

SUPPLEMENTARY PAPER 62

RESOURCES RENT TAXES

BY

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**A SUMMARY OF THE MONOGRAPH OF THE
SAME TITLE BY DR BAMBRICK**

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The views expressed are individual and do not represent those of CEDA, whose intention in publishing this report is to follow its objectives as a non-partisan organisation which encourages and actively promotes research and intelligent discussion in economic affairs of national interest and importance to Australia so as to lead to their better understanding.

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1. Australian Government Publishing Service, Canberra.

2. In my paper, "The Economic Implications of North-West Shelf Development West Coast LNG," (University of Western Australia Extension Service, December, 1977), I suggested a DCF rate of return of 15% on present prices, costs, etc., although recognizing that the results would prove to be different because of changes in a range of parameters. In a forthcoming article in *Energy Economics*, I illustrate the effect of a specific form of rent tax on this project - (continued on next page)

FOREWORD

I am especially pleased to record CEDA's thanks to Dr Susan Bambrick, the author of this paper, for her active interest in CEDA over many years, particularly in our major series on mining and energy resources and policies.

Her study on the mining industry, "The Changing Relationship - The Australian Government and the Australian Mining Industry" (M.42) published by CEDA in 1972, provided a noteworthy introduction to the CEDA "energy series" and this paper dealing with "Resource Rent Taxes" is a valuable contribution to information and debate in two areas of CEDA's research programme - mining and taxation.

Dr Bambrick's work has been summarised in this Information Paper, to provide an overview of the debate surrounding the introduction of a resource rent tax, the structuring of the tax and the problems of its practical application.

Sections of Dr Bambrick's Monograph that deal with detailed explanation and discussion of the theoretical concepts involved, overseas systems of resource rent taxation and the experience of the petroleum industry have been omitted. The full Monograph is available to those who require it on application to Dr Bambrick or CEDA.

Dr Bambrick's conclusions and recommendations are covered in full. These will certainly stimulate debate on the issue. I commend this paper to all Trustees.

R.C. GILLHAM
Vice President
Co-Chairman
Research and Policy Committee.

INTRODUCTION

Academic discussion concludes inevitably that a resource rent tax, based on profit, is the optimum way of taxing private gain from the exploitation of natural resources. The Australian Government contemplated a resource rent tax on "old" oil and on uranium from August, 1977, till June, 1978, when it announced that it did not intend to implement such a tax.

Academic discussion endorsing resource rent tax sometimes assumes, explicitly or implicitly, that the tax replaces royalties and income tax. Government discussion of resource rent tax assumes it is *additional* to existing taxes. With the theoretical foundation of the tax thus changed, its presence does not automatically guarantee that an optimum tax system is then in existence.

This paper examines the political and theoretical background to the recent discussions, and makes international comparisons; assuming that resource rent taxes may eventually be imposed, it attempts to outline a form these could take; but it concludes that unless a profit-based resources tax replaces all Federal and State levies, royalties and other imposts (other than Federal income tax) it should not be contemplated for any or all of the range of non-renewable energy resources.

THE AUSTRALIAN BACKGROUND

In Australia the first embracing of the rent tax idea at a semi-official level appeared in the September 1976 Report of the Industries Assistance Commission on crude oil pricing.¹ This recommended an increase in crude oil prices to world parity and pointed out that such an increase may encourage conservation and increased recovery, but would yield *windfall* profits to current producers. The report mentioned the Petroleum Revenue Tax of the United Kingdom and suggested that arrangements of a rather different nature, but with the same objective of increasing the government share of petroleum profits, might be considered for Australia. Press reports suggested that the Federal Government, when agreeing in August 1977, to incentives for development of the North West Shelf, had committed itself to not imposing resource rent taxes on the project, because it accepted the joint venturers' submission that the project was marginal.² However, it was later made

1. Australian Government Publishing Service, Canberra.
2. In my paper, "The Economic Implications of North-West Shelf Development West Coast LNG, (University of Western Australia Extension Service, December, 1977), I suggested a DCF rate of return of 15% on present prices, costs, etc., although recognising that the results would prove to be different because of changes in a wide range of parameters. In a forthcoming article in *Resources Policy*, I illustrate the effect of a specific form of rent tax on this project - (continued on next page)

clear³ that the government had not so committed itself - it *had* said that if resource taxes *were* imposed, they would affect only intra-marginal projects; so that *if* the North-West Shelf project is marginal as now suggested, it would automatically have been exempt. If⁴ however it is highly profitable - which it could well turn out to be - it could have been subject to such a tax if introduced. However, the argument for such introduction could not be conducted in terms of *windfall* profits from the government's raising of crude oil prices to import parity, but might have been in terms either of the government's decision to allow exports (which it must be mentioned applies equally to agricultural, pastoral and manufactured exports), or perhaps simply because of a high profit rate, if this eventuated. In either case, it would be difficult for a government to argue against extension of the tax to the coal industry, although the industry itself might do so on the basis of its cyclical nature. High profits in good times may be required to tide companies through the bad times.

Later chapters will include some of the arguments that can be raised against resource rent taxes, but before we leave petroleum we should mention another of these. Bearing in mind Australia's concern over her dwindling supplies of indigenous crude oil, and her rising bill for imported crude, we might agree with Robert Murray's prophetic comment⁵ that:

"the \$300 million oil exploration programme announced for the deep waters of the far-out North-West Shelf appears likely to be another nail in the coffin of the 'resources tax' foreshadowed in this year's Budget speech". He said that "the companies involved can be expected to use their commitment to heavy spending there - and far heavier spending if they find oil - as an argument against such a tax reaping off flush profits from production, particularly in Bass Strait".

What of the tax on uranium? The Federal Treasurer in his August, 1977, Budget Speech, suggested that the resource tax considered for uranium might go towards financing solar energy research. This is a logical move for a government which does not want it to be said that it has approved uranium exports simply to raise company profits or has no environmental concern. The uranium industry would take issue with the assumption that solar power is environmentally superior to nuclear

2. (continued from previous page) for taxable income up to \$500m. the tax rate is 46%; for any excess over \$500m. (but less than \$600m.) a rate of 66% applies; and for any excess over \$600m. a rate of 86% applies. The DCF rate of return falls to 8%, below the acceptable margin.
3. By the Minister Assisting the Treasurer, Mr Viner, at the West Coast LNG Symposium, University of Western Australia, 16 December, 1977. The joint venturers' representatives accepted his remarks without dissent.
4. In the same article in *Resources Policy* (see footnote 2) I looked at a situation where prices had been underestimated and revenue doubled in each year, with royalties doubling also since they are related to well-head value. Company income tax rises, although the rate remains constant. DCF rate of return rises to 24%, well above the margin of profitability.
5. In the *Australian Financial Review*, 21 October, 1977.

power, claiming this has yet to be demonstrated. It is nevertheless a widely held view amongst electors, many of whom, if given a choice, would prefer Australia not to move into nuclear power generation herself. With present coal resources, nuclear power is unlikely here in the short-term, except perhaps in Western Australia and South Australia; and in the long-term solar power may be an option.

The suggestion for earmarking uranium taxes for solar research might have raised some eyebrows in the Treasury, which has in the past sometimes disapproved of funds going into consolidated revenue being set aside for particular purposes. It might have been similarly concerned about the coal research levy, also introduced in the August 1977 Budget, which is to be disbursed on the advice of the National Energy Research, Development and Demonstration Council.

1. RESOURCE TAXES IN AUSTRALIA

DISCUSSION OF RESOURCE TAXES

Discussion in Australia of resource rent taxes has proceeded at two levels, and at a combination of these. One level has been the academic, where discussion has centred on the theoretical superiority of rent taxes over other forms of taxation. The other level has been the political, which seeks new sources of revenue, or new ways of confiscating income generated in the private sector (depending on one's viewpoint).

The Australian Labor Party, at its Federal Conference in July, 1977, embraced the idea of the additional profits tax. The Liberal-NCP in its August, 1977, budget, announced consideration of this for a limited section of the economy - discussing resource rent taxes for the mining industry, and within that industry confining attention to only two commodities - uranium and petroleum. On 11 May, 1978, the Federal Treasurer, Mr Howard, told Parliament "*The whole matter is under consideration*". In mid-March the Minister for National Development, Mr Newman, said the Government was considering in the first instance whether a resources tax should be implemented, and the Secretary of his department said in May "*no in-principle decision to apply such a tax has been taken*". The Prime Minister announced a resources tax on uranium when he announced the Government's uranium policy, but an inter-departmental committee in March disagreed on whether the tax should apply to oil. By June, 1978, the Government had decided definitely that no resource tax would be implemented at this time.

Politically the idea of a rent tax can be attractive to both parties. The public believes that mining is highly profitable (or at least that section of the public which does not hold mining and exploration shares). Any proposal to tax the industry further carries some political mileage for the party introducing the scheme. With petroleum, the public sees the multinational oil companies as a reasonable target. It rarely sees its own possible petroleum shortages and high prices in the future if indigenous crude reserves are not increased through exploration for new reserves and improving economics for known deposits.

The public's idea of the profitability of mining is not necessarily unfounded. Profit repatriation by one US coal company made headlines in October, 1977, for since the company was using a branch structure for its Australian operation, rather than a subsidiary structure, it had not been subject to withholding tax. Such headlines reinforce the public view, and the government has discussed altering legislation to subject branch dividends to withhold a tax. The possibility of a resource rent tax on coal was not seriously mooted. However, as a number of mining executives realized, a tax once imposed is

easy to extend and increase. The Federal Opposition, if returned to power, would certainly be considering an additional profits tax that effected the coal export industry.

Although individual companies or projects in the mining industry may be highly profitable, and resource rent tax is designed to tax these, mining as a group is not more profitable than other industry groups. The *PA Report, Business Profitability 1976/77* showed median rates of return on shareholders' funds (after tax and interest) for a number of industry sub groups. This was lowest for mining in 1976/77, at 6.9%. The highest was transport 17.2%, followed by vehicle distribution 13.3%, retail/wholesale 11.9%, manufacturing 11.4%, finance 9.5%, building and construction 9.3%, utilities 8.3% and primary production and distribution 7.3%. For all companies considered the figure was 11.3%.

If we look at the top 5% of companies we find mining with the highest figure (56.1%), compared with a figure for all companies of 28.1%, a figure for building and construction of 34.2%, for primary production of 33.8% for finance and retail/wholesale of 25.7%, for transport 25.2%, manufacturing 24.1%, utilities 21.2%, and vehicle distribution 19%. The number of companies varied between industries, from 393 in manufacturing to 7 utilities. Mining had 46, primary production and distribution 26, finance 94, building and construction 42, transport 18, vehicle distribution 34 and retail/wholesale 38.

The *PA Report* also showed that diversity of profitability appeared not only amongst mining companies, but for the industry over time. The medium return on shareholders' funds after tax and interest was 7.7% in 1973/74, 12.8% in 1974/75, 8.5% in 1975/76 and 6.9% in 1976/77. There was also fluctuations for sub-aggregates of the mining industry. The average percentage return on shareholders' funds (after tax and interest) over the years 1973/74 to 1976/77 fluctuated for non-ferrous metals between 8.5% and 17.4%; rose throughout for the ferrous groups and coal, the ferrous groups from 6.3% to 15.1%, and coal from 3.5% to 32.7%; fluctuated for primary metal industries between 5.2% and 8.0%; fluctuated for petroleum refining and marketing between 4.6% and 8.5%, and fluctuated for metal fabrication and distribution between 8.6% and 12.8%. Metal building supplies rose throughout.

The listing of sub groups shows that the mining industry as considered in the *PA Report* is extended well into the processing phase, beyond what is normally considered for discussion at resource rent taxes; but then it is sometimes suggested that *if* a rent tax is to be considered, it should not be confined to mining - and in the present economic climate the Federal Government would be ill-advised to extend business taxes generally.

What was the rationale behind the government's consideration of a resources tax for petroleum and uranium? As we saw in the Introduction, this has been explained in terms of the *windfall profits* arising from conscious government decisions, and the argument could without too much stretching of the imagination be extended to coal and to other minerals, e.g. there were conscious government decisions involved in granting leases (State governments in some cases) and export permits (Federal Government).

Petroleum and uranium industries do not start even with each other in this debate. The petroleum industry is producing, and could have been subjected to a resources tax immediately - or even retrospectively. The uranium industry is still to make its profit, and still has many factors that can prevent its profitable development, e.g. eroding of markets by other forms of energy or by other countries, environmental pressures, aboriginal demands and industrial unrest. On the marketing side, it should perhaps be said that although earlier estimates of *Australia's* potential markets may not be realized, on a world scale even conservative studies of nuclear growth expect the nuclear share of the market to increase. Long-term prospects must depend, however, on the rapidity of development of large-scale commercial solar power generation.

STRUCTURING A RENT TAX

One form of rent tax which could be considered in Australia is based on a variation of E. Cary Brown's 1948 proposal for a neutral company tax,¹ and Garnaut and Clunies-Ross's similar proposal for a resources rent tax.² Although this latter article was not published till 1975, a 1974³ paper had been available when the discussion paper for the petroleum and mining enquiry of the Industries Assistance Commission was prepared.

The IAC discussion paper was considering the taxation of the mining sector at differential tax rates and suggested that a number of systems could be regarded as appropriate. It recalled that for a given level of revenue raising, the most satisfactory type of royalty was that with minimum effect on operational decisions. It regarded this argument as:

"Equally applicable to the types of tax schemes under consideration. If the tax rate which applies to all mining ventures was simply set at a rate above that applying to non-mining ventures then certain marginal mining ventures might be discouraged. Alternatively, progressive tax rates could be introduced so that more revenue may be raised from more profitable companies while marginally profitable companies would be taxed at lower rates".

The IAC discussion paper recalled the existence of numerous tax systems, which, if it were considered appropriate, could be used to tax mining ventures differentially according to their rate of return. The case of the South African gold mining industry was cited, where highly profitable mines are taxed at above average rates and the less profit-

1. E.C. Brown, "Business Income Taxation and Investment Incentives", in *Income, Employment and Public Policy: Essays in Honour of Alvin H. Hansen*, (New York, Norton, 1948) pp. 300-316.
2. R. Garnaut and A. Clunies-Ross, "Uncertainty, Risk Aversion and the Taxing of Natural Resource Projects", *Economic Journal*, 85 (June, 1975), pp. 272-87.
3. R. Garnaut and A. Clunies-Ross, *Taxing Natural Resource Projects*, Australia-Japan Economic Relations Research Project 1974, ANU Press.

able mines receive concessions.⁴

The IAC discussion paper considered an alternative tax framework, incorporating progressive taxation and based on projects rather than companies. It mentioned the scheme proposed by Garnaut and Clunies-Ross in 1974, and based on mining ventures rather than on mining companies:

"They suggest an immediate write-off of capital expenditure against profit and where profit is insufficient for immediate write-off (as may be the case in the early years of a project), the deductions may be carried forward whilst earning a pre-determined rate of interest which is also allowed as a deduction. Once taxable profit accrues, it may be subject to differential rates of taxation. Although this tax reduces the expectation of high post-taxation profits without offering comparable protection against losses, it does cushion the firm's risk somewhat by allowing it to write off its investment immediately before taxes begin to be collected. It is suggested by Garnaut and Clunies-Ross that this framework would enable the government to obtain a higher proportion of the larger rates of return on capital which are made by individual mining projects and, at the same time, minimise the effects of taxation on new and perhaps marginal ventures. The renegotiated Bougainville Copper Agreement (between the Government of Papua New Guinea and Bougainville Copper Limited) is based on a similar rationale. The company is liable for normal company tax of 33 1/3 per cent. In addition any after-tax profits in excess of a rate of return of 15 per cent on funds at risk are taxed at a rate of 70 per cent".

The IAC discussion paper stated:

"The Commission recognised that there are many problems associated with schemes of this type but considers that a comprehensive analysis of alternative methods of levying taxes and royalties should be undertaken if meaningful recommendations on appropriate taxation treatment of the mining sector are to be provided".

However, the ultimate IAC report on petroleum and mining taxation took a more limited view.

THE CARY BROWN TAX

Cary Brown⁵ defined taxable income to exclude interest receipts and payments from the calculation; it allowed immediate expensing of all capital outlays, and at the time the tax was to be introduced the

4. See W.C.J. van Rensburg and S.C. Bambrick, *The Economics of the World's Mineral Industries*, McGraw Hill, Johannesburg, 1978, p. 118.
5. Such a scheme was also proposed by Vernon L. Smith, "Tax Depreciation Policy and Investment Theory", *International Economic Review*, January, 1963.

current market value of existing assets was allowed as a deduction. There was full loss offset so that in any period of negative net cash flow the government would have to pay money to the taxpayer. (More practically, of course, the revenue-raising authority could allow tax credits to be carried forward, earning interest, and to be offset against any future tax liabilities. In this case the benefit goes only to the subsequently successful).

Under this scheme, too, revenue from disposal of depreciated assets is taxed at time of sale. Capital gains are thus taxed at time of realization, and at the same rate as other sources of income. Since capital gains, like depreciation, are based on actual transactions there is no room for errors in estimation.⁶

The E. Cary Brown proposal, in its original form, was politically unacceptable in that it would be unlikely to collect as much revenue as the conventional company income tax it was designed to replace, since, unlike the company income tax, it would fall only on pure economic rents.⁷ Used in conjunction with company income tax, however, the proposal could prove attractive politically.

PRACTICAL APPLICATION OF A RENT TAX

The IAC's Rent Royalty Concept

A combination of two taxes (company tax and a Cary Brown-type tax) is the basis of the IAC proposal for a *Petroleum Rent Royalty*,⁸ (see full Monograph for details). This is a somewhat simpler proposal than that of Garnaut and Clunies-Ross, which incorporated an element of progressivity. The rent royalty would be calculated before the imposition of company tax and would, as with present royalties, be deductible in the calculation of company income tax. The rent royalty applies only to profits in excess of a specified minimum return on capital, known as the *threshold rate of return*. The mechanism is straightforward. All capital expenditures are totally depreciated in the time period in which they are made, (a process called "*expensing*", and deducted along with total operating cost in assessing net income in the relevant time period. Any sales of plant or equipment are assessed as income in the period in which the sales occur, although any interest payments and receipts do not reduce or form part of the tax base.

Where deductible outlays exceed assessable receipts, e.g. during the initial years of a project, the excess is carried forward at an interest rate equal to the threshold rate of return. This reduces net receipts when they occur. No rent royalty is therefore payable until the threshold rate of return on a project is actually exceeded. The threshold rate of return can be assessed as the minimum internal rate of return which the firm would have regarded as accept-

6. Such as could occur under Samuelson's proposals referred to earlier. These regarded "true loss of economic value - as a tax-deductible depreciation expense", so there was a need to estimate economic appreciation and depreciation.

7. P.L. Swan, "Income Taxes, Profit Taxes and Neutrality of Optimizing Decisions", *Economic Record*, (June, 1976), p. 175.

8. IAC *Report on Crude Oil Pricing*, Appendix 5, p. 62.

able when it evaluated the project. If that is so, then economists argue that the rent royalty can be set at any rate less than 100 per cent without distorting investment decisions.⁹ This over-simplifies the realities of the situation. Such a theoretically neutral royalty scheme may have some advantages over present royalty systems which involve ad valorem, unit, or profit-related royalty payments. Smith¹⁰ recognises the Federal/State difficulties involved in suggesting States cease to tax mining and approve instead a rent tax coupled with Commonwealth corporate taxes, and suggests that "the problem is to design State royalties on a basis equivalent to the resource rent tax, so that rents are appropriated where and to the extent that they exist rather than in an arbitrary and uncertain manner".

Some commentators suggest that the rent tax could be administratively simple, with only the most profitable companies assessed. They point out that there are no complex, arbitrary depreciation provisions involved, and that, since the rent-royalty can be additional to corporate income tax there is no need for total tax revenues to fluctuate unacceptably and there is no need for the inter-sectoral distortions which would occur if a resource rent tax replaced corporate income tax entirely.

There are theoretical advantages of the rent royalty or resource rent tax over other forms of royalty; but there are disadvantages also - e.g., with a royalty based on volume rather than profit, we would expect a company to be more conscious of costs, and the need to control them. If a project is expected to yield an internal rate of return equal to or in excess of, the rate that would compensate investors for risk, and if this minimum rate of return is the threshold rate for the purposes of assessing the rent royalty, then only returns above this rate will be subject to the tax; the project will still proceed.

With "*i*" as the required minimum internal rate of return, (*i* + *x*), the expected return and "*t*" the tax rate, expected returns after tax will be "*i* + (1 - *t*)*x*" and the project will proceed regardless of the tax rate. Alternatively, if the net present value of the project is initially positive (with "*i*" as the discount rate), then it will remain positive (although lessened) despite the imposition of the rent royalty.

Decisions under Uncertainty

The expected net present value of a project with uncertain returns can be regarded as the weighted sum of a range of net present values, each representing a combination of possible costs and benefits. The weight given to each outcome is the probability of its actual occurrence - assuming initially that investors are risk neutral, which, I assert later, they are not. The net present value of a tax which appropriates only those returns in excess of the supply price of capital to the project, including an allowance for risk, may exceed the net-present value of the mining lease. Consider a marginal project. Suppose the expected internal rate of return on this project is 15 per cent, which happens to be the minimum accept-

9. P.L. Swan, "Australian Mining Industry Taxation", *op. cit.* p.12.

10. Ben Smith, *op. cit.*

able return to the investor. Using 15 per cent to discount future returns, the net present value of the project must be zero. However, it is possible that returns will exceed 15 per cent, so that the net present value of a rent-royalty which used 15 per cent as its threshold rate would be positive. The expected present value of the project would fall by an amount equal to the expected present value of the tax, and the project would therefore become uneconomic. Thus, the existence of the tax could reduce expected returns below the supply price of capital although the tax itself would apply to actual returns only if they exceeded the supply price of capital.

Let us assume that the 15 per cent expected return for the project reflected a 50 per cent chance of an actual return of 15 per cent, and 25 per cent chance of actual returns of 10 and 20 per cent.

$$\begin{array}{rcl}
 & 15 \times .5 & = 7.5 \\
 + & (20 \times .25) & = 5.0 \\
 + & (10 \times .25) & = 2.5 \\
 \hline
 & & 15.0\% \text{ net expected return}
 \end{array}$$

With a resource rent tax at a rate of 50 per cent, with a threshold rate of 15 per cent, the expected return falls:

$$\begin{array}{rcl}
 & 15 \times .5 & = 7.5 \\
 + & (17.5 \times .25) & = 4.375 \\
 = & (10 \times .25) & = 2.5 \\
 \hline
 & & 14.375\%
 \end{array}$$

This expected return of 14.375 per cent is less than the minimum required for the project to proceed. As Harvard economist Richard Caves has pointed out, the tax effectively "lops off the upper tail of the profits expected *ex ante* by the firm without offering comparable downside protection".¹¹

One implication of this is that if tax neutrality is to occur in practice, different threshold rates may need to be applied to different projects, with specific rates taking account of both the minimum return required by participants in the project, and of the size and distribution of expected returns. The knowledge required of the taxing authority would be prohibitive, and potential investors could be expected to present an outlook to minimise their tax liability. All new mining projects would, for public purposes, be regarded as "marginal".¹²

Loss Offset

A more practicable arrangement, which would not require perfect knowledge on the part of the bureaucracy, would be to subsidise losses by an amount equal to the product of the tax rate and the gap between actual returns and the supply price of capital. Consolidated revenue would share in both the rewards of success and the cost of failures.

11. R.E. Caves, "Policies Toward Australia's Resource Based Industries", Australia-Japan Economic Relations Research Project Research Paper, ANU, Canberra.

12. P.L. Swan, "Australian Mining Industry Taxation", p. 13.

This resembles the original Brown proposal where the government effectively holds equity in the project, by subsidising losses as well as sharing in profits.

Should the tax rate be 100%? Efficiency requires that the rate should be less than 100%, since some of the risk would then remain with the private enterprise operators of the project - but even with less than a 100% rate a completely neutral tax (with losses subsidised at the same rate as surpluses are taxed) reduces both the risk borne by private investors and their opportunity to benefit from success, and should thus leave unchanged the risk premium demanded by those supplying capital. It would be simple enough for the government to provide funds for x% of capital expenditures and to tax project income at x%.

Not all possible Australian governments in the future would want to take x% equity in all new projects (and receive x% of profits, if any). Even where a government is not ideologically opposed to such a move¹³ it may be politically - and economically - difficult to make large payments for this purpose from consolidated revenue.

Smith¹⁴ has suggested that it would be:

"more in keeping with existing procedures, if rather than making a direct payment towards investments the taxing authority could allow immediate expensing of investment expenditures against income from any source. To the extent that companies were able to use these immediate write-off provisions, the effect would be the same as making a direct grant.¹⁵ Where companies were not able to use these provisions fully, the tax would allow indefinite carry-forward of expenses not written-off, at a rate of interest equal to the minimum return required by shareholders. Two problems immediately emerge. First, companies which never made any profits would receive no loss offset provision and, second, there is the problem of determining the appropriate threshold rate at which losses should be carried forward. By examination of capital market and company behaviour it is possible to make a reasonable estimate of the risk premiums attached by shareholders to investments in particular activities. However, it would clearly be sensible to err on the side of generosity in determining the appropriate threshold rate. This is particularly so when it is recognised that the threshold rate at which losses can be carried forward

13. The Whitlam government, for instance, was prepared to provide 72½% of the funds for the Ranger development, in return for 50% of the equity.

14. Ben Smith, "Taxation of Mining Industry Profits", *op. cit.*

15. Smith says, "It should be noted that one of the mining industry's objections to rent taxation is falsely based. The industry has pointed to the importance of profits as a means of financing new investment but, to the extent that profits were so used, they would not be subject to the tax".

must also compensate for the possibility that those losses may never be offset. That is, the absence of a guaranteed full loss offset is made up for by allowing shareholders to take a larger share of any profits before the tax is imposed".

Attitudes to Risk

Most academic discussions of resource rent taxes are theoretical, assuming that investors are risk neutral, that their investment decisions are based on significant knowledge and made on a rational (if probabilistic) basis, and that for any given project there is a known and fixed supply price of capital. These assumptions are unrealistic.

Investors are not risk neutral:

"...casual empiricism would suggest that managers are somewhat averse to bankruptcy and such econometric analysis as are possessed on share valuation and the cost of capital tends to indicate that both individual and corporate risk aversion is almost uniformly prevalent".¹⁶

This may be partly explained by the fact that the penalties for management for poor investment decisions exceed the rewards received for decisions which in the event turn out to have been fortunate.¹⁷

The IAC, from information supplied by mining companies, suggested that the 'discounted cash flow' (DCF) rate of return sought from individual projects typically exceeds 15 per cent, after payment of tax and allowance for inflation.¹⁸ (A representative of C.S.R. has stated publicly that his company looks for a return of 20%). The IAC's evidence is that the average return in the mining industry, before tax, is between 10 and 15 per cent. The use in project evaluation of a minimum acceptable rate of return after tax of 15 per cent or higher indicates a substantial degree of risk aversion.

If risk aversion is substantial, possible high returns in the future will be significantly discounted by the investor and possible low returns in the initial years of a project will be weighted disproportionately. This is implicit in the use by some firms of the 'pay-back' method or the internal rate of return method in their investment analysis.¹⁹ However, the point should be made that outside commentators may have a false idea of the extent to which the 'pay-back' criterion is used in investment appraisal; while it may be considered for most projects, it is usually not the deciding factor

16. S.J. Nickell, "The Influence of Uncertainty on Investment", *The Economic Journal*, 87 (March, 1977), p. 51.

17. This point was made strongly by representatives of the private sector in response to a paper by B. Smith and A.M. Ulph, "Economic Principles and Taxation of the Mining Industry: an Introductory Survey", at a Workshop on Mining Industry Taxation, Centre for Resource and Environmental Studies, ANU, November, 1976.

18. IAC "Report on Petroleum and Mining Industries", p. 44.

19. R. Garnaut and A. Clunies-Ross, *op. cit.* p. 273, footnote 1.

except in high-risk situations - high-risk perhaps because of political instability in the countries concerned, or even because of the possibility of tax changes.

The 'pay-back' criterion can ignore the more distant returns, and the internal rate of return method heavily discounts returns in the more distant future, compared with the situation where the supply price of capital is used for discounting.

The Supply Price of Capital

A recent Reserve Bank study²⁰ suggested that the supply price of capital to the corporate sector in general is slightly less than 10 per cent in real terms. The social discount rate has been generally assumed lower than the private discount rate²¹ - although in the present political climate one could argue that the government's time horizon is shorter than that of the private sector.

If, however, the social discount rate is lower than the private discount rate, then the net present value to society of the yield from a resources rent tax will exceed the net present cost of the tax to the firm, which implicitly discounts future tax payments at a higher rate than would society as a whole. Thus it can be theoretically argued that such a tax can have a high potential yield with only a marginal disincentive for the firm to proceed with the project.

The imposition of a resources tax could render the project more economic in prospect, if it were an alternative to other royalties - even though the net present value of the resources tax to the government might exceed that of prospective royalties. As Garnaut and Clunies-Ross emphasised, "... prior taxes that are proportional to the volume or value of production or to company profits raise the risk of failure or of unacceptable low returns and hence raise the supply price of capital to the project ...".²²

In discussing earlier the setting of threshold rates of return to individual ventures I mentioned the problem of different distribution of expected benefits. With any given threshold rate, the expected value of a resources rent tax would rise with the variance in the distribution. However, a firm's estimates of variance in expected returns tends to be, at best, in terms of greater or less risk - and since more distant (and hence riskier) returns are already significantly discounted, some commentators consider it reasonable to use a common threshold rate of return, as long as an allowance for risk is included.

Such a proposal is reinforced by the fact that it is not possible to estimate accurately the supply price of capital, which is, as Garnaut and Clunies-Ross pointed out,²³ a behavioural concept.

20. C.I. Higgins, H.N. Johnston and P.L. Coghlan, "Business Investment: The Recent Experience", Paper prepared for the Conference in Applied Economic Research, Reserve Bank of Australia, September, 1976.

21. See E.G. M.S. Feldstein "The Social Time Preference Rate", in R. Layard (ed) "Cost Benefit Analysis", Penguin, 1974.

22. R. Garnaut and A. Clunies-Ross, *op. cit.* p. 275.

23. *ibid.*, p. 273.

Its revelation is in the decision whether to invest, which depends on the degree of risk (political and economic) estimated for the project, and on investor's attitudes to risk. Qualitative estimates of and attitudes to risk are volatile.

Phenomena such as these illustrate how difficult it is to estimate the true supply price of capital for a given venture, and hence to capture all the 'rents' of the venture. Given uncertainties, the taxing authority will aim to capture significantly less than 100% of the rent. As the Industries Assistance Commission has commented "... In specifying a threshold rate of return and a tax rate it needs to be remembered that these two parameters act in conjunction".²⁴ Garnaut and Clunies-Ross thus suggested that higher rates of return could be taxed at progressively higher rates.²⁵ In appraising this proposal we have to remember that "windfall" returns would be significantly discounted in firms' own project evaluations. Swan has suggested that a progressive rent-royalty would result in the loss of the neutrality feature of the proposal 'as firms, by investing more, can depress the returns they earn'.²⁶ Others have suggested that if this is correct it must apply to the non-progressive version of the rent-royalty as well. The comment implies that the rent-royalty system would induce firms to undertake investments which they otherwise would not have undertaken: i.e. investments which return less than the supply price of capital. The commentators find it hard to see how a firm could be made better off as a result of such action.

What is the Target?

Discussion so far has centred on proposals to tax on a project basis. Resource rent tax on a company basis would avoid the need to assess the risks of individual projects, since large firms would be able to offset high taxes payable on successful ventures against tax credits earned in loss situations. The threshold rate of return should then reflect the risk-free supply price of capital.

This would not be a neutral situation as it would discriminate against smaller companies, who could not earn the returns required to offset tax credits from unsuccessful ventures. The concentration of mining and exploration activities in a small number of large firms already operating in Australia would be encouraged.

It would be possible to allow for the risk of failure in the threshold rate used in the computation of the rent royalty. A uniform allowance, if set for the small firm risk level, would discriminate in favour of large companies for whom the risk of failure across all their activities is close to negligible. However, different threshold rates could apply for different companies, to reflect their risk spread. This is subject to a disability noted earlier - a heavy strain on bureaucratic resources and judgement.

Should administrative savings be made, therefore, by confining

24. Industries Assistance Commission, *Report on Crude Oil Pricing*, p.65.

25. R. Garnaut and R. Clunies-Ross, *op. cit.* p. 278.

26. P.L. Swan "Australian Mining Industry Taxation", *op. cit.*, p.17.

resource rent taxes to large and profitable firms?

It can be argued that the theoretical neutrality of the resource rent tax would not be jeopardised if it were levied only on large and profitable firms. Inter-company or inter-sectoral distortions would not be induced.

Against this it can be argued that the supposed neutrality of the tax is impossible to achieve in practice, and if distortions do arise they should apply to all; that if the tax does capture only economic rent then there is no reason to exempt any rents; and even if some firms or projects were initially exempt from the tax because of their low returns (actual or expected) those firms would suspect that the tax would be levied should their profits exceed expectations. In their project evaluation they would heavily discount such possible profits because of this possibility. Whatever the probable effects of the tax on investment decisions, these would occur regardless of whether the tax were ultimately levied on the specific project or firm; the expectation would be enough. *Ad hoc* impositions of the tax could, by generating uncertainty in the industry, do more to raise the supply price of capital than if the tax were applied to all projects at their inception. As one prospective financier²⁷ for the North West Shelf gasfields explained, the open-ended announcement concerning Australian resource rent taxes on oil and uranium had made financiers more risk-conscious than would a simple announcement of a *fait accompli* - a tax with published conditions.

Sequence of Resource and Company Tax

Should a resource rent tax be levied before or after corporate income tax? The former method would require no change from the present practice of the Commissioner of Taxation, who regards royalty payments as a cost of production. However, the latter method would allow recognition and, indeed, some correction for the fact that conventional corporate income taxes are not neutral. Since the resource rent tax would bite only after some years of operations of a project, firms could continue to enjoy early cash flow from accelerated depreciation. Since firms usually calculate DCF (discount cash flow) returns in after-tax terms this would support the case for levying the rent-royalty on a similar basis. The threshold rate of return used would naturally be lower to reflect the difference between required returns pre-tax and post-tax.

27. M.C. Deverall, of Barclays, at the West Coast LNG Symposium, University of Western Australia Extension Service, December, 1977.

2. THE AUSTRALIAN MINING INDUSTRY AND FUTURE TAXES

COMMONWEALTH/STATE COMPETITION FOR REVENUE

It has been said by astute political observers that the reason the Federal Government was contemplating resource rent taxes for petroleum and uranium, rather than for coal, was that it did not wish to become embroiled with at least two States on the issue.

The Federal Government has the ultimate power in the granting of offshore petroleum leases, although the State Governments may act as "designated authorities"; the Federal Government sets the prices of indigenous crude oil and charges excise; the Federal Government shares offshore royalties with State Governments. It is thus in a position to control what has been termed *the total remuneration package*, or looked at other ways, we might call it the *total incentive package* or the *total taxation package*. It thus has the power to "optimize" tax recognising that there is a trade-off between tax and development incentives.

In the case of uranium, the Federal Government has been in a similar position because, although onshore, the majority of large known deposits were in Commonwealth Territory. The major dispute of companies has been with the Northern Land Council which represents Aborigines.

Coal is not so simple. Here the States issue leases - and would be primarily concerned with black coal deposits in Queensland and New South Wales, as it is difficult to see the Federal Government trying to assess the people of Victoria for resource rent tax on brown coal mined by the State Electricity Commission. Only in the case of coal exports is the Commonwealth in complete control - and the previous Labor Government used its power to introduce the coal export levy.

If resource rent tax were imposed on coal, what would be its relationship to State royalties? Resource rent tax as originally suggested was to replace both royalties and income taxes - with a single profit-based tax responsive to super-normal profits. It is hard to see the States willingly surrendering their right to levy royalties.¹

1. Another interesting question is whether say, the U.S. Internal Revenue would rule resource rent tax in Australia as creditable against U.S. tax, or whether its creditability would have to be written into a tax treaty. It should also be said that there has existed a system under which what some politicians would call "Australia's failure to tax" has increased the revenue of the U.S. government, and that resource rent taxes have been seen as one way of transferring income from Australian resources to Australian residents rather than to U.S. residents.

On the contrary, we can recognise the possibility that State governments, resenting a Federal resource rent tax, would raise their own royalty levels and their rail freights, to acquire revenue for themselves rather than have the Federal government take it at a later date for redistribution over a larger population.

The Federal government might try to compensate for this revenue loss by refusing deductibility for royalties for either or both of income tax and resources tax, by raising secondary tax rates, or by widening the application of secondary taxes, e.g. by lowering the threshold rate of return. In the first instance the main losers would be the companies concerned, although ultimately the nation as a whole might suffer because of the lack of incentive to explore and develop.

The potential dangers of Federal/State tax struggles are best illustrated from one Canadian province where for a short while total federal and provincial taxes could exceed taxable income.

The possible conflicts outlined for coal could also occur for most other minerals, although some, such as copper, are in such a depressed state, even attracting subsidy, that discussion of rent taxes for them is ludicrous at present.

Are such struggles unlikely for the uranium industry, where a large part of possible future activity will be based in the Northern Territory? The uranium miners have perhaps an even more intractable problem to deal with than State Governments. Under Federal legislation, some Aboriginal communities have been given land rights and with this the right to decide whether mining should take place on their land. If they agree to mining, they are entitled to negotiate compensation from the relevant companies. There are indications that such compensation may be based on company revenue and calculated at a substantial rate. If the Aboriginal communities achieve the remuneration they seek, then the scope for the Federal Government to levy resource rent taxes would consequently be limited.

There is manifest scope for dispute between Commonwealth, and States, and/or Aborigines over future revenue sharing.

ASKING THE RIGHT QUESTION

We should reflect on why resource rent taxes have been contemplated and whether they are justified by facts and figures.

(i) *Have rent taxes been contemplated for mining and/or petroleum because there is a general feeling that returns earned there are higher than returns earned in other sectors, and is that borne out by the facts?*

The Industries Assistance Commission concluded that there was "little difference in the rate of return over the period (1967/68 - 1973/74) between the two sectors - manufacturing and mining".² Those who suggest there are differences in the extent of risk associated with

2. Industries Assistance Commission, Report on Petroleum and Mining Industries, May 28, 1976, page 9.

the two activities see this position as inequitable. The Australian petroleum exploration/production industry has not been seen by potential investors as a place in which to make exceptionally large profits. Exploration effort has declined sharply over recent years and, in fact, the industry as a whole has a negative cumulative cash flow.

Such statements do not deny that individual companies may earn above-average profits. There are examples of this at present in both the coal industry and the petroleum industry; and uranium is expected to prove highly profitable (this may not eventuate, not only because of Aboriginal claims, but also because the market situation could well turn out to be less favourable than expected). Other minerals earn above-average profits from time to time.

Market fluctuations characterise the mineral industry - iron ore faces a difficult market situation now, after enjoying boom conditions some time ago; the world aluminium industry is set for a boom, after passing through a difficult period. To confiscate high profits in good years is as we have seen to reduce compensation for lean years, and to reduce overall expectations. Exploration and development effort may be reduced because both expectations and available funds have fallen. To confiscate the high profits of the profit-leaders in an industry is to reduce disposable funds for that company, and expectations throughout the industry.

(ii) *Have rent taxes been contemplated for Australian mining and/or petroleum because there is a general feeling that taxes paid by the local sector are lower than they are overseas?*

Comparisons of mining tax between countries has been undertaken in a number of recent studies.³ Such comparisons do not take account of the different degrees of risk for companies establishing operations in various parts of the world.

C.T. Gibbons⁴ compared cumulative tax which would be payable by CRA's Hamersley development under alternative tax systems:

Australia 1968	Liberal	\$157m.
Australia 1973/74	Labour	\$288m.
Australia 1976	Liberal	\$187m.
Canada (at the 50% rate)		\$206m.
Peru		\$127m.
U.S.A.		\$125m.
South Africa		\$114m.
Brazil		\$ 65m.

Except during Labor's period of government, this puts Australia behind Canada in taxation, but ahead of other countries. As Barnett said

3. e.g. CRA's submission to the IAC Petroleum and Mining Enquiry; the *Report* of that Enquiry.

4. "Effects of Recent Taxation Developments on New Mining Projects", Mining Economics Symposium, School of Mining Engineering, University of N.S.W., 21.9.77.

Braham have pointed out,⁵ however, "conclusions based upon these figures may be misleading, because Gibbons (and CRA) have not discounted the tax streams".

After further studies, they conclude that:

"under the Whitlam Government the mineral industry was clearly over taxed. This is indicated by the international comparison and the size of the ratios of returns to public to the returns to equity. The current Liberal policy, particularly if the coal levy is removed, appears from the international comparison to be a reasonably moderate one. It would not appear that the industry is over-taxed, but most certainly the return to the public from the mining activity can only be considered as most satisfactory".

Australian oil production is already heavily taxed. The United Kingdom and Norway have a resources tax, but both governments allow producers to charge world price for their oil. When the community subsidy, represented by below-import-parity pricing for most current production, is added to direct taxes, it can be seen that Australian producers are already worse off.

(iii) *Have rent taxes been contemplated for mining and petroleum because these industries exploit a natural resource belonging to all the people represented by the leasing authority, who should therefore be compensated in ways additional to the income taxes and so on paid by manufacturing companies? If this is so, should a company operating a tourist hotel amid sunshine and beautiful beaches pay a rent tax, in addition to its rates, to the relevant local authority or some other institution?*

Presumably the objective of a government in imposing rent taxes would be to raise the welfare of the population whose resources are being exploited. If the application of additional taxes inhibits the very development whose rewards were to be shared with the community, it could be that in the long-term, welfare may be higher in the absence of such taxes, despite the fact that these resources are regarded as non-renewable. Sunshine and beaches are at present treated as renewable - although some scientists warn that man is now permanently degrading those things we take for granted.

(iv) *Have rent taxes been contemplated for mining and petroleum because this is a growth industry and an export-earner, and there is a perceived need to reduce the rate of growth of national income, and to reduce the level of export earnings?*

The view that further growth in the mining industry should be curbed stems from a simplistic reading of what became known as the

5. Donald W. Barnett and Benjamin Braham, "Are We Really Overtaxed"? paper presented to the 1st Australian Coal Conference, Surfers Paradise, April, 1978.

"Gregory Thesis".⁶ This points out that an export boom in any sector, through its effect on the exchange rate, can cause problems for other sectors. Thus a mineral boom may displace textile workers in the metropolitan cities or provincial towns. However, long-term considerations, including a desire for growth in national income, may favour the fostering of a mineral boom.

In the present Australian situation, with a developing need to pay for increasing imports of oil in the medium term, Australia would surely be glad to increase export earnings.

6. R.G. Gregory, "Some Implications of the Growth of Minerals Exports for the Agricultural Sector", *Australian Journal of Agricultural Economics*, August, 1976.

CONCLUSIONS

CURRENT STATUS OF THE AUSTRALIAN MINING INDUSTRY

1. The Australian mineral and petroleum exploration/production industries do not make profits above the level of industry in general.
2. Individual companies within these industries do make profits substantially in excess of the average level of industry in general. These eye-catching successes fail to compensate adequately, on an industry-wide basis, for the failures which constitute a large proportion of the ventures that make up these high-risk industries.
3. Australian natural resource industries are already adequately taxed compared with those of comparable countries - particularly when the consumer subsidy represented by controlled oil prices below free-market levels for most current production is added to income tax, excise, and royalty to arrive at a total community take.
4. Australia requires a healthy and growing mineral and petroleum exploration/production industry to provide export earnings, to mitigate the need for oil imports, and ultimately to maintain and improve the standard of living of its citizens.
5. It is to a large extent the current participants in the industry who must be relied on to provide the required new investment. Only retained earnings can provide sufficient capital for the high-risk part of the industry's investment needs.

THEORETICAL APPLICATION OF RESOURCES TAX

1. Australian governments have a history of changing the rules *ex-post* to which investment is subject. (The Gippsland oil fields did not in the event receive the oil price Government had fixed for the five year period to September, 1970; the coal exporters were subject to a substantial levy which could not have been foreseen by them).
2. It is a fact of life that, whatever has been said today, future Australian governments are likely to contemplate again the confiscation of a share of the rents of highly successful projects in some form or another.
3. Profit-related taxes such as resource tax provides a better (less-distorting) mechanism for collecting revenue additional to company income tax than do current methods such as royalties expressed as a percentage of value, and levies on product-

ion or exports expressed in dollar terms, and inflated rail freights.

4. Without a means of reimbursing the losses of unsuccessful ventures at the same rate at which successful ventures are charged resources tax on their profits, the introduction of such a tax would still have a (non neutral) negative influence on investment.
5. A resources tax can provide a known framework to accommodate the taxing of highly profitable future ventures - and thus remove the justification for introducing additional (and unforeseeable) taxes after the event.

IMPACT OF CURRENT COMMONWEALTH ATTITUDE

1. Government perceives a political need to curb exceptional profits of individual companies, even within risk-industries where industry-wide profits are unexceptional or perhaps inadequate. (This despite the fact that a recent privately commissioned public-opinion survey on the topic indicates the contrary, with 57% against an additional tax on oil producers, 16% of no opinion, and only 27% in favour).
2. Although current Government Studies have reached the conclusion that no resources tax should be introduced, companies must still take account of the probability that it will nevertheless be introduced at some time. A future outstandingly successful project may cause Government to reconsider; and in any event the Federal Opposition have stated their determination to have the tax.
3. Uncertainty in future tax levels, which the recent Government examination of the advisability of introducing a resources tax represented, was almost as harmful to the investment climate as the tax would be.

FEDERAL/STATE CO-OPERATION

1. Once introduced at the Federal level to mop up perceived rents, the presence of a resources tax might stimulate the States to increase their royalties or other levies to maintain their share of total government take.
2. If introduced, a resources tax should replace and incorporate all overt and covert levies and imposts, Federal or State (including levies imposed by aboriginal land-holders), other than company income tax. In this way regressive effects on project development and operation should be minimised.
3. Achieving an arrangement for Federal collection, through a resources tax, of monies currently collected by the States through royalties (with subsequent reimbursement) would be difficult and time-consuming. That seven parliaments passed the mirror legislation of the Petroleum (Submerged Lands) Acts demonstrates that it is not impossible.

RECOMMENDATIONS

1. *Unless a profit-based resources tax replaced all Federal and State levies, royalties and other imposts (other than Federal income tax) it should not be contemplated for any or all of the range of non-renewable energy resources.*

From August, 1977, for nearly a year, the threat of a secondary tax hung over the more profitable potential ventures, big oilfields or open-cut uranium mines, for instance - failures and mediocre successes would not bring it on. And yet the energy industry includes costly offshore gasfield developments, and underground coal mines, which also shape its profitability. If high returns in some energy ventures were to attract a secondary tax, returns below threshold-level in other ventures (which may be just as vital to Australia) should earn a remission of secondary tax. Some commentators felt during the first half of 1978 that the uncertainties surrounding possible introduction of the tax could be overcome only by introducing it, and that it was illogical to apply the tax to 'old' oil and uranium only, that it should apply integrally to the entire group of energy minerals.

The various Federal and State imposts constitute considerable scope for distortion of investment and operating decisions. Introduction of a single Federal/State resources tax would provide an opportunity to collect the same money in a less regressive way but since such a tax would have to *replace* existing levies and royalties to achieve the aim, it may not be politically feasible.

2. *Non-energy minerals be excluded.*

The markets for the products of the non-energy extractive industry are too narrowly-based, and too subject to fluctuation, to make them a feasible subject for a resources tax. Since OPEC took control of oil pricing in 1973, energy minerals have been protected from the cyclic conditions which plague other commodities in world trade. If Saudi Arabia continues to stabilise world oil prices in the future, as seems likely, energy minerals can look forward to a continued stability of price which is quite unattainable for non-energy depletable natural resources.

3. *Introduction of the tax, if agreed upon, as a replacement for all levies and royalties should not be scheduled until the 1981/82 financial year.*

This is the first financial year following the end of the current progression of crude oil prices to the nominal level

of 50% import parity. Previous to this time, the fixed low price is more than sufficient restriction on the profitability of oil producers. Introduction of the tax could coincide with the lifting of crude oil prices to import parity and a free market. Similar timing would seem appropriate to the uranium industry.

4. *Negotiations with the energy industry be begun in time, if introduction of resources tax is contemplated once more.*

The precise form and level of the tax can only be determined after detailed study in co-operation with participants from the energy industry.

5. *Negotiations with the States be begun in time, if introduction of resources tax is contemplated once more.*

Much detailed Commonwealth/State negotiation would be required if the States were to forfeit willingly their right to raise revenue from the extraction of energy minerals within their boundaries. A formula for re-inbursement of revenue raised by the resources tax would need to be devised, and all necessary legislation drafted and enacted in timely fashion if the Federal Government wanted to introduce the tax in years to come.

6. *If such a tax were to be applied across the full range of the extractive energy industry this should be on a company-wide basis, including subsidiaries and affiliates.*

A project-by-project taxation basis would fail to encourage reinvestment in the energy industry. Expenditure in any aspect of the extractive energy industry, including research and new technology development, should be deductible from resource-taxable revenue. Because existing corporate boundaries within company-groups have been chosen to meet the requirements of previous tax regimes, it would be appropriate to allow consolidation for the purpose of calculating resource tax liability.