

TAXATION — RESOURCES TAX, ROYALTIES AND OTHER TAXES PECULIAR TO THE MINERAL INDUSTRY

By L.J. Carden

1. INTRODUCTION

In Australia, ownership of mineral resources is generally vested in the Crown. This follows the precedent of British Law and differs from the United States of America which has private ownership of mineral resources. The Australian State Governments have ownership over minerals found within their borders while the Commonwealth Government currently has ownership in the Territories and in Australian territorial waters. These various governments have facilitated the exploitation of mineral resources by delegating to private companies and individuals the rights to explore for and to develop mineral deposits.

As the operation of mining companies leads to the depletion of particular mineral deposits, governments in Australia have generally charged the companies for the right to mine these resources by levying a special tax in the form of royalties which are in addition to normal corporate income tax. It is to royalties and other taxes peculiar to the mineral industry that this paper is directed.

This paper will firstly look at the concept of resource rent, its main objective and the desirable features of such a tax system. The paper then compares different types of royalty systems currently being used in Australia and notes the effects of these systems on mining investments. Next an examination is made of the proposed resource rent tax and its implications for the industry. Finally the best existing royalty system is compared with resource rent tax.

2. THE CONCEPT OF RESOURCE RENT

The definition of economic rent as it applies to the mining industry derives from the concept noted by the British economist Ricardo in the early 19th century. In today's terms it is defined as the profits of an investment that remain after deducting that income which corresponds to the minimum return necessary to attract investment to the project in the first place. Such rent is a function of the quality of the resource, its location and the numerous other variables that affect the rate of return necessary to attract investment.

In recent months there have been references by Federal Ministers to proposals for the introduction of a resource rent tax. Canberra's proposed resource rent tax is a levy to be imposed on mining companies by the Federal Government for the use of mineral and petroleum resources even though these are mostly owned by State Governments.

Levies for the use of mineral resources are in fact already being paid by mining and petroleum companies. Royalties are the most obvious payment but other levies imposed on the industry can also be regarded as resource taxes. They include lease rentals, export levies, excessive rail freights, prices fixed below world parity and the industry's contribution to community infrastructure. Many of these are difficult to quantify. However the Australian Mining Industry Council recently estimated that royalties, rentals and the coal export levy alone amounted to \$321 million in 1976/77.

Clearly a good deal of resource rent is already being collected by the public sector. Not so obvious is the fact that some of the rent may also be flowing into other hands. For example, labour (as opposed to capital) may be collecting this rent through the receipt of wages in excess of market rates. Similarly, inefficient management may be consuming the rent; very efficient management may be generating more rent than normal by its success in reducing costs.

The question as to whether or not there is in fact any resource rent available for collection needs to be considered in any discussion of the subject. The dynamic nature of the free enterprise system tends to make the periods when such rent is available notable for their brevity. As soon as a company starts to make exceptional profits in a particular commodity others start developing similar resources. Under free market conditions this soon brings down the price and reduces profits to a normal level.

3. THE MAIN OBJECTIVE AND DESIRABLE FEATURES OF A SOUND ROYALTY OR RESOURCE RENT SYSTEM

The main objective of a royalty or resource rent system should be to levy a charge related to the value of the right to exploit mineral resources. Such a charge should involve consideration of the potential revenue that could be generated from the mineral resource and all of the costs of obtaining that revenue including the return necessary to attract debt and equity finance.

For a mining company, corporate income tax payments and other additional taxes such as royalties present further costs which must be met before any return can be received on funds invested. Companies will only explore for and develop an ore body when they are reasonably confident that after all costs are met there will be sufficient surplus funds left to earn a satisfactory return on investment, after allowing for the inherent risks faced.

Ore bodies are explicitly or implicitly ranked by mining companies according to the expected value of each and the likelihood of achieving an adequate return on investment. This ensures a reasonably efficient allocation of resources as capital and labour will be directed to the development of the best available ore bodies. Additional taxes such as royalties can impinge on these decisions by having a significant impact on the economics of all proposals. Alternatively, if the impact of these additional taxes is variable they can alter the ranking of proposals and, under these conditions, such taxes can promote inefficiency in the allocation of resources.

To avoid this, a desirable feature of a sound royalty or resource rent system should be that it has a minimum effect on exploration, development and production decisions.

Mining is inherently a high risk area of investment because of the great number of variables facing the industry. Given the existing level of unknowns it is highly desirable that governments adopt consistent and predictable policies towards the industry. If they do not they add to the risks facing the industry and tend to frustrate its growth. On these grounds a further criterion of a sound royalty or resource rent system should be that it be robust and able to stand the test of time without requiring change.

In summary, it is considered that the following, in descending order of importance, should be the main criteria of a sound royalty or resource rent system: As the objective is to collect revenue related to the value of the right to mine, the additional taxes should recognise variations in the value of that right.

The system should have a minimum effect on exploration, development and production decisions.

The system should be robust and able to stand the test of time without requiring change.

4. TYPES OF EXISTING ROYALTY SYSTEMS

The manner of assessment of royalties varies widely, both between States and from mineral to mineral within States. Some rates are set out in mining acts, others are specified in regulations under those acts and some are defined in specific agreements relating to special mining leases. There are three basic types of royalties in Australia — unit royalties, ad valorem royalties and profit-based royalties.

A. Unit Royalties

Unit royalties are levied on a production basis. This can involve a flat rate per tonne of ore mined, or per tonne of contained metal. Examples are:

STATE	MINERAL	ROYALTY RATE
Queensland	Coal consumed in the State	5 cents/tonne
	Nickel ore won at Greenvale	10 cents/tonne
New South Wales	All coal	\$1/tonne
Victoria	Brown coal	4 cents/tonne
West Australia	Bauxite saleable as refractory, abrasive or chemical grade	50 cents/tonne

The rate applicable to a unit royalty can also be indexed to price and so becomes almost an ad valorem royalty — for example the Mount Isa royalty on copper.

B. Ad Valorem Royalties

Ad valorem royalties are levied on a revenue basis. A percentage of ex-mine value or FOB/FOR value are the most common revenue bases. Examples are:

STATE	MINERAL	ROYALTY RATE
Queensland	Export Coal	4% of FOR value if mined underground
		5% for FOR value if mined Open cut
South Australia	All minerals except — petroleum & gemstones	2½% of "value of mineral", or
		5% of "value of extractive minerals"
West Australia	Iron ore	7½% FOB value of direct shipping ore, (minimum rate 60 cents/tonne)
		3¾% of FOB value of fine ore

C. Profit-Based Royalties

Profit-based royalties are usually a percentage of profits (before corporate tax). An example is the Tasmanian system where the royalty rate is essentially five per cent of profit.

As can be seen from the above, governments in Australia have adopted a variety of approaches to the royalty question.

5. COMPARISON OF ROYALTY SYSTEMS

A. Unit and Ad Valorem Royalties

Both unit and ad valorem royalties generally fail to take account of the net income of a mining venture. For the purpose of comparison therefore, these two systems can be reviewed together.

It is possible that a unit or ad valorem royalty could be set initially at an appropriate level for a particular project. However, if there is any change in the price received for the mineral or the cost of getting the mineral to market, then the unit royalty has little chance of being able to continue to relate to the value of the operation. Similarly, although an ad valorem royalty may satisfactorily account for changes in services, it generally will not reflect changes in costs.

To illustrate the unsatisfactory nature of such royalty systems one need look no further than the Australian record of cost and price changes since 1970. Cost levels in Australian industry, measured by the GNE deflator, have more than doubled since 1970. As well, many mineral prices have been subject to large fluctuations. For example, copper prices jumped from about \$800 per tonne in 1972 to almost \$2200 per tonne in 1974 and since then have halved to \$1100 per tonne in 1978.

The Goldsworthy iron ore project is a specific example of how ad valorem royalties fail to reflect changes in value. In its early years (1965-1971) Goldsworthy royalty payments which are a fixed percentage of FOB revenue were running at about 10 to 12 per cent of earnings before royalty and tax. From 1972 onward the proportion climbed rapidly reaching the 40 per cent range by 1975. More recently the royalty percentage of pre-tax profits has reached infinity as the project has gone into a negative earnings situation, whereas the royalties continue to be assessed at a fixed proportion of revenue.

Depending on relative movements in costs and prices, it is possible that royalties levied on a production or revenue basis will increase as profits decrease. This could have a profound effect on production decisions such as determining cut-off grades. A cut-off grade is that grade of ore below which the revenue per tonne is less than the total cost per tonne of achieving that revenue. If a unit or ad valorem royalty becomes incompatible with the fundamental cost/price relationship assumed when the royalty was first imposed, the royalty can operate to reduce profits substantially. This can force companies to raise cut-off grades to stay in business. This end result could well be the premature closure of mines and the sterilisation of mineral reserves. Thus, in the long run an unrealistic unit or ad valorem royalty rate may cause a fall in public sector receipts from the mining industry.

As the performance of existing mines is closely examined by prospective investors, unit or ad valorem royalties, which are out of line with current price/cost relationships, can not only affect production decisions. If royalties are proving to be a heavy burden for existing operators, exploration effort will be directed elsewhere.

Companies will have increasingly negative attitudes towards further development in the area.

The final criterion of a sound royalty system is that it should provide long term stability. Unit or ad valorem royalties provide stability for State budgetary needs in the short term. However in the longer term the opposite may in fact occur as development of new mines is restricted or reduced.

From the preceding discussion it would seem that unit and ad valorem royalties are unlikely to satisfy the requirements of a sound royalty system.

B. Profit-Based Royalties

Unit and ad valorem royalties can initially make allowances for price/cost relationships existing at the time the royalties were imposed, but they may quickly become inappropriate with changing price/cost relationships. Profit-based royalties, however, automatically adjust for altered price/cost relationships thus reflecting the changing average value of the right to mine.

Provided the rate of royalty is kept at moderate levels, a profit-based royalty will consistently give mining companies the chance to make satisfactory returns on their investments. This is an essential factor in encouraging further investment in the mining sector.

Mining differs from most industries in that its operations constantly deplete the industry's main assets — the ore bodies. Exploration for further ore and for new ore bodies is essential to ensure that mineral resources continue to be available. The bulk of exploration funds comes from mining profits and if profits are consistently depressed, so also will be exploration activity. Profit-based royalties applied on a reasonable and consistent basis will tend to have a minimum impact on exploration, development and production decisions. That is, rational economic-engineering decisions will be made.

As the profit-based form of royalty takes into consideration changing price/cost relationships, there is no need for constant adjustment to the royalty formula. The public sector automatically shares in the increased profits in years of buoyant market conditions.

In summary, a profit-based royalty system is clearly superior to the other royalty systems. The main strength of such a system is that payment is directly related to the value of the mining activity. It achieves this by taking into consideration both the price realised and the costs of realisation.

Support for this view was expressed by the Industries Assistance Commission (1976) when it was stated "the most desirable royalties are profit royalties because they are based on both cost and price movements and hence reflect the ability of the company to pay".¹

6. RESOURCE RENT TAX

As previously noted the concept of resource rent is not new. Royalties and other imposts are in fact a form of resource rent tax. The danger to the mineral industry and to the availability of future mineral resources is that the proposed resource rent tax seems likely to be additional to existing royalty taxes.

The effects of an additional tax on resource availability can be readily appreciated by an examination of its impact on our international competitiveness, on investor confidence, and most importantly exploration and development.

A recent study² showed that the relative tax payable by Australian companies was significantly higher than for companies in four of the other countries considered including the major Australian competitors, Brazil and South Africa. Only in Canada was the relative tax position slightly more onerous.

Moreover, Canada has had a substantial decline in mineral exploration following increases in taxation from 1971. De Young³ showed that "investment in the Canadian mining industry had decreased steadily since 1971 when Federal tax reform legislation was introduced in the June Budget". However a far more telling observation was that "Canadian mining companies spent an estimated 60% of their exploration effort abroad in 1975, compared with 20% in 1971".

Australia's location, remote as it is from many markets, is an additional handicap. Apart from iron ore and coal, of which a significant proportion is exported to Japan, most of Australia's mineral exporters are very poorly situated in comparison to their main competitors. It is obvious that the imposition of an additional tax will further erode an already inferior competitive situation.

The second major factor affected by the resource tax proposal is investor confidence. Due to a combination of factors, the scale of operation necessary to make most modern mining or petroleum projects economic is very large. Finance on the same large scale is involved.

In negotiating for funds traditional financial criteria are largely ignored. Instead lenders rely on a detailed examination of prospective cash flows to ensure a borrower's ability to meet his commitments. To be able to adequately predict cash flows, both lenders and investors must be confident that the basic rules under which the developer is to operate will not be subject to continual change.

Recent history has created an increasing doubt about the reliability of these basic rules in Australia. There have been a number of major changes to taxation laws over a relatively short period of time. These include:

- Elimination of the outright deductions for mine development expenditure;
- elimination of the deduction for share capital subscriptions to finance exploration expenditure;
- elimination of the five year deduction for housing and welfare facilities;
- increasing the tax rate from 42.5 per cent to 46 per cent, and
- applying tax to dividends paid out of exempt income.

As well, royalty rates, the conditions of export licences, and the granting of mining leases have undergone drastic unfavourable changes in the space of a few years. Uncertainty in industrial matters, frequent adjustments to foreign exchange conditions, and apparently arbitrary decisions on foreign investment, have all added to the confusion.

The mere proposal of another tax has further dampened the confidence of both local and international investors. Investor confidence is a fragile thing. Consider the situation where a mining company purchases a piece of largely unexplored but highly prospective ground. The price paid is justified purely on the very small possibility of getting a very high return. The risks of the gamble being lost are also very high. Would the company take the gamble at all if any high returns were to be cut by a resource rent tax?

The third major factor affected by the resources tax proposal is the most important area of all, exploration and development. It is an area where the effects could be devastating. Such a tax would influence the decisions whether to explore and develop or not.

It has been suggested, quite correctly, that the tax will not affect marginal projects. Certainly the tax will not affect projects which have been proved marginal. The problem is that at the time of the decision to invest, it is not possible to say with certainty whether a particular project will be marginal, a bonanza or a total loss.

Mineral and petroleum exploration is a very high risk activity and it is essential that investor confidence be maintained to ensure that future development does take place. Mineral exploration has been undertaken in the past because the potential rewards for success have been high (potential rewards, not necessarily the actual rewards).

In a sense the traditional explorers have been incurable optimists. They are the type of people who have built the industry into what it is today. The continuation of the explorer's expectation of reward is vital to the future of the industry. A resource rent tax will diminish these expectations with the inevitable result that funds for exploration will be diverted elsewhere — to areas where the possibilities of geological success are just as good but taxes are less onerous.

The effect of a resource rent tax on mining and petroleum development is not limited to the long term effect resulting from a fall off in exploration activities. There is also the immediate effect on deposits already discovered.

Projects which, before the tax, were considered marginal, will become uneconomic if the tax is introduced. This is because even the marginal project has a small but vital chance of producing high returns.

The Australian Mining Industry Council recently pointed out that advocates of resource rent tax naively assume that the minimum rate of return or trigger point for the tax (i.e. some arbitrary assumption of the rate of return necessary to induce a decision to invest) is known precisely in advance and also is a single rate for each project. Both assumptions are wrong.

It scarcely needs to be said that forecasts in any area of human activity are more likely to be wrong than right. Feasibility studies are based on a range of assumptions as to capital costs, mining conditions, operating costs, taxation laws, market prices and a host of other factors.

The result of the calculations will always be a wide range of possible returns for a single project, conceivably stretching from negative to, say, 50 per cent.

Analyses of probability are then applied to all these possible rates, and an average or expected rate of return is arrived at. If this is equal to the developer's minimum requirement he will usually proceed. Such a project would be classified as marginal.

Now assume that his required rate of return has been correctly estimated in the tax law as the starting point for a resources tax. Then all of the possible rates above that return which were taken into account in assessing the average or expected rate of return will be reduced by the amount of the additional tax.

The inevitable result is that the expected rate of return will be reduced. As the reduced rate will then be below the minimum required rate, the development will not proceed. The tax, even though designed to apply only to "excess" profits will have the effect of pushing the marginal projects below the commencement threshold.

It is vital that this point about the marginal projects be understood. It is wrong to assume that the resources tax will result in a greater return to the community from the use of the nation's natural resources. More than likely the very existence of the tax will cause marginal projects to be shelved — projects which in the absence of the tax would proceed and add to the basic taxation revenue of the nation.

If new developments are shelved neither resource rent tax nor company tax will be collected. But more than this there will be a reduction in secondary benefits which are associated with the new mineral developments such as decentralisation and the development of new infrastructure, employment both direct and indirect, security of supply, and balance of payments relief.

7. RESOURCE RENT TAX VERSES A PROFIT-BASED ROYALTY

As discussed earlier, of the three general types of royalty systems currently in use in Australia, a profit-based royalty system is to be preferred. How then does this system compare with the proposed "resource rent tax"?

The differences are:

A royalty based on profits is calculated on "accounting" profits while the resource rent tax is based on total cash flows excluding loans and interest paid and received.

A resource rent tax is paid only on the cash flows after a "threshold" rate of return has been earned, but a profit-based royalty must be paid on all profits, i.e., the threshold rate is zero.

By and large these differences are relatively minor. A resource rent tax of itself, therefore, is not such a new concept but to resource companies it becomes frightening when the government threatens to add it to its already existing tax systems.

A real problem with both systems is the arbitrary fashion in which the tax rates are set by the government. At best, these taxes can only reflect the average resource rent available from the industry. Mines developing below average resources will pay too much and mines developing above average resources will pay too little. If the rate does not reflect the average industry rent, the whole industry will be either penalised or subsidised.

Both systems, also disadvantage those companies which are more efficient than normal. The profits generated by this efficiency will attract a royalty or rent payment in the same fashion as the profits generated by the use of the resource. In a similar fashion, inefficient companies will pay less for the use of a resource than they should.

In terms of the objectives previously stated there is very little to choose between the two systems. Neither system will collect the value of the right to mine for all individual mines although they both could reflect it on average for the industry.

Both systems will affect exploration and production decisions albeit to a lesser extent than other systems. Both systems being based on measures of a company's ability to pay should, as a broad generalisation, be reasonably equitable. Both systems should also be reasonably robust.

Basically it becomes a question of which system is more likely to promote sufficient exploration and development to provide the mineral resources we need over a long period of time. This, of course, will depend on the royalty rate set for the profit-based royalty system or the threshold and tax rates set for the resource rent tax system. However it is clear that as both systems would be in addition to corporate income tax that either system would be less damaging to Australia's mineral prospects than both.

8. CONCLUSIONS

Given the criteria outlined in this paper it is clear that a royalty system should

be based on some measure of ability to pay. Of the common types of royalty system currently in use in Australia a royalty system based on profits is more appropriate than unit production or ad valorem systems.

The proposed resource rent tax however, if grafted on existing resource tax collections, will probably be more harmful than any of these systems. It could impair the Australian mineral industry's competitiveness and seriously erode the confidence of those making exploration and development decisions. It will delay the development of projects expected to be marginally profitable. These factors will inevitably cause a reduction in the future available mineral resources of the nation.

If, however, a resource rent tax should replace the royalty and other collection systems that exist (in addition to corporate income tax), the concept could have merit.

FOOTNOTES

1. Industries Assistance Commission (1976), "Petroleum and Mining Industries", Australian Government Publishing Service, May 28, p. 41.
2. Gibbons, C.T. "Effects of Recent Taxation Development on New Mining Projects" presented at the Mining Economics Symposium, School of Mining Engineering, University of New South Wales, September 21, 1977.
3. De Young, J.H. Jr, "Effect of Tax Laws on Mineral Exploration in Canada, Resources Policy" June 1977, p. 96-107.