

International Mining for Development Centre
Mining for Development: Guide to Australian Practice

Mineral royalties and other mining- specific taxes

Pietro Guj



Australian Government
AusAID



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA



THE UNIVERSITY OF
WESTERN AUSTRALIA

The **International Mining for Development Centre** has been established to promote more sustainable use of minerals and energy resources in developing nations by assisting governments and civil society organisations through delivery of education and training, fellowships, research and advice. Our focus is on three core themes of Governance and Regulation, Community and Environmental Sustainability, and Operational Effectiveness.

Prepared by Pietro Guj

Research Professor
Centre for Exploration Targeting,
The University of Western Australia

Centre for Exploration Targeting (CET) was established in 2005 as an unincorporated joint venture between the mineral exploration industry, the University of Western Australia, Curtin University and the Government of Western Australia.

This report does not necessarily represent the views or the policy of AusAID or the Commonwealth of Australia.



Introduction

Under most jurisdictions throughout the world mineral resources are, with some rare exceptions, in public rather than private ownership. Mineral resources are finite and non-renewable in the sense that their extraction permanently depletes a country's resource inventory. **The role of governments should be to manage the exploitation of these resources to maximise the economic benefits to their community, consistent with the need to attract and retain the exploration and development capital necessary to continue to realise these benefits for as long as possible.**

Exploration for and the extraction and processing of minerals are generally (but not exclusively) carried out by private sector companies, despite the public ownership of mineral resources. Companies are often exposed to significant risks that flow from the substantial capital investments required, the long exploration and pre-production periods during which no revenue is generated, and the generally long life of mining projects, paired to the volatility of commodity markets as well as other technical and environmental uncertainties inherent in individual mining projects.

On the other hand, given the volatility in the price of mineral commodities, mining operations have the capacity to generate surplus revenues in excess of all costs of production. This surplus is known as **economic rent**¹, and it is calculated as the margin realised after netting off from the gross mineral revenue all the costs of production (recurrent and capital recovery costs) as well as a minimum return on capital high enough to attract capital and retain it in the project. This minimum required return on capital, termed "normal profit", compensates investors for foregoing the next best alternative investment opportunities, as well as for the timing and risk of the uncertain cash flows expected from the project.

Revenue in excess of costs of production (economic rent), where costs of production include normal profit, is the target of special taxation regimes in the mining sector. The practical issue for governments, however, is how to design tax regimes that best meet their objectives.

This paper provides a review of mineral royalties and other special taxes which apply specifically to the mining sector in mineral-rich countries, with emphasis on current arrangements in Australia. Mineral royalties have traditionally been considered a form of compensation to the community for the depletion of non-renewable resources. Special mining taxes including royalties are additional to the general income taxes and other forms of taxation levied on all sectors of an economy. They represent, therefore, different ways for governments to levy an additional share of the revenue flowing from mining operations relative to other non-mining activities.

The paper sets out the objectives sought by governments in imposing these special taxes and then provides an analysis of the different forms in which these special taxes may be imposed. The importance of the mining sector in the Australian economy and the special taxation regimes imposed by some of the Australian States and the Commonwealth (federal) Government are also discussed as examples of the application of different fiscal regimes.

The paper concludes with consideration of some pertinent enforcement and administrative issues that need serious consideration in designing a "best practice" mining sector taxation regime.

This paper provides a review of mineral royalties and other special taxes which apply specifically to the mining sector in mineral-rich countries, with emphasis on current arrangements in Australia.

¹ For a more in depth discussion about the nature of economic rents in mining the reader can refer to Harman and Guj, 2006 and Otto et al., 2006.

MINERAL TAXES

Mineral royalty and tax types and their characteristics

As special taxes for the mining sector are, in principle, directed at the net value of the mineral resource after the deduction of costs of production including normal profits, they should be **levied as close as possible to the point of extraction**. That is to say at the run of mine (ROM) ore pad and not on any value added by further processing or transport to markets. In practice very few, if any, mineral commodities are sold at-arm's-length at this taxing point, which generates problems with establishing the value of the resource on which a special tax should be based.

It must also be noted that special taxes for the mining sector are levied at the project level, rather than, as is commonly the case for corporate income tax, at the consolidated entity level. In most jurisdictions, these special taxes are a legitimate deduction in assessing corporate income tax.

Special taxes for the mining sector generally take the following forms:

- Unit based (specific) royalties when the tax base is a physical unit (volume or weight);
- *Ad valorem* royalties based on the value of production;
- Profit based royalty or tax when the tax base is an accounting concept of profit;
- Economic rent based when the tax base is a direct measure of economic rent;
- Hybrid systems combining a profit or rent based system with an *ad valorem* system; and
- Other methods when a variety of tax bases are used, including production sharing.

The term mineral royalty has traditionally been applied in mining legislation when referring to specific, *ad valorem* and, in some cases, mining taxes based on an accounting profit base.

In effect, all of the forms set out above are alternative ways for governments to appropriate economic rents unique to mining and are applied in addition to the general corporate income tax and other forms of taxation that cover all sectors of an economy.

Unit based (specific royalty). In this case, a fixed monetary rate is applied to a physical rather than a financial base, for example as dollars per tonne or dollars per cubic metre. Provisions may be incorporated in the regulation for progressive adjustments of the fixed royalty rate to inflation or to changes in commodity prices. This type of royalty generates stable revenue and is administratively efficient and easy to audit. However, it can also be highly economically inefficient and distortionary. For these reasons, specific royalties are generally applied to bulk, low-value commodities.

Value based (*ad valorem*) royalty. In its simplest form, an *ad valorem* royalty consists of a uniform percentage (the rate) of the value (the base) of the mineral(s) in the products sold by the miner. As already discussed, the value of the resource should be at the point of extraction, but very few sales of crude ore take place, after crushing and screening, at the "mine gate". The first at-arm's-length sale is generally in the form of a product to which some value has been added by downstream processing, as for instance with sales of mineral concentrates or refined metals. *Ad valorem* royalties can be levied on two possible bases:

1. **Realised value of sales.** This is the value shown on the sales invoice, which often represents the Net Smelter Return (NSR) freight on board (FOB) smelter. Its advantage is that it is unequivocally defined and leads to simpler audits, lower administrative costs and fewer disputes. The disadvantage of this type of royalty is that it relates to the payable metal rather than the value of the resource at the mine gate and that it may include realised hedging gains and losses, effectively involving government sharing in the marketing risk.
2. **Gross value of the mineral/metal contained in the mineral product sold.** This approach derives the value of the resource by multiplying the weight of the mining product sold by its grade to obtain the relevant amount of contained metal and assessing its value using a quoted market price for the metal on the day of the sale. Auditing of this type of royalty often involves difficult verification of quantities and grades of product sold.

A single royalty rate is often applied to the value base regardless of how it is defined and irrespective of the nature of the product sold. Such an approach is inequitable to products to which value has been added and creates a disincentive to invest in downstream processing. For this reason, some jurisdictions apply progressively lower royalty rates as the nature of a product progresses from crude ore to metal. Deduction of transport, insurance and other marketing costs may also be allowed in an attempt to approximate an ex-mine value base. *Ad valorem* royalties are conceptually simple, and, even though somewhat economically inefficient, ensure that as long as the mine operates, a royalty will be paid. The magnitude of a government's revenue will of course be variable, as it will reflect changes in commodity prices. For these reasons and the low to bearable administrative load that they impose, *ad valorem* royalties are the most commonly encountered form of mining taxation.

Profit-based royalty and/or tax. A percentage rate is applied to a measure of accounting profit realised by the project. The accounting profit base is computed at the project level and may not be consistent with the contribution that the project makes to the consolidated profit of the holding entity on which corporate income tax is levied. An accounting profit based tax has greater economic allocative efficiency, but results in unstable government revenue and high compliance costs for both government and industry.

Hybrid royalty/tax. This type of royalty or tax incorporates a minimum specific or *ad valorem* royalty component generally in a profit based or economic rent based tax to limit the risk that government may collect no revenue if in any year there is no taxable profit or rent. This ensures a modicum of revenue stability.

Resource rent based tax. This type of tax consists in the application of a percentage tax rate on the economic rent produced by a project. Although the general concept is relatively simple, its practical implementation may be complex, often misunderstood and can potentially lead to significant compliance costs and disputes. This is largely the reason for the poor rate of adoption in spite of its very high level of economic allocative efficiency. Aside from the petroleum industry, at the time of writing there are no resource-rent based taxes in force in the mining industry, though a number of jurisdictions have plans for their introduction in the near future.

Production sharing contract. Production sharing contracts (PSCs) are very commonly used in the petroleum industry, but rarely in the mining industry. The principles of PSCs are simple and their application transparent and easily verifiable. Generally the company bears all the costs, both capital and recurrent, of the mining operation which it deducts from the gross value of the mineral produced to arrive at the “net profit mineral”. This is then shared between the company and government according to pre-determined proportions stipulated in the PSC. To the extent that under the terms of some PSCs the company’s share of production may not be subject to mineral royalty, the proportion of the government share of mineral production needs to be set at a level that compensates for its lack. Most PSCs, however, do not fulfil this role as royalties are often levied on the value of the company’s share of mineral before calculating the “net profit mineral”. The company pays corporate income tax on its share of net profit mineral and may market the mineral along with the government’s share of minerals on the government’s behalf.

MINING SECTOR TAXATION POLICY

Mineral Fiscal Objectives

Special taxes for the mining sector, including traditional mineral royalties, in combination with standard or mining-specific provisions for corporate income tax, are the main components of a mining fiscal regime that can be used to achieve the desired balance of a number of fundamental government objectives. It should be noted in that some cases these are incompatible. Government objectives include:

- **Revenue maximisation/adequacy.** This objective addresses the vexed question of determining the optimal sharing of economic rents from exploitation of mineral resources between government and industry. In effect it addresses the questions “*What should the magnitude of the total mining tax imposed on industry be?*” and “*How high can the total fiscal take be before it becomes a serious disincentive for industry to invest in the country?*” When, as in recent times, commodity prices are high, mining companies may realise extraordinarily high levels of profit, which often generates the perception that the community is not receiving a “fair share” of the resource rent and prompts political pressure for a review of current mining fiscal regimes. This issue invariably generates vigorous debate. On one side there is the theoretical academic approach that advocates that, under perfect market conditions, government could/should appropriate a larger share of the rents. On the other side is the pragmatic approach that recognises that economic and political circumstances surrounding this issue are far from perfect and that the optimal sharing of rents must take into account the fact that exploration and development capital is mobile in a world where different countries are competing for it using fiscal incentives. Mining companies also point out, with a degree of legitimacy it can be argued, that they should retain surplus revenues to compensate for any lean years in which they fail to realise a normal level of profit.
- **Optimal tax base.** While higher levels of rent could be levied from currently operating mines which are “captive” to the country in which their resources are located, this would discourage future exploration and development investment in the country, as mobile capital would be re-directed to countries with more attractive and stable mining fiscal regimes. In effect, government revenue would rely on fewer mines more heavily taxed rather than more mines more lightly taxed. In a globally competitive capital market, a balance must be found at a point where the inflow of necessary exploration and development capital is optimal in supporting a growing pipeline of future mining project developments. This will result not only in acceptable, ideally growing, levels of total mining taxation revenue, but also in a range of broader, desirable socio-economic benefits and multipliers, consistent with the government’s role of optimising social welfare.

MINERAL ROYALTIES AND OTHER MINING-SPECIFIC TAXES

- Economic allocative efficiency.** An economically efficient tax system promotes reallocation of the resources of the economy to their most productive use to generate the ever-changing mix of goods and services that society requires and at the lowest possible unit cost. In a mining context, the objective is to ensure that, as far as possible, the same exploration and production activities would occur whether the rent-collecting tax were in place or not. Figure 1(a) shows that a change in the rate of a tax proportional to the economic rent (yellow area) would not change the unit cost of production and therefore the cut-off grade, i.e. the minimum grade economically mineable. The optimal size of the reserves, set to include all ore blocks with a grade equal or greater than the cut-off, will not be affected by changes in tax rate. This is the condition of **neutrality**, meaning that the tax system does not distort the investment behaviour or decisions of a mining company. In practical terms, a **non-neutral, inefficient or distorting** system gives rise to either:

- extracting too much of the resource (over-exploitation); or
- not extracting enough of the resource (high-grading), relative to what would be the case in the absence of the tax system.

Special taxation regimes unrelated directly to the economic rents generated by a project, particularly traditional royalties based on volume or weight and, to a lesser extent, on value, are a tax on the costs of production as well as on economic rent. Figure 1(b) shows how an amount of tax equivalent to that of Figure 1(a) levied using a unit-based tax increases the fixed cost and total production cost, and as a consequence the cut-off grade used in determining the commercially exploitable ore reserves.

As a result, if the miner wishes to maintain its net after tax margin, it's forced to mine a lower number of higher grade ore blocks, thus reducing the economically exploitable reserves. The higher the inefficiency of the applicable tax, the smaller will be the size of the economic reserves, the higher their average grade and the shorter the productive life of the mining project. This all amounts to sub-optimal exploitation of the resource. If the fixed tax is set too high, a project may prove uneconomic and new projects may not be developed. Projects already developed under a more benign previous tax regime may close, which would not happen under an efficient tax proportional to rent.

- Revenue stability.** Mineral commodity prices are highly volatile and as a consequence so are the revenue flows of a mining project. Taxes based on accounting profits or economic rents, while desirable because of their greater economic allocative efficiency, result in unstable government revenue. The alternative of achieving a higher degree of revenue stability by relying more on fixed taxes prevents government from sharing in high rents when commodity prices are high, besides being economically inefficient. Governments can of course counteract revenue instability by resisting the temptation to overspend in periods of high mineral revenues and by adopting smoothing strategies, such as the establishment of sovereign revenue equalisation funds.

Figures 1(a) and 1(b): Schematic breakeven diagram showing how an economic rent based tax is efficient in that changes in its rate do not alter the optimal level of mine reserves and total production. By contrast, changes in the rate of a unit-based, fixed tax will create the need for higher unit value of production to break even, thus reducing the size of economically exploitable reserves and the life of a mine to a lower, sub-optimal, hence economically inefficient level.

Figure 1(a): Economic Rent-based Tax - Economically efficient

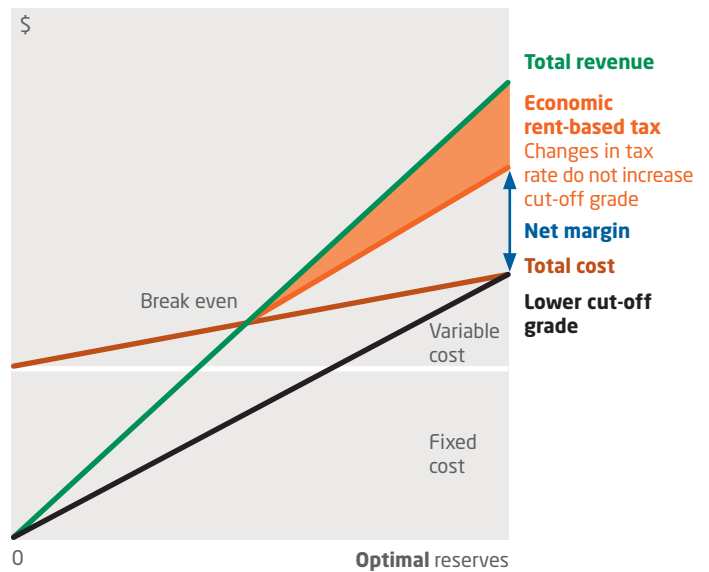
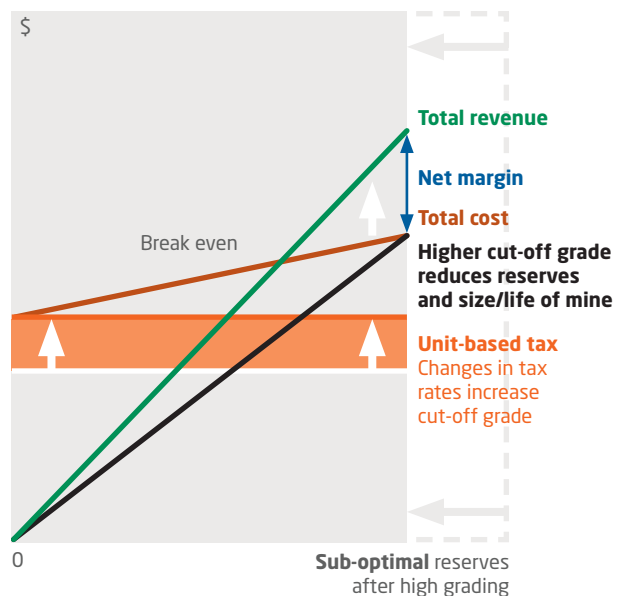


Figure 1(b): Unit-based tax - Economically inefficient



- Equity.** This objective addresses the question as to whether the impact of the tax is spread fairly among various taxpayers. Should the tax system differentiate among different mineral commodities, size and/or profitability of different projects or companies, their location etc.? There are two dimensions to equity. Firstly, **horizontal equity** is concerned with whether taxpayers that generate the same amount of economic rent are taxed at the same rate. By contrast, **vertical equity** considers whether the tax system fails to discriminate between high rent and low rent operations and their related "ability to pay". Another dimension to equity and one of considerable political interest is fairness over how the tax revenues are utilised. In particular, whether the revenues should be consolidated by government and dispersed through the normal budgetary processes, or appropriated, at least in part, by the local government or communities of the areas hosting and bearing the impact of the mining operations. Issues of intergenerational equity, or resource and asset equity between current and future generations also arise in the context of sustainability.
- Transparency and stability.** This principle relates to whether miners are fully informed about the tax liabilities that may follow from any proposed activity. Transparency also refers to the openness of the taxation arrangements and collections to examination by the community. The transparency case argues that, on account of the significant up-front capital investments, the tax liabilities should be predictable and ideally stable over the life of the mine before any proposed mining investment takes place. If government later arbitrarily changes the laws to impose tax burdens that were not originally planned or predicted, then it engenders the potentially very damaging perception of **sovereign risk**. It is not surprising therefore that,

in the case of capital intensive, long-lived projects, industry may insist on statutory "special state" or "stability" agreements.

- Administrative efficiency.** The compliance burden on both governments and companies is a significant consideration in establishing a mining tax system. Compliance costs increase with the sophistication and complexity of the tax system and is a major reason most mineral royalty regimes currently in place are based on reasonably simple royalty formulations (mainly unit or value-based) in spite of their relative economic inefficiency.

Achieving government objectives with special mining taxes

As already pointed out, some government objectives are mutually incompatible and cannot be optimised simultaneously. For instance, it would be impossible to achieve a high degree of revenue stability at the same time as maximum economic efficiency. In reality most jurisdictions set taxation and royalty policies that represent acceptable compromises and reflect to some degree their capacity to administer them.

Figure 2 provides a synoptic view of the degree to which different royalty types are consistent with each of the six key government objectives described in the previous section. It shows how, from the viewpoint of the **economic allocative efficiency** criterion, taxation methods would rank in the following order:

1. Resource rent based tax.
2. Accounting profit based royalty/tax.
3. Hybrid royalty/taxes.
4. *Ad valorem* royalties based on value of sales.
5. Specific or unit royalties based on volume or weight.

Figure 2: Qualitative assessment of the performance of various royalty/taxation types with regard for the main government's fiscal objectives.



By contrast, for **administrative efficiency** and **stability in government revenue**, the ranking is exactly reversed. This reflects increasing methodological and administrative complexity and the potential for ambiguity and disputes. Higher compliance and auditing costs for both government and industry have usually weighed heavily in governments' choices of mineral royalties and largely account for the current absence of rent based taxes and paucity of accounting profit based royalties.

In seeking a compromise between administrative and economic efficiency, policy makers must consider:

- The **size of a mining operation**, as larger mines lower the unit-cost of compliance;
- The **price of the commodity**, which determines the relative contribution to revenue of operations of similar size in terms of ore throughput; and
- The **price volatility of the commodity produced**, affecting the stability of government revenue.

The fact that there are many more small mines than large ones and that the commodity prices of several key minerals are very volatile, militates against the use of accounting profit based royalty/taxes once again. These factors have contributed to, until now, confining resources rent types to large petroleum projects.

MINERAL SECTOR TAXATION IN THE AUSTRALIAN CONTEXT

Background: Importance of the Mining Industry to the Australian Economy

Australia has a diverse inventory of mineral resources including the world's largest economic resources of brown coal, mineral sands (rutile and zircon), nickel, silver, uranium, zinc and lead. It has the second largest resources of bauxite, copper, gold, iron ore, niobium, tantalum and manganese ore. Australia also ranks among the top five countries worldwide for black coal, industrial diamonds, ilmenite, lithium, vanadium and antimony (Geoscience Australia, 2011).

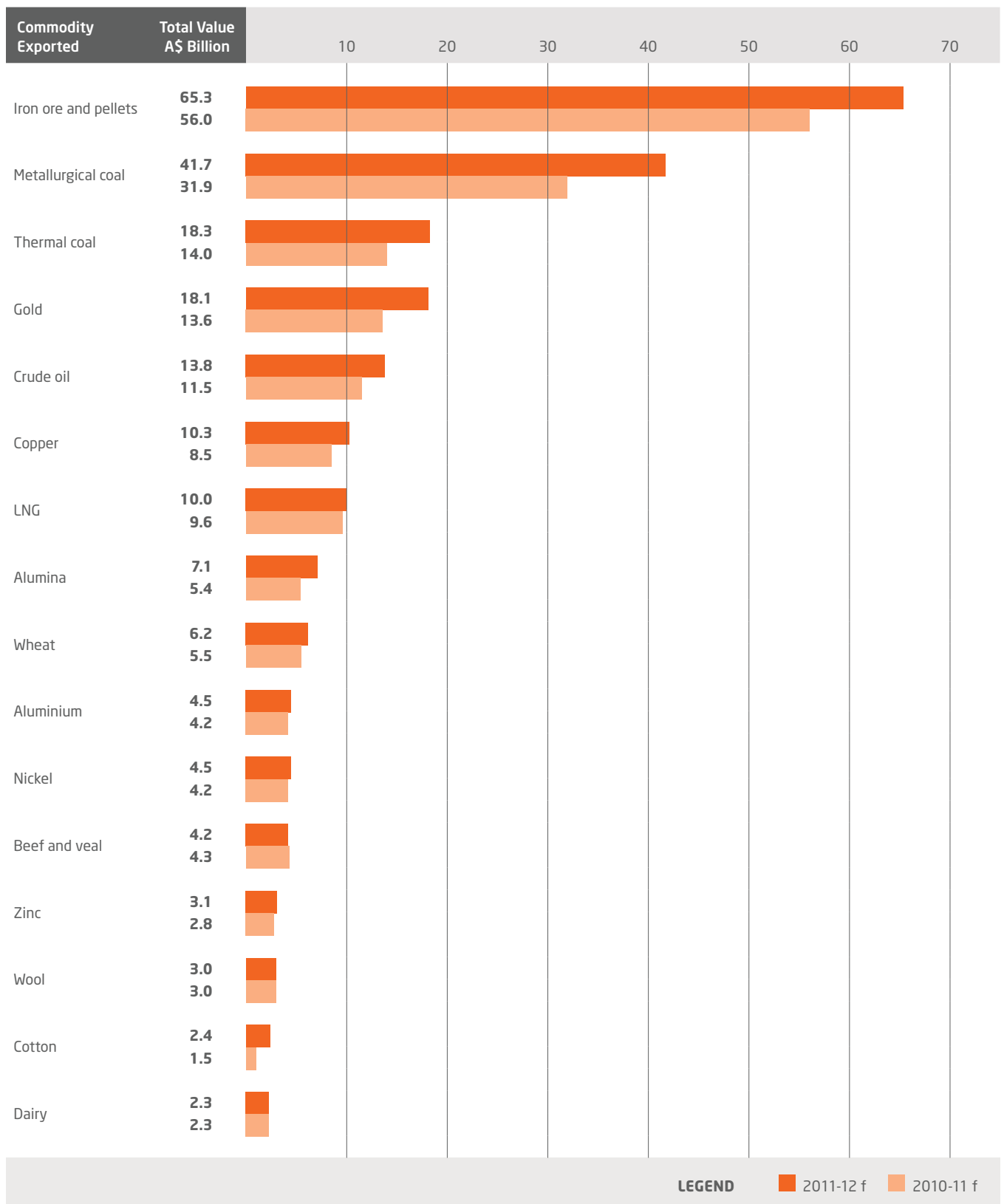
In terms of mineral production, Australia is the world's leader in bauxite, alumina, rutile and zircon; the second largest producer of gold, iron ore, lead, zinc, lithium and manganese ore; the third largest producer of uranium; the fourth largest producer of nickel; and the fifth largest producer of aluminium, brown coal, industrial diamonds and silver.

At current buoyant prices, iron ore and coal account for more than A\$102 billion in value, or approximately 56% of total mineral production. Western Australia (WA) produces approximately 97% of the iron ore output, while Queensland (Q) and New South Wales (NSW) jointly account, in roughly equal proportions, for 97% of coal production. In addition, WA is a large producer of gold, nickel, alumina and mineral sands, Q of alumina, gold and base metals, South Australia (SA) of copper, gold and uranium, the Northern Territory (NT) of manganese, alumina and uranium, with less significant mineral production in NSW, Victoria (V) and Tasmania (T).

The bulk of Australia's mineral production is destined for export markets, particularly in Asia. The current (2010-11) value of mineral exports at A\$182 billion represents approximately 84% of total Australian commodities exported and more than 50% of total exports. Figure 3 (modified from ABARE, 2011) displays how minerals, and in particular iron ore and coal, dominate the value of Australia's exports. Given the high value of these commodities it is not surprising that they have recently attracted the special attention of policy-makers, as will be discussed below.

Minerals also represent more than 13% of Australia's Gross Domestic Product (GDP). It is estimated (Deloitte Access Economics in MICA, 2011) that in 2010-11 total Australian mining taxation amounted to A\$23.4 billion, including A\$14.6 billion in corporate income tax and A\$8.8 billion from mineral royalties, much of which is attributable to iron ore and coal.

Figure 3: Value of Australian exports showing how iron ore and coal accounted for 61.4% of total Australian commodity exports in 2010-11 (Modified from ABARE, 2011).



Australia Federal and State policy regimes

Australia was constituted as a federation in 1901 and includes six states (Western Australia (WA), South Australia (SA), Victoria (V), Tasmania (T), New South Wales (NSW) and Queensland (Q)) and two territories (the Northern Territory (NT) and the Australian Capital Territory (ACT)). A Westminster style of government applies to both the central Commonwealth government in the national capital, Canberra, and the state governments. Although the NT has extended powers of self-government, major powers are retained by the Commonwealth including rights in respect of Aboriginal land, the mining of uranium and industrial relations.

The Australian Constitution confers on the Commonwealth government specific powers in areas such as defence, customs and excise, and monetary and fiscal management. Where the Constitution is silent, however, relevant powers rest with the states. As a consequence, **the states have ownership and control of mineral and petroleum resources within their jurisdiction** up to the high water mark of the surrounding territorial seas border, beyond which mineral resources belong to and are controlled by the Commonwealth government.

As a consequence, individual and generally quite different royalty regimes are legislated and enforced by each Australian state and territory, while the Commonwealth government has centralised power in terms of legislating and enforcing laws relating to the assessment and collection of off-shore minerals and petroleum royalties, and of corporate income tax from mining operations.

The mineral regulatory and fiscal regime of the states comprises a large number of laws dealing with all aspects of licensing, safety, environmental and other aspects of mineral exploration, mining activities and subsequent land rehabilitation. The obligation for mining companies to pay special mineral royalties and taxes is generally embodied in provisions of the mining laws of various states, with the actual rates and administrative processes and procedures contained in supporting regulations.

To ensure stability in the conditions applying to project developments of large scale, longevity and economic significance, companies and state governments, particularly in Western Australia, have entered into statutory State Agreements. These types of agreements, which in some countries are known as indentures or stability agreements, bind both parties to the conditions that will apply to the project generally over its life. Conditions may include royalty arrangements as well as commitments to further processing of mineral products and requirements to provide township and transport infrastructure. Even though conditions may become impractical or obsolete over time, they can only be changed with the agreement of the parties and subject to endorsement by the relevant State Parliament.

A small proportion of the Australian land mass is privately owned. The vast majority of it is in government hands (unalienated Crown Land), vacant or subject to long-terms leases to pastoralists, or occupied by nature reserves, national parks or indigenous reserves.

Land owners, lessees and other land occupiers/users have no right to sub-surface resources and only a limited ability to influence the extent of exploration and mining activity on their land. Generally, this is restricted to the granting of permission to access the

land and to compensation for any cost or damage incurred due to exploration and mining activity. In some cases, however, the compensation process and related potential delays may amount to a *de facto* power of veto.

Legislative and regulatory frameworks

This paper does not include an exhaustive discussion of the royalty/taxation regimes applicable in each of the states and territories, but rather provides an example of the variety of approaches adopted in a selected number of mineral-rich states with significantly different regimes, specifically WA, Q and the NT. This choice will cover royalty/taxation regimes which progress from a combination of specific and *ad valorem* royalties as applied in WA, attempts to capture a degree of the economic rent by linking royalty rates to the price of some of the mineral commodities in progressive, hybrid royalty systems as in Q (and in NSW with regards to coal), and an accounting profit based system as it applies in the NT.

Western Australia

Table 1 shows how in 2010-11 WA produced A\$101.2 billion worth of minerals and collected A\$4.9 billion in mineral royalties. The former is a large proportion of the Gross State Product (GSP), thus making WA a typical mineral economy.

Table 1: Composition of WA's 2010-11 mineral production value and royalty collection.

Commodity	Value A\$B	Royalty A\$B
Iron ore	57.3	3,358.6
Crude oil & condensate	12.4	955.2 incl. LNG
LNG	8.7	LNG see above
Gold	8.2	197.8
Nickel	4.6	112.9
Alumina	4.0	66.1
Others	6.0	191.0
Total	101.2	4,871.6

In WA, the *Mining Act (1978)* and related *Mining Regulations (1981)* specify two general royalty systems for minerals:

1. A specific royalty, mostly applied to low-value, bulk, non-metallic mining products of \$0.62 per tonne for construction use or \$1.00 per tonne for metallurgical use and coal subject to yearly adjustments.
2. An *ad valorem* royalty, applied to the realised value of most higher-value, generally metallic minerals, with three decreasing rates of royalty to reflect increased downstream processing of the product sold, thus providing an incentive for investment in downstream processing facilities:

- crushed and screened, bulk material: 7.5 per cent;
- concentrates: 5.0 per cent; and
- metal: 2.5 per cent.

The regulations also provide an exhaustive list of product-specific royalty rates, including exceptions such as:

- Iron ore fines (< 60 mm) at a rate of 5.625%;
- Gold at a rate of 2.5% of the spot market price at the time of sale;
- Nickel in accordance with the formula: Royalty in \$ = $(P/100) * [(U * 2.5)/100]$, where P = Ni price per tonne f.o.b. Australia and U = Percentage Ni contained in the product sold;
- Cobalt and copper if sold as nickel by-products;
- Ilmenite concentrates used as feedstock for a beneficiation plant in WA; and
- Tantalum and tin when sold in any form other than metal.

The royalty rates for some economically important mining and minerals processing projects for iron ore, nickel, diamonds, mineral sands and bauxite-alumina are locked under state agreements. Their statutory nature means that the conditions are legally binding for both government and companies and can only be changed by mutual agreement followed by legislative amendment. Opportunities for trade-offs arise when a party wishes to introduce changes in an existing agreement. For example, recently the state sought to lift and normalise the original concessional royalty rate for iron ore fines of 3.75% to 5.625%, which is the normal rate paid by iron ore mines under standard royalty regulations. By contrast, the Argyle diamond project achieved a relief from its original more onerous, state agreement royalty (a hybrid profit based royalty of 22.5%, subject to a minimum *ad valorem* royalty of 7.5% in any year) to a simple 7.5% *ad valorem* royalty in exchange for a commitment to embark on a less profitable underground extension of the previous open cut project.

Queensland

As shown in Table 2, in 2009-10 (latest figures available) Q collected a total of A\$2,698.3 million in mineral royalties, down from 2008-09 because of the impact of recent floods on the value of mineral production (i.e. from \$A49,430.5 million in 2008-09 to A\$29,661.1 million in 2009-10), particularly that of coal.

Table 2: Composition of Queensland's 2009-10 mineral production value and royalty collection.

Commodity	Value A\$M	Royalty A\$M
Coal	22,823.9	2,356.9
Base, Precious and Other Metals	5,717.4	236.3
Petroleum	871.4	52.1
Other Non-metallic Minerals	248.5	53.0
Total	29,661.1	2,698.3

Q's Mineral Resources Regulations (2003) provide for:

- Specific royalties of between \$ 0.50 and 1.80 per tonne for a large number of listed mineral commodities;
- Normal *ad valorem* royalties for some minerals (e.g. bauxite 10% (or \$2/t), mineral sands 5% and gemstones 2.5% etc.); and
- A hybrid *ad valorem* royalty for base, precious metals, coal and iron ore with rates fixed below a minimum price, becoming variable above the minimum as a function of prevailing market prices. For example:
 - Base and precious metals 2.5% increasing at 0.02% increments above a minimum commodity price listed each year in the regulations to a maximum of 5%.
 - Coal 7% of value up to a price of \$100/t and 10% thereafter.
 - Iron ore \$1.25/t at prices below \$100/t plus 8.5% of the value generated above it.

For copper, lead and zinc, the value is determined by the settlement price on the London Metal Exchange (LME) on the day of the sale. Similar values apply for gold and silver. By using market prices, possible hedging gains and losses are excluded. Values are also adjusted for fluctuations in the value of the Australian dollar between the recording date of a sale and that of the actual payment. Marine transport, insurance and the value of metal not recoverable during processing are deductible from the gross value for the purpose of determining the royalty base. Rail and road haulage costs and other marketing costs are not deductible. There are also concessions for small mines and 20% to 35% discounts where prescribed minerals are processed domestically.

Northern Territory

Table 3 shows how in 2009-10 the NT produced A\$3.5 billion worth of minerals, and collected A\$146.6 million in mineral royalties, excluding royalties collected on uranium oxide that are remitted to the Commonwealth government.

Table 3: Value of the 2009-10 mineral production of the Northern Territory.

Commodity	Value A\$M
Manganese	1,133.8
Alumina/bauxite	710.1
Uranium oxide	645.4
Zinc/lead concentrate	436.5
Gold	331.4
Iron ore	178.9
Non-metallic minerals	32.4
Total	3,468.6

MINERAL ROYALTIES AND OTHER MINING-SPECIFIC TAXES

The *Mineral Royalty Act* provides for a profit based royalty/tax from most mines at a rate of 18% of the "Net Value" of mineral commodities sold or extracted. The exceptions are uranium mines, which are the responsibility of the Commonwealth government, and quarries and mines operating under specific royalty agreements.

"Net Value" equals $GR - (OC + CRD + EEE + AD)$ where:

- GR is the gross realised revenue from mineral sales from individual projects;
- OC represents operating costs;
- CRD is a Capital Recognition Deduction akin to depreciation, but incorporating an interest factor (long-term bond rate plus 2%) over asset lives of three, five or 10 years;
- EEE is any eligible exploration expenditure; and
- AD represents additional deductions as approved by the Minister.

Negative Net Value from previous years can be carried forward.

The first \$50,000 of Net Value is not liable to taxation, thus exempting very small mines.

A provisional amount is payable six-monthly with annual reconciliations and penalties for under-payments below 80% of the actual annual liability.

This accounting profit based royalty/tax, which recognises the "ability to pay" of different mines, is a more economically efficient and equitable regime than those based on value or tonnage. As its impact on less profitable mines is proportionally lower, it does not discourage development of high-cost, low grade, hard-to-mine, and deeper or remotely located deposits.

Because of the relative complexity of this profit based system, however, these benefits are gained at high administrative cost.

The Proposed Mineral Resource Rent Tax for Iron Ore and Coal

Following recent significant increases in metal prices and in the profitability of mining companies, the Australian Prime Minister (in common with that of many other countries) declared that the community should receive a "fair share" from the nation's non-renewable resource wealth (Press release N.028, 2 May 2010). In addition the government considered that the necessary changes in mineral taxation also created an opportunity to address the current economic inefficiency of most of the Australian royalty regimes.

On these grounds, after having reached agreement with the three major Australian producers of iron ore and coal (Rio Tinto Ltd, BHP Billiton Ltd and Xstrata), the Commonwealth drafted and passed through Parliament legislation, which, subject to approval by the Senate, will impose a Mineral Resource Rent Tax (MRRT) commencing 1 July 2012.

The MRRT will be levied at a rate of 30% (reduced to 22.5% through the application of an Extraction Allowance²) on "mining profit". This means that economic rent is determined at a taxing point placed at the Run of Mine (ROM) ore pad, i.e. as close as possible to the net value of the resource before further processing and transport.

In parallel with the introduction of the MRRT, there will be a reduction in the economy-wide rate of corporate income tax from the current 30% to 29%. MRRT amounts paid are deductible for the purpose of assessing corporate income tax.

The economic rent is determined by subtracting from the mining revenue at the taxing point all capital and operating costs upstream of that point.

The Commonwealth will credit to the companies the royalty they pay to states and territories. By crediting the royalties the Commonwealth has, in effect, substituted the MRRT for them.

Any unutilised losses and royalty credits can be carried forward and uplifted at the long-term bond rate (LTBR) plus 7% and can be transferred against the MRRT profits from any other iron ore or coal project in a company's portfolio.

To shelter small operations and emerging developments, those projects with an annual mining profit of less than A\$75 million will not pay any MRRT. This benefit is then progressively reduced for mining profits between A\$75 million and a cap of A\$125 million.

Very few at-arm's-length mineral sales take place in the form of crude ore at the mine gate and are generally in the form of mineral products to which value has been added by various degrees of downstream processing and transportation. Therefore both revenue and expenditure must be apportioned between that derived from activities upstream and downstream of the taxing point. This can be done by the most appropriate of five methods, consistent with the guidance set out in the OECD's Transfer Pricing Guidelines (TPG) (2010), with a general preference for the netback approach.

To capture the very significant rents generated by a small number of very large current producers, the MRRT will be applied to both current and future producers. Complex rules, therefore, had to be drafted to recognise capital investments that were incurred before the MRRT was first announced on 2 May 2010 and during the transition period to its enforcement on 1 July 2012. Owners of existing projects have two choices to determine the starting value for their projects:

- Book value which excludes the value of the resource, to be depreciated over five years on an accelerated base; or
- Market value at 1 May 2010 plus any capital investment that takes place in the transitional period, to be depreciated on a straight line over the life of the mine to a maximum of 25 years. Market value includes the value of the mineral resource, which in some cases may constitute the bulk of the market value. Uplifting will be limited to CPI.

The strategic choice as to which starting base to adopt when the MRRT is introduced will be a critical one for iron ore and coal mining companies.

DISCUSSION: TOWARDS BEST PRACTICE

It is rare that governments have the opportunity to formulate mineral taxation policy using a “best practice” blueprint in the absence of political constraints. This may be the case for reconstruction following a long and destructive conflict, if a new mine is being developed for a commodity not previously mined, or if mining resumes after a significant break for a commodity, the royalty of which had been removed from the statutes.

Optimal government’s share of economic rent

If there were an unconstrained capacity to put in place a new special taxation system for the mining sector, the first and most important decision would be to determine the optimal share of the economic rent that should be appropriated by government. This decision should balance the revenue-maximisation objective with that of attracting to the country the necessary level of international exploration and development capital, taking into account the international perception of the country’s prospectivity, political stability and infrastructure/logistics, as well as other non-monetary socio-economic benefits and costs.

Appropriate, clear and stable mineral taxation regime

The next decision would be to establish which mineral taxation regime would be most appropriate to achieve government’s revenue objectives, while ensuring acceptable revenue stability as well as clarity and predictability of the regime in the eyes of investors. The last aspect is highly valued by investors, who need to commit large sums of up-front capital. Future regime predictability/stability should be a high priority in designing the fiscal regime independently of whether it has to include the use of “special” or “stability” agreements or not. Government should model and have a clear understanding of the revenue consequences of formulating different fiscal policies and agreements before implementing them. Ideally they should incorporate clear processes, timing, triggers and boundaries within which possible future reviews of royalty or tax rates should take place, thus making them predictable and capable of being considered by investors before their decision as to whether to invest in the country.

Industry consultation and the principle of no surprises

Unexpected reviews may become necessary if government finds that royalty collections, individually or in aggregate, are not in line with the desired proportion of economic rent that they originally intended to levy or that the proportion has become inadequate in terms of evolving events or emerging needs. To minimise perceptions of sovereign risk, which can undermine the relative attractiveness of the country as a mining investment destination, government must adhere to the principle of “no surprises” in that they must prepare the ground for changes in consultation with industry. Aside from presenting rational arguments for change they must also devise strategies for their gradual introduction to give industry a chance to progressively adjust to their impact. Consultation must be in tandem with hard but well-informed bargaining and is particularly crucial if change is to be applied to existing mines. It is best to avoid retrospective application.

Legislation to reflect policy objectives and to be capable of being enforced and administered

The next priority is to ensure that the relevant legislation truly reflects the policy objectives and the spirit of any agreements reached with industry. It must also be supported by clear definitions and enforceable regulations and administrative procedures that reduce compliance costs and potential for disputes. There is no point in having highly sophisticated legislation if the administrative departments that must enforce it have a low level of relevant administrative skills, capabilities and supporting systems. The simpler a fiscal regime the more effective and efficient its administration will be.

Equity in tax impact

Simple fiscal regimes, however, may raise equity issues. Policy-makers, for instance, must determine whether their royalty regime should be uniform or whether it should consider “ability to pay” at the project level. This may be achieved through the use of different royalty/taxation rates for different commodities or for projects with different profitability or economic rents. Providing incentives to attract investment by negotiating lower royalty/taxation rates on a project-by-project basis for projects of national economic significance irrespective of their profitability may raise serious equity issues and undesirable precedents. By contrast, incentives to promote domestic downstream processing can be provided across the board by applying progressively lower *ad valorem* rates to sales of mineral products to which value has been added, e.g. sales of ore, concentrate, metal etc. In the final analysis it is once again a matter of trade-off between equity and administrative efficiency.

Co-ordination and systems sharing among relevant ministries and departments involved in mining taxation policy and administration

It is generally better if the legislative and administrative powers in resources management reside at the same level of government whether central or state/provincial in federal systems of government. This is not always the case. Some recent trends towards decentralisation have seen administrative powers delegated to the level of local government or even to the community level in some cases. This is often the result of strong dissatisfaction by local communities about the way royalty revenue is appropriated and then re-distributed through budgetary processes. Communities may feel there is little or no regard for their needs and the fact that they host and bear the impact of the mining operations. These grievances are often legitimate on the ground of equity, and better re-distribution of royalty payments to the areas affected by mining operations may be justified. Extreme decentralisation of the administrative process, however, may not be the best way of achieving these aims. It is worth pointing out that, in the absence of significant institutional strengthening at the decentralised level, these changes have in some cases generated very disruptive confusion and inefficiency.

The nature of mining operations also means that companies interact with government through a number of different ministries and related departments. Aside from environmental considerations, mining departments typically administer and collect statistics about

mineral tenements, technical and safety aspects of mining, while departments affiliated to the ministry of finance deal with policy formulation and collection of mining taxes. Sound assessment, collection and audit of royalties, however, require a high level of integration and co-ordination of the sets of skills and information residing in different departments. This in many cases is lacking or does not occur to an adequate level.

Select taxation systems with clear audit trails

As already discussed, *ad valorem* royalties are easy to administer if based on the realised value as shown on companies' invoices of at-arm's-length sales submitted with their royalty returns. With this approach, no ambiguity arises about sales volumes (in contrast with unit based royalties) and grades or the amount of royalty to be paid. Government, however, is exposed to both the up- and down-side risk of commodity price volatility and any realised hedging gains or losses, over which it has no control. The latter, however, may be netted out of the realised value. By contrast, royalty payments based on the value of metal contained in the mineral product sold introduce issues of appropriate assaying and payable recovery. This is particularly the case when the product sold is poly-metallic. Significant ambiguity and disputes often arise with not at-arm's-length sales where transfer prices need to be "deemed".

Modelling the impact of changes before implementing them

When, as in recent times, commodity prices rise, traditional specific or *ad valorem* royalty collections do not rise in line with company revenues. This may generate perceptions that government and the community are not receiving their fair share of economic rents and may lead to hurried, unanticipated, and sometimes not well-informed changes in the taxation regime. These knee-jerk responses may prove ineffective if not properly thought out and modelled and may be damaging in terms of future investments if introduced with inadequate industry consultation due to perceptions of sovereign risk.

On the other hand, when commodity prices inevitably fall, government will still collect royalties as long as the mine stays open. Narrow-margin operations however may become unprofitable or even worse the net cash flows may fall below the corresponding marginal cash operating costs, justifying closure of the mine. Under threat of closure and the consequent loss of jobs, mine owners will exert political pressure to have royalties waived or deferred. Modelling is once again critical to determine whether to make a legitimate concession or "call a bluff". This is an administrative area fraught with great complexity, uncertainty, lack of transparency and which may be open to abuse.

Sophisticated fiscal regimes come at an administrative cost

Accounting profit based and economic rent based taxation regimes and associated hybrid schemes, while economically more efficient, have seldom been implemented in the past due to their administrative complexity. The profit or rent base must be determined on a project basis, generally in a manner which differs from the standard accounting measure of profit. Different capital recovery rules, allocation of common expenses and overheads and particularly the determination of an appropriate level of "normal profit" may make the process ambiguous, hard to audit and open to intractable disputes. In practice, while it is relatively easy to draft and enact sophisticated taxation legislation, serious challenges may arise in its enforcement and administration. This is especially the case if the administering authority is either under-funded or cannot attract the necessary skilled personnel.

Implementing complex special taxation regimes also requires legislative frameworks with scope for ministerial discretion. Exercising ministerial discretion, however, in resolving fiscal disputes at best generates undesirable precedents and inequities and at worst is open to corruption and should therefore be minimised.

On balance the author tends to agree with the sentiment expressed in Precept 3 of the "Natural Resource Charter"³ (2011) that, on average, in countries with weak administrative institutions the most effective and efficient way to increase the government's share of economic rent would be through retaining traditional specific and *ad valorem* royalties and implementing selective increases in the corporate income tax rates applicable to mining.

Commensurate and progressive penalties for non-compliance

Another area of contention is that of penalties for non-compliance. Legislative regimes range between:

- No specific provisions. This implies that no errors can happen and accurate royalty amounts should infallibly be paid with every return. This system is essentially unworkable because mistakes amount to non-compliance with the conditions of the mining title. This may lead to forfeiture of the title unless there is ministerial discretion.
- Draconian penalties, including disproportionate fines and in some case even jail sentences. The political reality of mining enterprises under financial stress and the related employment consequences of possible closure make enforcement impractical.

Ideally, sanctions should rise over extended periods of non-compliance from application of progressively higher penalty interest on the outstanding amounts, to fines and finally to forfeiture of title.

Conclusions:

In conclusion, policy-makers should strive for mining sector royalty/taxation legislation and related regulations that have the following attributes:

- ▲ Are clearly written and understood by both government and industry, transparent, equitable, predictable and stable;
- ▲ Achieve defined government revenue collection and stability objectives without excessively compromising economic efficiency, equity and ease of administration;
- ▲ Are enforceable and supported by adequately skilled and resourced government administrative institutions and systems, with good inter-ministerial and inter-departmental co-ordination and information sharing;
- ▲ Anticipate and minimise or pre-empt the need for future amendments. Where these are necessary, they should be based on the principle of “no surprises” and continuous and meaningful industry consultation, avoiding perceptions of sovereign risk;
- ▲ For unit based and *ad valorem* royalties, make use of actual volumes and realised values as shown in sales invoices, rather than contained metal and deemed prices;
- ▲ If incorporating more sophisticated, complex and more economically efficient profit or rent based taxation regimes, ensure that they are based on unequivocal methodologies and definitions for the determination of the appropriate taxation base, thus reducing compliance costs, ambiguity and potential for litigation;
- ▲ Differentiate royalty/taxation rates for different minerals according to their general “ability to pay” and provide, as an incentive, decreasing royalty/taxation rates to recognise the value added to various mineral products sold by investment in downstream processing. Lower royalty/taxation rates negotiated at the individual project level should not be viewed as an effective means of providing investment incentives and subsidies;
- ▲ Have penalties for non-compliance that are proportionate and progressive, increasing from penalty interest to fines to forfeiture of mining titles; and
- ▲ Involve appropriate but not excessive ministerial powers of discretion and determination that, if excessive, may become the source of inequitable decisions and open to abuse.

REFERENCES

ABARE, 2011, Australian Commodities, June Quarter 2011

Geoscience Australia, 2011, Identified Mineral Resources, www.ga.gov.au/minerals/mineral-resources/aimr.html, accessed 12, December 2011.

Harman F. and **Guj P.** - Mineral taxation and royalties, Chapter 15 in “Australian Mineral Economics - A survey of important issues” Monograph N. 24 of the Australasian Institute of Mining and Metallurgy - Maxwell P. and **Guj P.** Editors, BPA Digital Burwood - Victoria - Australia, ISBN 1 920806 46 6

Natural Resource Charter, 2011, www.naturalresourcecharter.org, accessed 27 December 2011

OECD, 2010, Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations, obtainable on: www.oecd.org/ctp/tp/guidelines

Otto J., Andrews C., Cawood F., Doggett M., **Guj P.**, Stermole F., Stermole J. and Tilton J., 2007 - Mining Royalties: A global study of their impact on investors, government and civil society - The International Bank for Reconstruction and Development / The World Bank - (Directions in Development, Energy and Mining), Washington, D.C., ISBN 10: 0-8213-6502-9



Contact

International Mining for Development Centre

Perth, Western Australia
Australia 6009
Email: admin@im4dc.org

www.im4dc.org

The Energy and Minerals Institute

The University of Western Australia
M460A, 35 Stirling Highway
Crawley, Perth
Western Australia, Australia 6009
Tel: +61 8 6488 4608
Email: emi@uwa.edu.au

The Sustainable Minerals Institute

The University of Queensland
St Lucia, Brisbane
Queensland, Australia 4072
Tel: +61 7 3346 4003
Email: reception@smi.uq.edu.au