are charged with identifying and helping resolve community issues along mutual borders. Local governments on both sides of the NSW-Victorian border also collaborate in the Halve Waste program of waste management: http://halvewaste.com.au/organics/.

Benefit regions do not require official agreements or memoranda of understanding. It would be difficult to conceive, for example, a situation where Victorian spectators were denied entry to a football game held in a stadium constructed by the NSW government, or prevented from purchasing goods or services there. Non-NSW residents typically also have equal rights of access to services provided for NSW residents in terms of police protection, access to public roads and infrastructure, parks and emergency services.

6. Some Incongruities in the Application of Standing by the States and Territories

One of the questions asked of state officials who were interviewed by Dobes *et al.* (2016) was "whose travel time savings would be counted in evaluating a proposed freeway from the airport to the

[3]The CGC bases its distribution on an equal per capita amount for each state, but adjusts the amount to take into account revenue-raising capacity and efficiency, as well as the ability to provide services and associated infrastructure to the same standard as other states (Dale, 2014). Under the application of this principle of horizontal fiscal equity, the Northern Territory, for example, obtains a much larger proportion of GST than its population-share alone would suggest.

[4]As Howard (2001, p. 90) points out, British Acts of Parliament established territorial borders in Australia along lines of longitude and parallels of latitude "without necessary reference to the natural topographic or economic homogeneity of regions."

CBD?." The answer was invariably that the occupants of all vehicles would be considered because of the inability in practice to distinguish between residents of that state and visitors from other states or other countries. Attributing travel time saving benefits to outsiders who do not have standing obviously biases the estimate of benefits upwards, to the disadvantage of competing projects.

State officials who were interviewed also claimed that CBA was always done from a state-only standing basis, so that externalities affecting other states or territories were not considered in CBA. However, the Regional Director South & West of the NSW Environment Protection Authority felt entitled to write (29 March 2017) to the Chair of an ACT Inquiry Panel examining a proposal to construct a waste-plastic-to-fuel facility about 500 m from the NSW border, in order to express his concerns about the negative externality of toxic emissions in the Queanbeyan area.

Transport agencies in various states have recently advocated the inclusion of so-called Wider Economic Benefits in transport projects, commissioning a supporting report from KPMG (2017). One of the claimed benefits of transport projects – an increase in the level of employment in the economy – is mooted as a source of increased income tax receipts. An increase in tax collections could be counted as an additional benefit, but income tax accrues to the Commonwealth rather than the states. A strict state-based specification of standing should therefore not include income tax receipts as a benefit (Dobes & Leung, 2015, p. 88).

Australian states have generally adopted the practice of including the price of carbon in analyses of projects that involve greenhouse gas emissions. The original source of the price used is rarely, if ever, revealed, but is likely based on some estimate of global damage costs attributed to climate change. The inconsistency in standing – the local cost of reducing greenhouse emissions versus the benefit of reducing adverse effects for other countries – could be resolved by instead using estimates of the willingness to pay to reduce emissions by those with standing (e.g. Akter & Bennett, 2011; Kotchen *et al.*, 2013; Williams, 2015).

Given these incongruities, it is at least arguable that the Australian states have not been consistent in applying the concept of standing from a strict state-based perspective. Whether such inconsistencies are due to political influences is not known, but the inclusion of factors such as global climate change costs or exaggerated estimates of Wider Economic Benefits can only lead to the inefficient allocation of resources.

7. Efficiency Implications of Sub-national Standing in Federated Nations

Like any form of analysis, CBA requires variables to be expressed in commensurate dimensions in order to be internally coherent. Discount rates, for example, are expressed in real value terms if costs and benefits have been estimated as real values. Alternatively, all three may be expressed in nominal terms, but consistency is the key.

The standard autarkic perspective – that people outside the defined area or population of analysis should be denied standing – can similarly be thought of as a means of ensuring consistency at a spatial or demographic level. That is, the benefits generated in a given area or enjoyed by a specific population should match or exceed the cost of resources used within that area. In other words, if the people living within a particular state or country are the ones who bear the tax burden required to fund a project, then it is only their benefits that should form the conceptual basis of comparison.

7.1 Flows of Real Resources and Goods and Services[5]

Consider a NSW Government proposal to build a sports stadium in Albury. The cost is to be financed from payroll taxes and stamp duty revenue raised within NSW alone with standing defined as the state and residents of NSW. Assume also that the prices of resources available in NSW (such as labour or cement) are established in competitive markets and therefore reflect social values.

[5]The adjacent border towns of Albury (NSW) and Wodonga (Victoria) are used here for illustration, but the points made are not limited to liminal areas of adjoining jurisdictions. They are also applicable by analogy to regions within a state.

Given that standing is defined as NSW, an analyst may well ask how residents of the Victorian city of Wodonga who are employed on the project should be costed in a CBA. At one extreme, it might be argued that Wodonga residents are a source of free labour because their use does not draw on the labour resources of Albury or NSW, so their shadow wage should be zero. On the other hand, once they have crossed the border into NSW they could be considered as being available for work in NSW, so that there would in fact be an opportunity cost to employing them on the project under consideration, rather than elsewhere in NSW.

Another approach might be to treat workers from Wodonga identically to unemployed workers from Albury by valuing the shadow price of their labour according to their loss of leisure time. But it is not clear if the loss of leisure time is relevant if it is incurred by someone who is not accorded a full measure of standing in NSW. Moreover, conceptually contradictory account would need to be taken of income tax on the actual wage paid (a transfer to the Commonwealth) and loss of Commonwealth unemployment benefits, both being losses attributable to the project if a state-based standing is adopted.

An *ad absurdam* extension could require that all resources (not just labour) that are imported from Wodonga should be shadow priced as being costless, save for the associated transport costs incurred within NSW. An ostensibly costless project in Albury could thus boost economic activity in the interstate rival of Wodonga; presumably not the intention of NSW policy-makers keen to foster regional development in their own state.

A third possibility would be to accord a lower (higher) weighting to benefits (costs) attributed to those without local standing. Anecdotal information indicates that it is already the practice for NSW project appraisals to apply a 40 per cent (0.40) weight to the benefits of those from other states. However, such distributional weighting is ultimately arbitrary, and offers no satisfactory conceptual or theoretical basis for allowing for differences in standing between residents of different jurisdictions.

A fourth possibility is to conduct two separate calculations; one that includes costs and benefits of both Albury and Wodonga residents, and one limited to the effect on Albury alone. But this would simply introduce ambiguity, because a decision-maker would be no wiser as to which of the two results to accept. A prior choice of one approach or the other – even if not perfectly justifiable – would appear to be preferable.

There may be a compelling ethical or political argument for including the costs of any negative externalities (e.g. toxic emissions) suffered by Wodonga residents from a project in Albury. A decision-maker is free to take this into account, although current practice among the Australian states is to not do so. But the standard approach to standing would require some evidence of altruism on the part of Albury residents, reflected in a willingness by them to pay to reduce or eliminate the negative externality in Wodonga.

Clearly, defining standing solely from the perspective of a particular state would be problematic when costing resources used in a project. Projects that utilised a greater value of resources from outside the state would be favoured, even if market prices of locally sourced resources were lower. The outcome would be economically inefficient for NSW. Because NSW residents are *de facto* also part of a wider Australian society, then Australian society as a whole would experience an inefficient use of resources.

Another example might be the proposed construction by the NSW Government or the local Council of a theatre in Albury. Assuming a conventional specification of standing, benefits to non-NSW residents would be excluded in the calculation of NPV. Assuming no Federal Government subsidies,[6] the cost would be borne solely by the citizens of NSW. To ensure its financial viability, construction costs would be constrained by limiting the size of the theatre in order to roughly match expected local demand for performances, allowing for future population growth in Albury. But conceptual consistency would require that no allowance be made for potential audience demand by the residents of Wodonga, about 5 km away across the Murray River.

[6]It could be argued that attracting some explicit Federal Government funding would transform standing into a national perspective, so that benefits to Wodonga residents would logically be included in the analysis.

But a smaller capacity theatre might prove unable to attract prominent actors or accomplished musicians to Albury. Local consumers of drama or music would be forced to travel further afield (Melbourne, Canberra or Sydney), resulting in loss of consumer surplus (including deadweight loss) because of the additional cost to them. Due to limited seating capacity, producer surplus might also be constrained because a larger theatre would have permitted attendance of patrons from Wodonga at little additional cost at each performance.

An alternative quasi-Coasean solution might be for the NSW Government to persuade the Wodonga Council to make at least a token financial contribution to the construction of the theatre, in return for being granted formal standing in the analysis of the construction of a larger theatre in Albury. Or, if Wodonga residents preferred to have the facility in their own town, it might be worthwhile for them to offer a side payment to Albury residents to forgo their plans. In the absence of such cooperation, inefficient outcomes are likely.

Another example of inefficiency might be consideration of widening an intra-state highway to improve traffic flow by reducing congestion. Excluding from a CBA, the benefit of travel time savings accrued by users from other states could result in only a partial widening of the road, or a postponement in its construction. The residents of the state, as well as outsiders, would continue to suffer from some degree of unwarranted congestion; an inefficient outcome even if congestion were partly reduced. A national perspective, even if it ignored benefits to foreign travellers, would ensure a more efficient outcome than a sub-national one.

7.2 Intergovernmental Grants

Financial transfer payments in the form of grants between different jurisdictions (Table 1) are a characteristic of federated countries such as Australia.

Transfer payments represent a claim on resources that is provided by one party to another, but without any goods or services being given in return. Standard examples of transfer payments from individuals and organisations to governments include personal and corporate income tax, stamp duty, petrol excise, tariffs on imports and royalties. Governments may also make transfer payments to individuals and organisations in the form of subsidies, pensions or unemployment benefits, as well as to other governments in the form of "tied" and "untied" grants.

Unless their separate identification is desired for presentational or transparency reasons, transfer payments are usually ignored in a CBA because they are simply a form of redistribution of wealth or income. A taxpayer's loss is a gain to government or to another citizen who benefits from the government's expenditure of the tax revenues that have been collected: unemployment benefits and pensions are examples. They do not in themselves increase or decrease society's welfare.[7]

However, the standing adopted in a particular CBA is a key determinant in the treatment of transfer payments, and hence the calculation of the bottom line of NPV.

If standing is designated as "national" ("society as a whole"), then transfer payments between citizens and/or national organisations are simply internal transfers from one part of the nation's society to another. The overall wealth or welfare of society remains unchanged, assuming that wealth distribution within society is broadly equal and that the transfers are costless.

Where a "national standing" perspective is adopted for CBA, both tied and untied inter-governmental grants are simply transfer payments, but they do reflect the use of national resources. The use of the funds for a project represents a cost to the nation as a whole. Whether the result is an increase in the overall welfare of society will depend on whether the project generates social benefits that

[7]Where additional sales tax, for example, is collected due to an increase in production of a good, the tax is technically a transfer to the government sector, but it also forms part of the "real" portion of the additional output value that is skimmed off by the government. The increase in output is measured by the market price of the good (reflecting consumers' willingness to pay for it), inclusive of the sales tax. Similarly, correctional (Pigovian) taxes can be treated as transfers, but their "real" effect would also be included in the CBA as an increase in welfare (a benefit) due to a reduction in a negative externality.

exceed social costs, and whether other available projects or measures might have yielded higher NPV outcomes.

Transfer payments that cross the national border and involve foreigners, on the other hand, are subject to more partisan treatment. For example, the after-tax profit made by a foreign company which repatriates its earnings is a loss to the host society. Only the tax on the profits is treated as a benefit to the host country because it is retained by the national government. Similarly, the provision of untied development assistance or humanitarian aid is a transfer payment that results in a social loss for the donor country, matched by a gain for the recipient.

When standing is defined at a sub-national entity level such as a state, region, or town, the treatment of tied and untied government transfer payments requires more nuanced consideration. A basic precept is that residents in a sub-national entity are also members of the wider national society. Inefficient outcomes that reduce the welfare of the residents of a state or town therefore also reduce the welfare of the nation as a whole.

If the Commonwealth provides a state (or a state provides a local government) with an untied grant, then it can be treated *prima facie* as an unambiguous benefit to the state that has been provided by the residents of the whole country. Projects that are fully funded with untied grants from another level of government would therefore be likely to proceed if benefits exceed any other costs such as negative externalities internal to the state.

An alternative view might be that an untied grant, as soon as it has been received by a state, becomes part of that state's general resource base (e.g. as part of the NSW Consolidated Fund). It no longer belongs to the Commonwealth donor government. From this perspective, use of the untied grant to fund a state project should be treated as a cost[8] of the project. Its use for any particular project will involve an opportunity cost of not using it on any alternative, higher yielding projects within the state. Assuming that the untied grant is used to fund the highest yielding project available in the state, there will be no loss of efficiency at the state level. Nevertheless, if higher yielding projects are available elsewhere in the country, there will be a loss of efficiency at the national level.

The situation is different in the case of tied grants. Because they can only be used to fund the project or policy designated by the Commonwealth, they involve no direct opportunity cost to a state government. Because the tied grant is effectively costless to the state, the resources that it commands as inputs to a project can also be shadow priced as being costless from the standing of the state. To the extent that they produce higher NPVs as a consequence, projects funded by tied grants are thus likely to be favoured by states. But if tied grant projects displace alternative projects that might otherwise have achieved higher NPVs in that state, or elsewhere in the country, there will be a loss of efficiency at the national level.

Finally, there is a need to recognise that transfer payments are themselves not costless. The taxes that are used to generate transfer payments impose deadweight losses on society (e.g. Cao *et al.*, 2015), just like taxes that are used for direct funding of projects. These deadweight losses should be taken into account as social costs in the calculation of NPV, irrespective of whether standing is defined at a national or a sub-national level.

8. Conclusions

Defining standing is a crucial step in any CBA because it determines whose benefits and costs are counted, and hence the bottom line of the estimated Net Present Value for a policy, project or program. More often than not, however, CBA studies fail to define standing explicitly.

Following a brief debate almost three decades ago, the academic literature has generally ignored the issue of standing. The standard formulation is typically that costs and benefits should be counted

[8]It could be argued, however, that the shadow price or cost to the state of the untied grant will be less than its cash equivalent. Had an equivalent amount been raised through taxation within the state, deadweight loss in the form of marginal excess tax burden would have been incurred solely by the residents of the state. If the sum is raised through Commonwealth taxation, then the deadweight loss is likely to be spread across the whole country rather than being concentrated in the recipient state.

for "society as a whole," although this begs the question of what constitutes society. The answer is relatively straightforward at a national level if society is defined as legal residence or citizenship, but is less clear at a sub-national level.

In federated countries like Australia or the USA, individual jurisdictions invariably lack strict concordance between taxing areas and benefit regions. States would rarely, if ever, preclude non-residents from accessing services such as police protection, emergency services, hospitals, parks, roads or other infrastructure. Indeed, inter-governmental agreements extending jurisdiction and official cooperation in border regions indicate that pure sub-national standing is not a practical option.

Australian states generally claim that they adopt a state-based approach to standing. While this provides a legitimate stance in conducting a Cost–Benefit Analysis, it raises substantive conceptual inconsistencies in calculating social costs and benefits. Strict adherence to a sub-national perspective can work to the disadvantage of local projects (e.g. by excluding benefits attributable to "outsiders"), as well as creating inefficiencies. The situation is further complicated where tied and untied grants are received from different levels of government.

Ultimately, standing is an accounting artifice that is not based on immutable logic or theoretical principles. But the balance of principles and practicalities would seem to favour a national approach to standing in the case of federated nations, at least as a default position.

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