

# International Studies Program

Working Paper 04-16  
November 2004

## **Revenue Sharing, Natural Resources and Fiscal Equalization**

Bob Searle



Georgia State  
University

---

Andrew Young  
School of Policy Studies





## **Revenue Sharing, Natural Resources and Fiscal Equalization**

Working Paper 04-16

Bob Searle  
November 2004

International Studies Program  
Andrew Young School of Policy Studies  
Georgia State University  
Atlanta, Georgia 30303  
United States of America

Phone: (404) 651-1144  
Fax: (404) 651-3996  
Email: [ispaysps@gsu.edu](mailto:ispaysps@gsu.edu)  
Internet: <http://isp-aysps.gsu.edu>

Copyright 2001, the Andrew Young School of Policy Studies, Georgia State University. No part of the material protected by this copyright notice may be reproduced or utilized in any form or by any means without prior written permission from the copyright owner.

## International Studies Program Andrew Young School of Policy Studies

The Andrew Young School of Policy Studies was established at Georgia State University with the objective of promoting excellence in the design, implementation, and evaluation of public policy. In addition to two academic departments (economics and public administration), the Andrew Young School houses seven leading research centers and policy programs, including the International Studies Program.

The mission of the International Studies Program is to provide academic and professional training, applied research, and technical assistance in support of sound public policy and sustainable economic growth in developing and transitional economies.

The International Studies Program at the Andrew Young School of Policy Studies is recognized worldwide for its efforts in support of economic and public policy reforms through technical assistance and training around the world. This reputation has been built serving a diverse client base, including the World Bank, the U.S. Agency for International Development (USAID), the United Nations Development Programme (UNDP), finance ministries, government organizations, legislative bodies and private sector institutions.

The success of the International Studies Program reflects the breadth and depth of the in-house technical expertise that the International Studies Program can draw upon. The Andrew Young School's faculty are leading experts in economics and public policy and have authored books, published in major academic and technical journals, and have extensive experience in designing and implementing technical assistance and training programs. Andrew Young School faculty have been active in policy reform in over 40 countries around the world. Our technical assistance strategy is not to merely provide technical prescriptions for policy reform, but to engage in a collaborative effort with the host government and donor agency to identify and analyze the issues at hand, arrive at policy solutions and implement reforms.

The International Studies Program specializes in four broad policy areas:

- **Fiscal policy**, including tax reforms, public expenditure reviews, tax administration reform
- **Fiscal decentralization**, including fiscal decentralization reforms, design of intergovernmental transfer systems, urban government finance
- **Budgeting and fiscal management**, including local government budgeting, performance-based budgeting, capital budgeting, multi-year budgeting
- **Economic analysis and revenue forecasting**, including micro-simulation, time series forecasting,

For more information about our technical assistance activities and training programs, please visit our website at <http://isp-aysps.gsu.edu> or contact us by email at [ispaysps@gsu.edu](mailto:ispaysps@gsu.edu).

---

# *Revenue Sharing, Natural Resources and Fiscal Equalization*

BOB SEARLE

## **1. Introduction**

As applied in Australia, horizontal fiscal equalisation (HFE) is achieved when untied funds from the central government are distributed to the States so that:

if each made the same effort to raise revenue from its own sources and operated at the same level of efficiency, each would have the capacity to provide services at the same standard.

Not all nations try to achieve this degree of equalisation and define it in much more limited ways. Some, like Canada, have decided that ‘full’ equalisation is impossible to fund because of the great diversity of natural resource revenue capacities available to their provinces. Others, like Indonesia, have so much revenue sharing between the central and local government that the pool of funds available from which to achieve equalisation is not large enough to overcome the impacts of these other policies.

However it is defined, HFE is ultimately about equalising (or at least a move towards equalising) the capacity of local governments to provide services. It usually takes account of differences in the capacity of the recipient governments to raise their own revenues, and is increasingly taking account of differences in levels of demand for and unit costs of services provided by those governments. It is about equalising fiscal capacity, but it is more about equalising service provision standards.

Equalisation can be achieved at any level of service provision or quality – all jurisdictions at a level could be funded to provide a service that is clearly below United Nations or other international acceptable standards and we would still have equality of services. The situation in many developing countries is precisely this. Many such nations, however, see HFE as part of a mechanism to achieve a pre-defined level of services *as well as* an equalisation in the provision of those services. Indonesia, for example, is currently investigating how to achieve what it terms ‘minimum service standards’ within its equalisation based funding system. It is possible to combine these two policy objectives but it requires additional resources being made available to the recipient governments (or improved efficiencies being made by them) to fund the difference in costs between the current average level of services and the required level of services.

There are a number of ways to view the conflicts within the allocation of funds across the public sector of any nation. Vertical fiscal imbalances are often considered to be the primary concern, but it is often what is done to reduce VFI that produces the unexpected limitations on governments to achieve other objectives.

The allocation of revenue sources to the different levels of government is the primary way of handling vertical imbalances in fiscal capacity. It is relatively easy to measure the percentage of total public sector revenue collected by each level or sphere of government. This distribution of revenue sources is sometimes seen as so important that it is considered in isolation from (or at least prior to) the allocation of functional responsibilities to those levels of government. It is at this stage that the decision is made about what, if any, revenues will be shared and what level or levels of government will have access to revenues raised from natural resources.

After all the individual taxes or other revenue source have been allocated to a specific level of government, and the responsibilities for service delivery have also been decided, there is often a realisation that the logical result of the individual decisions has left too large a vertical fiscal imbalance in favour of the central government. This conclusion seems to result from a conflict between what might be best for overall accountability of local government (to give local government greater expenditure responsibilities capacities) and what might be most efficient in raising national public sector revenue (to give the central government greater revenue raising capacities). Whatever the cause, the result is that, to reduce VFI, nations very frequently give local government the rights to revenue from natural resources and/or enter into revenue sharing between the central and local governments. These are both legitimate decisions of governments in their attempts to reduce VFI but are too often made in isolation of other policy objectives.

The issues addressed in this paper are the relationships these VFI-based decisions have to the equalization objective. Because of differences in the ‘own-source’ fiscal capacity of local governments, any injection of additional revenues into that sphere of government to reduce VFI is most likely to increase the levels of horizontal fiscal imbalance, thus increasing the pool of funds necessary to achieve HFE. Decisions on

overcoming VHI are too often taken in isolation of the decisions on the extent to which HFE is to be achieved.

## **2. Revenue Sharing**

Revenue sharing is an effective mechanism for overcoming VFI as it transfers capacity readily from one level of government to another. It can take several forms but can always be seen as the equivalent to allocating a revenue source between more than one level of government – it is simply another of the allocation decisions. Revenue sharing can be:

1. governments at more than one level sharing the revenue collected from a tax base;
2. governments at more than one level working together to use the same tax base to raise separate elements of the same tax (piggy-backing); or
3. governments at more than one level using the same tax base to raise revenues from different taxes.
- 4.

Leaving aside for the moment the relationship between revenue-sharing and HFE, there are a number of issues that arise in applying any revenue sharing scheme. These need to be considered carefully as they relate to the distribution of authorities in the revenue raising effort and the establishment of incentives that can lead to greater or lesser efficiency in the use of the revenue bases involved. Apart from deciding exactly what is meant by tax sharing, the more important of these questions seem to be:

1. what revenue sources should be shared;
2. should the revenues raised be tied to particular purposes, for either or both levels of government;
3. what level or levels of government should decide on the rate of tax (and how should they come to any joint decision on this);
4. what level of government should be responsible for the revenue collection;
5. what level or levels of government should be responsible for the granting of any exemptions from the shared tax;
6. whether it is actual collections or ‘face imposts’ that are to be shared;
7. how is the revenue to be shared between the levels of government, and the individual jurisdictions at any one level;
8. the frequency and means by which the distribution of revenue should take place; and
9. the means by which any disagreement between governments relating to the revenue sharing are to be handled.

As will be seen, the questions are often closely inter-related and should not be decided in isolation from one another. Any revenue-sharing system must be developed as an overall package. Nevertheless, it is beneficial to discuss each of the questions separately to clarify the issues and the inter-relationships.

### ***What revenues?***

Identifying the revenues that are to be shared is important because of its relationship with other policies of the central government, the local governments and the nation as a whole. Depending on how collection authority is shared for example, efficiency in tax collections can be either increased or decreased by the choice of what revenues are shared. Sharing the wrong base and then giving individual local governments the capacity to set their own rate of tax can lead to unwanted competition between governments and a gradual reduction in total national revenue effort. This is particularly important when dealing with mobile revenue bases where decisions on tax rates can cause locational changes to economic activity as firms (or individuals but this is probably less important) move to minimise tax imposts.

The overall objective when considering what revenues to share is to ensure that the total revenue of each sector of government increases at the rate at which it is intended their service provision costs should increase. This is a delicate issue as it rests on the level of fiscal stress each sector is under – how does their current level of service provision relate to community expectations? Each level of government will be competing to achieve a sharing agreement that, as well as adjusting to the required level of VFI, maximises its likely revenue growth. The incentive for central governments is usually to ensure that the revenue going to local governments does not grow any faster than total public sector revenue. The incentive for local government is to ensure that the shared revenues are those that should grow at about the rate of the national economy (such as income tax and VAT), or those that are expected to grow very fast because of some known future event (such as the scheduled development of oil or gas fields).

Depending on the intended basis of distribution of the revenue between local governments, there might also be competition between those governments. Sharing on the basis of location of origin can cause friction between local governments and severely limit the ability to implement national objectives of equity.

### ***Revenue Hypothecation***

Whether the revenue flow resulting from any shared base or collection should be hypothecated to a particular function by either level of government often depends on the source of the tax. A shared forestry royalty, for example, is much more logically hypothecated to reforestation than any shared revenue from income tax. It is important, however, to decide in advance if all or part of the shared revenue is to flow to each or any level of government for a particular reason. If hypothecation is imposed on local governments as a condition of the revenue sharing, the flow of funds becomes equivalent to a tied grant.

In some circumstances, hypothecation can result in very different results to those intended. While there might be benefits in hypothecating forestry royalties as indicated above, there is little point in doing so if the areas that need reforestation are now denuded and producing no royalty revenues, and the sharing is based on the region of origin. If hypothecation is being considered, the question is whether revenue sharing is the best way to proceed, or if it is better for the central government to collect all the revenue and distribute whatever share is agreed as a tied grant based on need. The second option provides a much better capacity to meet needs where they lie.

### *Deciding the tax rate*

Deciding on the rate of tax is obviously a delicate task. The different levels of government that are to share in a revenue source often have different attitudes to what the rate should be. These attitudes depend on the importance of the tax to their budget, the way they perceive the tax in terms of its economic impact on their area and whether they are the collection authority or not.

It is easy for a non-collecting government to place a greater onus on the collecting government by arguing for (or imposing) an increase in the tax rate, knowing it will not have to face the full wrath of the taxpayer for the increase. The question of setting the tax rate is therefore closely related to the question of what level of government is collecting the revenue.

For individual jurisdictions, the sector of the economy from which the revenue is collected is also a consideration. Local governments with little secondary industry will argue that taxes on this type of industry should be higher, while those with the secondary industry will clearly have other ideas. Denuded areas requiring reforestation may argue for higher forestry royalties while the current forestry areas will argue the opposite.

In summary, the pressure for higher tax rates on shared revenues will depend on how each local government and the central government sees the net benefit to its area, taking account of the increased taxes on their citizens and the government's increased capacity to provide services for those citizens. Not all governments will have the same expected net benefit.

Once a tax rate has been set, there can be legal issues associated with how the decision is implemented. It is sometimes the case that while only one level of government has the power to impose the tax, the task of setting the rate is given to another level. This can create difficulties if the imposing government disagrees with the rate that has been decided (or any change to reduce it) and the lower levels of government have no power to enforce their decision. In Australia, where all the VAT (known as the Goods and Services Tax) collected by the central government is distributed to the States - a 100 per cent sharing - the Agreement reached is that:

a proposal to vary the 10 per cent rate of GST will require:

- i. the unanimous support of the States (and Territories);
- ii. the endorsement of the central government; and
- iii. the passage of relevant legislation by both houses of the central parliament<sup>1</sup>.

Clearly, an individual State that wants to vary the tax rate has very little power, and the combined will of all States can be thwarted by the central government<sup>2</sup>. Because of the large VFI in favour of the central government, the States find it difficult to say no to the more fiscally powerful centre. They are left with little real power to alter the rate of tax on what amounts, on average, to over 25 per cent of their revenue.

In any revenue sharing circumstances, what is required is a workable means by which the tax rates on shared revenue sources are set (or changed) and implemented. Both levels of government need to have real power to have their arguments heard, yet self-serving incentives need to be avoided in arriving at the decision.

### ***Collecting the revenue and granting exemptions***

The level of government that collects the tax must be fully compensated for the costs of collection, but must not be in a position where it can benefit unduly because it is the collection agency. Most frequently, the government imposing the tax is also the collecting agency because of legal requirements, but the authority to collect can be delegated by legislation and given to a more appropriate level of government. What is important is that the incentive is always to collect more tax and not to give undue exemptions etc.

In poorly designed systems, the collecting level of government can manipulate the process so that all the 'down-side' of collection shortfall lies with the non-collecting governments. It is too easy for a collecting authority to grant tax exemptions if it knows it will not suffer the full (or any) impact of those exemptions. This is much more of a problem, of course, where the collecting government receives a smaller share of the collections than others. In effect, it only costs the collecting government, say, 30 per cent of the collectable tax to give an exemption, and this might be less than the additional collection cost. The circumstances that result in exemptions must be laid down very specifically in the agreement and there must be a mechanism established to adjudicate on disputes with taxpayers.

---

<sup>1</sup> Intergovernmental Agreement on the Reform of Commonwealth-State Financial Relations, June 1999, para 31. The complete documentation on this tax reform is held in *Commonwealth Grants Commission, General Revenue Grant Relativities 2000 Update, Supporting Information*, p 372.

<sup>2</sup> At present, all the State and Territory Governments in Australia are controlled by a different political party to the central government, making this a more likely possibility if any suggestion for change were to be made.

The incentive in collection and exemption should be based on total net public benefit, not simply the net benefit derived by the collecting government.

### ***What is shared***

It is important to specify what is to be shared. Assuming it is the ‘receipts’ in some form that is shared, is it actual revenue collected, the total of the tax impost notices sent to tax payers, or the estimated collection at some time prior to the collection year – usually set by the budget preparation timetable?

To use actual collections is logical but administratively difficult as it requires an adjustment some time after the end of the fiscal year to which the collections and transfers relate. Transparency between actual collections and the value of the transfers is lost because of the inter-temporal adjustments. To use estimates is administratively simpler but there is a natural tendency to underestimate revenue collections and some way of overcoming this is necessary. If estimates are used and there is no post-period adjustment, the collecting agency or agencies become the full beneficiary of (or contributor to) any difference between actual and estimates. In these circumstances, there is a very high incentive for them, if they are the estimating authority, to make conservative estimates.

To use the total of tax impost notices creates an incentive for the collecting government to make sure it receives its agreed share of the ‘collectable tax’ and then pass all the detriment of non-collectable tax and exemptions on to the non-collecting government. Under these circumstances, the ‘agreed’ levels of sharing are not achieved. If it is the tax base that is shared in something of a ‘piggy-back’ arrangement, another set of questions present themselves. Is there to be total harmonisation of the tax effort (tax base and taxpayer definition, assessment procedures, collection methods, appeals and auditing of payments) by the sharing parties, is there to be one tax notice or two, one collection agency or two, and so forth? These questions may be easier to answer than where receipts are shared, but they are non-the-less important.

In other cases, the tax base might be shared but be used in different ways by different levels of government. In Australia, for example, the value of property is used as a tax base by both the State and municipal levels of government. Typically, municipal governments levy a property rate on all properties while the States levy a land tax on non-farm commercial and industrial properties.

### ***Sharing the revenue***

*Between levels of government.* Overcoming VFI is usually the reason for revenue sharing and, irrespective of what might be best policy, is most frequently seen as a political issue. As a result, the percentage of the revenue received by each level of government will most likely be decided in a political rather than an economic environment. It is more complex where there is more than one level of beneficiary local government. In those circumstances, there is not only the competition between the centre

and local government, but also between the different levels of local government. It would be best if there could be a measure of the level of fiscal stress that each level of government finds itself in and the shares of total public sector revenue be based on these. That, however, is both very difficult and very unlikely.

*Between local governments.* How the revenue is to be shared between jurisdictions at any level is probably the most difficult issue of all. It relates closely to many of the other questions and, as a result, some aspects of it have already been discussed. A basic consideration in answering this question is the philosophy behind the revenue sharing and the political objectives in the fiscal decentralisation within the nation. As has been seen, it is easy to produce a distribution that is contrary to the type of decentralisation the country is trying to achieve.

At one extreme is the distribution to recipient jurisdictions based on where the revenue is paid or collected – the origin basis. This is often what is argued for by local government, but it does present problems. Depending on the revenue source, there can be differences between where the activity leading to the tax is undertaken, where the taxpayer lives and where the tax is paid. A forestry company, for example, might be extracting timber in a remote province, but be owned by a tax payer who lives just outside the jurisdiction of the capital city who pays his tax at an office in the capital. If the revenue for reforestation is required in the location of economic activity, can that be achieved by applying an ‘origin’ basis? What is the ‘origin’ of the tax? Are there data available on which to base the distribution so that it is paid to the locations of economic activity and thus achieves the aim of funding reforestation?

At the other extreme is a pooling of the revenue to be shared and some general principle applied to its distribution between local governments. If the basis of distribution were to be equal fiscal capacity, for example, this would be the best way to overcome both VFI and HFE problems. However, an agreement to apply HFE principles to shared revenue is often very difficult to achieve because of the political considerations and the arguments of ‘origin’. The greater the extent to which individual locations can see themselves as ‘locations of origin’ for the revenue, the more difficult it is to pool the funds and distribute them according to a general principle.

In Indonesia, for example, fiscal equalisation was a major objective but it also wanted to return some natural resource revenue to the areas where the mining or extraction occurred, with this differing by type of mining and by area. Because of these joint aims, the distribution mechanism for mining and oil-based revenue that was written into the decentralisation legislation in 1999 included a large number of elements, differentiating between: provinces where revenue originated and provinces where it did not originate; and municipalities where revenue originated and municipalities where it did not. In each of these groups, the distribution to the originating areas was based on the value of production or contribution to GST from the area, and the distribution to non-originating areas was based on population. The system is extremely complicated and requires data on the contribution to GSP of individual industries by municipality.

Obviously, this is very difficult to measure with any accuracy and many disputes have arisen as a result.

It is important that the system is not too complex or too difficult to manage. The revenue sharing agreement has to be understood by all parties concerned and be as transparent as possible so that taxpayers know what is happening.

### ***The frequency of transfers***

The frequency and means by which the distribution of revenue should take place is often a matter of contention in poorly designed revenue sharing arrangements. The collecting government can do its job well, but then delay the payment to other governments for as long as possible to improve its cash holdings. The incentive here is obvious and the agreement should overcome it by specifying clear time requirements and penalties on the collecting authority for late payments.

The best option is for the transfers to be made in accordance with the rate of collection. Whether the frequency of transfer should be daily, weekly or monthly will depend on the type of revenue and the technology available to manage the transfers. If the shared revenue is one that is payable only at the end of each month, for example, then monthly payments might suffice. If the shared revenue flows evenly to government throughout the year, daily payments might be best. By managing bank accounts and using electronic banking technology, it is possible to arrange for such revenues to be transferred on a daily basis if that is required. Whatever frequency of payments is arranged, it should be such that it gives all governments, both collecting and non-collecting, about the same flow of cash receipts.

This raises the question of what rights the non-collecting governments should have to monitor the rate of revenue collections. It would seem reasonable for all recipient governments to have some rights to audit the collection and transfer system to ensure themselves that it was working, and being operated, in accordance with the agreement they had reached.

### ***Disagreements between governments***

The last issue to be discussed under this topic is the dispute settlement clause. Any government that is sharing a revenue source must have some way of overcoming disputes with the other(s). In most cases, the government with the authority to collect the revenue has a stronger hand than the other(s), but this should not be the cause of it having a non-planned advantage in actual revenue received.

### ***Conclusion on revenue sharing policy determination***

A revenue sharing agreement should be a formal written document with legal status, and should cover all the issues raised in this paper. There are often good reasons to share revenue bases or collections between levels of government but the agreements

should remain as administratively simple as possible. In the longer-term, a well designed agreement will reduce administrative costs and tax levels.

The negotiations leading to revenue sharing arrangements benefit from being more wide-ranging than is generally understood and require a broad knowledge of public sector objectives at both the national and local levels. The negotiations will sometimes be difficult because of conflicting incentives, but all elements of them should be completed before the arrangement is entered into.

### ***Revenue sharing and fiscal equalisation***

Leaving aside some specific matters associated with the sharing of natural resource based revenues, there are a number of issues that are general to revenue sharing and a fiscal equalisation system. They revolve around how the revenue capacity of the local governments will be assessed for the shared revenues; and what impact those assessments are likely to have on the distribution of grants between local governments, the volume of funds necessary to achieve the equalisation and the volatility in the level of funding for individual local governments.

*The revenue capacity assessments.* Because shared revenues are tantamount to the allocation of part of the tax base to local governments, the capacity of the local governments to raise that revenue should be included in the equalisation assessment. The shared revenue is available to them to meet the expenditure needs of their communities. In most instances, the sharing of revenue between the central and local government requires the maintenance of a data base that can be used in the assessments needed for an equalisation system. Assuming the local governments are all subject to the same sharing arrangement, the measurement of tax bases will mirror the agreed way in which the revenue is distributed. Where the distribution is on an 'origin' basis, it will be necessary for the central government to hold data on that basis. This becomes the automatic measurement of the capacity of each council and the actual revenue received by each local government should be an accurate measure of both their absolute and relative capacities to raise the shared revenue.

In fact, in all cases where there is a uniform basis of distribution as between councils and the distribution accords with the agreed method, the actual revenue received by each will be an accurate measure their capacities, even if the agreed method cannot be measured by objective data. It is only where the actual distribution has not been done according to the agreement that there will be a need to arrive at some measure of capacity that is not based on actual receipts.

These conclusions might be negated if there are different sharing arrangements for different jurisdictions at the same level of local government. If those different arrangements are a true reflection of the inherent capacities of the councils to raise the shared revenue, actual receipts can still be used as the measure of capacity. If, however, the differences are due to political or other reasons not related to inherent capacities,

there is a question of whether the equalisation assessments should ‘override’ the agreement in its endeavour to achieve overall equity for all councils.

This the same question as arises when considering how tied grant revenue should be handled within the revenue equalisation process. The answer in theory is that if equalisation is the only objective asked of the grant determining agency, there should be adjustments made to ‘override’ these differences. In these circumstances, it is necessary to find a common objective base on which to measure the capacity of all councils. If the grant determination process is not to negate other objectives of government (no matter how inappropriate in terms of equalisation), actual revenues should continue to be used as the measure of capacity.

*The impact on grant distribution.* In practically all cases, revenue sharing will increase the differences in capacities of individual local governments to raise revenue. This will increase the differences in grants between councils, probably in both per capita and absolute amounts, and as a result, probably also increase political pressure to reduce the extent of the equalisation. Disgruntled local politicians tend to argue not about equalisation of total fiscal capacity, or even total per capita revenue, but about equalising the per capita size of grants. Increasing differences in the size of grants (even if only in per capita terms) tends to lead to those councils receiving less making claims that there is too much equalisation or that the grants are being determined incorrectly.

While HFE is the objective within the grant distribution, anything that changes the level of VFI is likely to increase the differences in per capita grant funding. Because any change in the responsibilities or revenue capacities of local government will not be distributed evenly across those jurisdictions in per capita terms, any change in VFI will result in a change in the calculations necessary to achieve equalisation. In all but extreme circumstances, this will increase the differences in per capita grant funding.

*The funds required for equalisation.* If the equalisation system is open-ended as in Canada<sup>3</sup>, revenue sharing can have very detrimental impacts on the central government budget. Where this is the case, any increase in the funds necessary to achieve equalisation are provided by the central government. In closed systems like that in Australia, equalisation is achieved from the same sized pool of funds irrespective of changes in the need for redistribution. This is achieved by redistribution between the States rather than changing the size or nature of the central government budget result or changing the distribution of resources between the central and local level of government. A closed system is based on a premise that the equalisation system should not result in changes to overall public sector outcomes, whereas an open system allows it to do so.

*Revenue sharing and grant volatility.* The usual starting point in an allocation of revenue sources between levels of government is that the level with the greatest fiscal capacity has the best tools for overcoming fluctuations in revenue collections. This is usually the central government and, as a result, it is therefore given the more volatile tax

---

<sup>3</sup> In such systems, the level of equalisation funding is done in absolute terms and the central government has a commitment to fund the scheme, irrespective of the fiscal impact on its budget.

sources. It is also these more volatile revenues that are shared if a further step in reducing VFI is required. Revenue sharing therefore often results in greater annual movements in councils' relative revenue capacities and thus greater volatility in the size of their grants – both to the absolute size of the transfer and its distribution.

One aspect of a grants distribution system that brings it into disfavour is volatility of annual outcomes. Local governments cannot plan and budget to an acceptable degree of accuracy if they cannot estimate their grant sufficiently well. In many circumstances, a council would sacrifice an increased revenue over the long-term for more predictability and stability on an annual basis.

Where the central government has all the fiscal liability, this is not as great a problem as in closed systems where the zero sum game can result in substantial reductions in funding. One way of handling these annual variations is to base the grant distribution on the calculations over a past period of years on a rolling basis to spread the impact of annual fluctuations in capacity. This method can be effective but greatly complicates the equalisation calculations.

### **3. Natural Resource Revenue**

Like revenue sharing, the way revenue from natural resources is handled can have a big impact on Vertical Fiscal Imbalance. It is also a revenue source that is often hotly argued by local government as belonging to them. The difficulty with accepting this argument is that the receipts from natural resource activities are usually unevenly distributed between jurisdictions and over time, and can thus cause great difficulties when applying policies aimed at equalisation of fiscal capacity and service provision. Whether natural resource revenues should be allocated to local government (and if so to what extent if revenue sharing is an option) is therefore a major issue in most fiscal transfer systems.

The questions that arise in coming to conclusions in relation to natural resource revenue seem to be:

1. why do we raise revenue from natural resources;
2. what level or levels of government should have access to the revenue;
3. how should we raise the revenue if we are to satisfy these desires;
4. what level of government is best placed to raise the revenue;
5. how should it be distributed between the levels of government; and
6. how should it be distributed between jurisdictions if any revenue is provided to local government.

There are many policy considerations to these questions and some general discussion of the issues will be beneficial to the decision making process. But first, we should decide what we mean by natural resources.

## What are natural resources?

The answer to this question seems easy - anything that nature has provided and that has a value in the market place. But this is too broad when considering the revenue capacities of governments, and yet may also be too narrow. Land, *per se*, is not considered a natural resource in terms of revenue raising by government, but is used extensively as a revenue base – why differentiate between land that can grow wheat and land that has minerals under it, or even on the surface? There seems to be an element missing from the definition. On the other hand, plantation timber and the produce of aqua-farming are sometimes seen as natural resources for revenue raising purposes and these cannot be said to result solely from nature – how do they differ from general agricultural production? No matter what, for the purposes of this discussion we will include oil and gas, mineral extraction, forestry, fisheries and hydro-power under a definition of natural resources<sup>4</sup> and think about classifying them in several ways that will assist in our development of an optimal policy on revenue collection authority.

*Exhaustible or replenishable.* For the most commonly thought of natural resources - minerals, oil and gas - it is assumed that there is an exhaustible supply. Certainly this is the case in any one location. The economic activity taking advantage of the resource uses it until there is nothing of value left (given its current price) and then moves to another site. Forestry, fisheries and hydro-power might be seen as replenishable resources. These resources are useable on a permanent basis if they are well managed and the environment in which nature provides them does not change radically. With this difference in mind, replenishable resources might be thought of as no different from industrial activities and taxed accordingly, especially if the cost associated with establishment and management of the resource is a private expense.

Where the capital expense associated with the establishment of the resource (eg the building of a hydro water storage), and/or the cost of management is a public expense, this is tantamount to the public ownership of a commercial activity and the enterprise might be seen for revenue generation purposes as being equivalent to any other government business activity.

*Impact on infrastructure requirements.* Infrastructure costs money and all activities that utilise natural resources require infrastructure that has a public benefit. Infrastructure such as roads, railways and ports we might term economic infrastructure as it relates directly to the economic activity. Infrastructure such as schools, health facilities etc for the people involved in undertaking the activity we might call social infrastructure as it relates more directly to the needs of society and only indirectly to the economic activity. Where the cost of this infrastructure lies varies from case to case. The first company to commence extraction in an area might put in the economic (and even the social) infrastructure at its own expense. It may then retain ownership and maintenance responsibility of the economic infrastructure but pass ownership of the social infrastructure to the government (either the central or local government level, depending on the responsibility allocation existing in the nation). In developing countries, it is not

---

<sup>4</sup> A more complete discussion of this issue is to be found in Brosio, G, 2004.

unknown for the company to continue to own and run even the social infrastructure (thus obviating the social expense). Neither is it unknown for the economic infrastructure that has value as a public asset to be handed to a government free of charge, either when it is completed or at the end of the firm's economic activity in the location. This might be seen as the equivalent of an up-front or final lump-sum payment of revenue.

The infrastructure can be either permanent or temporary in nature. It will be as permanent as the period of the mineral extraction or as temporary as the construction period of the facility that enables a long-term economic activity - a new water storage. A road and railway system may be maintained and operated in perpetuity but a town at a construction site may be dismantled when the project is completed. A town at a mining site may be built and then abandoned after 15 or 20 years because the deposit of mineral value runs out, but the port built to export the material might still be in use because of other sites being operated by other companies.

Some infrastructure can be income generating for the government. If the government builds or owns the ports and the railways, these might be net revenue generating for the life of the economic activity or thereafter. Social infrastructure will not be net revenue generating and will require long-term maintenance and then replacement costs if they are of a permanent nature.

Most important from a natural resource revenue allocation perspective, the infrastructure may or may not be located where the economic activity is located. The mine may be in one jurisdiction, the roads and railways pass through several others and the port is in another. There are even examples of where the entry and infrastructure to an underground mine is in one jurisdiction but the resource is being taken from under another. How does the concept of 'origin' fit into these scenarios? If a fishery is operated in national as opposed to local waters<sup>5</sup>, the port and other facilities are obviously in a local government area, but where is the place of origin if that is to be used to distribute the revenue base?

*Ownership of the exploited resource.* Ownership of natural resources is subject to both tradition and law, depending on the nation and the culture. Even in a single nation, it can differ between resources and change over time. It can differ depending on whether the resources are on the land or below the soil and, if below the soil, it may depend on how deep they are located. Ownership can lie either with an individual or with a community. If a community, it may be the traditional indigenous landowners of the specific parcel of land, or a group of people less directly attached to that land. These may be the indigenous people of a wider area, or all the residents of a local municipal council, a province or the nation as a whole.

The issue of ownership very often creates problems in negotiations concerning natural resource revenue. Where it is based on law, ownership is seen as being 'dictated'

---

<sup>5</sup> In Australia at least, the rights to the sea and what lies under it are with the State for the first xx kilometres from the shore, then become central government assets. This creates some interesting agreements regarding off-shore oil reserves.

and people argue that culture and traditional aspects of ownership have been over-ridden. Where it is based on culture and ownership, there are often different views as to how these define the owner or owners, and there are expectations that the law will give clarity. This is not the paper to discuss these issues and we have assumed ownership is an accepted position.

So to what extent should the exploitation of the natural resource benefit those other than the owners of that resource? If a private individual or firm owns a mineral deposit (as against the rights to exploit it), is a government entitled to raise revenue from it through export charges or extra rail/road use charges etc? If an indigenous community or a community limited by a geographic boundary (a municipality) owns a resource, should the wider community also benefit from its exploitation?

*Impact on the environment.* Different types of natural resource activity also have different impacts on the environment that result in different levels and types of expense. Natural fisheries might have only environmental management costs but strip mining of bauxite will have wide-ranging costs of land reclamation and uranium mining may have very long-term costs associated with protection of the community from radio-active materials. Environmental costs can be incurred before, during and after the economically beneficial activity. They may be the responsibility of the company, the local government or the central government.

*International or national market.* Firms active in natural resource industries can operate in either a domestic or an international market. Those operating in a domestic market are much easier to manage as taxpayers, but is that market a local or a national market? Those operating in an international market are subject to much greater price volatility and can move profit from one nation to another to minimise tax payments. At what level of government are the taxpayers best managed?

Clearly, there are many ways we can look to classify natural resources and each has some relationship to the wider question of public sector revenue raising. No one way of looking at natural resources should take precedence over another, and their consideration should be combined with other variables that lead to the holistic environment on which revenue allocations might be decided.

### **Why raise revenue from natural resources?**

We need now to consider why taxes are raised from activities associated with natural resources. There seems to be three reasons.

*To cover public cost.* We have seen that there are likely to be some public costs associated with any economic activity exploiting natural resources. These can be either up-front one-off costs or continuing costs, but are likely to be a mixture of both, varying according to the activity of the firm. They can also be costs of the local government or the central government. They may be reduced by a 'construct and handover' agreement

with the firm or fully funded by the firm through user charges (such as port handling fees).

Whatever the arrangement, a jurisdiction should not be out-of-pocket because of infrastructure costs it incurs because of a natural resource activity in its area, unless for social or reasons it is prepared to subsidise the firm's activities. In some ways, this element of public sector revenue might be seen as being hypothecated. Ownership would seem to have little relevance to this aspect of the revenue allocation.

*To add to general revenue.* Natural resource revenues are more generally used simply as a supplement to unhypothecated general revenue used to fund the range of services a recipient government provides. This is where the ownership question becomes much more important because most such revenue is collected through some form of royalty. Who has the right to collect the royalties? Are royalties the equivalent to the sale of a capital asset by an owner? If we see them as the sale of an asset, what is the justification for governments, if not the owners, collecting taxes from natural resource activity through such means as railway and port user charges to achieve super-profits as an alternative to royalties?

Whatever means is used and with whatever justification, revenues from natural resources are very often (most often) seen as a source of general revenue.

*To fund specific objectives.* In some circumstances, natural resource revenues are used to fund specific services or types of infrastructure<sup>6</sup>. This hypothecation of the revenue seems to have some association with concepts of ownership, yet also some control by non-owners. It would be bad budget management and unlikely that a jurisdiction that owned the asset would want to hypothecate its revenue resulting from the sale. It is more likely that hypothecation, where practised, is imposed on the beneficiary jurisdiction by a more powerful (central) government. In these circumstances, it is also likely that the people that central government represents have less ownership connectivity with the resource.

In a sense, this is a subset of the general revenue reason for revenue raising as the fields of expenditure are very largely unrelated to the economic activity, and might be totally unrelated to it. The hypothecation is simply some authority's idea of where there is a need for public expenditure. It could be recurrent or capital expenditure and its distribution might be based on need or political considerations. Hypothecation is just another way of spending money that is received with strings attached – it owes the recipient nothing when it is received.

---

<sup>6</sup> In Columbia for example, oil royalties received by local governments must be used to fund priority projects in education, health, sewage systems and water supply.

## Revenue raising from natural resources

Like the time sequence of public expenses associated with the utilisation of a natural resource, there are also different possibilities in the time sequence of public sector revenue flows from natural resources. Depending on the arrangements between the producer and the government(s) concerned, it is possible to have an up-front payment and/or a payment over the period of the economic activity.

*Up-front payments.* An up-front fee is the equivalent to either the sale of an asset or the cashing out of a future revenue flow. Where it is a right to explore, for example, it is the sale of an asset that we can separate from a mineral deposit because the exhaustible asset has not yet been proven. A separate payment stream will flow from a second asset if a deposit is proven. An up-front receipt in these circumstances might be seen as a capital transaction rather than a recurrent revenue. If this is the case, it may need to be treated differently when measuring revenue capacity in a fiscal equalisation calculation. If an up-front payment is agreed to be in lieu of a future cash flow, it is less likely to be seen as a capital transaction but may again have implications for the measurement of revenue raising capacity. Should it be seen as a capacity that existed in one year, or a capacity that should notionally be distributed over many years - the period of future cash flow to which it is equated?

*Rent income.* There are many different and acceptable means by which annual revenues can be gained from the utilisation of natural resources<sup>7</sup>. In general, these payments are based on either the annual value, value added or volume of production of the enterprise; or the profitability of the enterprise. Whatever base is used, it results in the receipt of a recurrent revenue stream over a period of years. The size and variability of the income stream will depend on the tax system, the volatility of costs and the price for the commodity, and the firm may not be profitable in some years, but it must be assumed that there will be some public revenue flow for some part of the period of operation of the firm.

## The allocation of the revenue

So what call do local governments have on the receipt of natural resource revenues? In economic terms, it is logical that at least some of the revenue should attach itself to whatever unit(s) of government have or need to undertake expenditure as a result of the activity. Some revenue should therefore flow to local government if it incurs expense, which is very likely because of its usual infrastructure responsibilities. The recipient local government units may extend beyond the jurisdiction of origin of the resource, and the payment may logically be either an up-front payment or a revenue stream depending on the mix of capital and recurrent expenditure undertaken by the council(s). Recurrent expenditure by government may be limited to the period of the activity or may extend beyond that period. The need for up-front expenses may even dictate the structure of the revenue stream governments negotiate with the firm.

---

<sup>7</sup> Brosio, G, 2004 discusses these matters very thoroughly.

There is no doubt that if a local government incurs expense because of the exploitation of a natural resource, it is entitled to at least the value of that expense. And this also applies for the central government. In some ways, the income flow needed to cover public sector costs can be seen as hypothecated income.

If a local government owns the assets being exploited, there is also a strong argument that it should receive some additional compensation, but that does not mean that other jurisdictions should receive no benefit. The absolute volume of royalties can, as we know, be so large and so limited in its spatial distribution if based solely on the place of origin that it can be detrimental to national economic efficiency and create unwanted inequalities of opportunity or differences in service delivery standards. National unity and internal security may be enhanced if the distribution is somewhat wider than a strict origin basis. Nevertheless, there are mechanisms within an equalisation system that will allow all the revenue to go to the place of origin and still not create the unwanted side effects. These are discussed later in the paper.

If the nation rather than a local council owns the assets, it is difficult to see that the area of origin has a greater claim to a share of the excess (non-hypothecated) royalties than any other jurisdiction in the nation.

But these conclusions say nothing about what level of government should be responsible for setting the royalty rate and collecting the revenue from the firm.

There seems no reason why the management of the public sector revenue collection should attach itself to the concept of ownership. It is also clear that central governments will have a greater capacity to deal appropriately with more complex royalty schemes and more complex industrial circumstances. They will allow less opportunity for cross-border 'loss' of capacity through firms moving their profit to lower taxing jurisdictions, and thus increase the chances of the firm's revenue contribution being higher. They are also in a better position to audit the firm's revenue returns and arrange the distribution between jurisdictions as agreed.

Natural resource companies operate in an international environment and their cost structures, including tax imposts, therefore have to be seen in that light. Usually, international trade is a central government rather than local government function and it would seem logical to have the setting of resource royalty rates done by the same level of government that handles international trade relations for the nation. The volatility of natural resource revenue and the central government's larger budget capacity to even out the impact of this volatility is a further reason why it is probably best for a higher level of government to manage natural resource revenue collection.

### **Natural resource utilisation and fiscal equalisation**

We showed earlier that fiscal equalisation is about the equal provision of services by governments at the same level. We have also seen that the utilisation of natural resources has an expenditure (service provision) aspect to it as well as a revenue

perspective and that councils will most likely have different expenditure needs associated with natural resources as well as different revenue capacities arising from their use. We now need to consider how these dual impacts of natural resource utilisation might be handled in the calculations associated with fiscal equalisation.

In its most basic form, the budget equation lying behind an equalisation grant formula might be expressed as:

$$E = R + G, \text{ where}$$

- E is the level expenditure in a council that will enable it to provide the same level of services as all other councils;
- R is the own-source revenue capacity of the council; and
- G is the grant the council needs to equalise its capacity to provide the services.

In the case of natural resource activities, we have an impact on both sides of this equalisation budget. If we make equalisation calculations on one side of it only, we are implicitly making an assumption about the equalisation situation on the other side - we are implying there are no differences in the impact natural resources have on councils in that part of their budget. Thus, an assessment of councils' different capacities to raise revenue is an implicit acceptance that natural resources will also have different impacts on their service provision demand and cost. Logically, therefore, we should do an assessment on both sides of the budget.

*The revenue assessments.* The revenue assessments are influenced greatly by both the pattern and type of revenue flow, as well as the way revenue bases are measured. Assuming councils collect at least some of the revenue, the first issue is whether they collect it as an up-front payment or not.

If the revenue is an up-front amount, we need to consider whether or not it is a capital receipt. In general, capital transactions on both sides of the budget are excluded from equalisation assessments. Equalisation has been seen as relating to recurrent expenses (services) and recurrent revenues. In recent times, Australia has included capital needs in the process but it has developed a very complicated procedure that is extremely intensive in its data requirements.

For simplicity, we might best assume that capital transactions are not included in the equalisation calculations. But like any such assumption, we should make it only with a full understanding of what it is implying. Here, the assumptions are either: that there are no differences in councils' capacities to raise capital revenue or need for capital expenditure; or that in every council's case, the ability to raise capital revenue matches their need for capital expenditure. Neither of these assumptions is likely to be correct but that does not prevent governments from deciding that equalisation should only apply to recurrent transactions.

If the revenue is up-front but in lieu of a future cash stream, it is much more likely to be seen as recurrent revenue. The question then is whether or not to notionally spread it over the relevant period when undertaking assessment calculations. Is it a revenue raising capacity that exists only in the year in which the lump sum is received, or does part of the cash relate to capacity in future years? If this pattern of revenue flow is intended to match capital expenditure requirements associated with the start of a project, should the 'recurrent' lump sum revenue be seen as capital anyway because it is being used to fund capital infrastructure expenditure?

Clearly, these decisions must be taken on a case-by-case basis. Assuming a need to measure councils' capacities on an annual basis, however, there are still some important issues to consider.

Across a nation, there are usually many different natural resources being utilised and many different bases on which royalties are paid. The most common bases on which payments are made are volume of production, value of production and profit, but combinations of these and others are also used. Some councils will use only one of the common bases, others might use all three. Some councils will have no natural resources at all. How should the assessments be handled? Should all minerals (and oil) be combined or should there be a separate assessment for each type of resource? How should the revenue base or bases be measured?

If the revenue base is to be determined by examining the usual practice of the councils, it will be tempting to look at how royalties are based in each industry and split the assessment of minerals and oil revenue up to match the different bases. Royalties on coal might usually be based on volume of production. Royalties on iron ore might always be based on value. This degree of disaggregation of the assessment is possible but can lead to many problems. Do we really need a separate assessment for each of, say, the 25 minerals found in a nation, when no council has more than three? What do we do where one council uses a different base for its coal royalties, or half the councils that have coal use value rather than volume. What do we do if only one council has a certain mineral? Can we get all the data we need to get each of the assessments on a comparable base – councils using a volume base may have no data on value, etc etc?

What might be found best to do is to combine all the minerals and oil assessments into one. Based on an assumption that it is ultimately the net income (or profit) flow to the mining industry that is being used as the revenue base, the mix of the revenue bases actually used for different minerals (or even firms) becomes irrelevant. If data are available on the mining industry's input to GST, these can be used as a proxy to do an overall assessment of the capacity of the sector to contribute to public revenue.

The capacity of the sector to contribute to public revenue, and the capacity of the councils to impose and collect royalties, may not be the same<sup>8</sup> but to assume so is a beneficial simplification of the process and can give acceptable results. It does not,

---

<sup>8</sup> These might differ because of structural differences within the mining industry in different localities, the laws relating to royalties and nationally accepted practices that result in some sectors of the mining industry being expected to make a lower contribution than others.

however, overcome the problems arising from a very uneven distribution of this revenue base across jurisdictions, especially if all the revenue is provided to local government.

An uneven distribution of revenue from natural resources can be overcome by an equalisation system if the pool of funds available for redistribution is large enough or if the differences in capacity, even if large, are not a large contributor to total differences in revenue capacity. In Australia, for example, the mining sector is only 12 per cent of States' own-source revenue but the assessment has a larger redistributive effect<sup>9</sup> than any other single category of either revenue or expenditure. The overall size of the equalisation pool, however, allows all these capacity differences to be overcome. If it were much more than the 12 per cent of States' total own-source revenue, it would create more difficulties.

In Canada, that is not the case because it is an open system and the central government funds the amount necessary to achieve equalisation. The increase in oil production and prices over time has resulted in changes to the system to redefine the objective, lower the standard and reduce the extent to which equalisation is achieved.

*The expenditure assessments.* Based on our earlier assumption, capital expenditure by local government can be omitted from the expenditure assessments. If, however, the expenditure is recurrent in nature, it should be included somewhere in the scope of expenditure assessments. Such recurrent expenditure might directly relate to the mining activity and cover debt charges for publicly-owned economic infrastructure, roads maintenance and environmental management; or it might only be indirectly related to the activity and relate to such things as the running of schools and hospitals. The assessments for all these functions of government, if they are identifiable, will need to take account of whether differences in States' needs arise because of mining sector activity.

Where there are no expenditure assessments in the equalisation system, it is clearly inequitable to include all the natural resource revenue base in the assessments if we know that some of it has to be spent on activities associated with developing the revenue base. It might be seen in this guise as an investment and the net revenue (and revenue base) be included in the assessments of States' capacities. In this way, the States are funded to cover their costs and only the surplus revenue is brought into the assessment.

---

<sup>9</sup> In 2002-03, the ACT had no revenue raising capacity, and the other States varied between 390 per cent above the national average capacity to 95 per cent below that average. Commonwealth Grants Commission, Report on State Revenue Sharing Relativities, 2004, Review, Supporting Information, p213.

## **4. Conclusion**

Shared revenues and revenues from natural resources are important considerations in the design of intergovernmental fiscal relations. They are often some of the largest revenue sources allocated to local government and are often distributed on an 'origins' basis. This results in a very uneven distribution of fiscal capacity between jurisdictions.

This paper has shown that there are many important considerations in deciding issues of revenue sharing and what level of government should have the rights to collect natural resources revenues. It has shown the interrelationships between the policies designed to influence the size of the VFI and the decision on the extent of HFE that is to be achieved (or is achievable) by the redistribution to local government.

Shared revenue arrangements should be formalised in a written agreement that gives all parties at each level the same rights and obligations. The agreement should specify exactly what is being shared, what rights to decide tax rates and exemptions each party has, how collections are to be handled, how and when payments are to be made, and many other issues.

Revenue from natural resources are often considered suitable for sharing. To the extent that they are needed to fund expenditures associated with the economic activity, there is some justification for this. Their impact on HFE assessments is very different to other shared revenues because of the 'investment' expenses associated with them. They also pose much more difficult problems when the revenue capacity is being measured.

'Full' equalisation can be achieved in an environment of revenue sharing where local councils collect all the natural resource revenues. This achievement can only occur, however, if the size of the redistributive pool is large enough and/or the differences in capacity to raise revenue from natural resources are not very large.

The over-riding issue, however, is that governments can (and do) have different policies operating in parallel and should be aware of the repercussions of one for the other. The policy instruments used to overcome VFI have easily measurable impacts as against that objective. They do, however, often make the achievement of HFE more difficult. Policy makers need to be aware of this inter-relationship before any decisions are taken and, preferably, should design an overall fiscal transfer system covering both VFI and HFE, thus maximising the chance of both objectives being achieved. .