

## Incentives for grant-maximization and other distortions of provincial and state policies: A comparison of equalization regimes in Canada and Australia

David A. Péloquin\*

### ABSTRACT

This paper assesses a number of frequently-heard claims regarding the incentives for grant-maximizing behaviour and other distortions of government policy inherent in the nature of fiscal equalization regimes, with particular reference to some of the key design differences between the equalization regimes of Canada and Australia. While the paper concludes that many of these criticisms appear to be overstated, there are a number of features of equalization design in both countries that raise potential concerns, notably their respective treatment of natural resource revenues. While neither jurisdiction can claim to have “got it right” (or wrong) in all respects, this paper argues that both countries could benefit from an examination of features of each other’s equalization regime in exploring potential future reforms.

### Introduction

Though equalization policies are motivated mostly by considerations of horizontal equity – i.e. the comparable treatment of comparable individuals, regardless of where they may live – economic efficiency considerations also figure prominently among the fundamental objectives of equalization policy design in both Canada and Australia.

In the theoretical literature, equalization is generally recognized as an area where there is no necessary trade-off between the achievement of efficiency and equity considerations. In practice, however, there may be a range of circumstances where either equalization in general – or, more typically, particular equalization designs – may lead to socially inefficient outcomes. This is particularly likely to be true where practical considerations make it difficult to achieve “policy neutrality” – i.e. to avoid incentives for recipient or donor governments to adopt different approaches to taxation or expenditure policies (e.g. to maximize their equalization entitlements) than they would adopt in the absence of equalization.<sup>1</sup>

The purpose of this paper is to compare the equalization regimes in two federal countries – Canada and Australia – with a view to identifying certain “best practices” regarding the design of equalization programs with a view to minimizing such incentives. Particular attention will be given to assessing frequently heard claims made with respect to:

- the scope for grant-maximizing behaviour and the extent of other distorted incentives under the two equalization regimes (including the extent of any distorting effects of the Australian practice of equalizing inter-state cost disparities);

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\* The author is on leave from the Intergovernmental Affairs Secretariat, Privy Council Office of Canada and is currently on an assignment with the Australian Commonwealth Treasury in Canberra. The research contained in the paper was primarily conducted while the author was on assignment with the Australian Commonwealth Grants Commission of Australia from February to October 2002. The author wishes to thank Dick Zuker, Russ Mellett, Sean Keenan, Arndt Vermaeten, Peter Urban, Dermot Doherty, Mark Altus and Alex Scherini for their assistance and valuable comments, while acknowledging that all remaining errors are his own.

<sup>1</sup> Strictly speaking, the achievement of policy neutrality is not compromised by the *income* effect equalization payments may have on the behaviour of jurisdictions. That is, it is not a violation of policy neutrality if poorer jurisdictions are able to provide the same level of public services at the same level of taxation, as that is what optimal equalization policies are meant to achieve. However, it is compromised by distortions in the *price* signals faced by policy-makers in deciding among alternative policies in meeting the needs of their constituents.

- the disincentives to economic development posed by the generic “base tax-back” phenomenon that is inherent to the equalization mechanism; and
- the particular challenges associated with the measurement and equalization of natural resource revenue capacity, including a comparison of the very different approaches taken in the two countries – a single natural resource tax base in Australia that roughly approximates profitability versus Canada’s multiple and regionally concentrated natural resource tax bases derived from measures of the value (and, in a few cases, the volume) of production.

### **The fiscal federalism context**

While similar in a number of respects (like the two countries themselves), the equalization regimes found in Canada and Australia have evolved in somewhat different directions in response to markedly different fiscal federalism contexts.

For the entire period since the Second World War, Australian fiscal federalism has been characterized by a very large vertical fiscal gap. This is in sharp contrast to Canada, where – from a starting point that was roughly comparable to Australia’s in 1945 – provinces become progressively more fiscally autonomous through the 1950s to 1980s by occupying (or reoccupying) all major tax fields. As a result, Canada now has a vertical fiscal gap that is the smallest of any federal country.

The greater access of Canadian provinces to a wide range of tax fields has contributed to making horizontal fiscal disparities much larger in Canada than in Australia (see Annex 1). Accordingly, Canada has fallen far short of being able to fully equalize the fiscal disparities among its provinces, notwithstanding that its equalization regime results in larger inter-provincial fiscal transfers (expressed as a percentage of provincial GDP) than does Australia’s (see Annex 2). By contrast, the Australian equalization regime effectively delivers full fiscal equalization across its states and self-governing territories, as the pool of equalization funds is much larger than the minimum required to equalize all jurisdictions to the same standard.<sup>2</sup>

Given the relatively modest scale of state and territorial own-source revenues in Australia (relative to their expenditure responsibilities), the Australian equalization regime has also focussed to a greater extent on expenditure needs than any other federal country. By contrast, Canada (with particularly large disparities on the revenue side) has focused its equalization regime exclusively on the revenue side and does not take expenditure need into account in any way.

Finally, the institutional context for designing and administering the equalization regime has been radically different in the two countries. In Australia, the equalization regime is designed and administered by an arm’s length agency – the Commonwealth Grants Commission (CGC) – with minimal direction from the federal or state Treasuries or any other outside body. While not completely removing equalization from the arenas where intergovernmental disputes are vented, the Australian equalization system has nevertheless been a much less prominent area of intergovernmental dispute than in Canada, where equalization design and administration has been the responsibility of the federal Minister of Finance and has been a recurring flashpoint of federal-provincial and inter-provincial tensions.

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<sup>2</sup> The pool of funds available for equalization purposes in Australia reflects its large vertical fiscal gap and is over seven times larger than the minimum amount that would be required to fully equalize fiscal disparities among its states and territories. By contrast, current equalization payments in Canada are between an eighth and a ninth of what would be required to fully equalize all provinces to the same standard.

## Incentives for grant-maximizing behaviour and other distorted incentives

In spite of the significant differences in the context in which Canadian and Australian equalization regimes operate, the two equalization regimes have evolved in similar ways in many cases. In both countries, equalization payments are unconditional and are structured as “block funds”. That is, equalization entitlements are calculated by reference to a formula that is intended to be as invariant as possible to the revenue and expenditure policies of receiving governments (i.e. rather than providing for a differential cost-sharing ratios for better-off and worse-off jurisdictions in jointly-financed policy areas, as is the case in some other federal countries).

There are also somewhat similar institutional checks and balances within the equalization (and broader intergovernmental transfer) system in both countries that contribute to the ongoing scrutiny of incentives within the system – though scrutiny does appear to be more vigorous in Australia than in Canada. This may be attributable to the fact that in Australia (unlike Canada) the overall quantum of equalization entitlements is exogenous, i.e. total equalization transfers are a fixed sum that is not determined by reference to the fiscal capacity or expenditure needs of any particular state or subset of states.<sup>3</sup> Equalization is thus a decidedly zero-sum game in Australia, particularly given that all states are, in effect, “equalization receiving” in the sense that all experience a decline in their transfer entitlements if their standardized revenue capacity increases (or their standardized expenditure needs decline) relative to the national average. With a clear focus on their own “bottom lines”, all states vigorously scrutinize the equalization system and its interactions with each other’s tax and expenditure policies with a view to identifying “non-neutralities” that may advantage other jurisdictions at their expense.

By contrast, the quantum of equalization entitlements in Canada is determined by the gaps between the fiscal capacities of each of the receiving provinces and the average capacity of the five “standard” provinces. Since any manipulation of entitlements by receiving provinces impacts on federal government’s budgetary expenditures (without any direct impact on the revenues of non-receiving provinces), there are relatively limited incentives for non-receiving provinces to scrutinize the factors determining equalization entitlements.<sup>4</sup> It is also possible that the “positive sum” nature of the equalization “game” in Canada may limit incentives for receiving governments to too vigorously scrutinize each other’s equalization entitlements.

Over time, the repeated dynamic of equalization negotiation and renegotiation has nevertheless resulted in the use by both countries of *standardized* measures of revenue capacity (and, in Australia, of expenditure need) to determine entitlements, rather than the *actual* revenues or expenditures of provinces and states. These standardized measures of “representative” (or national average) tax and expenditure policies are based as much as possible on economic, socio-demographic and geographical factors that are difficult for provincial or state governments to manipulate through their own policy choices – particularly in the short term – except at significant fiscal, economic, political or other cost to themselves.<sup>5</sup> In effect, the two equalization systems seek

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<sup>3</sup> The quantum of equalization payments in Australia has in effect been exogenously determined since the early 1982. It will be explicitly exogenous in the future as a result of Australia’s 1999 tax reforms, under which (after a transition period which is likely to run into the latter half of the current decade), the total volume of Australia’s equalization transfers will be determined by the yield of its goods and services tax (GST).

<sup>4</sup> Since the 1990s, however, even non-receiving provinces have taken a growing interest in equalization design issues in light of the limited ability of the federal government to finance both increasing equalization payments (which they do not receive) and increasing health and social transfers (which they do).

<sup>5</sup> One can (and many critics of existing equalization practices in both countries do) criticize the arbitrariness associated with many of the weights attached to the various factors that are used to measure “standardized”

to minimize distortions in the incentives faced by provincial and state governments in making their taxation and expenditure policy decisions.

Nevertheless, one frequently hears criticisms in both countries that the design of their particular equalization regimes is not really policy neutral (and perhaps that it never can be) – i.e. that provincial and state policies can and do influence the level of equalization grants available to them. With a few exceptions noted below, analysis of the incentives faced at the margin by individual jurisdictions under the two equalization regimes suggests that – at least as far as direct manipulation of equalization grants is concerned – these arguments may be overstated.

### *Scope for directly influencing the equalization standard*

One concern flows from the fact that the aggregate behaviour of provinces and states (i.e. “what provinces/states do”) determines the form and structure of the equalization regime in both countries. In particular, it is argued that the use of “national average” policies under a representative tax or expenditure approach may enable individual jurisdictions (particularly large ones) to manipulate entitlements.

At some level, it is hard to see how any equalization regime could be said to “equalize” fiscal disparities across provinces or states if it did not base its assessments on what provinces/states did in aggregate.<sup>6</sup> Moreover, it is rarely the case in practice that an individual equalization-receiving province/state – not even Québec (accounting for roughly a quarter of provincial revenues in Canada) or New South Wales (roughly a third of Australia’s) – can affect national average policies in a way that brings it significant fiscal advantage.

For example, it would be correct to claim that provincial or state jurisdictions can under certain circumstances increase their equalization entitlements by raising their respective tax rates, thereby increasing the “standard” (i.e. national average) tax effort on which equalization entitlements are based. If the case of any jurisdiction with a below-average revenue-raising capacity, the increase in the national average tax rate that results from its increasing its own tax effort would increase the equalization standard by more than it would increase its own measured capacity, thereby increasing its equalization entitlement. In effect, equalization offers a low-capacity jurisdiction a subsidy for increasing its tax effort and a high-capacity jurisdiction a subsidy if it lowers its tax rates.<sup>7</sup> These subsidies are, moreover, larger in the case of the larger jurisdictions, given their greater weight in determining national average tax rates.

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revenue capacity and expenditure needs. However, there are relatively few cases in either country of these factors and weights having been determined by reference to the (past) experience of only one or two jurisdictions. Accordingly, even if particular weights were arbitrary and inappropriate (and so distorted the pattern of equalization relative to what it “should” be), the inability of individual jurisdictions to manipulate them would in principle still keep equalization-induced policy distortions to a minimum.

<sup>6</sup> Theoretically, one could envisage some sort of externally-determined standard (e.g. a fixed dollar value of “standardized revenues” per capita in Canada or a fixed dollar value of the “standardized budget result” per capita in Australia) to which one could equalize fiscal disparities. However, unless the standard were periodically recalibrated, there would be a significant risk of growing arbitrariness and irrelevancy in the external standard in the wake of the evolving fiscal circumstances of provinces or states.

<sup>7</sup> Essentially the same scope for grant manipulation exists on the expenditure side in Australia, where a state can increase the standard/national average expenditure effort by enhancing the scope and generosity of their expenditure programs. In principle, the incentives of the expenditure side could either reinforce or counteract each other (depending on whether low-revenue capacity jurisdictions also tend to have above-average

The incentives for high-capacity jurisdictions to lower their tax effort – and the corresponding incentives on the expenditure side for low- (high-) need jurisdictions to reduce (increase) their expenditure efforts – would appear to be more widespread in Australia, where all state jurisdictions (even the larger, better-off states) are “equalization-receiving”. By contrast, at least two (and, typically, three) of the four largest provincial jurisdictions in Canada never receive equalization transfers and are not faced with any incentives of this nature.

Even in Canada, however, there are a number of individual tax bases where receiving provinces have above-average capacity and may face significant incentives at the margin to reduce their tax effort. As discussed further below, the most extreme example of this phenomenon is in the case of natural resource tax bases that are regionally concentrated in one or a small number of equalization-receiving provinces. In such cases, there are particularly strong incentives (commonly known as “rate tax-back”) for affected jurisdictions in question to tax only very lightly, if at all.

Nevertheless, most of the largest and most widely used revenue sources (and most expenditure categories) – i.e. those that account for most revenues and virtually all expenditures of provincial and state jurisdictions – are geographically dispersed. In these cases, the incentives faced by even the larger equalization-receiving jurisdictions to vary their tax or expenditure effort in response to implicit equalization subsidies would appear to be quite modest – particularly when set against the opprobrium that generally accompanies being a “high-tax jurisdiction”.

For example, as noted in Table 1, the implicit equalization subsidy associated with the personal income tax (which accounts for over a quarter of all provincial revenues subject to equalization in Canada) is only about 4% in the case of Québec (the largest equalization-receiving province), barely 1% in the case of Saskatchewan (a mid-sized province) and a virtually inconsequential 0.2% in the case of Prince Edward Island (the smallest province).<sup>8</sup> Similarly small implicit subsidies would prevail in the case of most widely dispersed tax (and expenditure) bases in both countries.<sup>9</sup>

By contrast, the potential for policy distortions is significantly greater in the case of a regionally concentrated tax base (such as Saskatchewan’s “heavy third-tier oil revenues” tax base, also illustrated in Table 1). In that instance, the implicit equalization penalty/subsidy for increasing/reducing tax effort is in the order of 86% of the change in gross revenues produced by a change in tax rates.<sup>10</sup>

expenditure needs or vice versa). In practice, however, it would appear that on balance the two incentives point in the same direction in Australia – i.e. high-need jurisdictions do tend to be low-capacity jurisdictions.

<sup>8</sup> That is, in addition to an increase in gross revenues from their increased tax effort, Québec receives a further 4% “bonus” (and Saskatchewan and P.E.I. only 1% and 0.2%, respectively) in the form of an induced increase in their equalization entitlements.

<sup>9</sup> In practice, the particular design of Australia’s equalization regime (which is based on a lagged, five-year moving average of overall fiscal needs) would “smooth out” any such effort-induced changes in equalization entitlements over time. Presumably, these incentives would therefore be even less material in the short- to medium term than they would appear to be in Canada.

<sup>10</sup> As noted below, the Canadian equalization system attempts to mitigate the effect of these situations by taking into account only 70% of the revenues derived from such tax bases when calculating equalization entitlements. However, even with 30% of their revenues sheltered from equalization “tax-back” in this way – an adjustment that clearly runs counter to the equity rationale for fiscal equalization – jurisdictions with concentrated tax bases can still face very substantial implicit penalties/subsidies in response to changes in their tax effort. This “generic solution” to the rate tax-back problem is only one episode in a decades-old Canadian argument over whether all

Table 1

## Implicit equalization subsidies for variations in tax effort in Canada

Nature of revenue source	<u>Scenario 1</u>	<u>Scenario 2</u>	<u>Scenario 3</u>	<u>Scenario 4</u>	
	Personal Income Tax Broad-based, dispersed			Heavy third-tier oil revenues Geographically concentrated	
<b>Action by jurisdiction</b>	Québec increases tax effort by 10%	Saskatchewan increases tax effort by 10%	P.E.I. increases tax effort by 10%	Saskatchewan increases tax effort by 10%	
<b>Size of jurisdiction</b> (as % of total tax base)	Large (20%)	Mid-size (2%)	Small (0.2%)	Very large (90%)	
<b>Relative fiscal capacity</b> (as % of national average for the revenue source)	Low (83%)	Low (66%)	Low (60%)	Very high (2700%+)	
<b>Revenues received prior to hypothetical increase in tax effort (in \$ per capita)</b>					
	<b>Own-source revenues</b>	\$1,744.00	\$1,178.97	\$1,129.73	\$32.99
	<b>Associated equalization payments</b>	\$270.14	\$538.93	\$630.21	-\$32.39
(1)	<b>Total</b>	<b>\$2,014.14</b>	<b>\$1,717.90</b>	<b>\$1,759.94</b>	<b>\$0.60</b>
<b>Impact on revenues due to hypothetical increase in tax effort (in \$ per capita)</b>					
(2)	<b>Increase in gross revenues</b>	<b>\$174.40</b>	<b>\$117.90</b>	<b>\$112.97</b>	<b>\$3.30</b>
(3)	<b>Increase in own measured capacity</b>	\$34.53	\$2.54	\$0.30	\$2.96
(4)	<b>Increase in equalization standard</b>	\$41.74	\$3.87	\$0.51	\$0.11
(5)=(4)-(3)	<b>Net change in equalization payments</b>	<b>\$7.20</b>	<b>\$1.33</b>	<b>\$0.20</b>	<b>-\$2.85</b>
(6)=(5)+(2)	<b>Net gain</b>	<b>\$181.60</b>	<b>\$119.23</b>	<b>\$113.18</b>	<b>\$0.45</b>
<b>Equalization "bonus/penalty" as % of increase in gross revenues</b>					
(7)=(3)/(2)	<b>Increase in own measured capacity</b>	19.8%	2.2%	0.27%	89.7%
(8)=(4)/(2)	<b>Increase in Equalization standard</b>	23.9%	3.3%	0.45%	3.3%
(9)=(5)/(2)	<b>Net change in equalization payments</b>	<b>4.1%</b>	<b>1.1%</b>	<b>0.18%</b>	<b>-86.4%</b>

Source: Finance Canada, *Provincial Fiscal Equalization: Third Estimate, 2000-01* and author's calculations

The ability to minimize the distortion of tax and expenditure policies by basing equalization calculations on large dispersed tax/expenditure bases (rather than on smaller concentrated ones) suggests a potentially significant trade-off between achieving two of the central goals of equalization as practiced in both countries. Too great a focus on achieving a

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(or just part, or none) of the natural resource revenue capacity of provincial governments should be taken into account by its equalization regime. (See Feehan (2002) for a chronology of the fluctuating treatment of natural resources within the program and of the many proposals for their partial inclusion.)

“representative” tax or expenditure system (notably through finer and finer disaggregations of tax/expenditure bases) may lead to situations where particular disaggregated bases are regionally concentrated, resulting in significant policy distortions.

### *Compensation for erosion of elastic tax bases induced by high tax effort*<sup>11</sup>

The preceding discussion is predicated on the assumption that underlying tax bases are inelastic with respect to tax rates. If this were not the case, there would be a further – and potentially more serious – distortion in the incentives faced by equalization-receiving jurisdictions. While some tax bases may be relatively inelastic with respect to tax rates, others may be more likely to shrink in jurisdictions that tax them heavily and to expand in jurisdictions that tax them lightly. The more elastic the tax base, the greater the shrinkage in a high-taxing jurisdiction’s measured revenue-raising capacity and the more important equalization becomes in determining the net revenue gains to be derived from any increase in an equalization-receiving jurisdiction’s tax effort at the margin.

As illustrated in Figure 1, the net revenue gains from a given percentage increase in tax effort declines as the elasticity of tax bases increases. For equalization-receiving jurisdictions, however, equalization entitlements can offset a potentially significant proportion of any revenue losses associated with tax effort-induced shrinkage of tax bases. Using the personal income tax in Québec as an example, Figure 1 shows that a simulated 10% increase in Québec’s personal income tax (PIT) effort would result in a \$182 per capita increase in PIT revenues in the absence of any elasticity effect. However, these gains would be progressively smaller if the underlying elasticity of the personal income tax base were more and more elastic.

Moreover, the relative importance of the equalization “bonus” (or “offset”) within those declining net gains grows particularly rapidly. In an extreme situation where the tax base had an elasticity of -1 or greater, the entire amount of any revenue gains from increased tax effort would be attributable to equalization payments made to compensate the jurisdiction for shrinkage in its underlying tax base.

As in the case of the ability of jurisdictions to directly affect the national average tax yields noted in the previous section, there may be scope for questioning whether this compensation effect in response to tax base erosion is an important phenomenon in practice. Even so, elasticities are typically larger in the long run than in the shorter- and medium-run time frames that may be presumed to dominate governments’ calculations on taxation policy. Since at least some widely used tax bases may be materially elastic in the long run, policy neutrality suggests a need for adjustments to elastic tax bases where some jurisdictions’ tax rates deviate significantly from the national average.

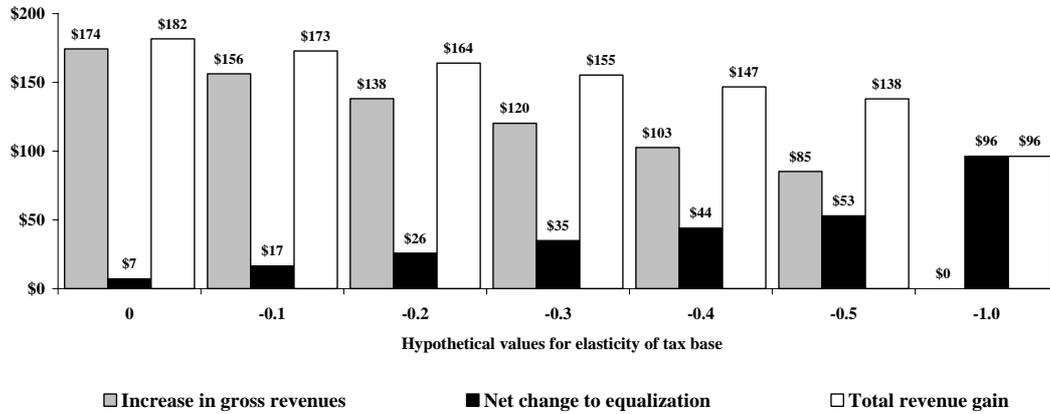
With one exception, however, neither the Canadian nor the Australian equalization regimes have sought to make any adjustments to correct for the possible distortion in incentives associated with tax base elasticity.<sup>12</sup> In part, this undoubtedly reflects the practical difficulties and

<sup>11</sup> The discussion that follows is primarily focused on the revenue side though – as in the previous discussion – the same incentives undoubtedly exist on the expenditure side (i.e. where measured expenditure need may not be independent of the relative generosity of programs in different jurisdictions). In practice, however, it may well be that tax bases are generally more elastic with respect to tax effort than expenditure needs are with respect to generosity of most government programs. Hence the focus on revenues in this section.

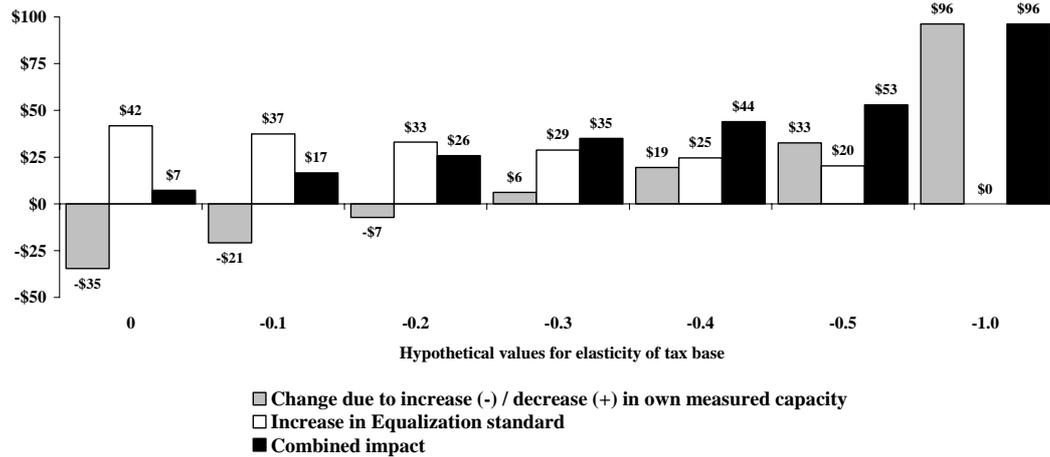
<sup>12</sup> Ironically, the exception is Australia’s current elasticity adjustment in respect of its mining revenue base. As will be argued below, however, the “lumpiness” of natural resource deposits, the fact that many of them generate

Figure 1

Sensitivity analysis: Net gains from a 10% increase in Québec PIT effort under alternative hypothetical values for tax base elasticity



Sensitivity analysis: Impact on Equalization entitlements of a 10% increase in Québec PIT effort under alternative hypothetical values for tax base elasticity



potential arbitrariness associated with the estimation of elasticities (particularly given the existence of only a few data points). However, it may also reflect a presumption that the tax bases that dominate revenue-raising are generally inelastic and that those that are elastic are not important enough to be material in assessing equalization entitlements.

The latter rationale would appear to be most plausible in Australia, given that the own-source revenues of Australian states are small to begin with (due to the large vertical fiscal gap in favour of the Commonwealth government). Australian state taxes are also relatively narrowly based. However, most of the major ones either are nevertheless in the nature of user fees, gambling revenues and other taxes (e.g. payroll taxes, stamp duties on conveyances of real property) that are either relatively inelastic or largely harmonized as to both rate and tax base structure across states. Accordingly, there may be little real cause for concern regarding tax base elasticity in Australia.

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substantial economic rents and the likelihood that many of these are not fully extracted through taxation means that the case for elasticity adjustments may be particularly weak in that instance.

By contrast, provincial own-source revenues in Canada are significantly larger (reflecting Canada's high degree of fiscal decentralization and its small vertical fiscal gap). They are also dominated by tax bases that appear to be more mobile across provinces (and presumably more elastic with respect to tax effort), including taxes on corporate income and capital, personal income and consumption.<sup>13</sup> Even so, the very size and prominence of these taxes may themselves constitute some sort of check on provinces' recourse to the cushioning effect of equalization on the erosion of tax bases associated with high tax effort. After all, large numbers of electors will inevitably notice the effects of an equalization-subsidized fiscal strategy based on high tax effort across a range of tax bases. Any comfort derived from the cushioning effects of equalization may thus figure less prominently in provincial governments' tax policy calculations than the more practical day-to-day (or at least budget-to-budget) inconvenience of having to regularly defend high-taxation policies.

### ***“Base tax-back” disincentives for economic development***

A frequently heard criticism of equalization in both Canada and Australia is that equalization inevitably imposes dynamic efficiency costs by reducing incentives for recipient provincial and state governments to pursue sound economic development policies – i.e. to expand their economic and fiscal “base” – since these leave them fiscally no better off and possibly even worse off. In particular, it is argued that equalization further accentuates the problem of vertical fiscal externalities associated with successful economic development interventions – i.e. the tendency for fiscal benefits from such development to spill over into increased revenues for other levels of government that may not have been involved in the successful intervention.

As in the case of the incentives inherent in the ability to affect equalization entitlements through changes in one's own tax effort, there is a *prima facie* theoretical basis for believing that the additional impact of equalization – i.e. the reduction in equalization payments associated with the growth of a provincial or state tax base – may create disincentives for provincial or state interventions to promote economic development. An analogy is often made to welfare recipients facing very high marginal effective tax rates upon finding employment. To the extent that a jurisdiction's decision-makers are motivated primarily or largely by a desire to maximise net revenues, equalization acts as a confiscatory “tax” on any action to increase the overall productive capacity of the jurisdiction (what we hereafter refer to as “base tax back”).

Yet while there is no denying that net revenue-maximisation can be one of the motivations of provincial or state decision-makers, it must be recognized that the incentives facing them are significantly more complex than those facing the stylized welfare recipient. In the first instance, provincial and state governments typically seek to be re-elected. Any government that sat on its hands in promoting sound economic development policies would soon find opposition parties campaigning on such a platform. Moreover, sluggish growth would make it particularly vulnerable to defeat regardless of how well its communications gurus were able to convince electors that it really was pursuing the best economic development policies around (regardless of their actual merits). Most elected officials are also presumably motivated to a significant extent by a desire to serve the public good, behaviour which the elaborate system of checks and balances one finds in all

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<sup>13</sup> Provincial reliance on inherently mobile corporate tax bases, on increasingly mobile consumption tax bases (given cross-border shopping and the growth of Internet commerce) and on some of the more mobile components of the personal income tax base (e.g. capital gains and other forms of personal taxable income derived from capital) mean that large components of provincial own-source revenue are likely to be significantly more elastic than the own-source revenues of Australian states.

governmental systems act to constantly reinforce through ongoing demands for accountability to the public for their actions.

Furthermore, there is room for doubt regarding the magnitude of the marginal impact on incentives associated with equalization. In the first instance, there are doubts as to the effectiveness of many provincial and state interventions made in the name of “economic development” – i.e. those that are ostensibly targeted on particular investments or business enterprises, rather than those associated with sound economic framework policies. Moreover, in both countries, the major source of fiscal spillovers associated with provincial and state policies is the fact that the revenues of other levels of government also benefit from tax base growth. This is particularly true of Australia, where the state share of total tax revenues is significantly smaller than it is in Canada. While equalization may increase these spill-overs by neutralizing the fiscal gains from provincial and state revenue growth as well, it is by no means the main reason for their existence.

Provincial and state governments may complain about the “tax-back” phenomenon and sincerely (and correctly) believe that they could do a better job of serving their electors if they could keep both the additional revenues from economic development and the net fiscal transfers from other jurisdictions they have grown accustomed to receiving. Nevertheless, the other considerations noted above suggest they may still typically choose to pursue what they believe to be sound economic development policies even if they have to resign themselves to receiving no net increases in revenues.

Indeed, if one views governments as agents of the general population (and the design of incentives for governments as an application of general techniques for dealing with principal-agent problems), it could even be argued that it would be undesirable for revenue maximisation to be tolerated as the prime motivation for action by provincial or state decision-makers. In particular, it could be argued that this is not far removed from arguing that private rent-seeking behaviour among elected officials (in the form of having additional revenues to use as they see fit) is something to be encouraged, rather than guarded against by instituting a range of accountability mechanisms to minimise the opportunity and temptation to engage in rent-seeking behaviour while still ensuring that the interests of the government and the governed remain broadly aligned.

### *Efficiency consequences of equalizing cost disparities*

As noted above, one of the distinguishing features of equalization in Australia is the effort made to take expenditure need differences (reflecting both the cost and demand for government services) into account in assessing the overall fiscal needs of its states and territories. There is good reason to believe that expenditure need differences among Canadian provinces would be of secondary importance relative to their large (and not fully equalized) disparities on the revenue side. Nevertheless, there is likely to be growing interest in Canada for a more systematic assessment of expenditure need differences in the case of its three Northern territories, as well as in the case of self-governing First Nations and possibly local government jurisdictions.<sup>14</sup>

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<sup>14</sup> The special demand and cost factors applying to the provision of public services in the three territories were explicitly cited in their refusal to sign onto the federal-provincial health accord agreed to in early 2003. For similar reasons, expenditure need disparities are likely to dominate revenue disparities when comparing overall fiscal needs across self-governing First Nations, most of which are unlikely to have significant own-source revenues relative to their likely expenditure responsibilities.

However, a frequently-voiced efficiency criticism made of Australia's practice of equalizing expenditure needs is that:

- it subsidizes uneconomic patterns of settlement and migration by equalizing differences in real economic costs (e.g. those associated with remoteness or congestion);
- such costs should be taken into account by economic actors – including state governments (when making decisions about the level of services to offer in remote or congested metropolitan areas) and state residents making mobility decisions.<sup>15</sup>

Here too, there is a *prima facie* plausibility surrounding this argument, though the concerns it raises would appear to be addressed by the existing design of Australia's equalization regime. In particular, there is nothing in it that obviously biases states' decisions regarding the level of service delivery in remote or congested locales. It is clear that equalization grants may have an *income effect* by enabling a relatively "needy" jurisdiction to provide more services to residents of high-cost locations (and, in particular, services that are more comparable to those offered to high-cost locations in better-off states). However, the lack of conditionality and of any significant ability to manipulate grant shares to compensate itself for the cost of such services at others' expense means that there is no obvious distortion of *price signals* as far as state policy-makers are concerned.

Indeed, there is at least anecdotal evidence that in all states, the quality of public services enjoyed by remote rural dwellers is below that enjoyed by city dwellers. If Australia's equalization design were materially distorting incentives for state provision of services to high cost areas, one would find a markedly and systematically different pattern of services to remote areas in net-recipient and net-donor jurisdictions, which does not appear to be the case.

Moreover, in order for the *income* effects of equalization to have a negative impact on overall efficiency of settlement and migration patterns, the marginal propensity of net-recipient states to subsidize inefficient patterns of settlement needs to be greater than that of net-donor states. Thus, equalization grants could be *efficiency-enhancing* if they reduced the revenues of better-off jurisdictions that would spend them on generous subsidies to remote or congested regions and increased those of less well-off jurisdictions that would use it to provide a more "efficient" spatial pattern of services. Alternatively, they could be *efficiency-reducing* if the proclivities of the two classes of jurisdiction were reversed.

There is also no obvious theoretical reason to favour one or the other of these two hypotheses. Thanks to persistent out-migration of their more mobile residents, "poorer" jurisdictions often end up with concentrations of immobile and highly vocal constituencies for "regional development" incentives. Clearly, large constituencies of this type make it politically important (albeit costly) for state governments to be seen to be responding to these demands. Yet it is also undeniable that better-off jurisdictions have such constituencies as well and the very wealth of such jurisdictions may make it more affordable to "grease the squeaky wheel" with particularly generous subsidies that would be harmful from an "efficient pattern of settlement" perspective.

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<sup>15</sup> To keep things in context, it is worth remembering that even if this criticism were valid, it would not necessarily constitute an overwhelming reason to reject equalization of cost differentials. In particular, the equity rationale for equalizing costs is no less valid than it is for equalizing differences in, say, standardized demand factors due to concentrations of more elderly or young populations in different jurisdictions. It would, however, constitute a case where a clear trade-off would exist between efficiency and equity considerations.

## The thorny problem of natural resources

There is a significant fiscal federalism literature that argues it is undesirable to separately identify natural resources (or any other distinct revenue base) and fiscal capacity should be calculated only by reference to a “macro” formula based on broad economic variables (such as GDP per capita).<sup>16</sup>

As argued above, there may be some merit in the argument that disaggregated treatment of revenues may bias revenue policy choices and that more broadly defined tax bases are preferable to narrowly defined ones. However, a strong case can be made that the ability of provincial or state governments to extract economic rents from natural resources – particularly when they are their legal owners – is significantly greater (and more efficient) than their ability to tax income, consumption or other major components of GDP.

In practice, natural resources are particularly highly taxed, accounting for a disproportionate share of provincial and state revenues, and are much more concentrated in particular jurisdictions than are broad economic aggregates (such as GDP). As a result, they tend to generate greater fiscal disparities per dollar of contribution to GDP. (Figure 2) If such important, long-lived and variable sources of revenue-raising capacity are not properly taken into account, the degree to which an equalization regime can be said to actually “equalize” would be cast into doubt.

### *Policy neutrality in the measurement of natural resource revenue capacity*

The logic of equalization clearly requires taking full account of natural resource revenue capacity. However, the practical difficulties of ensuring policy neutrality faced by equalization regimes in the measurement and equalization of fiscal capacity are perhaps nowhere greater than in the case of natural resources. One of the main reasons for this is that it is very difficult to identify and quantify a policy-neutral measure of either:

- what the actual tax base is for natural resources revenues; or
- the standard tax effort (i.e. the national average “tax rate”).

The usual approach to any sort of revenue capacity measurement in both the Canadian and Australian equalization regimes is to base both these parameters on “what provinces/states do”. Unfortunately, to a much greater degree than in the case of other tax bases, there is a wide variety of natural resource taxation practices among provincial and state jurisdictions in both countries.<sup>17</sup>

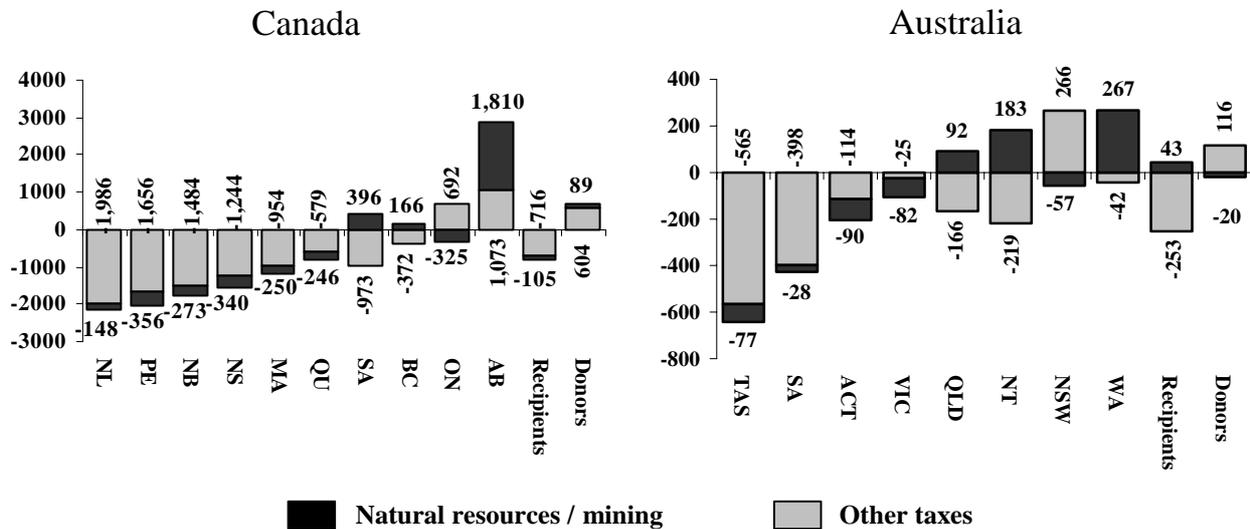
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<sup>16</sup> Much of this literature emanates from the United States, where fiscal capacity (as measured by a broad measure of the “total taxable resources” of states) is taken into account in the distribution of certain federal programs. See Compson and Navratil (1997) and Tannenwald (1999) for an overview of this literature.

<sup>17</sup> The Commonwealth Grants Commission (2002b), par. 34-39, notes that the royalty regimes of most Australian states are based on various definitions of value of production (on an *ad valorem* basis). However, it notes that many also take account of the profitability of extraction of particular deposits in various ways and suggests that states may also levy higher royalties in cases where they contribute infrastructure support in ways that reduce the cost of production (and hence profitability) of mining companies. There are also significant variations in the royalty rates levied on different classes of mineral production (higher rates for oil and natural gas, middling rates for coal and the lower rates for other minerals). Similarly, royalty regimes in Canada vary significantly by natural resource type (natural gas, several different classes of oil and various classes of minerals). They are generally based on level or value of production. However, many are also sensitive to price, the volume of output from particular deposits (low-productivity wells), stage of production (e.g. development, tertiary production, etc.), ownership (e.g. leases on Crown land vs. freehold lands) and certain exploration and

Figure 2

**Contribution of natural resources/mining to overall revenue disparities, 2001-02**  
(in \$ per capita, relative to the national average)



Source: Finance Canada: *Provincial Fiscal Equalization: Third Estimate, 2000-01*  
Commonwealth Grants Commission: *Report on State Revenue Sharing Relativities, 2003 Update* (Tables 4-49 and 4-52)

The lack of a single obvious pattern of “what provinces/states do” has, moreover, translated into dramatically different approaches to the equalization of natural resources in the two countries. Canada’s approach has been to multiply the number of disaggregated tax bases.<sup>18</sup> Australia, by contrast, has a single mining tax base that attempts to consistently measure a comparable tax base across all classes of minerals – including oil and gas – and to apply a single average tax rate in order to calculate standardized mining revenue capacities for the several states.

Though, as argued below, there are reasons to doubt that either regime has come up with “the” (or even “a”) right response to this challenge, there are reasons for believing that the conditions which prevail in Australia are more amenable to getting it right than those which prevail in Canada:

- Natural resources – though important sources of state revenues – are less valuable to states and less concentrated in particular jurisdictions than they are in Canada. Relatively little state revenue capacity relates to high-profitability petroleum (Australian oil production is comparatively modest and its significant natural gas reserves are more difficult to get to market than are Canada’s) and there is no counterpart to the significant concentration of oil and gas resources in Alberta.<sup>19</sup>

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development costs in a way that suggests they in effect try to approximate profitability or economic rent as the ultimate tax base. See Government of Alberta (1999), David Gladwin and Associates (1998) and Watkins (2002).

<sup>18</sup> Of the 33 distinct provincial tax bases assessed under Canada’s equalization program, fully 14 (not counting gasoline and diesel taxes) relate to natural resources and, of these, 11 relate to different categories of oil and natural gas alone.

<sup>19</sup> In 2000-01, natural resources accounted for 6.1% of provincial revenues subject to equalization, whereas mining revenues accounted for 3.5% share of state own-source revenues in Australia. In Canada, Alberta alone (with 9.9% of the population) accounted for fully 59% of total fiscal capacity for these revenue bases (and 79% of oil

- None of the assessed natural resource revenue-raising potential of Australian states relates to resources (such as hydroelectric power generation capacity) whose economic rents can be relatively easily dissipated directly to households or industrial consumers.<sup>20</sup>
- Moreover, all states are “equalization-receiving” and the quantum of Australian equalization payments is exogenously set. As a result, there is no counterpart to the situation in Canada, where particular natural resources are concentrated in a small number of receiving provinces. Provinces in this situation face a collective incentive to prevent the associated revenue capacity from being taken account, thereby reducing their measured fiscal capacities relative to those of non-receiving provinces and maximizing the volume of equalization entitlements distributed among them.

The particular design of the Australian approach to natural resources equalization also appears to offer less scope for perverse incentives. Much of the recent evolution of thinking about natural resource equalization in Australia reflects the observation that economic rents can be seen as the upper bound for extraction of natural resource revenues – even though rents may not be the tax base actually used (or even approximated) by states’ royalty regimes.

This has led, over time, to the development of a proxy natural resource base, using a measure of adjusted value added that involves subtracting some (but by no means all) of the costs of production that would ideally need to be excluded in deriving a precise estimate of economic rent.<sup>21</sup> In practice, data availability constraints – and, to some extent, conceptual considerations – have resulted in a proxy that more closely approximates profitability than economic rent. In particular, in deriving the current proxy for Australia’s mining tax base, measured or estimated value added of the mining industry is adjusted by subtracting:

- wages, salaries and other labour costs (payroll tax, workers’ compensation and employer pension contributions);
- a five-year average of on-lease exploration expenses; and
- a ten-year average of capital expenditure.<sup>22</sup>

These adjustments have been criticized by state proponents of an economic rent tax base as falling well short of approximating economic rent. In particular, they do not make adjustments for off-lease exploration expenses (i.e. “dry holes” that are an inevitable cost of mining exploration and must be paid for through profits from successful exploration if the industry is to remain viable in the long run) or for interest and financial charges on debt-financed capital investments and a normal return to equity-financed capital.

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and gas capacity). This compares to a 39% share for the Australian state with the highest dependency on mining revenues (Western Australia, with 9.8% of the population).

<sup>20</sup> In the Canadian context, the observation that provinces dissipated hydroelectric rents dates back to at least Zuker and Jenkins (1984).

<sup>21</sup> Cf. Commonwealth Grants Commission (2002b), Attachment A, for a historical overview of the evolution of the mining tax base in Australia.

<sup>22</sup> Published data for many of the relevant cost variables that should ideally be deducted from value added to arrive at a measure of economic rent do not exist. Moreover, even where these data could in principle be estimated, heroic assumptions would often need to be made. To cite but one example: given the informational asymmetry between governments or their statistical agencies and mining companies, it is never likely to be possible to accurately measure and take account of site-specific differences in underlying (i.e. “standardized”) costs of production. In the absence of such information, a theoretically accurate measure of rents cannot be derived.

In spite of their shortcomings, the adjustments that are made in Australia do nevertheless constitute an attempt to isolate a proxy tax base that is dominated by economic rent to a greater extent than alternative proxies derived from the simple volume or value of production. The closer the approximation to economic rent, the greater the likelihood that the proxy can serve as a rough-and-ready measure of the underlying natural resource tax base that is nevertheless reasonably comparable across all natural resource revenues (including oil and gas). In applying a single representative tax rate to what is in principle a single comparable tax base, Australia in effect seeks to avoid the need for multiple sub-divisions of natural resource tax bases that characterize the Canadian equalization formula.

In particular, a single aggregated tax base is less likely to be concentrated in one or two jurisdictions than multiple disaggregated tax bases. As a result, it is less likely to give rise to particularly perverse incentives for provinces or states not to extract any revenues at all.<sup>23</sup> The resulting absence of such “rate tax-back” problems in Australia obviates the need for *ad hoc* adjustments – such as Canada’s “generic solution”, which takes into account an arbitrary proportion (70%) of actual revenues into account in situations where a single province’s capacity accounts for 70% or more of total fiscal capacity for the tax base in question.<sup>24</sup>

The Australian equalization regime has also been more adept in dealing with situations in which economic rents are extracted by their ultimate owners (i.e. state governments) through mechanisms other than formal royalty regimes. For many years, the Australian regime explicitly took into account – as an element of mining revenue capacity – the excess profits derived by a state-run railway system’s above-market rate for hauling coal to market.<sup>25</sup>

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<sup>23</sup> To distinguish it from the more general “base tax-back” issue discussed previously, this phenomenon is usually labelled “rate tax-back”. It arises whenever a single jurisdiction dominates a particular tax base to such an extent that its tax rate becomes, in effect, the national average tax rate (see the illustration of Saskatchewan’s “third-tier heavy oil revenues” in Table 1). Under these circumstances, there is little or no incentive at the margin for an equalization-receiving jurisdiction to extract any revenues at all from the resource. Instead, it faces maximum incentives to dissipate the rents that it could extract (e.g. by ceding them to mining companies in exchange for non-revenue *quid pro quos* or transferring them directly to consumers in the form of inexpensive hydroelectric power) in such a way as to not be credited with any actual revenues or revenue capacity.

<sup>24</sup> As a result of this adjustment, the province in question in effect enjoys a higher post-equalization fiscal capacity than other receiving provinces because only a portion of its revenue capacity is deducted from its equalization entitlements. In extreme circumstances – where the tax base eligible for treatment under the “generic solution” was a large one (as is potentially the case of both offshore oil in Newfoundland and offshore gas in Nova Scotia) – the provinces in question could even have significantly higher fiscal capacities than non-receiving provinces yet still be net recipients of equalization grants.

<sup>25</sup> By contrast, the closest Canadian equivalent to this situation – the extraction of rents by provincial Crown corporations and their treatment under equalization as ordinary profits of which only a proportion (equivalent to a national average tax rate on corporate earnings) is taken into account as revenue capacity – has not invited a comparable adjustment to more fully capture the actual underlying revenue capacity. As such, the current system operates as a potentially perverse incentive for receiving provinces to rely on Crown corporations for the development of natural resource deposits, rather than relying on rent-extracting royalties levied on privately-owned companies engaged in natural resource extraction. The practice of channelling natural resource revenues through government enterprises (so as to benefit from more favourable equalization treatment) has even been explicitly sanctioned in the case of the financial arrangements governing some self-governing First Nations. In the particular case of the Nisga’a, it was agreed that the corporate tax rate would be applied to natural resource revenues at the margin in order to measure Nisga’a own-source revenue capacity. The author is grateful to Dick Zuker for pointing this out to him.

In Canada, by contrast, regionally concentrated natural resource tax bases have become the rule rather than the exception. In 2000-01, a single province accounted for 50% or more of all but one of Canada's 14 distinct natural resource tax bases.<sup>26</sup> Though seven of these cases involved Alberta (which, as a non-receiving jurisdiction, is not faced with distorted incentives due to equalization), six involve provinces that either receive equalization or are close to receiving status (notably British Columbia and Saskatchewan). For the most part, the trend toward more disaggregated tax bases appears to have been motivated by a desire to take into account differences in the nature of different provincial natural resource entitlements. In particular, it has been argued that there are systematic differences in the relative profitability of otherwise identical measured volumes or values of production as the result of systematically higher exploration, development, production, transport or other unavoidable costs and/or risks associated with them.<sup>27</sup>

However, where such tax bases are concentrated in equalization-receiving provinces, the latter are faced with particularly strong incentives to adopt policies designed to effectively quarantine natural resource revenue capacity from equalization calculations, notably by using their associated economic rents to provide residents with fiscal benefits without reducing their equalization entitlements.

In some cases, provinces may be able to disperse rents directly to consumers (e.g. in the case of hydroelectric resources, through lower power rates). In other cases, they may be able to transform them into higher profits for provincial Crown corporations (and benefit from a more favourable equalization treatment of such profits than of amounts extracted as royalties).<sup>28</sup> In other cases, they may be transformed into higher gross revenues of privately owned natural resource companies in exchange for higher-than-necessary expenditures that generate increased (and potentially uneconomic) employment or other outcomes that may be in the interests of the provincial governments concerned.

The likelihood of presenting provinces with incentives to adopt policies along these lines is clearly greater if particular tax bases are concentrated in a small number of jurisdictions. Even in the absence of explicit collusion, the smaller the number of players in the "repeated game" of natural resource taxation, the greater the likelihood of their adopting strategies that minimize the assessed value of equalization entitlements for all of them (e.g. by taking a significant part of the economic rents they are able to control out of their measured revenue capacity, making them appear poorer in fiscal terms than they may actually be). Furthermore, given that the design of equalization in Canada (unlike Australia) is not "at arm's length" from the federal government,

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<sup>26</sup> It is perhaps significant that the only natural resource tax base not to be highly concentrated is the "mineral resource" tax base. That base was created only in 1999 by consolidating several previously disaggregated tax bases (potash, coal, asbestos and other minerals), some of which were also highly regionally concentrated.

<sup>27</sup> Because it still falls well short of an accurate measurement of rent, Australia's single aggregated mining tax base is not immune from pressures to vary the effective "standardized" tax rate applied to different components of mining in order to better match actual tax practices. The Commonwealth Grants Commission (2002b), Table 2, notes a wide variation in Australian average tax rates on oil and gas, coal and other minerals and has sketched out the possibility of attaching different weights to the different components of its proxy tax base with this in mind. The paper (par. 58) notes, however, that this approach would be equivalent to disaggregating the single tax base into separate sub-categories and assessing them individually (as is done in Canada, with the attendant risks noted in this section).

<sup>28</sup> For example, though Québec and Manitoba are both relatively rich in hydroelectric power, neither directly extracts hydro rents but instead channel hydroelectric revenues through Crown corporations. It is perhaps significant that the only province with significant hydroelectric resources to tax hydro sites directly (British Columbia) has not (until recently) been an equalization-receiving province.

there is an incentive for provincial governments to try to negotiate “behind-closed-doors” special arrangements for the treatment of their resources.

These concerns may be increasingly important ones in the current Canadian context, given the emergence of potentially significant new and regionally concentrated natural resource tax bases arising out of the development of Atlantic off-shore oil and natural gas reserves (concentrated in Newfoundland and Nova Scotia, respectively).

### *Treatment of “resource development” expenditures<sup>29</sup>*

Another problem associated with natural resource equalization to which neither country appears to have found a workable solution is the issue of whether and how to take into account the infrastructure and other costs borne by provincial/state governments in the development of natural resource deposits.

The issue is illustrated particularly clearly in the case (common in both countries) of natural resource deposits that are in isolated and largely unpopulated areas where the transportation or other infrastructure in question may be for all intents and purposes exclusively “dedicated” to the extraction of the natural resources in question.<sup>30</sup> It might be tempting at first to argue that this means the infrastructure in question would be tantamount to a purely private good (and its provision by the province or state to be a “gift” to any privately-owned companies involved in its development). However, if the infrastructure in question were to be privately financed, the ability of the provincial or state government to tax the resource in question would be materially reduced.

There does not appear to be any compelling reason to tilt the playing field toward or away from public or private provision of infrastructure in these cases. Accordingly, it would appear reasonable to conclude that the costs of any dedicated infrastructure required for the development of natural resource deposits should be subtracted from the tax base used to measure revenue capacity in order to avoid creating a grant-maximization bias in one direction or another.

Inevitably, however, there would be significant challenges in operationalizing such an approach. The specific illustration used above is particularly clear-cut and there would undoubtedly exist many grey areas where many of the same issues may arise in a more ambiguous way. For example, ostensibly “dedicated” transport infrastructure linked to mines may give rise to public as well as private benefits (either initially or in the event that significant population centres develop around a mine site). There may also be unavoidable costs of providing dedicated infrastructure for non-mining enterprises that may be analogous to the example noted above.

As in the case of other inputs into the calculation of revenue bases, policy neutrality would also appear to require avoidance of the use of *actual* infrastructure expenditures by a particular jurisdiction or private natural resource development company and to instead make use of

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<sup>29</sup> The discussion contained in this section is an elaboration on a discussion of “economic development” expenditures contained in the Commonwealth Treasury’s submission to the Commonwealth Grants Commission in the context of the 2004 review of equalization methodology. See Commonwealth Treasury (2003).

<sup>30</sup> Another possible example would be the expenditure requirements associated with reforestation in British Columbia, expenditures that should in principle be offset against forestry revenue capacity regardless of whether they were undertaken by the province or by forest companies. To the extent that these expenditure needs were not taken into account, British Columbia might well be credited with a higher revenue-raising capacity than it may in fact have.

some kind of policy-neutral *standardized* measure of such expenditures. Otherwise, there would be a clear incentive for provincial or state governments – or the companies with which they negotiate lease and royalty arrangements – to artificially inflate the costs of providing such investments (e.g. in order to maximize employment), thereby reducing measured fiscal capacity and maximizing equalization entitlements.

### *Elasticity adjustments for natural resource tax bases*

As noted in a previous section, Australia – unlike Canada – does not assume that the size of its “standardized” revenue bases is independent of the level of state tax effort in all cases. In particular, it has made elasticity adjustments in relation to the different mining royalty/tax rates observed in different state jurisdictions. It appears somewhat curious, however, that this practice has been reserved only for the mining revenue base. While this may simply reflect the fact that there is a larger observed variation in state tax effort on mining revenues than on other tax revenues, there are grounds for doubting that an elasticity adjustment is appropriate for mining revenues.

Particularly when compared to other major sources of state revenues – i.e. those involving taxation of economic transactions such as salaries, conveyances of real property, financial transactions, etc. – mining revenues are more likely to fall on economic rents, given that the costs of production of many (and in some cases all) of the particular resource deposits in the country may be well below the world price of the commodity in question. In short, for at least some (and perhaps most) developments, even an *ad valorem* tax on natural resources is likely to occasion fewer welfare losses (due to substitution effects resulting from a tax-induced distortion in price signals) than a corresponding *ad valorem* tax on an equivalent volume of economic transactions where many more economic agents are at or near the margin.

Moreover, the inherent “lumpiness” of natural resource deposits means that these are relatively few in number and sufficiently different from each other that it would often be feasible to tailor taxation regimes to at least the most visible manifestations of differences in economic rent (even in cases where it may be difficult or impossible to fully gauge the extent of extractable rents for asymmetry of information reasons). Where individual mining projects may be economically marginal (e.g. because of relatively high costs of production relative to world prices), it is often possible to adjust the royalty regimes they face or provide for state funding of supporting infrastructure. In this way, projects can proceed even in the face of ostensibly prohibitive volume or value of production-based royalty regimes.<sup>31</sup> Moreover, in many cases in both Australia and Canada, it is likely that the most profitable mineral deposits will be large and will dominate the industry so that relatively little production may be affected by marginal changes in tax rates.

Finally, it is unlikely that any state government seeks to fully extract the rent associated with particular natural resource deposits, since it is impossible to know at precisely what point a royalty regime would fully extract all available rent and begin to eat into “normal” profits in a way

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<sup>31</sup> Referring to a number of examples of rent extraction practices in Canada, Australia and the U.K., Watkins (2001) points out the variety of different mechanisms for tailoring rent extraction to the particular circumstances of each natural resource deposit. These include combinations of auctions for exploratory leases, sharing in production volumes and/or gross or net revenues, corporate income taxes and resource rent royalties levied on the net cash flow from projects. Through these mechanisms, governments can and do extract larger rents from infra-marginal resource deposits (i.e. those with the lowest costs of production relative to the market price and thus producing the largest rents) than from marginal deposits.

that would eventually affect firms' decisions about continuing production, or at least undertaking new exploration. Indeed, since the value of economic rents varies with the world price of the commodity in question and with the prices of its various inputs – all of them prone to fluctuations to a greater or lesser degree – there is no single “correct” value of economic rents that is invariant to external conditions. Under the circumstances, there is obviously significant scope for agreements between mining companies and governments to come to mutually advantageous agreements on predictable royalty regimes that concede a share of resource rents to mining companies, but also minimize information requirements and enable governments to promote a range of objectives (including investment and employment growth) by establishing a reputation as “a good place to do business”.

For all of these reasons, it appears likely that the observed pattern of differential mining revenue tax effort in different state jurisdictions is primarily a reflection of the underlying pattern of rents associated with the particular resource deposits in the different jurisdictions. It is much less plausible that causality runs in the opposite direction – i.e. where differential tax regimes are having a significant impact on the level of production and on the measured revenue-raising capacity.<sup>32</sup>

### *A “partial extraction” approach to the natural resource tax base?*

The likelihood that governments do not attempt to fully extract natural resource rents suggests a possible avenue for taking natural resources into account in a way that minimizes perverse incentives for rent dissipation or other grant-maximizing behaviour on the part of equalization-receiving provinces and states. Generally, the “representative tax system” approach applies a standard tax effort (the national average tax rate in both Canada and Australia) to each jurisdiction's standardized tax base (i.e. a measure of its taxable capacity that is as invariant as possible to policy manipulation by the jurisdictions themselves). In the case of natural resources, it would appear feasible (and less problematic than current practices from both an efficiency and equity perspective) to use a relatively rough-and-ready measure of “extractable rent” as the tax base and an equally rough-and-ready estimate of the actual proportion of rent likely to be extracted by jurisdictions over the long run as the standard tax rate.

This approach has much in common with the existing practices of the equalization regimes in both countries – in the sense that it would seek to replicate “what provinces/states do” (partially extract rents) – though the special circumstances surrounding natural resources would appear to warrant a few significant differences in approach:

- At least initially – and quite possibly indefinitely (given conceptual and measurement difficulties) – measurement of extractable rents would need to be based on standardized gross revenues reflecting a roughly-weighted combination of spot and forward contract prices applied to observed volumes of production for each distinct class of minerals in each jurisdiction. These would be adjusted by subtracting an estimate of the average development and extraction costs observed in the case of other more or less comparable mineral deposits elsewhere in a country or (ideally) internationally.<sup>33</sup> In principle, these average costs should

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<sup>32</sup> The value of the elasticity parameter currently used in making this adjustment (an elasticity of -3 that would be more consistent with a very marginal mining industry with large numbers of producers operating near the point of unprofitability) is particularly implausible, as acknowledged by CGC itself as part of its current methodology review (2000b), par. 77-78.

<sup>33</sup> Given the “lumpiness” of natural resource deposits, measurements based on only the production within a country will likely give rise to incentives for grant-manipulation (i.e. by artificially enhancing “costs” or

be defined in a way that includes a normal rate of return (possibly risk-weighted) as well as an allowance for remoteness from markets (i.e. as a rough estimate of costs of providing transportation and other “development infrastructure”, however financed).

- In order to minimize the ability of jurisdictions to manipulate their measured capacity by altering the national average tax effort, the aggregate of estimated extractable rents over all classes of minerals would serve as the tax base.<sup>34</sup> It might suffice to simply aggregate the current value of estimated extractable rent at a particular point in time. However, wide cyclical fluctuations in the prices of most natural resource suggest that any measure of extractable rents should be smoothed out over a number of years so as to minimize fluctuations in measured capacity that may not correspond to any actual ability to “skim off” temporarily higher revenues.<sup>35</sup>
- The calculation of the standard national average tax effort (or “extraction effort”) that is to be applied to the “extractable rent” tax base for the purposes of estimating standardized capacity of individual jurisdictions can also be fairly rough and ready. An appropriate first order approximation of the standard extraction effort might be the ratio of total revenues from sales of leases, production and revenue sharing mechanisms (plus rough estimates of “deemed” extraction implicit in the most blatant cases of rent dissipation to consumers and channelling of rents through government-owned business enterprises)<sup>36</sup> to total estimated extractable rent over the course of a number of years. However, international comparisons may also be appropriate to establish “standard extraction practices”. Moreover, in recognition of the inherently rough and ready nature of the representative tax base and tax effort, there may be a case for a more or less arbitrary “rounding off” of the standardized extraction ratio. A case could also be made for an initial rounding-up of the standard extraction rate in recognition of the under-extraction likely to have occurred in the past as a result of perverse incentives within existing equalization designs (particularly in Canada).<sup>37</sup>

dissipating rent directly to consumers in the case of deposits that account for the dominant share of production).

By looking to experience in comparable situations in other countries (assuming reasonable comparability of accounting and reporting standards), it may be possible to maximize policy neutrality.

<sup>34</sup> In general, aggregation of tax bases effectively minimizes the ability to grant-maximize through manipulation of the national average tax rate (since jurisdictions are unlikely to be able to significantly affect the national average tax rate). However, it does little to minimize equalization’s cushioning effect on tax effort-induced shrinkage in elastic tax bases. As argued above, however, the problem of elastic tax bases is particularly unlikely to apply to natural resources, where jurisdictions only seek to achieve partial extraction of rent.

<sup>35</sup> To take an extreme example, at a particular point in time, estimated “rents” can be negative (e.g. if current prices are unusually low and do not generate enough revenue to cover estimated average costs of production), though examples of governments accepting negative royalties during such episodes are hard to find. To compensate oil and mining companies, governments instead provide them with a larger share of gross revenues when prices are high. Accordingly, a rise or fall in measured “rent” is likely to translate into more dampened fluctuations in revenue capacity, a reality that can be modelled reasonably well by using a moving average of estimated extractable rent. While the Australian equalization regime already uses a lagged five-year moving average to measure fiscal needs, the long lives of natural resource deposits (and the also-long cycles in natural resource prices) suggest that an even longer smoothing period may be preferable.

<sup>36</sup> Providing an aggregated extractable rent tax base was derived by deducting a standardized estimate of development and extraction costs from a standardized estimate of gross revenues from all revenue sources, the incentives for rent dissipation would be much reduced in any event. Dissipating rents would generally have little impact on a jurisdiction’s overall measured tax base or on the national average tax effort.

<sup>37</sup> In the interests of equity (i.e. producing an accurate reflection of differences in the underlying fiscal capacities of various jurisdictions), it would be necessary to ensure that the standardized extraction effort was reasonably

Inevitably, an approach along the lines of that sketched out above would be criticized on the grounds of its numerous more or less arbitrary assumptions, including its relative laxity in differentiating between the feasibility of different levels of rent extraction in the case of different classes of natural resources. While valid in isolation, such criticisms ignore the much more fundamental equity and efficiency shortcomings of the existing approach to natural resources in Canada and (to a lesser degree) in Australia, both of which give the (misleading) impression of a high degree of precision in the ability to estimate actual natural resource revenue capacity.

In particular, there is a practical trade-off between policy neutrality and arbitrariness (in the sense of avoiding a focus on the form of extractive practices in favour of a focus on their underlying substance). The more precisely one attempts to replicate the precise extraction practices of jurisdictions, the greater the perverse incentives and efficiency losses associated with increased scope for grant-maximizing behaviour. Moreover, the current approach to natural resource equalization in both countries is clearly inequitable, with *ad hoc* adjustments (e.g. partial inclusion of arbitrarily determined resource revenue bases under Canada's "generic solution" and Australia's mining elasticity adjustment) giving preferential fiscal treatment to jurisdictions that already enjoy the economic benefits of higher-quality/lower-cost deposits.<sup>38</sup>

## Conclusions

It is often alleged that equalization in general and/or the particular design of equalization programs found in Canada and Australia create significant distortions in the incentives faced by provincial and state governments to adopt sound taxation and economic development policies. This paper has argued that these concerns are generally overstated, given the complexity of the incentive structures facing those governments and the generally appropriate design of equalization regimes in the two countries. While it is acknowledged that it remains theoretically possible for equalization regimes to systematically bias government decision-making in undesirable directions, it is not clear that the empirical conditions under which this is likely to occur are present in either country, given their current equalization designs.

The equalization of natural resources is the most significant exception to this rule. Neither country can claim to have designed a regime of natural resource equalization that is free of significant policy biases. However, with the exception of its elasticity adjustment, Australia's is arguably much closer to meeting the challenges posed by natural resource equalization in terms of avoiding perverse incentives for grant-maximizing behaviour and could usefully serve as a model to emulate and improve upon.

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close to the actual average extraction effort across jurisdictions within a country – at least eventually. Otherwise, the approach would attribute revenue capacity to jurisdictions that they did not actually have (since unextracted rent left in private hands would not generate fiscal benefits in the form of above-average levels of public services or below-average levels of taxation).

<sup>38</sup> The "partial extraction" approach (unlike numerous superficially similar proposals frequently made in Canada for the partial exclusion of actual resource revenues) is explicitly intended to fully attribute revenue-raising capacity to jurisdictions in respect of that portion of extractable rents that would actually be extracted under standard natural resource rent extraction practices. As a result, it aims to fully capture all (and not just a fraction of) fiscal benefits typically generated by natural resources, but not those that may result from deviations from the norm in a specific jurisdiction's extractive policies.

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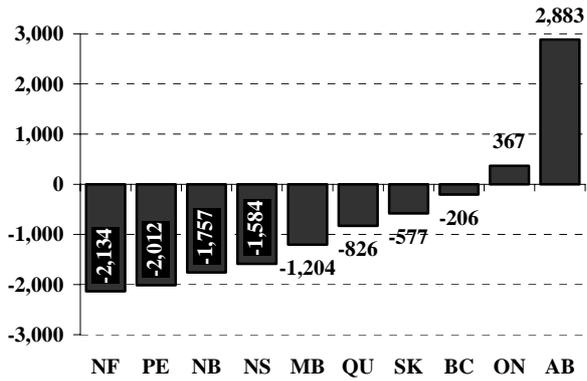
## Annex 1

### Revenue-raising disparities across provincial/state jurisdictions, 2000-01

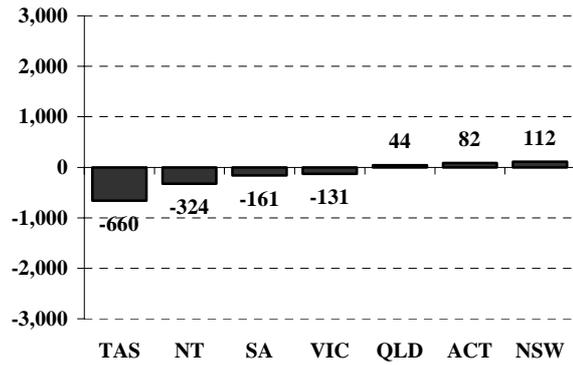
(in CAD at purchasing power parity)

#### Pre-equalization disparities

##### Canada

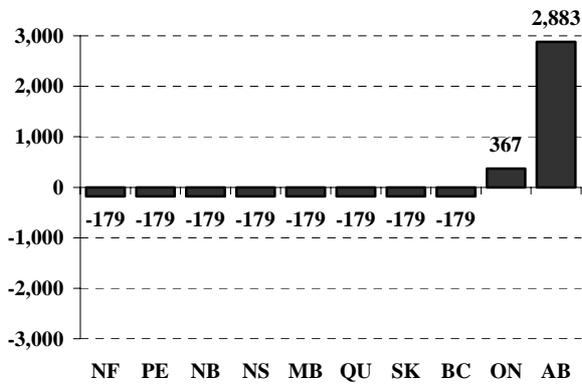


##### Australia

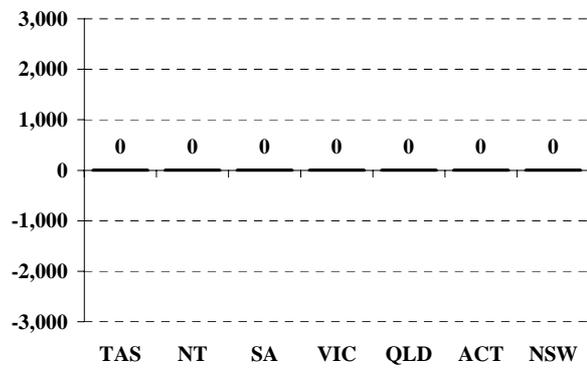


#### Post-equalization disparities

##### Canada



##### Australia



Source: Finance Canada  
Commonwealth Grants Commission  
OECD (purchasing power parity exchange rates)

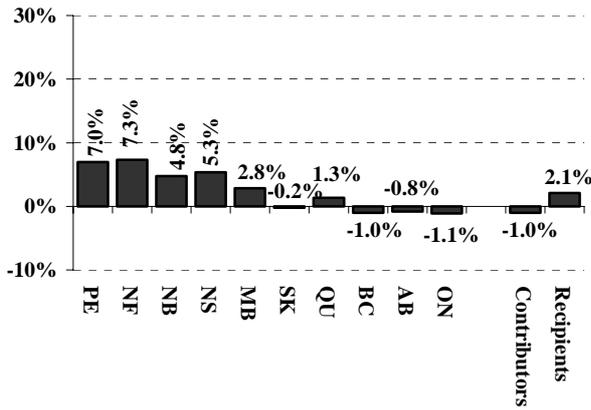
## Annex 2

### Inter-regional net fiscal transfers resulting from federal revenues and expenditure<sup>1</sup>

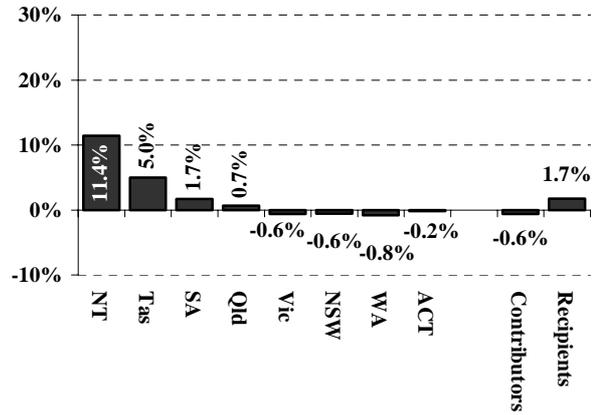
(as a % of provincial/state gross domestic product)

#### Net fiscal transfers associated with equalization grants<sup>2</sup>

##### Canada

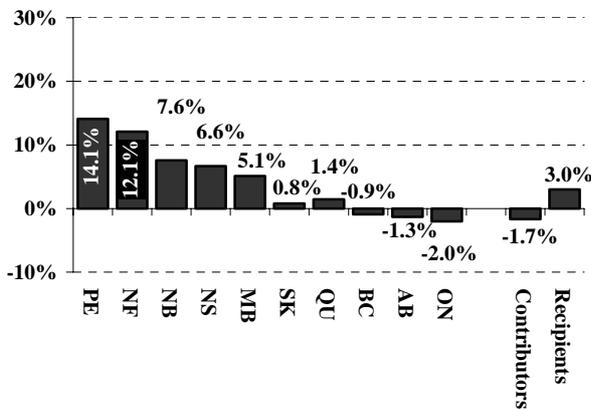


##### Australia

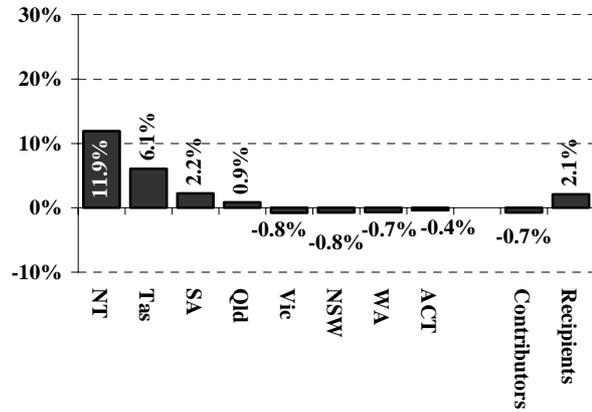


#### Net fiscal transfers associated with all federal grants to other levels of government

##### Canada



##### Australia

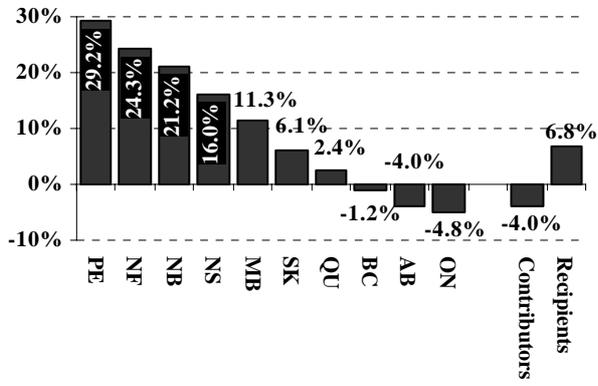


<sup>1</sup> The data in this annex are for 2000 in Canada and 2000-01 in Australia. They represent the difference between actual federal government expenditures in a jurisdiction and the estimated portion of federal revenues required to finance them that are ultimately derived from that jurisdiction. The latter is estimated by distributing an amount equal to the expenditures concerned (equalization grants, all federal grants to other levels of government, etc.) on the same basis as the overall distribution of total government revenues).

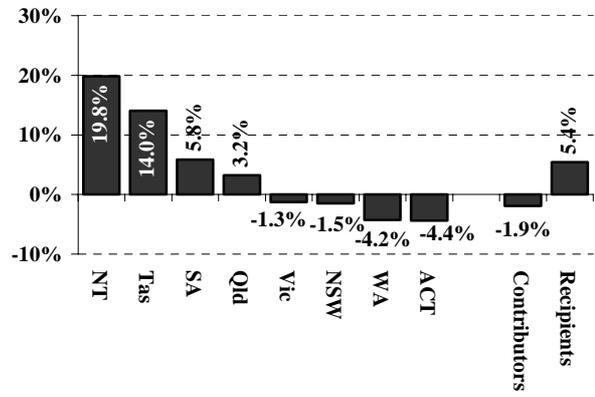
<sup>2</sup> In Australia, the relevant Commonwealth expenditure is the overall pool of general revenue assistance allocated in accordance with horizontal fiscal equalization principles.

## Overall net fiscal transfers (all federal expenditures)

### Canada



### Australia



Source: Statistics Canada (Provincial Economic Accounts, 2001).  
 Western Australia Department of Treasury and Finance and author's calculations.