Submission to Senate Economics Reference Committee on the development and operation of the Minerals Resource Rent Tax (MRRT)

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This non-confidential submission focuses on terms of reference **a**) on design; **c**) on the account taken of views of communities affected; and **e**) on any other matter: specifically, the economic case against royalties.

The submission represents our own views, and does not purport to represent those of any other person or body. Neither author is contracted to or employed by a mining company; neither holds any direct interest in companies whose operations fall under the MRRT.

Our submission has three sections:

1. Design features, revenue expectations and value.
2. Royalties are not so bad.
3. Give the MRRT to the States.

1: Design features, revenue expectations and value

We have no specific insights into Treasury modelling of the revenue forecasts, as the methods employed and data inputs have not been disclosed. What we do argue, however, is that ordinary economic analysis suggests that, unless there is sizeable and unexpected upside, then modest MRRT revenue is to be expected in the next few years: specifically, what is needed is an unexpected rise in coal and iron ore prices, which has yet to eventuate. In addition, the volatility of the MRRT revenue will be far greater than the volatility of the underlying profit streams. Consequently, the market value of the MRRT revenue stream is far less than its expected value, when capitalized at the allowable profit rate under MRRT, that is, long-term bond rate plus seven per cent.

The three design features of most significance to our submission are:

a) The allowable rate of return above which MRRT liability is incurred and 'losses' carried forward.
b) The depreciation allowance and, especially the choice for pre-existing projects to use market value of assets.
c) Unused MRRT 'credits' cannot be transferred between companies.

A fourth design feature is that royalties are credited against MRRT liabilities. This could become important to shortfalls in MRRT revenue in the future but not in the current tax year. However, we discuss aspects of royalties, below.

A fifth design feature, concerning the point of taxation, is not considered in our submission.

The MRRT tax liability or credit arising in year i from a project is equal to $t(R_i - R_A)D_i$, where t is the MRRT tax rate (effectively 22.5%); Ri is the rate of return in year i ; R_A is the allowable rate of return under the MRRT; and D_i is the

(depreciated) asset base for tax purposes. If $R_i < R_A$, then an MRRT 'credit' is generated, to be carried forward or offset against MRRT liabilities within the same entity (at rate R_A). If $R_i > R_A$, the project generates an MRRT liability for year i. The actual MRRT tax payment due from a taxable company, however, also depends on the size of any unused MRRT 'credits' from earlier years. (Unused MRRT 'credits' are not refundable, but can offset an MRRT tax liability within the taxpaying entity.)

For the MRRT, the allowable rate of return (R_A) has been set equal to the long-term bond rate (R_f) plus seven per cent:

$$R_A = R_f + 7\%.$$

We discuss existing projects first. The legislation permits companies to declare their market value as their asset base for MRRT purposes. To proceed, we assume all eligible companies choose to use market valuations; that there are no problems in apportioning the value to the assets that are used in the production process to the point of taxation. Also, we ignore the possibilities that the market may value a company with a number of projects differently from a set of companies, each with one of the projects; and that the stock market price would fall in anticipation of the imposition of a new tax on mining profits.

Fundamental to our submission is the economic proposition that expected profits will be fully capitalised into the market price of an asset: the value of an asset in the market should be equal to the present value of the cash flows anticipated from the asset, discounted at a rate that takes account of risk. The discount rate is the WACC, the weighted average cost of capital, which is what the market requires to invest in the company and its projects. It follows that the market value of 'excess returns' is zero, in that all such returns have been capitalised into market value.

Thus, the expected value of MRRT revenue would be zero if and only if:

a) The MRRT-allowable rate of profit is equal to the market's discount rate for the project (or company).
b) The discounted present value of the actual returns equals the market price at the date of MRRT valuation (that is, events turns out such that there is equality between the discounted present values of the expected returns and of the actual returns).
c) No project or company dies with unused MRRT credits.

Together, these imply that the expected value of MRRT revenue would be zero if investors had the same discount rate as the MRRT allows and if unused MRRT credits were fully transferrable between projects and companies.

Therefore, MRRT can be expected to garner revenue from existing projects if:

1. **The allowable rate under the MRRT is less than the discount rate applied by the market in valuing the stock of the company.**
2. **The actual returns exceed those the stock market expected at the MRRT-valuation date—there is an unexpected upside.**

Therefore, an MRRT liability is expected when the rate of return required by the market, $E(R_i)$, is greater than the long-term bond rate plus seven per cent. The size of the liability will depend on the size of that gap; on the degree to which market expectations are fulfilled or exceeded; and the time profile of returns.

Because credits are not fully transferable, the MRRT is expected to garner some revenue from existing projects that use market value of assets for MRRT purposes, even if the present value of the actual return does not exceed the capitalized value of the expected return.

Consider the case in which there are no 'excess profits', in the sense that the market value of the company is equal to the present value of expected cash flows, discounted at the appropriate WACC. Then, if the WACC exceeds the long-term rate on government bonds plus seven per cent, the MRRT will tax the 'normal profits'; and tax more heavily the shareholders of companies with higher costs of capital, because the market considers them unusually risky. This will be the case even with full capitalization and equality between predicted and actual income streams. This means the MRRT will distort investment, skewing it away from risky projects.

The companies that negotiated the MRRT with the government are the largest miners in Australia and have a diverse portfolio of projects, many of them well established. The market assessment is that, although mining is inherently relatively risky (given the variability of commodity prices), their levels of risk are low relative to newer and smaller mining companies. What public information is available suggests that they do not expect to be paying much by way of MRRT.

We expand on the conclusion that the MRRT is, in part, a tax on normal profits and not solely a tax on excessive or super profits. Even if on average there is no unexpected upside and even if the allowable rate is equal to the WACC, it will be the case that some MRRT revenue is to be expected in any one year. By chance, some years will be better than others; by chance, a 'good' year or run of years may precede a 'bad' year or run of bad years. MRRT revenue will be paid on account of the good years, but the company may die with unused MRRT credits, which, if they had been refundable or fully transferrable, would have offset the payments made in earlier years. A similar proposition relates to existing miners in aggregate: some companies will do better than others, and the former may end up paying MRRT, while the latter may end up with unused MRRT credits in any one year. However, unused MRRT credits are not fully transferrable and so, by chance, some projects with zero expected profits in excess of the MRRT allowable rate will have paid some MRRT tax before they terminate, leaving unused MRRT credits. (Recall that, for argument's sake, we are assuming that the returns are, on average, in line with expectations.)

Three other propositions follow the first two:

3. **The volatility of the MRRT revenue stream will be much greater than the volatility of the underlying project or company incomes.**
4. **The high volatility means that the MRRT net revenue stream has a value (to Consolidated Revenue, using options theory) far less than its expected value.**

5. **For new projects: the same propositions apply, except that the relevant market expectations are those held when an irrevocable commitment is made to go ahead with the project.**

Propositions 3 and 4 are implicit in an article by Paul Samuelson, "Proof That Properly Anticipated Prices Fluctuate Randomly", Industrial Management Review 6 (1965): 41-49. On point 4 (volatility): see also Henry Ergas, Mark Harrison and Jonathan Pincus, 'Some economics of mining taxes', *Economic Papers* 29.4: 369-383 (2010). This paper also showed that the MRRT discriminates against riskier ventures. That is, the MRRT will tend to reduce the volatility of the aggregate underlying profit stream from mining iron ore and coal (mostly relates to new projects, but also to efforts to cut the costs or increase the output of existing projects).

From a policy perspective, the volatility of the revenue raised by a tax is not in itself a criticism of that tax. However, volatile tax bases can be inefficient if governments tend to overstate their value, treating the expected revenue as if it were a 'sure thing' and make fixed spending commitments against that revenue. In Ergas, Harrison and Pincus we describe this as a form of fiscal illusion, which may both induce too high a level of government expenditure and force inefficient cuts in discretionary spending when anticipated revenues do not materialize. The economic costs of these distortions need to be added to those of the other distortions caused by the MRRT (including the cost of deterring investment in risky, but socially worthwhile, mining projects).

3: Royalties are not so bad

From a national point of view, the choice of the mix of levies on mining depends on a number of factors including, importantly, the economic cost of the various levies. Other considerations include fairness to individuals, regions and groups, and the degree of self-funding of the various levels of government.

Taxes change the incentives economic agents face and therefore alter their behaviour, causing social losses. For instance, a tax on labour income reduces post-tax wages relative to the wage costs faced by employers—the tax is said to drive a 'wedge' between these. As a result of that wedge, employees may choose to work fewer hours, because they value the leisure they thus gain at more than the post-tax wage, even though society values the output that would otherwise have been produced at the higher, pre-tax, wage. The gap between those valuations is a social loss, which is captured neither by taxpayers nor by the government. That social loss is the tax's economic cost.

In the literature of public finance, the economic cost of a tax or levy is called the excess burden or deadweight loss. (We will confine our attention to taxes for which the excess burden is a loss to the economy; that is, we ignore 'corrective' taxes like the excises on tobacco products). If an amount of revenue, say $Y billion, is collected and if that causes a reduction in the income or purchasing power of the private sector of $Y + $X billion, then $X billion is the excess burden. The average excess burden is the ratio X/Y, usually expressed as a percentage or as cents in the dollar of revenue. Another useful concept is the marginal excess burden; it is the rise in the numerator,

X, as a ratio of the rise in the denominator Y, when the tax law is changed so as to collect more revenue. It is, in other words, the increase in economic loss from taxation per unit of additional revenue raised.

It is desirable to minimize the total excess burden of collecting a given amount of revenue. This is realized by setting the rates so as to achieve equal marginal excess burdens for all of the levies in the mix.

Economic theory can give some general guidance about excess burdens:

i) As a rough and ready rule, the excess burden of a tax rises at a rate proportional to the square of the tax rate: a doubling in a tax rate leads to a quadrupling of the excess burden.

ii) For a particular tax rate, the average excess burden is lower when the tax is imposed on a broader base, rather than on a narrower one: thresholds and exemptions increase the average excess burden.

iii) The average excess burden is high for taxes levied on tax bases that can readily avoid (or evade) the tax; and low for those levied on tax bases that barely respond to the imposition of the tax (assuming the same tax rate is imposed in both instances). In theory, taxes on pure rents have zero excess burdens.

iv) The taxing authority cannot know as much about the responses of those being taxed, as do the taxpayers themselves. This asymmetry of information implies that tax policy should not attempt to collect all rent as tax revenue.

The arguments for the first three propositions are to be found in any standard undergraduate economics textbook; that for the fourth assertion is conveniently to be found in article by Ergas, Harrison and Pincus, referenced earlier. It disputes the assertion made in Australia's Future Tax System (AFTS), that the Resource Rent Super Profits Tax would have had zero excess burden. Subsequently, the Treasury and the Treasurer asserted that the MRRT would have a very low excess burden (largely on similarly-disputable theoretical grounds), although then Treasury Secretary Dr Ken Henry stated that the MRRT was less efficient than the RSPT would have been (in other words, caused greater excess burden per unit of revenue).

To assess the relative efficiency of alternative taxes, AFTS relied on quantitative estimates of excess burden made by KPMG Econtech, consulting for Treasury and seemingly accepted by Treasury. However, the KPMG Econtech estimate of a 50% average and 70% marginal excess burden of royalties should not be accepted.

The counter argument, that the excess burden of royalties is likely to be low, is set out in detail in Henry Ergas and Jonathan Pincus, Modelling the Excess Burden of Royalties, Research Paper No. 2012-03, July 2012, School of Economics, The University of Adelaide, available at
http://economics.adelaide.edu.au/research/papers/doc/wp2012-03.pdf
In this paper, we conclude that KPMG Econtech's results are not readily derivable from the data set out in the report they produced for AFTS. Additionally, the estimates we derive of average and marginal excess burden are very much lower than those reported by KPMG Econtech.

We apply their parameter estimates to a partial-equilibrium model that accounts for the facts that most Australian iron ore and coal is exported, and in sufficient quantities to influence world prices for those minerals. Much of the burden of royalties is borne by foreigners, in the form of higher world minerals prices, which benefit the Australian economy. This 'terms of trade' benefit offsets most of the damage to economic efficiency that royalties would otherwise cause. (Note that an export tax would be (slightly) superior to royalties, from an economic point of view. However, export taxes are forbidden under the rules of the World Trade Organization.)

Moreover, the KPMG Econtech report seems to be internally inconsistent: KPMG Econtech reported that royalties produce an excess burden equal to about half royalty revenue; but their own incidence tables show that the excess burden is almost zero. We suspect that KPMG Econtech made a mistake in applying the rules of national accounting.

KPMG Econtech also assumed that the RSPT would cause no economic loss. We believe this is simply an assumption, all the more so as the details of the RSPT (and hence its impact in practice) were not determined when KPMG Econtech undertook its assessment. (Indeed, they were not finalized before the proposed tax was abandoned).

In reality, neither the RSPT nor the MRRT will cause zero excess burden. Rather, for reasons more fully set out in Ergas, Harrison and Pincus, we suspect the excess burden associated with the MRRT will be quite high. In particular, the MRRT taxes normal profits on risky projects, deterring otherwise attractive investments; reduces the post-tax return on investments in increasing productivity and efficiency, so deterring innovation; and induces states to increase royalties, potentially increasing any economic harm royalties cause.

It is worth expanding slightly on this comparison of royalties and the MRRT. It is not our claim that royalties cause no economic loss—rather, as they drive a wedge between pre-tax and post-tax revenues, they lead miners not to produce some output that is at the margin of profitability. But precisely because that output is marginal (in the sense that even without the royalties, it barely covers its costs), the social loss caused by moderate royalties is small—and as noted above, some part of it is simply offset by higher prices on exports.

In contrast, a profits-based tax such as the MRRT cannot in reality distinguish between those profits that come from naturally given rents and those that arise from superior efficiency and entrepreneurial and inventive effort. As a result, it will to some degree tax non-rent sources of higher earnings and hence will deter those efforts from being made. That the MRRT imposes high tax rates on risky endeavours (as they are only allowed to earn a rate of return that may be below their WACC before being liable for the tax) aggravates that effect, as implementing innovative technologies may be very risky. The consequence would be to deter those technologies from being implemented, or inefficiently cause deferral of implementation until their risks have declined. As the resulting impacts will affect all output, and not merely output at the margin, their social cost will be high.

As a result, and quite in contrast to the conclusion reached by KPMG Econtech, the case for switching from royalties to the MRRT is at best, unproven and on balance, likely to be weak.

Therefore, we conclude that royalties should be included in the mix of levies imposed on the mining industry, at modest rates of the kind that have been imposed.

4: Give the MRRT to the States

4.1: The Commonwealth has been loath to consult and negotiate with State governments (which, after all, are the elected representatives of their communities, and are the owners of the sub-soil resources).

4.2: The best national mixture of levies on mining would comprise up-front auctioning of exploration and mining rights; royalties; and profits taxation.

4.3: To that end, the Commonwealth should vacate the MRRT field in favour of the States.

In an opinion piece in the *Australian* newspaper of May 29, 2012, Jonathan Pincus suggested that 'Government should cede mineral tax to the States': http://www.theaustralian.com.au/national-affairs/opinion/government-should-cede-minerals-tax-to-states/story-e6frgd0x-1226370376474
The purpose is to reduce tax competition between the States and the Commonwealth and to encourage a movement towards the optimal mix of royalties and profit taxation on mining. A similar proposal was made in the South Australian Government's submission to the review of the distribution of the GST. This section will explore the proposal, drawing on the opinion piece.

Here is what the Commonwealth should do: cede the MRRT revenues to the states; reduce by an equal amount the quantum of tied grants to the states (which are funded from Commonwealth non-GST revenues); pool the MRRT revenues with the GST; distribute the resultant pool of funds among the states according to the usual recommendations of the Commonwealth Grants Commission.

The proposal would, therefore, boost the revenues that the Commonwealth has available for its own copious spending, by exactly what is gained from MRRT. The Commonwealth Treasurer should be content and would have the wherewithal to bribe the states to cut the worst of their taxes, if he wished. Alternatively, the Commonwealth, relieved of some of its grant obligations to the states, can cut the worst of its own taxes, thereby further improving the tax efficiency of the nation.

Given that the revenue from the MRRT is highly uncertain—as was argued earlier in this submission, it may seem that the Commonwealth would be giving the states a headache. But under the proposal, what the states gain on the swings -- the MRRT revenue -- they lose on the roundabouts, by way of offsetting falls in Commonwealth grants.

The ‘Henry tax review’ (Australia’s Future Tax System, or AFTS) made two criticisms of royalties: they are inefficient, and they are unresponsive (p. 47). Inefficient, because for every dollar of royalties collected by the States, Australians lose another 50 cents in economic wellbeing, making royalties the second most inefficient tax in Australia. We argued earlier that 50 cents is a vast exaggeration. Be that as it may, the second criticism of royalties in AFTS was that they had been set too low and, when minerals prices rose, did not rise sufficiently to prevent miners from retaining excessive profits; and, presumably, that they would be too high if the bottom fell out of the export markets. (Although the States have some freedom to set royalty rates according to the expected or revealed profitability of each project, there are political and possibly constitutional difficulties involved; and there are disadvantages in frequent changes in royalty rates.) AFTS therefore recommended that royalties be abolished and that the Commonwealth impose a new tax on mining profits—the Resource Super Profits Tax, for which the Gillard government later substituted the Mineral Resource Rent Tax. Revenue from the MRRT would automatically vary (greatly) with the fluctuating fortunes of the various companies.

The advent of the MRRT has caused States to consider lifting royalty rates higher than they may have otherwise chosen; and some have done so. The reason is well canvassed in the report on the GST Distribution Review: it makes no financial difference to the post-tax, post-royalty profits of a company whether it is obliged to pay a particular sum to the Commonwealth for the MRRT, or the States for royalties. Therefore, the States have an incentive to raise royalty rates to capture revenue that would otherwise accrue to the Commonwealth as MRRT tax payments (or, for that matter, as company tax payments). This brings us to the matter of tax competition, and its possible inefficiencies.

If the states received the revenues of the MRRT, they would have no incentives to reduce the minerals resource rent tax revenue through increasing state mineral royalties. This is true for each state separately and, due to horizontal fiscal equalization (HFE), is true for the states collectively, through the operations of the Commonwealth Grants Commission, implementing HFE.

What would the states do, were this proposal implemented? If the Henry review is correct in claiming that royalties are a very costly way to get revenue, and that MRRT is very efficient, then the states would have all the incentives they need to cut royalties and boost the rate of MRRT: strong incentives would be put firmly in place for a more efficient Australian tax system. But on the contrary, as long as the Commonwealth holds onto the MRRT revenue, then two levels of government would be fishing from a common pond and they would fish for tax revenue competitively, not efficiently.

We understand that there are no constitutional barriers to the States’ levying a tax like the MRRT. That they have failed to do so suggests that the States collectively are not revenue hungry, despite their protestations; or that the incentives for a State to impose such a tax have been too greatly diminished by the operations of the Commonwealth Grants Commission; or that the MRRT is not as brilliant a tax as the Commonwealth and its Treasury believes.

If the Commonwealth vacated the field, then the individual states could set their own rates of MRRT, just as they set their own rates of royalties (and just as they rely, to a greater or less extent, on the auctioning of exploration and development rights). However, it may be preferable if the states all used the same definitions of the tax base, possibly those in the existing legislation. There would be, nonetheless, additional burdens on the companies, to report their MRRT profits by state. (Recall, however, that under the MRRT, the companies are required to apportion their assets to those used to the point of taxation; and presumably, this would be done project by project.) Nonetheless, there will be an additional compliance cost.

There are obviously some additional questions of implementation. In particular, as MRRT revenues are volatile, yet both the Commonwealth and the states value revenue predictability, there may be issues about the allocation of the revenue risk. However, the need to confront those issues would have the merit of bringing some transparency to the cost of that volatility, inducing the parties to take it properly into account. For example, if the states had to bear much or all of the risk, they might place greater reliance on the relatively predictable royalties than they would have done had the Commonwealth been willing to bear the revenue risk. Conversely, if the Commonwealth placed a high value on potential efficiencies from the MRRT, it could compensate the states for that tax's volatility, thus inducing them to place greater reliance on it than on royalties.