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Examining Horizontal Fiscal Equalisation in Australia

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Abstract

In 2010-11 over $45 billion GST monies, and about $24b of other grants, will be distributed between the States and Territories on the recommendation of the Commonwealth Grants Commission. The Commission is instructed to implement Horizontal Fiscal Equalisation (HFE); and not to be concerned with efficiency. The paper examines how the CGC pursues fiscal equality, and finds some systematic flaws. The adjustments made by the CGC for demography and mining, but not for wages, undoubtedly reduce inequality in fiscal capacities, from a short-run point of view. However, for payroll tax assessments, the CGC can mistakenly transfer moneys from equals to equals; and disturb an efficient pattern of interstate migration and settlement. The reason is that labour mobility tends to make working households indifferent between jobs in different jurisdictions, with the differences in wage rates compensating for locationally-specific differences in costs of living. In addition to equity flaws, I note some negative efficiency effects, as counterweights to the common claims that HFE improves economic efficiency. Interestingly, HFE in Australia strives for full equalisation of state budget capacities; in contrast, governments attempt only partial equalisation of private budget capacities. I present a framework for considering the trade-off between equality and efficiency, adapted from Brennan and Pincus (2004 and 2010). The main result is that little or no allowance should be made for interstate differences in unit costs of public provision of (public or private) goods and services. An alternative distribution of GST monies is estimated for 2010-11.

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1: Introduction

The Commonwealth Grants Commission is charged by the Council of Australian Governments with recommending the distribution of the GST monies— forecast at around $45 billion for 2010-11—so as to achieve horizontal fiscal equalisation (HFE). Also thrown into the pot are about $24b of fungible grants already committed by the Commonwealth to the various states. In its latest report, the Commission defines fiscal equalisation as:

> 'A distribution of GST revenue to State governments such that, after allowing for material factors affecting revenues and expenditures, each would have the [same] fiscal capacity to provide services and their associated infrastructure at the same standard, if each made the same effort to raise revenue from its own sources, operated at the same level of efficiency and maintained the average *per capita* net financial worth.' (CGC 2010:157)

How is this done? On the expenses side, the Commission (in effect) calculates the cost for each jurisdiction of financing the *all-state average per capita* of the public provision of a range of goods and services. On the revenue side, the Commission calculates what monies would have been raised if the state had levied the *all-state average* rates of taxation or charge for a range of imposts, and applied them *seriatim* to the state's corresponding revenue bases. The recommended grants eliminate any gap between hypothetical expenses and hypothetical revenues.[1]

The CGC compares its grant recommendations against a standard, which is equal *per capita* (EPC).[2] Appendix Table A1 shows the factors with the largest effects on redistribution away from EPC. In this paper, on the revenue side I will concentrate on payroll and land taxes, and revenues from mining; on the expenditure side, the dominant factors are socio-demographic—and specifically, Indigeneity and the age-structure—as well as wage costs.

It is important to recognise that the Commission is charged with the task recommending a distribution of grants that would bring about fiscal equalisation[3]; and that it has not been asked to consider and does not report on the consequences of HFE for economic efficiency. Nonetheless, the CGC is concerned with 'policy neutrality'; that is, it wishes to reduce or minimize any influence that it may have on the incentives of states to be efficient in what they do; or to 'game' the system.[4] Other than in a few instances (in particular, mining revenues), the Commission believes that its methods sufficiently satisfy the criterion of policy neutrality.

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[1] This is a simplification—in many instances, when the data are not suitable or the matter not material, the Commission attributes equal *per capita* revenue capacity or spending obligations; in other cases, the Commission uses its own judgments to 'discount' the factor and its effects on the CGC's recommendation.

[2] There is no definitive way to attribute GST collections to specific states according to where the GST-liable transaction took place. This is because the GST is a Commonwealth tax, and is commonly paid by a company or firm's head office, and not necessarily from the state where the GST-liable transaction—final or intermediate—took place.

[3] The goal of fiscal equalisation (through the distribution of GST monies) is mandated in the *Intergovernmental Agreement on Federal Financial Relations 2008*; and cannot be changed except unanimously.

[4] 'Policy neutrality means policy differences between the States do not affect the recommended GST distribution. We implement policy neutrality by applying the same policies for delivering services and raising revenue to all States (that is, by applying average policies to all).' (CGC 2010:37).

Equity is a criterion that usually applies to people, not governments. If the ultimate goal of HFE is equal treatment of otherwise-equal individuals, reflection suggests that the equity argument for fiscal equalisation must depend primarily on the claim that jurisdictionally-immobile sections of populations may otherwise be unreasonably disadvantaged by the operation of the fiscal system.

Moreover, it needs explaining why governments that pursue only partial equalisation of budget capacities of private persons, should attempt full equalisation of public budget capacities. All redistributions have efficiency consequences, some positive and some negative. In the absence of an overriding ethical principle that supports the goal of exact fiscal equality, democratic nations generally accept a trade-off between efficiency and equity, for constitutional and political reasons.

Against this viewpoint, there is a large theoretical literature in public economics on fiscal equalisation—see Boadway 2004 for a survey; also Boadway and Tremblay 2010: the seminal pieces were by James Buchanan 1950, 1952—designed to show the social planner if and how fiscal equalisation can be used to achieve an efficient assignment of taxing powers and expenditure responsibilities; or to induce autonomous subordinate jurisdictions to choose the optimal tax rates and spending, so as to internalise fiscal externalities (Oates and Schwab 1988); or to share fiscal risks optimally. Fiscal equalisation is not always necessary for optimality and generally not sufficient[5]; or the correct equalisation formula is too hard to derive.[6] In this literature, the consequences of inter-jurisdictional mobility have been investigated: sometimes it makes the job of the social planner easier, sometimes not (Wildasin 1991; Boadway and Tremblay 2010). Sometimes in this literature, public policies are chosen through highly stylised political mechanisms, like majority voting in single-issue referenda. However, largely the literature is not well integrated with Public Choice, the school of thought founded by Buchanan and Gordon Tullock, which eschews the assumption of benevolent dictators or benign social planners; or with the more recent field of mechanism design. Moreover, it is curious that it is mostly about how to avoid the inefficiencies caused by the very fact of federalism itself—as though federalism were merely an unfortunate historical accident: if the omniscient social planner existed, then federalism would indeed be a sub-optimal institution.

We should not exaggerate the degree of inequality in fiscal capacities that the Australian states would exhibit if the GST grants were made on some basis other than full horizontal fiscal equality including, specifically, equal *per capita*.[7] For reasons briefly explained in section 2, and especially the low barriers

[5] For example, Wildasin (1991) concluded that only if communities with weaker preferences for redistribution receive appropriately-larger subsidies, through the federal fiscal system, would decentralised and centralised decision-making mechanisms both choose the optimal level of redistribution. Also, Boadway and Tremblay (2010: 1026) noted that in models of federalism with costless migration, a fixed factor (land) and local public goods, 'regional governments choose their tax rates and public goods supplies optimally, under reasonable circumstances,' without fiscal equalisation payments. However, most state spending is on publicly-provided private goods (Boadway 2004:217).

[6] 'With costly migration, decentralized decision-making is not optimal unless very complicated transfer schemes are in place, which involve giving regions the right incentive for providing *G* [publicly-provided goods] as well as for redistribution. Such schemes have yet to be worked out except in special cases, even in an otherwise firstbest world of lump-sum transfers. Equalization on top of that is very complicated' (Boadway 2004:228).

[7] For example, some commentators have pointed to the contrast between the levels of public provision in the poorest of American states, compared to the richest, as an indication of what would happen in Australia if HFE were abolished. Arithmetically, EPC grants would reduce the variance in fiscal capacity, using the Grants Commission standard of comparison, which is EPC itself. Note that GST grants fund about one-fifth of state and local spending.

to interstate migration, the differences in average living standards are relatively small across the Australian states and territories, and chiefly explained by demography; and so are the differences in fiscal capacity, the Northern Territory excepted. Arithmetically, equal *per capita* grants would reduce the variance of fiscal capacities (compared with no grants). Table 1 illustrates the gain or loss, as a percentage of state expenditures (of 2009-10), that a shift to equal *per capita* grants (EPC) would cause. For the eastern seaboard, there is not much in it, but the Northern Territory and Tasmania gain greatly from the CGC processes. Only for the Territory would it be reasonable to worry that replacement of HFE by equal *per capita* grants could lead to the shocking sub-national disparities in public provision that can be observed in other countries.

Table 1: Approximate effects on state budgets of EPC grants compared with CGC recommendations, 2010-11 (% of general government expenses)

NSW	Vic	Qld	WA	SA	Tas	ACT	NT
1.05	1.38	1.71	6.45	-5.83	-12.67	-2.53	-53.00

Sources: CGC 2011 and ABS 5512, 5506
Note: The estimates are the percentage differences between the 2010-11 grants proposed CGC and equal *per capita*, compared with the 2009-10 general government expenditures. The GST collection for 2009-10 was $46,553m; the estimate for 2010-11 is $45,950m.

The paper first examines how the Grants Commission pursues fiscal equality, focussing on demographic variables, wages and mining (section 2). For demography and mining, the Commission undoubtedly causes a movement toward fiscal equality. On wages, however, it is questionable that the Commission improves fiscal equality: mobility tends to make working households indifferent between jurisdictions, even if wage rates differ; thus, the Commission can mistakenly recommend the transfer of moneys from equals to equals; and disturb an efficient pattern of interstate migration and settlement. Other negative efficiency consequences of HFE are noted, as counterweights to the common claim that HFE improves economic efficiency. As was stated already, HFE in Australia strives for full equalisation of state budget capacities; in contrast, governments attempt only partial equalisation of private budget capacities. In section 3, I present a framework for considering the trade-off between equality and efficiency, adapted from Brennan and Pincus (2004 and 2010). The main result is that no allowance should be made for interstate differences in unit costs of public provision of (public or private) goods and services. An alternative distribution of GST monies is estimated for 2010-11.

2: Equity and efficiency in HFE

Equity and mobility

The equity case for HFE depends on there being a significant degree of interstate *immobility* of some components of the population, whereas the efficiency case for HFE depends in part on there being a significant degree of interstate *mobility* of other sub-populations. A main argument of the paper is that interstate mobility of working households throws serious doubt on how the CGC accounts for differences

in fiscal capacity arising from differences in the payroll and land tax bases.[8] Unintentionally, a significant part of the CGC's redistributions may be from almost-equals to almost-equals. This will have adverse consequences for efficiency as well as for equity.

If otherwise-similar people are not treated similarly in the various states and territories, and if those differences are sufficiently great, then people will consider moving to another jurisdiction. In Australia, there are extraordinarily-low barriers to the interstate movement of people, capital, businesses, and goods and services. There is an extensive national social welfare system, and a highly-centralized tax system. Political, economic, social, legal and cultural differences are small, across the Australian states. The Australian constitution has provisions designed to encourage the creation of a single national economy (one currency, one system of weights and measures, national regulation of banking, and so on); and there have been no internal tariffs for over a century. Gradually, non-tariff barriers to interstate trade have been removed or reduced by the High Court and by inter-governmental agreement; Australia has become more of a single national economy than a set of separated and disparate state economies. In particular, mutual recognition relating to the sale of goods and the practice of occupations came into force within Australia in 1992.[9] The Australian population is not only one of the most geographically-concentrated in the world but also one of the most mobile. The extent of interstate movement of families has been used to justify the national curriculum for schools. About 17 percent of the population move in any one year, and over 40 percent in every five years (Hugo Panel report, p. 47). In 2008-09, 360 000 people moved interstate (ABS 3412.0), which is about 1.6 per cent of the population; and net overseas migration was over 320 000. There are no legal restrictions on interstate migration; the cash costs of moving have fallen over time; cheap travel and communications assist in the maintenance of links back to the former location; laws, regulations and school curricula have become more uniform across the nation, so the degree of disruption, attendant on moving, has fallen.

Therefore, no great differences can persist in the ways in which otherwise-similar people are treated in the various states and territories, unless they are immobile between jurisdictions. The across-jurisdictional dispersion of average personal disposable income in Australia is relatively small.

However, even without fiscal equalisation there would be a substantial degree of inter-state redistribution, from the richer states to the poorer, mostly through the progressive income tax system, and through the Commonwealth government's provision of nationally-uniform social services and social security payments, both probably redistributing disproportionately towards locationally-immobile sub-populations.

Even if the claim were true that immobile sub-populations would be unfairly disadvantaged in some jurisdictions without HFE, we need to explain how and why HFE grants will change their situations. There is are two mismatches between this kind of equity argument and the methods of HFE: the distribution of the HFE grants is not determined solely by considerations of the size and nature of locationally-immobile elements of populations; and there is no guarantee that the grants will benefit those

[8] This sub-section gives some theoretical support for the argument made by Peter Abelson (2010).

[9] The relatively-minor remaining impediments are being attacked by the High Court and by COAG, the Council of Australian Governments. COAG has explicit set itself the goal of boosting geographic mobility, to achieve a 'seamless national economy' (COAG *Communiqué*, March 2008, p.2), with the first focus on national licensing system for certain occupations.

elements of population (and, in the case of remote Indigenous peoples, good evidence to the contrary). Also, if sub-populations are badly served because their immobility lessens their political weight, then how will equalising grants alter that situation? Specific purpose grants may do the job, but not general-revenue grants.

Therefore, I conclude that the equity argument for HFE has limited validity. I now turn to consider how the Grants Commission assesses the fiscal capacity of the states.

Equivalised populations

Some of what the CGC does on the expenditure side can usefully be regarded as calculating the *per capita* costs of servicing *equivalised* or standardised populations. This is the jurisdictional analogy of equivalised family budgets. Those states with a higher proportion of the aged and the infirm, for example, on that account would have a higher expenditure burden if they are to provide the Australian-average levels of services; and so on for other demographic categories. In Appendix Table A1, these adjustments are labelled ‗Demographic features,' and redistribute about one-third of the net redistribution of the CGC processes (that is, $1,155m compared with $3,598m).[10]

Fiscal redistribution on the basis of demography (and socio-economic status) at first sight seems fully consistent with the goal of equalising budget capacities[11]. However, the equity case for fiscal redistribution on account of socio-demographic characteristics of the populations is a short-run one, except as it relates to jurisdictionally-immobile populations. If a state with a low fiscal capacity offered low levels of public provision, then those thus most disadvantaged would have strong wish to move to a state with higher levels; and those with low costs of moving, will do so. (In the US terminology, the attractor states are often called ‗welfare honey-pots'—but the argument is not confined to the provision of welfare.) Such inter-jurisdictional migrations may well have efficiency consequences, but for mobile populations they greatly weaken the case for HFE on account of socio-demographic differences, when the argument is based solely on claims about horizontal equity.

Moreover, these are general revenue grants—there is no requirement placed on a state to spend the grants according to how they have been assessed. So, in particular, Rolf Gerritsen has claimed that the Northern Territory has directed a significant portion of the GST monies that it receives on account of Indigeneity and remoteness, in such a fashion that the main beneficiaries have been non-Indigenous people in Darwin.[12] A strong case can be made for the Commonwealth to supervise the spending of this money, or to take direct responsibility for it.

[10] By the Grants Commission's method, the redistribution number $1,154m is half of the (row) sum of the absolute value of the column totals of the elements of Demographic features in Appendix Table A1.

[11] This is not to endorse the ways in which the CGC calculates EPC grants for equivalised populations, as I have not yet examined them in sufficient detail.

[12] Gerritsen is quoted by Erwin Chlanda in 'Nice try by government', *Alice Springs News*, July 31, 2008. Available at http://www.alicespringsnews.com.au/1526.html

Table 2 shows my calculation of grants based on equal per *equivalised* head (that is, EPC adjusted for Demographic factors only), in comparison with the CGC recommendations and with EPC, using the CGC estimates of the distribution of costs on account of socio-demographic factors.[13]

Table 2 Grants *per capita* under different regimes: demography only

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT
1	CGC ($)	1986	1961	1905	1425	2681	3378	2404	10568
2	EPEC ($)	1887	1604	2388	2514	2168	2440	760	10116
3	EPC ($)	2083	2083	2083	2083	2083	2083	2083	2083
4	%diff:2,1	-5.0	-18.2	25.3	76.4	-19.1	-27.8	-68.4	-4.3
5	% diff:2,3	-9.4	-23.0	14.6	20.7	4.1	17.1	-63.5	385.7

Source: Author‘s calculation using CGC 2011, Table 7 and passim.

Notes:

Line 1: Commonwealth Grants Commission‘s recommendations *per capita* for 2010-11

Line 2: Equal *per capita* of equivalised populations (EPC adjusted for ‗Demographic features‘)

Line 3: Equal *per capita*

Line 4: Percentage difference between EPEC and CGC

Line 5: Percentage difference between EPEC and EPC

The effects of discounting completely all Grants Commission assessments except demographic would be substantial or huge for all but NSW and NT (line 4). On the other hand, the effects of moving from EPC (equal *per capita*) to EPEC (equal *per equivalised capita*) are shown in line 5: not large for Queensland, Western Australia, South Australia and Tasmania, but huge for the ACT and the Northern Territory.[14]

Efficiency consequences of socio-demographic assessments

Although the adjustment of the grants for differences in demographic composition is designed to and must increase fiscal equality, it can also have efficiency consequences. The usual argument is that such adjustments improve efficiency in so far as they deter inefficient settlement patterns across jurisdictions. For example: the South Australia population has a relatively-high proportion of the elderly; if SA government services to the elderly were to be financed solely from SA government‘s own-source revenues, then either SA would have relatively-high taxes and charges, or would offer relatively low levels of services to the elderly or some other sub-populations (*cet. par.)*. The first response would tend to

[13] Table 1 accepts all the factors that the CGC lists under ‘Demographic features’, including the factor called ‘Effects of where people live’, which takes into account differences in unit costs due, amongst other things, service delivery scale. In section 3 below, I argue against compensating for such differences in unit costs; but there was no easy way to separate these costs.

[14] Peter Abelson has pointed to the anomaly of the ACT’s having the highest household disposable income, by far, but gaining grants because of a low assessed revenue capacity.

drive taxpayers out of the state, even if their productivity in SA were greater than elsewhere. The second response would tend to encourage settlement in other states of those who are soon to retire, even if their needs could be provided more cheaply in SA than elsewhere.

However, the positive case is not water-tight. Most Premiers like to boast about growth of their state's population; sectional interests benefit from population growth and lend effective political support. State government have, in the past, wooed retirees to settle in their states, on the reasonable assumption that, once attracted interstate, they are unlikely to move interstate again. A part of the attraction can be promises of superior levels of service. HFE gives a small encouragement to this kind of competition (a race to the top'?), in so far as the all-state-average cost of state provision of services for the additional retirees in any one state is spread across all states. However, the state does bear a large portion of the cost of additional (above-standard) offering.[15]

Moreover, to the extent that retirees are attracted from locations in which their needs are cheaper to serve, the CGC compensates the destination states for their higher costs of service.[16] Later in the paper I make the case for the CGC to use an index of taxable capacity of the jurisdiction that takes account of state differences in rents and transit costs. In that context, here I note that, those retirees whose income is largely tied to the nationally-uniform age pension can gain by moving from high-rent to low-rent places. If those are also places of low (or high) productivity of services for retirees, then these migrations may worsen (or improve) economic efficiency. HFE on account of socio-demographic composition probably exacerbates these efficiency consequences.

Spatial equilibrium

An anecdote: when we both lived in Canberra, a friend told me that he had just been offered a job as Professor in Sydney. "How can I afford to take it?" he asked: "Housing is so expensive in Sydney, compared with Canberra. I will go only if they offer me enough money to cover the difference in costs of housing." They did raise the salary offer, and he did take the job in Sydney.

Spatial equilibrium implies that a spatially-mobile worker would enjoy similar real incomes in every major capital city; and the counterpart for employers' incomes. Otherwise, there would be an incentive to move to gain a higher standard of living or profit. Interstate mobility of workers tends to equalise the welfare of otherwise-similar people in otherwise-similar jobs, regardless of the state of residence. The equilibrating variables include productivity, wages, amenities and land values; that is, money wages and cost of living are both involved in bringing about spatial equilibrium. For example, if a fork-lift driver can obtain a sufficiently-higher real wage in Brisbane than in Adelaide, then he or she may move interstate. This flow of interstate migration tends to drive up real wages in SA and drive them down in Queensland. Economies of scale would reinforce the movement; however, before everyone leaves SA, rises in land values, congestion and the like, produce a spatial equilibrium in which some fork-lift drivers

[15] The simplest case is that in which the Commission merely takes a weighted average of the expenditures. Then a state with higher levels of service bears a fraction equal (1 – p) of the extra cost involved, where p is the state's share of the national population.

[16] Cheaper, that is, for reasons recognised by the CGC under the headings of Economic activity – effects on expenses; Diseconomies of small scale; and Geographic and related influences. There are also other rent-determined differences in costs of living; e.g., nationally-advertised branded goods tend to be higher priced in stores in high-rent districts: contrary to Ricardo, in the present of alternative uses (like in accommodation), store rents are a cost of production.

reside and work in Adelaide and some in Brisbane, all enjoying about the same level of real wages. Any jurisdictional wage differences (at the level of the individual) are explained by the costs of moving and re-settling.[17]

To explore the HFE consequences of the idea of spatial equilibrium, I will use the classical model of urban economics, the circular city. [18] It is a world of private goods, in which everyone lives in one city-state or another. For convenience, Figure 1 shows the cross-section of half of the circular city. All market exchanges take place at a point called the CBD. All production (except of transport) takes place in the CBD, and all journeys, for work and shopping, are to and from the CBD. The horizontal axis shows the distance from the CBD: for simplicity, I assume that the density of settlement is the same at all locations. The rising dotted line shows the cost of transport or travel to the CBD, at all distances from the CBD. I have assumed that transit cost is linear in distance—but it could be any shape, and the argument goes through.

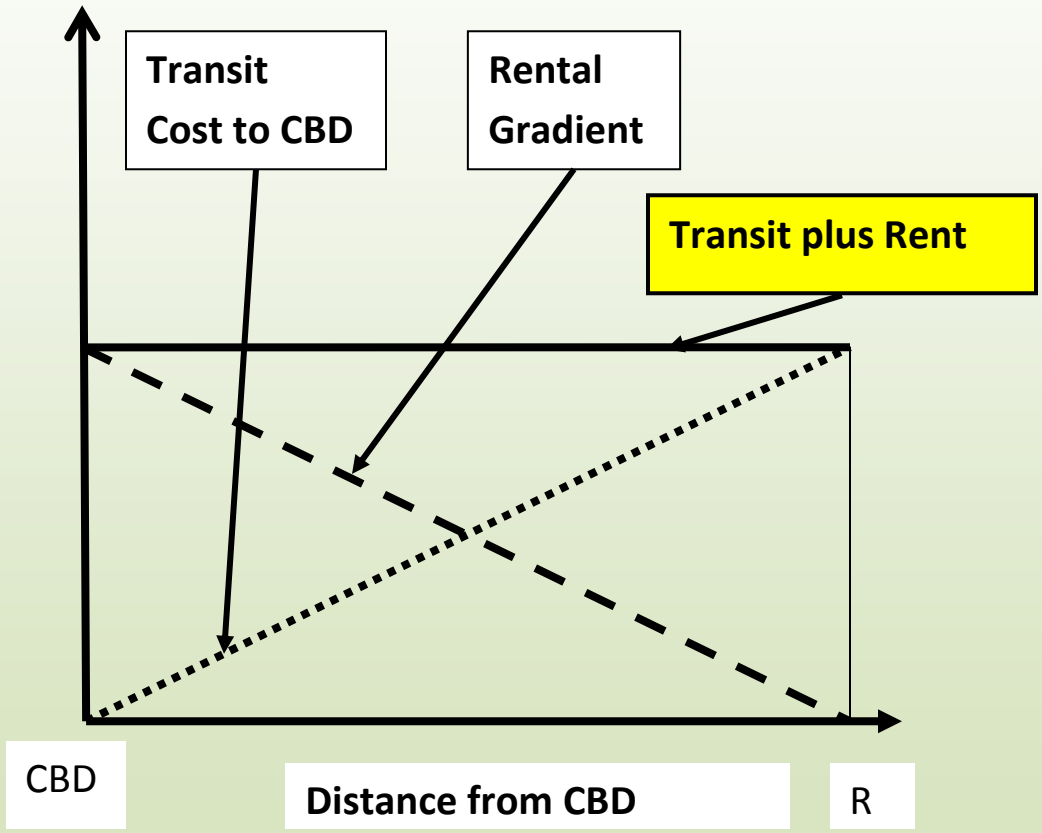
Figure 1 conveniently shows the (Ricardian) rents by location. The down-sloping dashed rental curve is the mirror image of the dotted transit gradient: the differential transport costs associated with each locality give rise to the differential of land prices of each locality. Land located near the CDB incurs a very small travel cost, and therefore commands a large locational rent. Land at the perimeter of the city, at point R, incurs a large travel cost but the land there commands a zero Ricardian locational rent. The land-value gradient reflects the land-transport gradient: same slope, opposite sign. (Land values beyond R are not city values, but rural values, which I take as zero for convenience of exposition.) For simplicity, I assume everyone travels in his or her own private vehicle.

In this simple case, the sum of land rent and transport charge is a constant across the city: looking only at locational costs, a person should be indifferent between situating at the CDB, or at the perimeter R, or anywhere in between: everywhere along OR, the sum of land rent plus travel cost to the CBD is a constant.

[17] This assumes that labour markets are relatively competitive: restrictions on new entrants—of the kind that Mutual Recognition is designed to remove—could support differences in real wages across locations. In a report commissioned by the CGC, Borland and Lye (1995, p. 11) state that 'To establish the 'state-specific' component of labour costs the theoretical analysis suggests that two types of corrections to earnings data are required. First, it is necessary to adjust earnings data for differences in skill levels and job characteristics of employees. After adjusting for these effects, residual differences in earnings between employees will be due to location-specific factors relating to employment conditions. Second, it may be necessary to adjust earnings data for the influence of non-competitive factors such as trade unions or imperfect competition in product markets.' Having adjusted for skill levels and job characteristics, Borland and Lye use state dummies to capture state-specific fixed effects on wages. These effects could include state-level differences in the cost of living, or differences in the marginal product of labour (not captured in the other controls for worker skills). An extension of this approach would be to include extra explanatory variables intended to directly represent state-level cost of living differences – such as rents and the cost of journey to work: see Appendix table A2.

[18] The Figure echoes the economic model used by Dixon, Picton and Rimmer (2002). However, I do not use their assumptions about utility functions.

Fig. 1: Locational Rents and Transit Costs in a "Circular" City



When all residents have equal real incomes

This simple model can illustrate that, if all residents had the same level of real income, the Grants Commission would upset the equality through HFE. (Later I will consider difference in incomes.)

Assume the city in Figure 1 comprised two States of Australia—the inner two-thirds comprise State Inner-Large—and the outer third, State Outer-Small. By assumption, each person has the same economic status, so any aggregation of persons has the same average economic status as any other aggregation. Thus, State Outer-Small and State-Inner Large have the same taxable capacity, per head, if we consider residents only in their capacities as workers. To ensure that land ownership does not disturb this equality, assume that all residences are rented; that all land-owners are fully mortgaged; that all mortgages are owned by a corporation; and that every worker has an equal share of ownership of that corporation.[19] (Also, assume equal shares in all other wealth, which is not subject to state taxation.)

With this set up, the CGC would recommend an HFE transfer from State Inner-Large to State Outer-Small, *ceteris paribus*. Yet, by assumption, everyone has the same level of real income and wealth.

In this simple model, the taxable capacity of any person is limited to their wages minus the costs of earning, which are rent and transit costs. Mortgage income is not taxed by the States, but payrolls are, as is city land not containing the principal residence of the owner. State Inner-Large would be credited by the CGC with a higher tax base than State Outer-Small, because of the higher value of land; and credited with the same *per capita* payroll tax base. Yet, by assumption, prior to HFE the two states have the same fiscal capacity on the revenue side.

What tax rates would each state levy? Without HFE, a natural assumption would be that they would raise the same total tax *per capita*. This would occur if they imposed identical land tax and payroll tax systems; but any tax mix that raised equal amounts *per capita* would do. However, once HFE is taken into account, then the residents of Inner-Large would be treated more harshly: that is, HFE would offend against the principle of horizontal fiscal equity. Moreover, in view of the belief of the CGC that its processes do not significantly alter state policies, it is worth noting that the CGC redistributions in this case would themselves tend to induce differences in state taxation practices. However, for HFE to have efficiency consequences, we need incorporate scope for mobility—which the next model does.

Two City-States

Now consider two circular city-states of different sizes: City-State S, which is the small; and City-State L, which has n-times the radius (and $4n^2$ times the area and population). For convenience, I again assume that the rental gradient the same at all locations, and the same in the two cities. Geometry tells us that each location in City-State L has a sum of {rent + transit} that is *n-times* that of City-State S: the average land value is *n-times* higher, and the average transport outlay is *n-times* higher.

[19] Using the methods of the Grants Commission, when all residents are owner-occupiers (to deal with the other extreme), both States would be credited with zero land tax bases for residences, and equal *per capita* payroll tax bases. Thus, a change in land ownership within a state does not change aggregate annual income and, therefore, does not alter the aggregate tax base of a state. There would be no fiscal equalisation that is due to differences in tax bases. (Note that the Income Tax Act does not recognise travel to the principal workplace as a cost of earning; states do not levy land taxes on owner-occupied housing.)

For mobile residents to be indifferent between living in State S and in State L, the money wages in State L would have to be high enough to compensate for the higher cost of living in City L. The theoretical point is that if both cities exist, and if people can move from one to the other, then similar people will enjoy similar levels of real income in the two cities. This means that, for the workers, higher wages in City L are offset by higher costs of living in City L.[20] And, for wages as cost, the higher wages would be matched by higher productivity, if employers sold into spatially-integrated, competitive markets.

Differences in taxable capacity

The CGC approach is to evaluate each tax base separately, and to aggregate the estimated differences in taxable capacity. Instead, the Productivity Commission (2008) advocated using a single index of the (sustainable) revenue capacity of a jurisdiction, namely, the sum of the disposable incomes in the jurisdiction, net of federal taxes. Peter Abelson (2010) has argued that the single index should take account of the differential costs of location—essentially, rents and transit costs. The model of spatial equilibrium presented here reinforces Abelson's position.

The wage income per head of population varies across states because of differences in employment ratios; differences in the mean of the distributions of wage incomes (the ‗wage level' effect); and differences in the shape of the distributions of wages incomes (the ‗composition effect'). To simplify the exposition, I will initially assume away the composition effect; and assume that differences in wage levels are offset by differences in costs of living.

To adopt the assumption most favourable to the Commission's methods, assume that the owners of land that is subject to land taxes all reside in the state in which the land is located. Then the taxable capacity of a state with a larger city—in the example above— exceeds that of the other by the difference in land values per head. However, the Commission's approach assumes that, in addition, higher wage incomes add separately to the taxable capacity. It involves a form of partial double-counting: to the extent that the higher wages are compensation for higher rents, then only one or the other indicates higher taxable capacity. If the distribution of earning capacities (composition of employment) were the same in the two states, other than in their means, in the simple example used earlier State L would have a larger tax base by the differences in rental values, per head.

More generally, in the absence of a composition effect, the alternative, single index of taxable capacity of state K would include $\pi_k(W_k - r_k - J_k) + R_k$, where π_k is the state's employment rate; W_k, r_k, and J_k are the state's averages for wages, and worker's rental and transit costs ; and R_k is the average taxable rent, all in *per capita* terms. (I have ignored out-of-state ownership of land.) The complete index of taxable capacity requires the addition of all other income sources; and the subtraction of Commonwealth imposts. (Although the other income sources are not discussed in this paper, similar arguments about equalising differences may apply to them.)

The CGC uses differences in total payrolls (per head) as one of its bases for fiscal redistribution. Of course, even if there were no locationally-driven differences in the levels of wage rates, average payrolls would differ across locations according the composition effect (that is, distribution of jobs, industries and

[20] There is evidence to support the proposition that, over a range of city sizes, productivity is higher in larger cities—they enjoy economies of conglomeration or aggregation; but that there are offsetting effects of congestion and other disamenities that work to limit the sizes of cities: see Glaeser and Gottlieb 2009.

human capital); in particular, one State may have a higher percentage of highly-paid workers with high human capital—a possibility discussed in the next paragraph. But over and above that factor, the CGC assumes that, for any given type of wage worker, a higher wage fully represents a higher capacity for tax purposes. But, if the theory of spatial equilibrium has empirical heft, then this is wrong. By imposing a higher burden on the residents of the state with higher nominal wages but not higher real wages for similar people and jobs, the Commission's approach to fiscal equalisation offends the principle of horizontal fiscal equity, and distorts the pattern of settlement—workers are induced to migrate to the smaller state.[21]

Now introduce a composition effect. Assume that the high wage state also has a higher fraction of highly-paid workers than the other state. If state-provided goods and services are superior goods, then the state with the higher average income would be expected, in the absence of HFE, to have higher rates of taxes and charges. This would encourage Tiebout-style sorting: lower-wage workers would be attracted to reside in lower-wage states for fiscal reasons, not reasons of productivity. HFE would exacerbate these Tiebout effects, rather than lessening them, because the high-wage state would be forced to subsidise the fiscal capacity of the low-wage state. [22] (This is not a general result, but depends on the assumption that the state with higher nominal wages levels also has a wage distribution more skewed to the right; and on state provision being a superior good.)

Estimating the efficiency consequences would require modelling the budgetary responses of the states, and of the mobile population, to the (endogenous) error in the GST redistribution. This has not been attempted, but there is no reason to expect that it would be trivial.

Wage equations

Generalising, the world being modelled is one in which there is a finite number of observably-different types of people, in terms of their human capital. In spatial equilibrium, each type of person would be indifferent as to location (*modulo* the costs of re-location).

Let W_{ik} be wage available to any such person by locating in State K = 1, 2; r_{ik} be the (individual's) locational-rental component of housing costs; and J_{ik} be transit costs (all measured in units commensurable with W_i). Denote the individual's cost of transfer (to any other state) as C, and the residual (or unexplained) state wage premium as $d_{1,2}$, then spatial equilibrium requires that $(W_{i1} - r_{i1} - J_{i1}) - (W_{i2} - r_{i2} - J_{i2}) = C + d_{1,2}$, at the level of the individual, *i*.[23] Thus, the appropriate dependent variable for the wage equations would be $W_{ik} - r_{ik} - J_{ik}$. If, however, information on housing costs and transit costs were available only as jurisdiction-wide averages, denoted r_k and J_k, then the appropriate equation would explain W_{ik} by the usual regressors, together with r_k, J_k, urban amenities and state dummies. In both equations, the coefficient of a state dummy would provide an estimate of the unexplained interstate wage premium (including the cost of moving interstate).

[21] Intuitively, the final equilibrium, at which HFE-induced migration ceases, would leave the city-states of unequal size, but not at their efficient relative sizes.

[22] It is '...impractical to take migration costs into account in designing equalization systems, even in relatively simple settings' (Boadway 2010:225).

[23] This is over-simplified, in that the moving cost, variable c_j, should only apply to the state that is, on balance, attracting immigrants of type *i*.

For its estimates of interstate wage differences, the Grants Commission has relied on regressions explaining individual earnings or wage rates in the private sector, with the usual regressors, like age, experience, education, occupation, industry, country of birth; and with dummies for the states and territories; but not including regressors like land values or housing costs and commuting times or costs. The American evidence is that their inclusion causes a large downward adjustment in the estimated difference in real wages in different-sized cities; a similar reduction may be expected for the coefficients on the state dummies.[24]

Reverting to the previous discussion of a single index of taxable capacity, the expression $W_k - r_k - J_k$ is the weighted average real wage of jurisdiction *k*. The wage premium would then be measured as the difference from the real wage of the ‗reference states' used for the state dummies in the wage regression.

Wages as cost

Every ground for redistribution used by the Commonwealth Grants Commission should be examined in isolation, before considering their combined effects. Here I will consider the Grants Commission's adjustment for differences in wages-as-cost. My conclusion is that either the Commission is in error on equality; or that it is causing economic inefficiency.[25]

The CGC explicitly assumes that higher private sector wage rates mean higher public sector wage rates (CGC 2010:64-65) and I will assume the same.[26] Because NSW, for example, has relatively high private sector wage costs, the Commission awards NSW a higher GST grant than otherwise (*cet. par.*), to compensate NSW for its (imputed) higher public sector labour costs. Under the CGC's methodology, in order for NSW to provide the all-state average *per capita* level of publicly-supplied goods and services, NSW needs to spend more *per capita*; and so the CGC awards NSW more GST monies, *cet. par*.

The validity of this line of reasoning depends on the unobserved relationship between wages and labour productivity in the public sector. Presumably, NSW private sector wages are higher because private labour has higher productivity in NSW.[27] What then is the relationship between public sector wages and public sector productivity in NSW? There are two polar possibilities. If NSW public sector wages do in fact reflect higher productivity in the public sector—Case A—then the CGC is using a mistaken ground to justify the transfer of some money to NSW on account of higher wages (*cet. par.*); the transfer creates

[24] Yanknow (2006) reported that, when differences in costs of living were taken into account, there were substantial falls in the estimates of the 'big city' wage premium in the United States, the largest being from 14 to 4 percent.

[25] I understand that various states have made submissions to the Grants Commission, using arguments along the lines set out in this sub-section.

[26] The Grants Commission takes account of wages as a public sector cost; and as the base for the payroll tax. From the Commission's Table 7-3 (reproduced below), they about offset each other on average, but NSW on balance gains non-trivially from having high wages. The CGC adjusts the calculated wage differences for Tasmania and the ACT, and then discounts by the one-eighth. In their extensive study of inter-sectoral and interstate wages, Borland and Lye (1995: 68-9)) found no 'overwhelming evidence of significant differences in earnings of public sector and private sector employees in each state...Second, state of residence effects are generally not a significant determinant of earnings.'

[27] This requires that the output markets are closely integrated across jurisdictions, which implies that unit labour costs in the industry are the same in different jurisdictions.

fiscal inequality. However, if higher public sector wages do not in fact reflect higher public sector productivity—Case B—then the transfer of monies to NSW is needed to equalise fiscal capacity.[28]

This, nonetheless, is not the end of the economic story of Case B. Supporters of HFE generally believe that, as well as improving equity (in the sense of horizontal fiscal equity between individuals in different jurisdictions), HFE also improves economic efficiency. Case B is a counter-example: transferring monies on account of difference in wage levels could damage economic efficiency. In Case B, higher public sector wages are not matched by productivity.[29] Therefore, a sum of GST monies would buy more public services in a low-wage state, say SA, than in a high-wage state, say NSW, so the transfer on GST monies from SA to NSW reduces the level of national output (in proportion to the differences in unit labour costs).

The appendix formalises the two considerations: the tax side (payroll and land) and the wage-expense side. In order to judge the outcomes, we need a normative framework within which to balance equity against efficiency.

Mining assessments

Redistribution of mining revenues is the largest factor moving grants from EPC. Undoubtedly, it serves to reduce fiscal inequality. Table 3, line 2, shows that WA would receive less than half EPC, if the only factor adjusting EPC were mining revenue assessments; Queensland and the Northern Territory would lose over one-fifth of grants made under EPC. (It should also be recalled that mining profits are taxed currently by the Commonwealth at the rate of 30 per cent; and will yield a large share, possibly one-quarter, of all company tax revenues over the next few years, or about five percent of Commonwealth tax revenues. And the government intends to introduce the Minerals Resource Rent Tax.)

The Australian Constitution assigns ownership of sub-soil mineral deposits to the state or territory in which they are located. However, the high degree of vertical fiscal imbalance means that the Commonwealth Parliament is in the position to make conditional grants to the states that they dare not refuse; and Parliament has seen fit to make grants on the basis of HFE.

[28] In Case B, the full difference in wages may not accurately reflect differences in unit labour costs: if the state dummy in the wages equations is significant when state-specific costs of living are included as regressors, then the coefficient of the state dummy measures the state-specific difference in productivity (which in competitive circumstances would be captured as rents on industrial and commercial land.)

[29] Presumably, variations in the gap between public sector wages and labour productivity in the public sector may be due to the imperfect integration of public sector labour markets, across jurisdictions.

Table 3 Grants per capita under different regimes: mining only

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT
1	CGC ($)	1986	1961	1905	1425	2681	3378	2404	10568
2	Mining ($)	2265	2413	1818	999	2313	2332	2430	1787
3	EPC ($)	2083	2083	2083	2083	2083	2083	2083	2083
4	%diff:2,1	14.0	23.1	-4.6	-29.9	-13.7	-31.0	1.0	-83.1
5	% diff:2,3	8.7	15.8	-12.7	-52.0	11.0	12.0	16.6	-14.2

Notes
Line 1: Commonwealth Grants Commission's recommendations *per capita* for 2010-11
Line 2: Equal *per capita* adjusted for Mining revenues only
Line 3: Equal *per capita*
Line 4: Percentage difference between CGC and EPC
Line 5: Percentage difference between EPC and EPC adjusted for Mining revenues only
Source: Author's calculation using CGC 2011.

What is the argument for ‗taxing' WA for having mines in horrible places and not ‗taxing' NSW for being blessed with a beautiful setting for its capital city; or Tasmania, for its pristine wilderness? In the absence of HFE, WA would have superior public services, and people would trade those off against the terrible heat. Presumably, the argument for treating mineral resources differently, from other natural capital, is that the benefits of Sydney harbour (say) already manifest in fiscal capacity as measured by the Commission. On the revenue side, this could be in land values; or in wages, as a result of the industry mix: Sydney is a more attractive place to live and work than is, say, a remote Western Australian mining province; and so Sydney supports a competitive manufacturing industry that eludes WA. It is argued elsewhere in this paper that the CGC assessments do not (and by implication, cannot) equalise fiscal capacity with any reasonable degree of accuracy. A pertinent example: to the extent that the NSW climate and setting makes it easier to attract labour, NSW wages do not need to be as high—but the CGC does not discount wages for differences in costs of living (as argued earlier). So it is not clear that difference in natural endowments other than mining are accurately reflected in the CGC assessments.

Moreover, there is something strange about equalising mining revenues, in view of exhaustibility. To maintain a target level of consumption, a state needs to invest a higher share of its mining revenue than, say, its tourism revenues. The CGC assesses mineral taxing capacity as the gross value of minerals produced in each State (plus an adjustment for revenue received under revenue sharing arrangements with the Commonwealth).[30] In effect, the Grants Commission's recommendations redistribute ownership of

[30] This is one case in which the CGC assessment methodology is far from being 'policy neutral': mining production is so unevenly distributed across the states that, say, a decision by WA to raise its royalty rates will have a significant effect on the Australian-average rate (and, after a lag of a couple of years, to the additional royalty revenue being redistributed according to each state's share of the Australian population). Similarly, the 'average' tax rate used by the Commission is very sensitive to WA's tax rates (in a slightly mysterious ways: see David Uren, 'State's "own goal" over royalties', *The Australian* newspaper, May 21-22, 2011).

sub-soil mining rights, but only in so far as ownership manifests as taxable mining output. Royalties, the main mining revenues for the states and territories, can be regarded as a deferred, contingent payment for the right to mine: the state owns an asset—the deposit—and transfers rights over that asset in return for a stream of payments. This transaction has no net effect on the state government's balance sheet; nor would an *ex ante* auction for the right to mine (even if the state agreed for the auction price to be paid over a period of years). The CGC methodology has recently moved a little way towards a balance sheet approach.[31] An HFE treatment of mining that would be more in keeping with a balance sheet approach would be for the CGC to assess the size of the 'permanent income' stream that is provided by a state's natural capital.[32]

Efficiency considerations of mining assessments

On the positive side, the argument is that if, say, the WA government kept all of its mining revenues, then it could lower other taxes (say, the payroll tax) or increase state spending per head. Either reaction could distort settlement decisions: a worker with a higher productivity in another state may be attracted to WA by the superior fiscal bargain offered there.[33]

On the negative side, HFE reduces the payoff to the Treasuries of the mining-rich states and therefore has some disincentive effects. Inevitably there are political costs as well as political benefits in approving exploration and mining, and the associated activities of construction, earth moving, water use, storage, transport, movements of workers, and so on. WA, for example, has about 10 percent of the Australian population, and so it retains about 10 percent of any public revenues from additional mining, after a lag of couple of years. At the margin, when a state government does not retain all of the tax revenues generated by its decisions, let alone only one-tenth, it would be less likely to grant the necessary approvals speedily and without restrictive conditions.

More subtly, HFE encourages those state governments to gather some of the mining rents in ways other than royalties (or cash payments generally). In particular, HFE encourages states to impose costly 'works programs' on miners, in excess of what the miner requires for its activities. These additional costs would tend to decrease the level of mining activity and, therefore, decrease royalty payments; similarly, if works programs are negotiated as an alternative to an increase in royalty rates on existing mines. However, it is rational for the state government to prefer works programs over cash, so long as the works meet a benefit-cost ratio of about ten percent (in the WA case): the works program need only be one-tenth as valuable (to the state government) for it to be preferred over a cash receipt of equal cost to the miner.[34]

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[31] More strictly, the CGC's approach is implemented by calculating the net lending a State would need for its end of year net financial worth per capita to be equal to the average, if it started the year with the same net financial worth per capita as other States (CGC 2010:60).

[32] The United Nations Development Program has a methodology for estimating 'natural capital'. The CGC has reduced the delay before equalisation, so as to make more timely recommendations.

[33] Interestingly, there have been complaints that Australian residents will not move to WA mining regions in sufficient numbers, despite the offer of fabulous wages and salaries; and the Premier has suggested that the Australian government pay the unemployed $10,000 to accept a job in WA. (Josh Jerga, 'Workplace Relations Minister Evan says open to talk incentives for worker migrations', *The Australian* newspaper, April 28, 2011)

[34] In South Australia some years ago, Santos donated monies for a new School of Petroleum Engineering at Adelaide University, when the state was considering extending some rights to Santos.

3: Balancing equity against efficiency

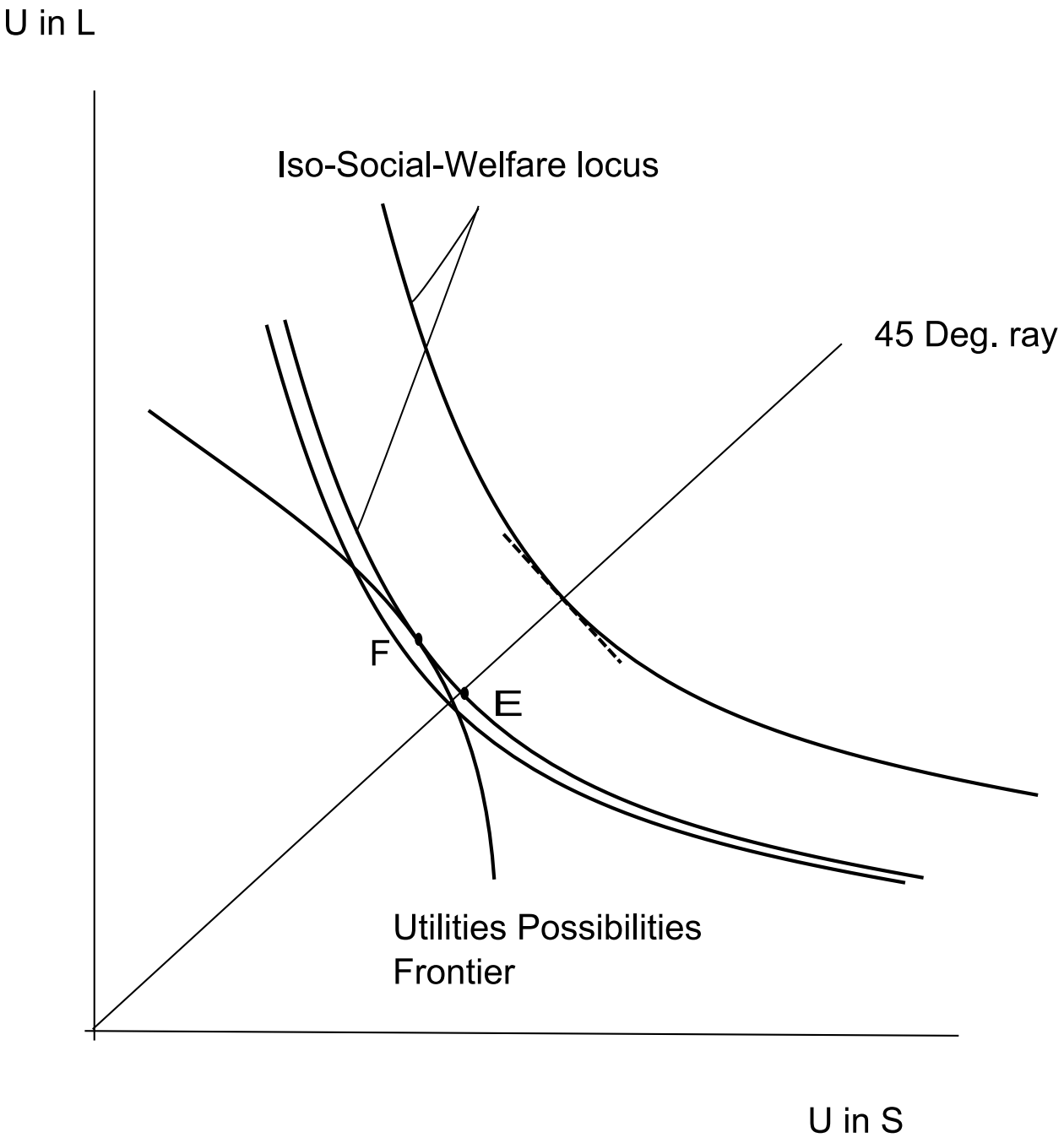
The classic basis of the argument in favour of HFE was formulated by James Buchanan and colleagues (1950, 1952; see also Buchanan and Wagner 1971 and Buchanan and Goetz 1972)[35]. Buchanan discussed when average incomes differ across jurisdictions. However, he did not take account of the possibility that, if one jurisdiction is able to provide some goods and services at a lower cost, that itself may be a reason to support the unequal fiscal treatment of equals within a federation.

To analyse this possibility, Brennan and Pincus (2004, 2010) devised a simple model that allows for inter-jurisdictional differences in efficiency in producing whatever the public sector provides. Reasoning behind the veil of ignorance shows that, when real public-sector costs differ across jurisdictions, full fiscal equalisation is not justified except under extraordinary ethical assumptions. In effect, full HFE ignores differences in jurisdictions‘ comparative advantages. The main lesson from this model is that HFE should severely discount, even ignore, differences in the unit costs of provision.

Consider a simple federation, with two jurisdictions or states, called L and S, for Large and Small. For convenience, assume that the many people in the population are identical. Under the veil of ignorance, the members of the constitutional convention know is that they or their children will live in one jurisdiction or the other. The initial jurisdictional allocation of people is random, except that more people are allocated to state L than to state S. Once they have resided in state L or state S, they and their children will stay there.

[35] Martin Feldstein (1971) argued that Buchanan and Wagner mistook pecuniary externalities for real externalities; and that, if labour is mobile but land not, fiscal equalisation of the kind proposed by Buchanan and Wagner would induce an inefficient pattern of settlement. However, pecuniary externalities can induce real behaviour; and the model can be modified to produce the kind of results that Buchanan sought: Flatters, Henderson and Mieszkowski (1974).

Figure 2: Behind the Veil of Ignorance



The ordinates of Figure 2 are utilities attained by a (representative) person, depending on whether he or she is located in state L and state S. (The person is assumed to have the same utility function, regardless of location.) Figure 2 illustrates a Social Welfare Function that embodies the idea of the veil of ignorance. Utility is treated equally, regardless of jurisdiction of residence, so the iso-SW curves are symmetrical about the 45 line from the origin; and the slope of the tangents along that ray is 45 : one is shown. In addition, the iso-SW curves are convex to the origin, illustrating a trade-off between equality and efficiency, with increasing marginal rates of substitution as we move further from the 45 .[36] The curve concave to the origin is a utilities-possibility-frontier.[37]

At the optimum, point F, the person gets a different level of utility, depending on to which jurisdiction they are randomly assigned. Unless nature and human ingenuity deliver a UPF that is locally symmetrical at $U_S = U_L$, then it would be decided in the constitutional convention to permit some degree of locationally-determined inequality. HFE would reduce social welfare. This is a general result, independent of the reasons for the shape of the Utilities Possibility Frontier.[38]

There is a singular case in which the SWF is Cobb-Douglas and the identical individual utility functions are also log-linear (see Brennan and Pincus 2010 for details). Then the optimum requires equal *per capita* expenditures in each location: budgets are equalised, but not fiscal capacities. In particular, differences in the cost of public (or private) supply of private goods provide no grounds for public or private redistribution.[39]

In general, however, partial but not full equalisation is justified, so long as there is a social welfare trade-off between equality and efficiency; and so long as there are differences in the costs of public provision.[40]

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[36] If the iso-SWF curves were straight lines, then there would be no trade-off between equality and efficiency: the only thing that matters would be efficiency. With symmetry, those straight SW lines will have a negative 45 degree slope. This would illustrate classical Utilitarianism, in which SW is the sum of individual utilities. At the other extreme, if the iso-SW curve were two straight lines meeting at right angles along the 45 , then there would be no trade-off between equality and efficiency: equality would then be the single objective of the constitutional convention, the only *desideratum*.

[37] The argument of Figure 2 assumed *ex post* immobility. In personal communication, Robert Schwarz pointed out that, with mobility, HFE may improve the efficiency of locational or settlement choices; therefore, only points inside the UPF can be attained without HFE (or some perfect substitute). Thus, HFE improves Social Welfare if the induced movement towards the frontier is large enough, measured along the 45 .

[38] Boadway (2004:218) concluded that, with additively-separable utility, 'If labor is mobile between regions, unconstrained social welfare maximization will generally call for different levels of net utility for potential migrants if public goods are not purely private... That is because of the economies of scale in consuming public goods which implies that utility per capita depends upon population in a complicated way.'

[39] To avoid confusion, and to put the results in context, I emphasise that the argument in Figure 2 relates to *ex ante* equals. A different kind of argument is needed to justify the extent of budget redistribution between *ex ante* unequals. '[F]ar from fiscal equalization involving weaker value judgements than "the distribution of fiscal burdens and benefits among unequals," as Buchanan suggests, fiscal equalization requires stronger value judgements. In other words, in order for fiscal equalization to be justified, the social welfare function formulation must embody a stronger commitment to equalization than is required for the equalization of private goods consumption. It must indeed embody a commitment to complete equalization of the kind characteristic of maximin.' (Brennan and Pincus 2010: 257.)

[40] Because of distortions in the real world, the optimum may not be reached.

The argument applies whether the public sector is supplying local public goods, or private goods (or something in between); and is not confined to federations: if in a unitary state, a regional town is less efficient than a city in providing whatever it is that the state provides, then the city should get more in quantity; and *vice versa*. Cash welfare payments made by the national governments in both federal and unitary countries do not normally vary according to local cost levels; why should equal consumption be mandated for public benefits in-kind?[41]

There is an additional efficiency effect. As a matter of HFE principle, the CGC would equalise for any (intrinsic) factor that tends to lead to different unit costs of provision—if the data were good enough and the factor material. The CGC equalizes for cost disadvantages due to diseconomies of small scale; and for geographic and related influences on unit cost. (The extra cost of serving remote or very remote areas may as high as one-half.) The CGC has equalised for the sinuosity of roads, and for the extra costs that tropical states incur in building and maintenance, including when a state has decided to allow settlement in cyclone-prone areas. When a State does allow settlement in areas that are more costly to service than are other areas of the state, then HFE means that the extra costs are spread to other states; and this must influence decisions about patterns of settlement within states, with consequences for economic efficiency.

4: Public choice

As is noted earlier, there is an extensive literature on the effects of fiscal equalisation on the efficiency of the allocation between governments of tax bases, spending responsibilities, risk. In large part, this literature adopts an idealised view of government decision-making.

If, instead, one adopts a Public Choice viewpoint, then one may conclude that, to encourage political accountability and responsibility, the best system of grants is none at all. This would require huge changes in the Australian fiscal system, and is not considered further. A more pragmatic recommendation would be a system of equal *per capita* grants, which would internalise the fiscal effects of marginal spending and taxing decisions of the states: they would be forced to finance their additional spending; and could cut taxes and charges or reduce deficits if they cut back on spending. In addition, EPC grants would be simple to understand and transparent. Arguments about clarity and responsibility in the political system are some distance from the usual discourse of economists about economic efficiency of fiscal equalisation. Nonetheless, they deserve serious consideration.[42]

Equal *per capita* grants would be easy to arrange for the distribution of GST monies. But GST grants represent about half of Commonwealth grants to the states. For clarity and responsibility, it would be better if all non-GST grants were treated in the same way: either by ‗inclusion' or by ‗exclusion': that is, thrown into the GST pool for redistribution by the CGC, or not. Again, from the point of view of political transparency, treating all by exclusion would be preferable: then the Commonwealth would be seen to deliberately discrimination among the states on various grounds, for which it could be held politically responsible. It would also obviate the need to make a distinction (one that Commission understands but does not seem to take seriously) between marginal and infra-marginal grants.

[41] The argument has relevance for 'postage stamp' pricing of public utilities.
[42] This discussion draws on Pincus (2010).

Of the non-GST grants, about half are treated by the Commission as fungible—in the old Commission language, by ‗inclusion'. Although in some instance the Commonwealth instructs the Commission on this matter, the Commission has considerable discretion as to how to treat non-GST grants. A recent instance: would the grants made by the Commonwealth to Queensland for flood relief be equalised across all the states, or not? It seems almost ridiculous that that decision should be made by a statutory authority. Again: in the recent federal election, Ms Gillard promised to fund 80 per cent of the $2.6b cost of the Parramatta-Epping railway line. This rail line did not appear in the list of proposals that New South Wales previously put forward for consideration by Infrastructure Australia. Yet suddenly funding is promised. Presumably, New South Wales' government would have preferred capital funds to go elsewhere. But the prospect of winning a western Sydney seat proved attractive for Ms Gillard. For the Commonwealth government to offer funding for some specific project, there must be some net positive payoff to the Commonwealth government. The Commonwealth has to do the taxing, so it wants some political advantage from the spending. The obverse is that the state is relieved of having to collect sufficient tax revenue or to borrow, but it has to share the political kudos, and to re-order its spending priorities. However, this $2.1b grant may add only $0.6b to the funds of New South Wales, less than one-third of what Ms Gillard promised—a pea and thimble trick. Unless the Commonwealth pre-empted the CGC decision on the matter, the Grants Commission is likely to treat the $2.1b grant ‗by inclusion': in effect, putting the $21.b in with the pool of GST funds to be distributed across the States and Territories.[43]

An EPC system for the GST, plus other grants by exclusion, would reduce some of the adverse incentive effects of the current system. These are many and various, and some have already been mentioned. Two worth noting here relate to the incentive for states to engage in reforms of the kind that the Commonwealth formerly rewarded under National Competition Policy, and now rewards through the COAG Reform Council.

School vouchers: Say that, in an effort to improve the efficiency and effectiveness of education, a State moved to a voucher system for all schools, government and non-government; and simultaneously legislated to permit the creation of publicly-funded ‗charter schools'. This kind of arrangement has been successfully implemented in a number of countries, including Sweden. Say that the reforms seemed to improve school efficiency and effectiveness. However, say they caused a flow of students out of government and into non-government schools. Under the Grants Commission's methods for calculating for the cost of ‗standard' levels of publicly-provided services, this State would receive a lower percentage of the pool of GST funds, as a consequence of the decline in enrolments in government schools. The state would be penalised for increasing school choice; as would parents, if the reduction in GST grants was passed on in the form of a reduced voucher.

Gambling limits: Currently, the Commission treats the capacity to raise gambling revenue as equal *per capita* (CGC 2010, vol. 2:142). It is therefore to be expected that states would tend to rely more on gambling taxes than previously: their revenues are not shared with other states. Meanwhile, through the efforts of some of the independents in the federal parliament, efforts are being made to put limits on the losses that ‗problem gamblers' may suffer.

[43] I should remark that the CGC has the discretion to change its methods if convinced that the existing ones are unfair; but, if they are true to their word, not if their methods lead to inefficiencies.

State tax reform: The Victorian government (2011) has made the (plausible) claim that the processes of the Grants Commission punishes or, at least, does not reward states that engage in the very tax reforms that the Commonwealth is encouraging. In particular, a state that reduces or abolishes inefficient or nuisance taxes will still be credited by the CGC with a particular taxable capacity (depending on the tax involved).[44] Moreover, if the abolition is only in one state or a few, then the Commission does not change the standard tax rate that it applies to a reforming state's tax base. In addition, if the Commonwealth rewards the state for this action, and if the reward is treated by inclusion, then other states share in the reward payment.

5: What is to be done?

A fiscal system without grants would make the states fully responsible for their own spending and, from the point of view of political accountability, is most desirable. It would likely require states to impose income taxes; and for the Commonwealth to retain GST revenues and to foreswear making grants to the states (or, at least, general revenue grants: Pincus 2010).

The next best alternative would be a system of equal *per capita* grants, EPC, funded by the GST. If there were no other grants, then the states would be fiscally responsible on the margin. Table 1 suggests that EPC grants could be applied without great damage the budgets of all but the Northern Territory. This exception reflects the great influence of assessments for Indigeneity makes to the Commission's calculations. If Indigeneity was dealt with outside of the Grants Commission processes, then EPC grants to all jurisdictions could be supplemented (as formerly) by special grants to the claimant states—SA and Tasmania—and the two territories. To encourage fiscal responsibility, the supplementary grants should be scheduled progressively to vanish by the end of ten years for the states, and twenty for the territories.

If EPC proves politically impossible, an alternative is to adapt the Grants Commission's calculations to achieve partial, not full HFE, as in Table 4, which presents an alternative distribution with following characteristics (referring to factors listed in App. Table A1)[45]:

1. On the expenses side, it accepts the Grants Commission's assessment for Indigeneity and Non-state service provision; all other socio-demographic factors are discounted by half.
2. On the revenue-raising side, it discounts all CGC adjustments by half.[46]
3. Differences in unit costs of provision (Interstate wage levels, Diseconomies of small scale) are discounted completely (that is, given zero weight).
4. All non-GST grants are treated by exclusion (that is, discounted completely).

Despite these large adjustments to the Grants Commission's assessments, line 9 shows that the resultant shocks to budgets are not huge. Table 4 includes all of the Grants Commission adjustments on account of

[44] Alternatives would be for the Commonwealth to instruct the Commission to remove that tax base from equalising treatment; or to treat the reforming state's tax base as equal to the average, so that it neither gains nor loses grants on account of that tax base; or as zero.

[45] These proposals also apply to a system of EPC grants to all but three or four smaller jurisdictions.

[46] Mining should be dealt with using a balance sheet approach, as discussed, but this has not been attempted.

Indigeneity. However, there is a strong argument for removing Indigeneity from the HFE process, thus reducing the pool to be distributed by whatever method is used, including EPC grants.[47]

Table 4 Grants *per capita* under different regimes

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
1 Alternative ($)	1926	1814	2191	1880	2371	2796	1612	10508
2 EPC ($)	2083	2083	2083	2083	2083	2083	2083	2083
3 CGC ($)	1986	1961	1905	1425	2681	3378	2404	10568
4 EPEC ($)	1887	1604	2388	2514	2168	2440	760	10116
5 %diff: 1,2	-7.6	-12.9	5.2	-9.8	13.8	34.2	-22.6	404.4
6 %diff: 1,3	-3.0	-7.5	15.0	31.9	-11.6	-17.2	-33.0	-0.6
7 %diff: 1,4	2.1	13.1	-8.2	-25.2	9.3	14.6	112.0	3.9
8 %diff to budget: 1,2	-1.7	-3.0	1.0	-2.0	2.8	7.0	-3.7	52.6
9 %diff to budget: 1,3	-0.7	-1.6	2.7	4.5	-3.0	-5.7	-6.2	-0.4

Source: Author's calculation using CGC 2011; and ABS 5512, 5506.

Notes
Line 1: Adjustments as in note 38 above
Line 2: Equal *per capita*
Line 3: Commonwealth Grants Commission's recommendations *per capita* for 2010-11
Line 4: Equal per equivalised capita (as in Table 2)
Line 5: Percentage difference between Alternative and equal *per capita*
Line 6: Percentage difference between Alternative and Grants Commission's recommendations
Line 7: Percentage difference between Alternative and equal per equivalised capita
Line 8: Percentage differences between *equal per capita* and Alternative, compared with the 2009-10 general government expenditures
Line 9: Percentage differences between Alternative and the 2010-11 grants proposed Grants Commission, compared with the 2009-10 general government expenditures

[47] It is straightforward to estimate a grants distribution along the lines of Table 4, but with Indigeneity removed from the GST pool and the assessment. However, the resultant distribution needs to be compared with budget expenditures less state spending on matters relating the Indigeneity, which I have not attempted.

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Appendix

Table A1 Causes of differences in fiscal capacity, 2011-12 GST

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Redist
Effects of:	$m	$m	$m	$m	$m	$m	$m	$m	$m
Revenue raising capacity									
Mining production	1325.4	1845.4	-1212.6	-2520.4	379	127	125.1	-68.9	3801.9
Payrolls paid	-439.9	-98.9	446.8	-340.3	271.5	126.7	-2.2	36.2	881.3
Property sales	179.7	125.8	-477.7	-278.7	322.1	116.9	-10.3	22.1	766.7
Land values	-39.2	64.8	-95.5	-252.7	187.7	77.5	37.3	20.1	387.4
Motor taxes	327.2	-44.2	-84.8	-224.9	8.2	-6.7	17.2	7.9	360.6
Other effects on revenue	-132.6	29.8	46.1	19.6	7.1	17.9	4.9	7.2	132.6
Expense requirements									
Indigeneity	-550.9	-1696	526.9	521	-231	16.1	-87.3	1501	2564.7
Population dispersion	-548.8	-805.4	378.8	653.3	160.4	-88.8	-199	449.6	1642.1
Interstate wage levels	500	500	-461.8	508.8	-128	-97.2	89.2	89.3	1187.3
Socio-economic status	381.2	10.4	-272.9	-525.4	537.8	201.9	-233	-99.8	1131.2
Non-State service provision	-767.1	-279.3	223.7	564.7	-67.6	34.8	26.4	264.4	1114
Population growth	-583.4	46.1	521.3	383.8	-257	-107	-19.4	15.2	966.4
Diseconomies of scale	-393.1	-243.7	-152	48.1	99.4	197.5	205.9	238	788.9
Other effects on expenses	-127.3	-237.9	238.9	-30.6	-70.3	159.6	61.4	6.1	466.1
Commonwealth payments	208.3	615.3	-345.4	5.7	-229	-103	78.3	-230.5	907.5
Total	-664.4	-1172	-718.1	-1464.1	990.2	673.9	94.1	2261	4018.9

Source: CGC 2011, Table 7

This rest of this appendix provides a formal definition of assessments of payroll taxes, land taxes, and public wage costs; compares the methodology of the Commonwealth Grants Commission with the true assessments; and shows the connection with state wage premiums. *It applies to the restricted case in which the distributions of wage incomes in the two states differ only as to mean.*

Abelson (2010) has provided numerical estimates of the error in tax assessments, along the lines discussed here.

Table A2 compares the assessments of fiscal capacity using the Grants Commission methodology, compared with using the theoretically-correct methodology. There are two states: k = 1, 2; labour is only variable public sector input; land is owned by residents of one state or the other (no 'foreign' land-owners). The 'standardised CGC budget' *per capita* is $\tau_P\{\pi_1 W_1 - \pi_2 W_2\} + \tau_L\{R_1 - R_2\} - (W_1 - W_2)E + g_i = 0$. The first two terms are the assessed advantage in revenue capacity of state k, of payroll and land taxes; where τ_t is average tax rate across states, t = P (for payroll) and L (for land); π_k is participation rate (workers/population); W_k are the average wage; R_k is rental value *per capita* for land tax purposes (and commensurate with W; so τ_L is the land tax rate expressed as a rate on the rental value, not land value). The third term is the assessed expenditure disadvantage of state k, with E being Standardised quantum of service *per cap*. The last term, g_k, is the variation from equal *per capita* grants, chosen to ensure balance. (I have ignored any discounting of factors that the CGC may have adopted.) Other notations in the table are: r_k is land rental cost to workers; J_k is transit cost for workers in state k (both commensurate with W); α_k is fraction of land taxable in state k that is owned by residents of state k; υ_k is the unit labour input in production of E in state k, or the inverse of labour productivity.

Table A2: Comparing assessment methodologies

	Payroll tax assessment	Land tax assessment	Expense assessment
CGC methodology	$\tau_P\{\pi_1 W_1 - \pi_2 W_2\}$	$\tau_L\{R_1 - R_2\}$	$(W_1 - W_2)E$
True	$\tau_P\{\pi_1(W_1 - r_1 - J_1) - \pi_2(W_2 - r_1 - J_1)\}$	$\tau_L\{(\alpha_1 R_1 + (1 - \alpha_2) R_2) - (\alpha_2 R_2 + (1 - \alpha_1) R_1)\}$	$(\upsilon_1 W_1 - \upsilon_2 W_2)E$
Difference	$\tau_P\{\pi_1(r_1 + J_1) - \pi_2(r_1 + J_1)\}$	$2\tau_L\{(1 - \alpha_1)R_1 - (1 - \alpha_2)R_2\}$	$\{(1 - \upsilon 1)W_1 - (1 - \upsilon_2)W_2\}E$

In the special case illustrated in Figure 1, the error in tax assessment is equal to $2\{\tau_P \pi \rho + \tau_L(1 - \alpha)\}(R_1 - R_2)$, on the assumption of no difference in real wages; and with $J_k = r_k$, where ρ is the ratio of householders' land rental costs to the rental value of taxable land (and so $r_k = \rho_k R_k$); and where, in addition, the parameters π, ρ and α are the same in both states.

The wage premium of state 1 over state 2, not explained by differences in costs of living and interstate migration, is $s_1 = (W_1 - r_1 - J_2) - (W_2 - r_2 - J_1) - C \geq 0$, where C is per worker cost of moving from state 2 to state 1 (commensurate with W).