

# RESOURCE RENT TAXATION–THEORY AND EXPERIENCE

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# Resource Rent Taxation – theory and experience<sup>1</sup>

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## Abstract

Resource rent taxation is topical again – it first featured prominently in discussion of resource tax policy in the 1970s. The context for renewed interest in resource rent taxation is debate over how best to share the spoils of the latest extractive industries boom. Sharing of these spoils is frequently characterized by brinkmanship between host countries and industry, resulting in heightened uncertainty and possible constraints on investment in resources in the longer term. The challenge that fiscal policy must address is how to optimize revenue from a heterogeneous resource endowment amid economic uncertainty and without resort to brinkmanship. Fiscal flexibility, employing progressive taxes, offers a more orderly and predictable basis to re-allocate benefits between host countries and industry when economic circumstances change. Progressive taxes that target resource rent should, in principle, maximize resource revenue by both optimizing resource exploitation generally and optimizing the rent available from individual resource projects.

Many taxes have been designed to target resource rent capture with various degrees of accuracy. The case for resource rent taxation is based on it being the most accurate of all progressive taxes in capturing resource rent. Host countries must balance these advantages against the fiscal risks associated with different types of taxes and the resources needed to assure their effective tax administration. Experience shows that pure resource rent taxation may impose an unacceptable level of fiscal risk on the host country – at best resource rent taxes have been combined with other tax instruments. Several other resource rent taxation issues arise; can the investor's required rate of return be determined reliably; how much of the resource rent should be taxed; how should tax thresholds and tax rates be set; will tax be creditable? Resource rent taxation also has a reputation for administrative complexity, which may weigh against it. A resource rent tax is one among several available instruments to capture resource rent – whether it is the best available option depends on an assessment of revenue potential, fiscal risk and administrative costs associated with its use. In any event, the advantage that all such instruments have over regressive and unsustainable fiscal regimes is the ability to avoid damaging brinkmanship.

## Introduction

Resource rent taxation (“RRT”) is topical again – it first featured prominently in discussion of resource tax policy in the 1970s. Now, as then, host governments face the challenge of how to tax an industry that is characterized by the variable quality of resource endowments and economic conditions for exploiting petroleum and mineral deposits that are unpredictable. The knowledge that higher quality deposits may generate substantial resource rents, particularly at times of elevated commodity prices, leads to a focus on how the tax system can be designed so as to capture resource rents, while

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maintaining the incentives that assure that investors will deploy capital to undertake the risky business of finding and exploring petroleum and mineral deposits. Achieving this balance by using the right kinds of tax instruments is the topic covered in this paper.

## Sharing the Spoils of Resource Exploitation

The paper begins by examining the response of host countries and investors to changes in the economic circumstances in the extractive industries, highlighting past and recent episodes in which many governments sought a “fairer” share of the financial benefits through the tax system during a commodities boom.

The development of resource rent taxation concepts and of specific tax instruments is associated with the commodities boom of the 1970s. This was a period of significant re-ordering of ownership and control in the extractive industries by assertive host countries. The design of the first resource rent taxes is closely associated with tax policy in newly independent Papua New Guinea. The world class Panguna gold-copper mine was much richer than predicted and prices for these two commodities exploded in the early 1970s. The fiscal terms in the original negotiated agreement anticipated neither development and left the Independence Government with a low and declining share of the bonanza.<sup>3</sup>

The conclusion reached then was that the investor would not walk away from a world-class deposit so long as it was able to recover all its costs and earn a rate of return sufficient to justify having made the investment. The fiscal terms were changed (by renegotiation) to achieve this effect.<sup>4</sup> Later the same principles were applied to design a fiscal regime for future resource projects in PNG – one that would seek to both attract new investment and capture a large share of any future bonanzas.<sup>5</sup>

The capture of potentially large resource rent also motivated changes to the United Kingdom’s petroleum tax policy at about the same time. In 1975 the UK Government imposed the Petroleum Revenue Tax, a supplementary tax designed to target high profits generated by some very big oil finds in the wake of the first OPEC oil price shock.

The theoretical underpinnings for RRT were to be developed in a wealth of economic writing, exemplified by the work of Garnaut and Clunies Ross. Their 1975 publication “*Uncertainty, Risk Aversion and the Taxing of Natural Resource Projects*” is still widely regarded as the primary source in this area. Later, this paper will explain the principal theoretical tenets of RRT.

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<sup>3</sup> The agreement with Bougainville Copper Limited in 1969 provided for a three-year tax holiday, indefinite shielding of 20 percent of the company’s income from any tax liability and generous capital allowances.

<sup>4</sup> The re-negotiated terms included an arrangement under which that part of income in any tax year that exceeded a 15 percent return on the capital base would be taxed at 70 percent compared to the then standard rate of 33 1/3<sup>rd</sup> percent.

<sup>5</sup> The PNG fiscal regime featured the Additional Profits Tax under which the after-tax profits of mines (and later oilfields) would be subject to additional taxation once a specified rate of return had been exceeded. Details are provided in Table 2 of the paper.

The context for renewed interest in RRT is the debate over how best to share the spoils of the latest extractive industries boom between host governments and industry. The boom has been principally price driven, since it is associated with relatively small changes in volumes. This has resulted in a particular focus, particularly in public debate, on price-driven windfalls.

The experience for many host governments in recent times has been that as company earnings have grown dramatically, the growth of their own revenues from the extractive industries has lagged well behind and fallen as a proportion of overall profitability (a reduced fiscal “take”). The reason for this, at least in part, is the predominance of regressive fiscal regimes designed in the 1980s and 1990s. Common features of these fiscal regimes had included low royalties and flat rate income taxation combined with generous allowances (accelerated depreciation and investment uplifts). In the mining industry, many governments had also offered tax holidays in the depths of depression in the sector, backed by stabilization agreements. In the oil industry, the prevalence of volume rather than profit-based production sharing, coupled with generous cost recovery provisions to lure investors, entailed limited government sharing in any price escalation. Some of these arrangements have been particularly ill-suited to the changed economic circumstances of the last few years.

In addition, host governments know that windfall taxes are now on the political agenda in some home countries (US, UK, Australia). If introduced, these would capture profits otherwise taxable in the host countries, an outcome that would be especially hard to accept.

Given this background, numerous host countries have been trying to tax the windfalls of incumbents and imposing tougher entry terms for newcomers. This has been coupled with increasing nationalizations and the denial of direct access by the private sector to valuable resource deposits.

For the most part host governments have sought to “re-balance” existing fiscal regimes by renegotiation, using the threat of unilateral action when credible. Some others have preferred, or felt compelled, simply to present a “take it or leave it” proposition to resource companies, calculating that their enhanced bargaining strength gives them such latitude.

The reaction of industry has varied. Incumbents, with immovable productive assets and sunk investment costs can opt to pack up and go, or dispute their fiscal treatment hoping to obtain compensation, or they can renegotiate and settle. There are examples of each of these, though relatively cases exist of the first option.<sup>6</sup> For newcomers the choices are

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<sup>6</sup> When in 200x, the Government of Venezuela increased tax rates and lifted state participation to a controlling interest in the heavy oil projects of the Orinoco, ExxonMobil and ConocoPhillips opted to withdraw from existing investments and filed legal claims for restitution and compensation. Others, such as ENI opted instead to renegotiate their financial positions while retaining a continuing commitment to their projects.

different. In the short term some are faced by the challenge that with so many host countries tightening their terms, there may be few better opportunities.

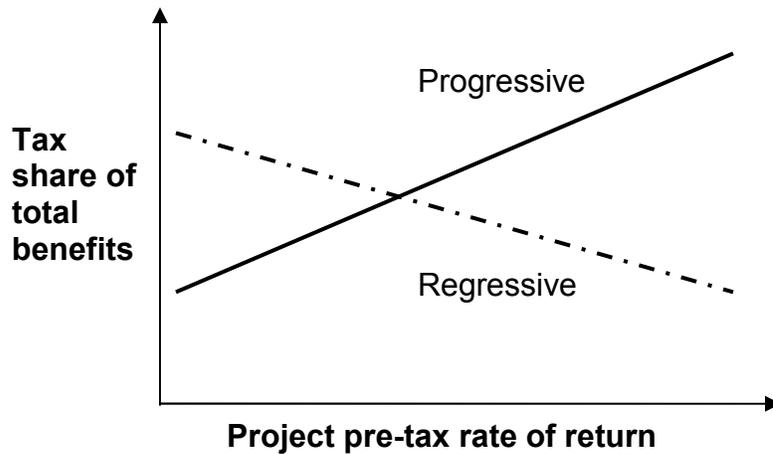
The full deterrent effects of the current spate of renegotiations and unilaterally imposed fiscal changes on new investment may take time to show, however. Although the run up in commodity prices has indeed resulted in significant short-term profit growth, recent price declines across a range of commodities, especially some metallic minerals, may signal difficulties ahead, especially so because of spiraling input costs and a lack of access to easy-to-develop resources. The long-term commodity price levels now needed to justify significant resource investments have escalated markedly. Moreover, the type of brinkmanship that is taking place between host countries and industry is resulting in an increasingly uncertain investment environment. It may be too early to say for certain but there is the possibility that in global terms such an environment could seriously constrain investment flows into the extractive industries over the longer term.

Host countries and the extractive industries should be able to re-allocate benefits between them without resort to the kind of brinkmanship taking place today. After all, variable rent potential and commodity price volatility have been known phenomena for decades. What might be the solutions to this challenge?

It might be argued that what is needed is better foresight, so that fiscal terms can be better tailored to the technical and economic conditions that will prevail during the lifetime of a resource project. This is, in effect, what the government and investor attempt to do in a specific project negotiation over fiscal terms. Experience suggests, however, that any such attempts to forecast the full range of possible economic outcomes over the lifetime of a project are fallible. Moreover, with any information asymmetry between the parties more often than not disadvantaging the host country, the outcome of reliance on forecasts is likely either to favor the investor or prevent the parties from reaching an agreement.

The parties could accept the inevitability of changing economic circumstances and the fallibility of forecasts and opt instead to agree to re-negotiate terms to re-balance fiscal terms that cease to be balanced. But on what basis can such agreement be based? A provision requiring the parties to review the fiscal terms of an agreement after a specified period, say five years, provides no assurance that at such time the parties will accept the case for a change of terms or that, while accepting that circumstances have changed, they can reach agreement on what changes to make to the original terms.

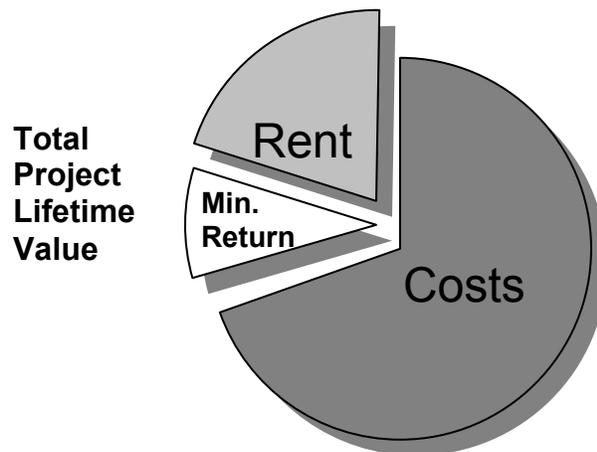
If, however, fiscal flexibility can be built into the design of a fiscal regime up front so that financial benefits are reallocated on an agreed basis if and when economic circumstances change, this would surely be preferable to either of the aforementioned options. Such fiscal flexibility can be provided by progressive taxation under which the share of total benefits are reallocated progressively in favor of the host country as the overall value of benefits increases. It is precisely the opposite of what happens when a fiscal regime is regressive. The distinction is illustrated in Diagram 1.

**Diagram 1: Progressive and Regressive Taxation**

To explore further what types of tax are appropriate to achieve fiscal flexibility, the paper examines more closely the concept of resource rent.

### Resource Rent

The classic definition of resource rent is the excess of the total project lifetime value arising from the exploitation of a deposit over the sum of all costs of exploitation including the compensation to all factors of production.<sup>7</sup> The latter includes the minimum return on capital required by the investor. Resource rent is depicted in Diagram 2. A compensatory return on capital would consist of a basic return equivalent to the rate of interest on risk-free long term borrowing plus a margin the investor considers necessary to compensate for the technical, commercial and political risks associated with a particular investment.

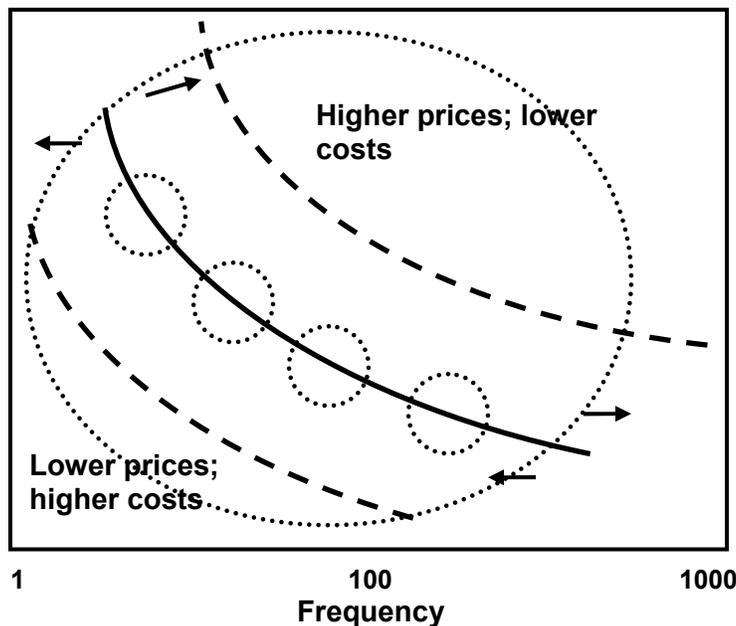
**Diagram 2: Resource Rent**

<sup>7</sup> Costs are expenditures on all inputs necessary to bring a mineral or petroleum deposit into production and exploit it until closure.

The resource rent potential of a resource deposits varies as a function of their quality. In the case of mineral deposits among the key determinants of quality are ore tonnages, mineral grades, rate of recovery of ore from a deposit taking into account dilution, the efficiency of ore extraction methods and the efficiency with which a saleable mineral product is obtained from the ore (e.g. metallurgical recovery rates). In the case of oil deposits some of the key factors are the size of recoverable reserves, the quality of the oil, the pressure of the reservoir, the efficiency of the oil extraction methods and the degree of processing necessary achieve a saleable product.

The resource endowment in any country comprises a distribution of high and low quality deposits, with the distribution skewed heavily towards lower than average quality. This is depicted in Diagram 3 showing a hypothetical distribution of resource deposits by frequency along the x-axis and by rent potential along the y-axis and represented by the solid line marked A.

**Diagram 3: Taxing a Heterogeneous Resource Endowment in Conditions of Economic Uncertainty**



The distribution is not static, however. At any point in time prevailing prices for resources and the costs of producing and marketing resources go up or down, affecting the rent potential of all deposits. Such changes are represented by the two dashed lines, one marked B and representing the impact of higher prices and/or lower costs and another, marked C, representing the impact of lower prices and/or higher costs.

Ideally, the sharing of resource rents should take into account the distribution of deposits and the dynamic character of this distribution with respect to prices and costs. Does it follow therefore that each deposit should have its own fiscal regime? This would lead to

multiple fiscal regimes, each one tailored to the specific techno-economic characteristics of the deposit. Although this is, in effect, what is frequently attempted when fiscal terms are negotiated at individual project level, the very dynamic and uncertain nature of the techno-economic environment for resource extraction defies such close tailoring of fiscal regimes. The outcome will, with rare exceptions, be a call by one or other of the parties to renegotiate the terms to adjust to unforeseen changes in techno-economic circumstances over the project lifetime.

If as an alternative, one is to prescribe a single fiscal regime, rather than multiple regimes, should the fiscal regime target only high potential deposits? Or, should the fiscal regime target only the average potential deposit? Finally, can a single fiscal regime be sufficiently flexible to accommodate all deposits and all eventualities over time? A flexible fiscal regime that employs progressive taxation is more likely to accommodate wide range of possible outcomes than one that is rigid and regressive.

The principle underlying resource rent taxation is to tax only the rent and leave alone the return required by the investor to undertake an investment. This should not, in principle, distort investment decisions, in so far as it should not alter the pre-tax merits of an investment. Thus, RRT is a neutral tax.

Under the definition of resource rent, a decrease in the risk associated with an investment by the investor would, *ipso facto*, reduce the minimum required return to undertake an investment and thereby increase the resource rent potential of the deposit. The opposite holds true as well. In this context, brinkmanship of the type described earlier in the paper would have the effect of increasing risk and therefore reducing rent potential. By comparison, fiscal flexibility using progressive taxation removes the need to re-negotiate periodically or override existing fiscal arrangements. The ability to automatically adjust fiscal terms provides a more orderly and predictable fiscal environment in which to undertake investment. It follows that this will increase rent available from the resource endowment in the country.

It also follows that the lower the compensation sought by an investor for risk, the greater will be the number of projects undertaken. Thus, progressive taxation should, in principle, maximize resource rent potential both by increasing the number of resource deposits exploited and increasing the rent available from each. This is equivalent to an upward shift in the solid line in Diagram 3.

## Rent Capture

To re-iterate, the objective of resource rent taxation is to capture rent while leaving to the investor at least the minimum required return on investment. But it is far easier to state this objective than it is to design taxes that can do this.

Many taxes have been designed to achieve resource rent capture with various degrees of accuracy. Table 1 presents a classification of tax instruments that have been designed, at least in part, with rent capture in mind. Taxes are classified in terms of whether revenues

or profits are taxed and by the base or trigger used to impose the tax. The order in which the taxes are presented in the table corresponds approximately to the degree of accuracy with which they can be expected to capture rent. In economic terms accuracy corresponds to efficiency and neutrality.

**Table 1: Classification of Rent Capture Taxes**

<b>Taxes on ...</b>	<b>Basis for tax rate ...</b>
<b>Revenues</b>	<b>Price level</b> <ul style="list-style-type: none"> <li>China – oil sales taxed at 20% once oil price &gt; \$40/bbl rising to 40% &gt; \$60/bbl</li> <li>Zambia – copper sales taxed at 25% once copper price &gt; \$2.50/lb rising to 75% &gt; \$3.50/lb</li> </ul>
	<b>Period</b> <ul style="list-style-type: none"> <li>New South Wales – oil sales taxed at 6% starting in year 6 and rising by 1% to 10% in year 10</li> </ul>
<b>Profits</b>	<b>Price level</b> <ul style="list-style-type: none"> <li>Alaska – oil profits taxed at 25% until oil price exceeds \$30/bbl, thereafter rising by 0.4% for every \$1/bbl &gt; \$30/bbl</li> </ul>
	<b>Output level</b> <ul style="list-style-type: none"> <li>Uganda – company share of profit oil is 50% @ low output falling to 15% @ high output</li> </ul>
	<b>Annual profit margin</b> <ul style="list-style-type: none"> <li>Botswana – mine profits taxed at the higher of 25% or <math>70-1500/x</math>, where <math>x</math> (%) = taxable income/gross income</li> </ul>
	<b>Annual return on capital</b> <ul style="list-style-type: none"> <li>Olympic Dam copper-uranium mine – after-tax profits taxed at 0% to 15% depending on return on capital employed in that tax year</li> <li>Bougainville copper-gold mine – after-tax profits taxed at 70% once return on capital base exceeds 15%</li> </ul>
	<b>Project rate of return (Resource Rent Tax)</b> <ul style="list-style-type: none"> <li>Timor Leste RRT – pre-tax oil profits taxed at 22.5% once project IRR &gt; 16.5%</li> <li>India - company share of profit oil is <math>x\%</math> @ <math>IM &lt; 1.5</math> falling to <math>y\%</math> @ <math>IM &gt; 3.5</math>, where <math>IM</math> = ratio of cumulative Net Income to Total Investment</li> </ul>

A number of taxes are employed in which the tax rate rises as a function of price alone. The rationale for a price-based royalty or windfall tax is that price movements are normally associated with changes in profitability. This disregards the impact of changes in output and costs on profitability. Prices might rise, but if unit costs have also risen, the profits generated on a pre-tax basis may have remained the same or fallen and yet tax would be payable at a higher rate. This approach is an inaccurate way to capture resource rent which will lead to distortion.

A more accurate way to capture resource rent is to make tax rates a function of the profitability actually achieved. This requires that profits be defined and tax rates linked to changes in such profits. As illustrated in Table 1, there are a number of ways to do this. Profits can be measured on an annual basis or on a cumulative basis. In the former case profits achieved in any year can be measured by reference to short-term costs (operating

margin) or capital employed. Although more accurate than price-based taxes, taxes linked to profits generated in a particular year will not necessarily correspond exactly to the return achieved by an investor on the investment.

The most accurate way to capture resource rent is to directly link tax rates to the return on investment achieved by the investor. As illustrated in Table 1, Timor Leste's Supplemental Petroleum Tax is structured this way and is typical of a Resource Rent Tax. Its key features are that:

- the tax base is the resource project (i.e. fully ring-fenced);
- a threshold rate of return on investment (16.5 percent) at which RRT would apply;
- a specified rate (22.5 percent) that is applied to net profits.

This type of arrangement can be replicated in production sharing by allocating all production to the oil company until full recovery of costs plus a cost uplift corresponding to the 16.5 percent threshold and then allocating 22.5 percent of any profit oil to the company. An equivalent approach, illustrated by India's production sharing contract, is to set an investment multiple as the threshold at which profits are taxed at a higher rate. In other production sharing regimes, this threshold is more commonly called an "R" factor, referring to "ratio".

Further examples of resource rent taxes are shown in Annex 1.

## **Fiscal Risk**

The ability to capture resource rent is, for the reasons explained, an important fiscal policy objective. However, any host country must balance this objective against fiscal risks that may be associated with the types of taxes used. By fiscal risk, the paper refers to a number of uncertain outcomes which a government might face by adopting one or another tax. These include the risk of absolute financial loss, which would arise if public funds were to be invested in a resource venture, such as in the case of state equity participation (in lieu of or in addition to tax) on a working interest basis. Another risk is of revenue foregone, which would arise if the promise of tax revenues were to be traded-off for another objective. An example of this might be an exemption or other form of tax relief granted in the expectation that this would result in an equivalent of greater economic benefit (perhaps through employment, local sourcing or value-addition).

Then there are risks associated with uncertain revenue flows associated with the types of taxes used, with respect to their timing, magnitude and volatility. Such uncertainties present revenue management challenges to a government. In so far as a tax is pro-cyclical, that is to say, it tends not only to replicate cycles in economic circumstances but to amplify the revenue effects of this, it will lead to even higher degrees of volatility than would otherwise be the case. Volatile revenues must be suitably managed by the government.

The tolerance that any host government has for such risk varies from one case to another. The preference for revenue sooner rather than later is represented by the discount rate on public funds. This could be high in a cash-strapped developing country, where tax revenues today are worth significantly more than an equal amount of revenue some years in the future.

Another influence on a government's tolerance for fiscal risk, is the diversity of revenue sources available to the government. Few developing countries have diversified portfolios of resource projects (i.e. numerous projects at differing states of maturity) that would help mitigate fiscal risk. There are, in fact, many cases in which a country's financial fortunes will actually hinge on one or very few projects, thereby amplifying the fiscal risks faced by the government. Examples include Ghana's Jubilee oil field, set to come into production in 2010 and Malawi's Keyelekera uranium mine that will be commissioned in January 2009. In each case, there are expectations of a step change in government revenues.

Fiscal risk might thus play an important role in determining the fiscal policy stance that a government wishes to take and influence the selection of particular tax instruments.

### **Administrative Burden**

It is not the purpose of this paper to examine the challenges of tax administration in any depth since this topic is covered extensively in other papers in this collection. But it will be evident that any fiscal policy must take into account the likely burden that administering the fiscal regime will place on government institutions. In particular, a government would be concerned if the human and financial resources necessary to assure effective tax administration could not be counted upon.

Factors to consider will include the variety of fiscal regimes which the government institutions have to administer, the number of individual tax instruments that are used and the complexity of each instrument.

A government will also be concerned to minimize tax leakage arising from a lack of capacity to employ suitable safeguards against tax avoidance by tax payers. In this respect, tax instruments need to be evaluated in terms of the propensity for tax avoidance by means such as manipulation of data used to assess tax liabilities, such as the volumes and values of products sold and the costs incurred and claimed by the tax payer.

This can have important implications for the selection of tax instruments. For example, a windfall tax on oil sales that is imposed when the international price of oil exceeds a specified level, presents rather fewer opportunities for avoidance than a profits-based tax in which all data upon which tax assessment depends are, in principle, open to manipulation. At the very least, significant reliance has to be placed upon the audit function in the latter case so as to verify the basis for tax returns filed with the tax authorities.

## Experience with Resource Rent Taxes

Having discussed the theoretical tenets upon which RRT is based and identified factors that might influence the selection of tax instruments, the paper now examines some experiences in using RRT. This is done by posing a series of questions about the design of RRT.

### *Has any country used a pure RRT?*

In practice, there are no examples of RRT being used on its own. Were pure RRT to be used by a host country the government would be likely to experience the following. There would be no tax receipts for projects failing to achieve the threshold rate of return; tax receipts on any project exceeding the threshold would be delayed until an uncertain point in the future, possibly several years after the start of production. Moreover, the RRT would be pro-cyclical, amplifying the revenue effects of higher and lower profitability. This would introduce heightened volatility into future revenue flows.

Experience would appear to show that “pure” resource rent taxation may impose an unacceptable level of fiscal risk on the host country. In practice, RRT has always been imposed together with other taxes to offset these disadvantages. Thus, typically in a royalty/tax regime RRT is combined with royalty and corporation tax, either as a final tax or as supplementary levy on pre-tax income, payments of which would be deductible for corporation tax purposes. The effect is that the government receives some revenue before the project reaches the point at which RRT is imposed.

Experience with production sharing regimes is similar. There are very few petroleum fiscal regimes that allow full cost recovery to take place before the government receives any share of production.<sup>8</sup> Cost recovery ceilings assure that host countries normally retain a share of production which the company is not entitled to use for cost recovery purposes. The effect is rather similar to imposing a royalty.

### *Can the investor’s required rate of return be determined reliably?*

Key to designing a RRT is to determine the threshold at which RRT will be come payable. Under resource rent taxation theory the threshold should be no lower than the investor’s minimum required return on investment. This minimum is not fixed, however, but varies in relation to the prevailing cost of capital at any point in time and expectations about the financial outcome of exploiting different deposits. Whereas the prevailing cost of capital can be derived from the international capital markets, the risk premium attached to particular investments is much more difficult to determine. In principle, the risk premium should be no higher than that required by investors on comparable

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<sup>8</sup> One of the criticisms leveled against the production sharing contracts negotiated in Russia in the early 1990s is that they allow 100% of oil (net of a modest royalty) to be allocated to the oil company to recover costs and only after all costs are recovered will the state and the oil company share the remaining “profit” oil. As the capital costs of developing oilfields in Sakhalin have escalated, the Russian authorities have become increasingly disillusioned with production sharing contracts structured on this basis.

investments in the host country. However, since deposits are few in number, vary in quality and because returns vary temporally, finding such benchmarks is very hard. Surveys of investor expectations even at a particular point in time have demonstrated wide variation by type of company and type of investment.

The table in Annex 1 shows the thresholds at which tax is imposed in a number of RRT arrangements. The two main approaches are to either define the threshold as a fixed percentage in nominal or real terms or as a fixed margin over a specified reference bond rate or long term debt rate (which changes annually). These display a range of between 11 percent (Australia) and 25 percent (Ghana).

### *How much of the resource rent should be taxed?*

Even assuming it were possible to determine reliably the minimum rate of a return that an investor would require in order to make a particular investment, there arises the issue of how much of the profits exceeding the threshold for RRT should be taxed? In particular, can RRT distinguish between true resource rents and efficiency gains that result from the skills and know how of the particular investor?

Industry has contended and most governments have recognized that excessive capture of rent could remove any incentives for companies to innovate and become more efficient. For example, a 100% RRT rate would cap the return that can be achieved at the RRT threshold rate and allow no incremental return above this level. This approach is used in regulating some utility industries (e.g. power and water), where the regulator is interested in limiting the exercise of natural monopoly to generate scarcity rents with respect to a public good. However, this approach is generally acknowledged not to be suited to the resource industries.

The table in Annex 1 shows the rates at which tax is imposed in a number of RRT arrangements. This shows that, in practice, RRT rates in fact are set below 50 percent in all cases.

Moreover, as in any fiscal regime, tax payer behavior is influenced by marginal tax rates. If the marginal tax rate is too high it may create incentives for tax avoidance. One of the ways to do this is to spend excessively in order to avoid altogether or to defer the time at which a higher tax rate is imposed. This behavior, known as gold-plating, can be expected to happen where the marginal tax rate exceeds the . These conditions are only likely to be satisfied, in the case of RRT, where the RRT rate is set at a punitive rate.

As already mentioned, RRT rates in practice are not set at such severe levels. Some RRTs have been designed to minimize incentives to gold-plate through a multi-tiered sliding scale of tax rates which smoothes the increase in marginal tax rates.

A related and significant issue is how the risk of exploration failure should be allowed for? Companies in the extractive industries rely on returns on few projects to fund numerous abortive exploration projects. [ ... ] The required rate of return for an

investment comprises not only a compensatory return for the particular investment being undertaken but also one that would compensate for several exploration ventures that have returned nothing to the investor.

In an area of high exploration risk, this might entail a very high premium added to the minimum return required by an investor. If this were to be fully reflected in the RRT threshold, the RRT threshold would have to be set at a very high level. An alternative is to relax the project-based RRT ring-fence to enable the costs of aborted exploration to be brought to account and recovered against revenues from a successful resource project. This would have the effect of delaying the point at which the RRT threshold is exceeded and tax payments made.

In Australia, the RRT was adapted in 19xx to relax the ring-fence to enable abortive exploration expenditures on other petroleum licenses to be written off in a license with petroleum income. ...<sup>9</sup>

### *How should tax thresholds and tax rates be set?*

In view of the challenging design issues addressed above it is relevant to examine how RRT thresholds and rates can be set. Should they be set by prescription or by negotiation?

Prescription, especially by law, provides for equal treatment, predictability and transparency but offers less flexibility. The onus is placed on officials to determine appropriate terms which, if they lack suitable market information, may turn out to be inappropriate – either by deterring investment or by needlessly foregoing taxes that the investor would have paid.

The Australian approach, in which the RRT threshold incorporates a market-determined cost of capital which is adjusted annually, offers some flexibility in setting the threshold. Those RRTs for which the threshold and tax rates are prescribed in the tax legislation are the least flexible. In Namibia, for example, the Ministry had to go through Cabinet and Parliament before it was possible to offer relaxed Additional Profits Tax terms in a competitive bidding round in the late 1990s.

Negotiation, on the other hand, offers the flexibility to tailor RRT terms to market conditions. However, this may lead to multiple fiscal regimes tailored to individual projects, adding significantly to the burden of administering RRT. Moreover, the onus is placed on the negotiating strength of the government to achieve a favorable outcome for the host country.

Competitive bidding offers a way to harness competition among investors to “discover” the going rate for rent capture if one or more elements of RRT are biddable. While this approach might lead to multiple regimes, if the variables open to bidding are limited, the resulting administrative burden need not be significant. In Namibia, for example, the

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<sup>9</sup> The change ... (ABARE)

main elements of the petroleum RRT are prescribed by law, however, within the three-tier sliding scale the two higher RRT rates are biddable. There are some recent examples of mineral projects being offered to interested mining companies in a competitive auction in which bidders offer a share of excess profits to the government as part of their bid.

### ***Will RRT be creditable?***

Historically, RRT was not always credited as a true tax on profits in all home countries, thereby posing a risk of double taxation to the investor. In order for a tax payer in a home country in which profits taxation is levied on worldwide profits (as in the USA) to obtain a credit against a tax already paid in a foreign country, it must show that the tax that has been paid corresponds to profits tax that would have otherwise been payable in the home country. Definitional issues that had earlier cast doubt on a tax payers' ability to do this have been resolved through test cases over a period of time.

Credibility issues no longer appear to be a factor that would inhibit the use of a conventionally designed RRT in host countries. An RRT that has unconventional features might, however, give rise to some risk of non-recognition.

### ***How difficult is RRT to administer?***

Resource rent tax has a reputation for administrative complexity and this may weigh against it. This concern is worth examining further.

RRT has, for the most part, the same tax filing and audit requirements as conventional income taxation. There are some differences in tax assessment that might need to be addressed by suitable additional procedures, however.

RRT is a ring-fenced tax. A taxpayer that operates more than one taxable entity under such rules would be assessed for RRT on each separately. To the extent that such project ring-fencing is not also the basis for income tax assessment, tax administrators would be faced by having to make ring-fence rulings that they would not be accustomed to making. Furthermore, if the RRT were a final tax on after-tax income, tax administrators would have to allocate deductions for income tax already paid among several RRT taxable entities. Therefore, in situations where income tax is assessed on a consolidated basis, the introduction of RRT would increase the administrative burden somewhat. There are, of course, many tax jurisdictions in which income tax is levied on resource projects with some degree of ring-fencing, so that this difficulty would not be new.

RRT is assessed on the basis of cumulative (multi-year) results rather than a single tax year. Although tax administrators are not accustomed to this basis of tax assessment, the challenge this presents is really only a computational one. An issue that could need to be addressed is to require that full records for all relevant years that need to be brought to account are available to the tax authorities.

RRT is assessed on a cash flow rather than tax accounting basis. In particular, non-cash charges, like depreciation are not used. In principle, however, non-cash charges correspond to cash flows, albeit with different timing. Tax administrators might need to add procedures to be able to interpret, cross-check and verify data presented on a cash and non-cash basis.

Tax leakage safeguards for RRT (dealing with transfer pricing, thin capitalization, allocation of overheads, expenditure verification) are no different from those needed for any other kind of profits taxation.

While not absolutely essential, the ability to administer RRT would probably benefit from an understanding, through suitable training, of the conceptual underpinnings of RRT, especially discounted cash flow, cost of risk capital, investment returns etc..

In summary, a tax administration that is capable of imposing income tax on resource businesses consistently and effectively, should, with a relatively modest augmentation of skills and personnel be able to administer RRT. If a tax administration does not already satisfy these conditions, then a move to RRT could represent both a significant additional administrative burden and create considerable additional risks of tax leakage.

## **Lessons and Way Forward**

A resource rent tax is one among several available instruments to capture resource rent – whether it is the best available option depends on an assessment of revenue potential, fiscal risk and administrative costs associated with its use.

Under RRT the potential for revenue maximization is quite high, and exceeds that of other progressive taxes. However, this consideration has to be balanced by the fiscal risks and administrative costs that would be borne by the government. Considerable fine-tuning of RRT is possible, as the paper has shown, to reduce fiscal risks but there is rather limited scope to reduce its administrative costs.

Government appetite to take fiscal risk and bear administrative costs depends in part on the scale of revenue at stake and availability of resources to achieve effective administration. This factor would seem to go some way to explaining why RRT has featured more prominently in the oil industry than in the mining industry. While the higher rent potential in the oil industry generally tends to favor RRT this should not preclude consideration of the use of RRT in mining, in high rent potential situations. In this regard, diamond operations and some world-class deposits of strategic minerals might be considered.

However, as this paper has shown, there are many other types of progressive tax instruments to choose from, and each can offer a different balance between revenue maximization, fiscal risk and administrative cost to suit individual country circumstances. In any event, the advantage that all such instruments have over regressive and unsustainable fiscal regimes is the ability to avoid damaging brinkmanship.

**Annex 1: Examples of Resource Rent Taxes from the Petroleum and Mining Sectors**

	Australia	Timor Leste	Ghana	Namibia	Angola		Malawi	PNG	Ghana	Madagascar
Name										
Single rate or sliding scale										
IRR threshold										
Prescribed or negotiated										
Biddable										
Ring fence										
Levied pre-tax or post-tax										
status										