Mineral Property – Rights, Royalties and Rents

D Mather[1], J Saavedra[2] and R Kilian Polanco[3]

ABSTRACT

In a modern economy there is a compelling case why governments should not own property rights to mineral deposits. Assuming they do, however, governments will use these constitution rights to raise revenue. They have two basic instruments to achieve this; a royalty charge on price or a rent tax on income/profits. On the one hand, a royalty charge creates a 'deadweight loss' to society by increasing cut-off grades and decreasing the life-of-mine. They are also regressive. However, they are easy to administer. On the other hand, a rent tax avoids the problem of 'deadweight loss'; it does not impact on the life-of-mine because the tax structure is neutral. But, they are difficult to administer correctly, particularly in the determination of rents and the definition of mining per se. If rents are incorrectly determined capital markets are distorted. And, if mining activities are incorrectly defined, downstream activities could be adversely affected.

INTRODUCTION

Governments should not own mineral rights simply in order to collect revenue, nor should they assume rents to justify super taxes. The fact remains that most governments do collect additional revenues from mining operations. Using a standard text book economic analysis, two different categories of revenue collection instruments are discussed. First, however, the concept property rights and how they apply to minerals is briefly covered. The two cases of mineral taxation, royalties and income taxes, are illustrated using a constant cost example for gold mining operations. Both systems have major faults. Royalties are regressive and shorten the life-of-mine. Income taxes, including a super tax, may create under-investment in the mining industry if there are no rents present. Finally, using the same constant cost model the proposed Australian resource super profits tax (RSPT) is analysed.

The purpose of this paper is not to provide an in depth economic analysis, but rather to highlight the major conclusions it would produce. The concepts used in this paper can be found in most good microeconomics text books, which usually provide references to classical and contemporary contributions. The application to mining taxation systems is, however, the work of the authors. Varian (1992) remains a standard text for microeconomic analysis. For a more specialised treatment on property rights and taxation systems, Cullis and Jones (1992) and Perman, Ma and McGilvray (1996) are good starting points. Many excellent books on modern financial and investment analysis exist, however, Brealey, Myers and Allen (2006) is the most accessible.

PROPERTY RIGHTS

The ability to trade private property is the fundamental characteristic of modern economies, but trade is only possible if individuals have exclusive rights to that property. In other words, the protection of private property, in conjunction with well functioning markets, will generate efficient prices. Efficient prices should ensure an efficient allocation of resources, particularly in capital markets, among competing uses. This caricature of a private market economy only exists if markets are competitive and private property rights can easily be assigned.

Sometimes it is impossible or very difficult to exclude people from the benefits flowing from certain property. For example, the incentive for private firms to build public parks (assuming that they cannot charge user fees) is very low resulting in too few parks open to the public. These type of goods and

1. Senior Lecturer, Western Australian School of Mines, Locked Bag 30, Kalgoorlie WA 6433. Email: d.mather@curtin.edu.au

2. Senior Lecturer, Western Australian School of Mines, Locked Bag 30, Kalgoorlie WA 6433. Email: j.saavedra@curtin.edu.au

3. SAusIMM, Post Graduate Student, Western Australian School of Mines, Locked Bag 30, Kalgoorlie WA 6433. Email: r.kilianpolanco@postgrad.curtin.edu.au

services are called public goods and there is a case for government to provide them through taxable income. If congestion is possible then a user fee is applicable. In some instances the government will attempt to mimic private property rights in order to capture the efficiencies inherent in the market system. A good example of this is the establishment of tradable carbon emission permits.

The government only has a case for owning mineral property if the deposits display public good characteristics. If the government believes that the market for mineral deposits functions badly, then it should regulate rather than nationalise. The entire process of mining, from prospecting to closure, displays very strong private good characteristics. There might be some justification for government to control property rights on mineral deposits if they subject to monopoly markets, which is generally not the case. The government does have a role to play in the registration and protection of private property rights to mineral deposits – which it does.

Most governments around the world still hold exclusive rights to mineral property, although few exercise the full extent of their rights. What is obvious is that governments use these rights to raise revenue over and above the normal company taxation. The concept of weak sustainability is often used to justify the additional taxation, that is, non-renewable capital (the mineral deposit) can be replaced by man-made capital (infrastructure) and government is better at providing infrastructure than private industry. In a world of public-private partnerships and private provision of public goods like water, electricity, roads and so on, the weak sustainability argument might not be as strong as it was 30 years ago.

ROYALTIES – AD VALOREM TAXES

Strictly speaking royalties are a proportion of the produce, or revenue, paid to the crown for the use of land. Problems arise when fertile land becomes scarce and people begin to farm marginal land which produces no excess (or rent). Mining/mineral royalties exhibit similar characteristics.

In the case of Western Australian Gold Royalty system, the mining company pays a proportion of the gold price as a royalty to the state government. Providing it is clear who pays the royalty, the system is easy to administer and police. The only information needed is gold output and the gold price to calculate the charge. This instrument is, however, far from benign. As is explained below; it is regressive, it increases the cut-off grade and it decreases the life-of-mine. As a result it creates a loss to society that cannot be recovered, a 'deadweight loss'.

A tax is termed regressive if it rises when a profit, or income, falls. To illustrate the regressive nature of the gold royalty a simple constant cost example is presented on Figure 1. The analysis holds the cost of producing an ounce of gold constant at $900 and a royalty charge of 2.5 per cent on price. The price per ounce is allowed to vary from $900 to $1400 per ounce. When the gold price is, for example $1000 ounce, the royalty is 25 per cent of profit. A further price increase to $1400 reduces the royalty to just seven per cent of profit. In addition, if the company is making a loss but still produces gold it still has to pay the royalty - at a gold price of $800, and if the mine is still operating, it makes a loss of $100 per ounce, but still pays a $20 per ounce royalty.


FIG 1 - The regressive gold royalty charge.

At normal breakeven, where the gold price is at $900 per ounce (costs are held constant at $900), the mine still pays a royalty and makes a loss of $22.50. The breakeven after a royalty charge increases to just over $923 ounce. This represents a higher cut-off grade which will impact adversely on the life-of-mine. The impact can be measured using an aggregated grade/tonnage curve. The important issue is; under normal market conditions more of the resource will be exploited – the royalty creates an undesirable market imperfection. This market imperfection has a real impact on society; people are employed for shorter periods, total income flows from the mine are lower and downstream income and employment effects are not as strong or long lasting. These adverse consequences can be avoided by using an income/profit based system implemented as a rent tax. This is discussed in the next section.

RENTS – PROFIT BASED TAXES

A profit based tax on economic rent certainly avoids the deadweight loss problems of a regressive royalty, but it introduces a different set of problems which make it difficult to administer efficiently and effectively. First, a flat rate tax is illustrated using the constant cost model. The total tax burden from company income taxes and gold royalties is also presented. Second, because government assumes that rents exist in mining, the concept is discussed from a modern economic perspective. The effect on the capital market resulting from taxing non-existent rents is highlighted.

Profit based tax

As the name suggests profit based taxes place a charge on profits, that is, they take into account the cost structure of the firm. If the tax rate is constant it is called a flat rate tax; Australian company tax is 30 per cent of profits regardless of the size of the company. Figure 2 illustrates a flat 30 per cent company tax as percentage of profits. A progressive tax is one where the tax rate rises as income increases, as in personal income tax.
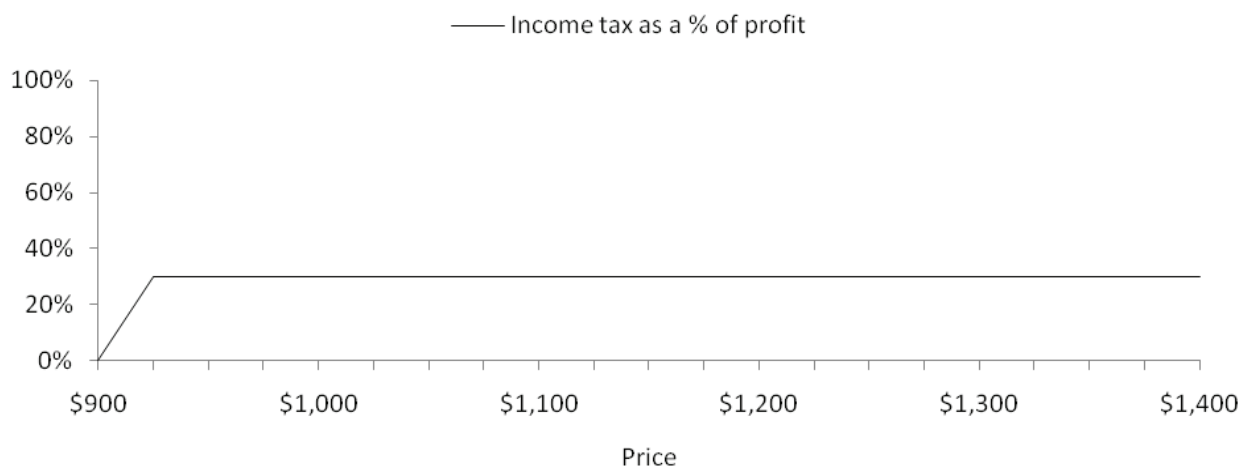

FIG 2 - The flat rate company income tax.

The advantage of a profit based tax is that it does not impact on the breakeven point as no profits are made at this point and thus no tax is paid. If the tax does not impact on the breakeven point it does not impact on the cut-off grade or the life-of-mine.

Using the same constant cost assumptions, the current tax burden on gold mining companies comprises a 30 per cent income tax and a 2.5 per cent royalty charge on gold sales. This is illustrated in Figure 3.

Figure 3 shows that the total tax burden as a percentage of income is very high when the gold price is low. During times of low gold prices the gold mining companies pay an excessive tax. When prices increase the tax burden decreases exponentially. This phenomenon begs a serious review of the current system of gold royalties, particularly in designing an instrument that is not regressive and does not impact on cut-off grades. This is exactly what the Henry Resource Rent Tax is supposed to achieve. Central to the proposed tax, however, is the presence of resource rents.
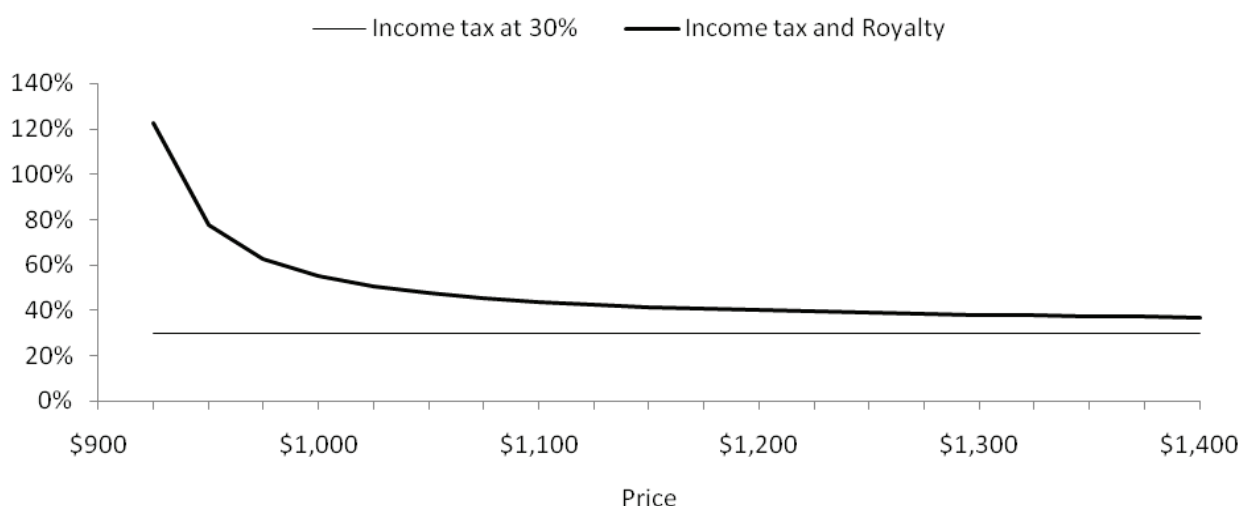
FIG 3 - Total tax burden as a percentage of income for gold miners.

Resource rents

Modern economics defines 'economic rent' or 'super-normal profits' as profits over and above the normal expected return for the level of risk inherent a particular industry. In theory, if economic rents are present and if markets, particularly capital markets, work properly then new firms will enter the industry to capture the excess gain. As more new firms enter the industry the supply increases, which depresses price and excess profits are eroded down to normal profits. In other words, under competitive market conditions economic rents should not exist.

A good example of where rents do exist is when a company can take out copyright or patents on a product or service. These rights place a barrier to entry into the market, thus creating a monopoly situation. New firms cannot enter, keeping prices high. Excess profits are sustained. Thus in situations where excess profits exist, which must be due to market failure in some form, a good case can be made for a rent tax. Indeed, the Australian government acknowledges this point, but recognises that imposing a super profits tax on, for example software or pharmaceutical companies encourages them to move off-shore (KPMG, 2010, p 12).

The difficult part of instituting a rent tax is defining when the firm or industry begins to make super-profits/rents. The classical theory of investments and finance asserts that people have a portfolio of investment choices. These investment choices range from options that offer a safe return to those that are very risky. Under the assumption that investors do not like risk, which is a good assumption, they will expect a higher return on risky projects than they would from a safe one. The price that investors are willing to pay to invest in a project will reflect a return in line with the risk associated with that industry. If the return is higher than the associated industry risk then asset prices are bid up driving the return down.

It follows that placing a super tax on an industry that operates under competitive capital markets, and has few barriers to entry, simply reduces profits to level below that for the industry risk profile. In this case the asset price is bid down and people will be slow to invest in new projects because the new price would reflect an industry with a lower risk profile. If investors had a choice between buying assets in projects between two industries with similar prices but different risk profiles they would obviously choose the less risky option. A rent tax on an industry not making super-normal profits will result in under-investment in that industry.

The big question still remains; do companies exploiting natural mineral resources make economic rents? The Australian government insists that they always do (KPMG, 2010, p 13) and because mineral deposits are immobile, unlike software companies, they are good candidates for a super profits tax. These issues are discussed in the next section.

RESOURCE SUPER PROFITS TAX

As stated previously, the issues underlying the resource super profits tax (RSPT) are relatively straightforward: first, the government insists that mining activities earn resource rents, which they

describe also as super profits, and second, because mineral resources are immobile they are good candidates for a super tax. Thus a new RSPT was proposed in the Henry Tax Review. The structure of the RSPT is a payment of 40 per cent of profits over and above company income tax, but as a deductable item from company income tax. The RSPT slots in at any profit level above the risk free interest rate (government bond). Justification for these rates is given below.

The Australian government contends that any profits in the resource industry above the risk free interest rate can be treated as super profit because:

- the RSPT allows for deductions of previous losses – 15 per cent for exploration and five per cent for development, for the theory to work these should not be capped; and
- companies are allowed to ring-fence poorly performing mines with well performing ones.

In essence, this means that if full payment for deductions are allowed and all tax losses are paid out at project close, then the risk profile should remain neutral (KPMG, 2010, pp 13 - 15). The 40 per cent super profit rate is more arbitrary. The government makes it clear that it is not the rate that matters, but rather that it remains constant over a long period of time (KPMG, 2010, pp 15 - 16).

A diagrammatic illustration, using the same constant cost example as previously, showing the difference between the RSPT and the gold royalty system is presented on Figure 4. The RSPT value includes the rule that it is deductable from company income tax.
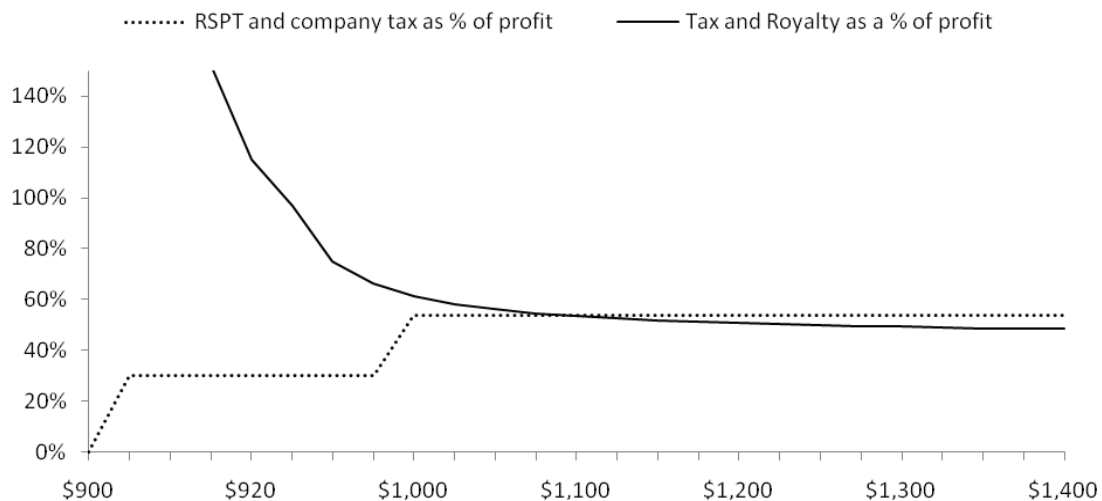
FIG 4 - Comparison between the resource super profits tax and gold royalties.

Figure 4 highlights some interesting points. Notably, that the RSPT is lower than the current taxation and royalty system for mines making marginal profits, or when the price of gold is depressed. Also, over a range of prices from about $920 per ounce to $1400 per ounce the net revenues (area beneath the curves) are greater for a royalty based system than for the RSPT. Two further issues on the RSPT are discussed below.

First, as stated on the government website dealing with the RSPT 'Under the RSPT, firms will receive a refundable credit for royalties paid. That is, every dollar of royalties a firm pays will reduce the RSPT liability by a full dollar' (Australian Government, 2010). With regard to this rule and Figure 4, it is worth looking at two interesting cases:

1. At high prices or when the mining firm is making good profits the royalty charge is refunded, but the difference between the revenue from the royalty charge and the RSPT is small (the area between the two curves after around $1100). Here there are few if any efficiency gains from adding a new tax and then refunding most of it back.

2. If the mining company is not doing very well, or prices are low, royalty payments are greater than the RSPT and the system reverts back to the royalty structure.

Fundamentally, the proposed RSPT system captures marginally more revenue at high prices and from rich mines; otherwise there is little difference apart from the larger administrative costs to run the RSPT.

Second, the 'RSPT would not be applied to profits from downstream activities such as refineries and smelters' (KPMG, 2010, p 16). In gold mining, this means that only profits made from actual mining are subject to a super tax. Mining in this instance, unlike that defined in the *Mining Act 1978*, stops at the ROM; ore transport from the mine site, milling and processing are not subject to the RSPT. It is very unlikely that ore on a mining ROM pad is worth enough to qualify for super profits, if it makes a profit at all. Most mining companies are vertically integrated and use unit costs, rather than transfer prices, to value the ore. For the proposed RSPT to be effective in gold mining, with an absence for a market price for the ore, standardised valuation techniques and methods are necessary. Failing this, it reverts back to the old regressive style of gold royalties.

CONCLUSIONS

In a complex modern economy there are no good reasons for governments to own mineral property rights. The only reason they do, is that it gives them an inalienable right to impose an additional charge on mining companies. This is often justified by insisting that mining generates rents/economic profit.

The collection of these so-called rents is often problematic. The two instruments discussed in the paper both have fatal flaws. The royalty system is regressive, it lowers cut-off grade, decreases life-of-mine and has a consequent negative impact on society. The income based super taxes pass on the grounds of not being regressive, but fundamentally fail because they assume the existence of rents in the exploitation of all mineral deposits. Imposing a super tax on an industry that is not making excess profits creates capital market disturbances and under-investment in that industry. When comparing the proposed resource super profits tax with the royalty system for gold mining, it fails on the grounds of being ineffective particularly if both systems run concurrently.

Finally, it should be the onus of government to prove, not assume, the existence of rents before a super tax is imposed. Once this is proved then an appropriate tax structure can be designed. It is important to note that the government does not need to own mineral right to impose super taxes. State governments do have to own mineral rights to impose royalties.

REFERENCES

Australian Government, 2010. A tax plan for our future [online]. Available from: <http://www.futuretax.gov.au/pages/default.aspx>.

Bealy, R A, Myers, S C and Allen, F, 2006. *Principles of Corporate Finance,* eighth edition (McGraw-Hill Irwin: New York).

Cullis, J and Jones, P, 1992. *Public Finance and Public Choice: Analytical Perspective* (McGraw-Hill: London).

KPMG, 2010. GCE analysis of part of the government's AFTSR response (30 April 2010, extended 4 May 2010) [online]. Available from: <http://www.kpmg.com.au/Portals/0/KPMGEcontech-Report-CGE-Analysis-of-part-of-Governments-AFTS-Response.pdf>.

Perman, R, Ma, Y and McGilvray, J, 1996. *Natural Resource and Environmental Economics* (Longman: London).

Varian, H R, 1992. *Microeconomic Analysis*, third edition (Norton: New York).