Resource rent mechanisms in Australian primary industries: some observations and issues

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(Note: The views expressed in this paper are those of the authors rather than those of the NSW Department of Primary Industries or the NSW Government)
ABSTRACT

Resource rents represent a return to the community for the exclusive use of resources and therefore are quite distinct from the recovery of governmental regulatory or operating costs. While the current framework for resource rents in Australian primary industries is providing financial benefit for Australian governments, it is uncertain whether the current policy settings are providing an appropriate community return. This paper discusses the theory underpinning resource rents and conducts a multi-jurisdictional comparison focusing on the minerals and fisheries industries to aid analysis of the role resource rent taxation plays in the existing management of Australian primary industries.
INTRODUCTION

Resource rent refers to the excess profit, or ‘super-normal’ profit, over the level earned in a competitive market. Resource rent is equal to the difference between revenue and costs (including a competitive return on capital).

It is often argued that natural resources, such as mineral deposits, wild fisheries and native forests, belong to the community and, as a public asset, any use of those resources for private gain should yield a return to society. Various taxation mechanisms have been developed and adopted to ensure that those who have been given access to natural resources provide such a return to society.

The objective of this paper is to consider the nature of some of the resource rent tax mechanisms that have been applied to natural resource based industries with a view to identifying some remaining policy issues and potential areas for reform. A review of the theory of resource rents is provided, followed by a brief overview of the various methods by which rents can be collected and a description of some of the present resource rent policy settings among the Commonwealth, states and territories for a range of primary industries. The paper concludes with some observations on the consistency and effectiveness of these arrangements with the objective of promoting discussion and further policy research opportunities.

HISTORY

While the issue of resource rents has its origins in Ricardo’s principles of 1819, the first suggestion of applying taxes to mining projects based on mineral rents in Australia was by Henderson (1971), who proposed that all new mining leases be auctioned to collect rents associated with potential mining projects. Henderson’s proposal was followed by the widely acknowledged 1975 paper by Garnaut and Clunies-Ross (1975) entitled “Uncertainty, risk aversion and the taxing of natural resource projects”, in which it was proposed that a resource rent tax (RRT) based on realised rents be applied to natural resource projects in developing countries in order to permit the economic benefit of such projects to remain within the domestic
economy. In 1976, Swan proposed the Brown Tax, whereby government receives a constant percentage of a miner’s profit on a specified project, as an option for taxing realised rent (Lloyd 1984).

In the late seventies a fourfold increase in the price of oil was matched by both coal and uranium (substitutes for power generation). The Commonwealth Government moved to capture the new found ‘rent’ being produced for crude oil and LPG through an excise tax (Dowell 1984). Tax collections from the period of 1975-84 totalled over $22 billion. This led to questioning as to whether states were collecting sufficient revenue within their jurisdictions. In 1979 Garnaut and Clunies-Ross compiled a paper proposing that a resource rent tax be substituted for all existing royalties that they deemed ‘inefficient’ (Dowell 1984 p. 438).

The oil shock of the 1970’s also generated further interest in the RRT for application to mining and petroleum projects within developed countries (Hogan 2003), with numerous proposals for rent based taxes being examined in the 1970’s and 80’s. A great deal of this research substantially contributed to the current resource rent royalty framework in Australia (Hogan 2003).

THEORY

Economic rent can be defined as the earnings from any activity that exceed the costs required to make the activity economically sustainable in the long term (Campbell & Haynes 1990 p.5). Economic rent refers to the surplus that is created as a consequence of a business activity and may be considered to be the difference between consumers’ willingness to pay (WTP) and the price at which firms are willing to supply (costs). Clearly, part of this rent is returned to management as reward for entrepreneurial input and may be labelled as “normal profit”. Any remaining rent can be viewed as ‘super profit’. Such super profit would not normally be expected to occur in a competitive industry and therefore is most commonly associated with some form of market failure, such as where a monopolist extracts rents from consumers by restricting supply to below the competitive level of output.
However, granting exclusive access to a particular natural resource can also contribute to ‘super profit’, or resource rent, earned by the harvester or miner (NSW DPI 2005). The concept of normal profit and super profit is illustrated in Figure 1.

**Figure 1:** Resource rent and normal profits

<table>
<thead>
<tr>
<th>Super Profit/ Resource Rent</th>
<th>Willingness to pay for access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Profit (ncl entrepreneurial rent)</td>
<td>Business costs and return</td>
</tr>
<tr>
<td>Resource costs (land, labour, capital)</td>
<td>Government fees and charges</td>
</tr>
<tr>
<td>Government Costs- Private (administration of access)</td>
<td></td>
</tr>
<tr>
<td>Government Costs - Public (species preservation)</td>
<td></td>
</tr>
</tbody>
</table>

Source: (NSW DPI 2005)

Resource rent is essentially a long term concept. Figure 2(i) illustrates a perfectly competitive industry that is assumed to have a perfectly elastic (horizontal) long run marginal cost (supply) curve due to the ability of existing and potential new entrants to replicate the most efficient producer’s production facilities (and hence marginal cost), resulting in an output of \( q \) at price \( p \). However, in circumstances where competitors are unable to match the marginal cost of the most efficient competitor and where the most efficient competitor cannot duplicate their marginal cost structure (due to the variable productivity of different ore deposits for instance), resource rents arise.
The concept of resource rent is most easily explained by taking an extreme view of Ricardo’s land rent example, which assumes that the supply of agricultural land is fixed and, hence, the long run supply curve of agricultural products that rely on the use of land is vertical. Figure 2(ii) illustrates that in such a case, a quantity \(q_l\) will be produced (at a ‘normal’ cost of production of \(b\)) and sold at price \(p_l\). The level of output \(q_l\) is lower than that which would be produced in a competitive market, and the price \(p_l\) is higher than the competitive price \(p_c\). This results in a land rent equivalent to \(p_l - a - b - p_c\) accruing to the owners of land.

However, for non-renewable resources, such as minerals, a less profuse generation of rent could be expected to occur due to the fact that mineral extraction can be expanded through increasing the output of existing mines and/or the opening of new mines. There are, nevertheless, impediments to the establishment of a perfectly competitive minerals market due to the heterogeneity of mineral deposits, such that high quality deposits will be able to produce a unit of output at lower cost than poor quality deposits. It is this heterogeneity that gives rise to a long run industry marginal cost curve that is upward sloping and convex – that is, the aggregation of individual firms’ marginal cost curves ranked in ascending order. It should be kept in mind that the cost of resource extraction is assumed to include the cost of production from existing mines, the cost of developing new mines to extract known deposits and the cost of exploration to make deposits known.

The nature of resource rent is illustrated in Figure 3. Where producers are willing and able to produce quantity \(q_w\) at price \(p_w\), ‘differential’ rent equivalent to \(p_w - a - b\) will
arise due to the differences in deposit quality, as discussed above. This is precisely what is known as producer surplus in other contexts, and is most easily conceptualised by considering the $q_w-p_w$ outcome for the most and least efficient producers - the most efficient producer will be accruing differential rents of around $p_w-a$ per unit, whereas the least efficient producer will be receiving little or no rent because they are producing the units of output that coincide with point $b$.

There is, however, another potential source of resource rent – ‘scarcity’ rent, which has its foundation in Hotelling’s 1931 article ‘The Economics of Exhaustible Resources’. The notion of scarcity rent relies on the assumption that the economically-recoverable stock of exhaustible resources is fixed. Consequently, those that have a property right in resources will require a return on the capital invested in those resources that is equal to the return they could obtain by selling their stake and investing elsewhere. Assuming a competitive market for both the resource and capital, this means that the resource price in the present period must be less than the price in the subsequent period and so on, and that this difference will be equal to the rate of interest (Anderson 1985). If this were not so, resource owners would have an incentive to either increase extraction (if future prices were not sufficiently higher than present prices) or reduce extraction (if future prices were greater than present prices plus interest).
Figure 3 illustrates the fact that the aforementioned incentive for producers to limit present production in order to achieve higher prices in future is the basis for scarcity rent. In equilibrium, a decrease in production from $q_w$ to $q_s$ causes an increase in price from $p_w$ to $p_s$, resulting in scarcity rents of $p_s - c - d - p_w$. The realisation of scarcity rents is not necessarily a bad thing – the restriction of resource extraction to take advantage of higher future prices would lead to the socially optimal level of extraction if the prevailing interest rate equals society’s discount rate. Of course, the degree to which scarcity rents actually occur depends on the extent to which the assumption, that the stock of resources is fixed, holds.

**RENEWABLE AND NON-RENEWABLE RESOURCE RENTS**

As with non-renewable resources, renewable resources can generate differential rents associated with differences in the costs structures of harvesters (Anderson 1985). However, the ability of a renewable resource to regenerate itself in the face of harvesting, thereby offering the prospect of generating rents in perpetuity, renders renewable resources distinctly different from non-renewables.

While non-renewable resource extractors that have been granted a property right over some portion of the resource can contemplate either immediate or delayed extraction and will decide on their level of extraction according to the respective returns, renewable resource harvesters in an open-access management framework are not in a position to delay harvest as they cannot be sure that another harvester will not harvest the resource beforehand. Consequently, rents will be competed away in the short term and over-harvesting will likely deplete the resource such that the magnitude of potential future rents is much reduced. It is this ‘common property’ problem that requires society, as the resource owner, to overtly manage access to the resource to optimise the rate of extraction.

By limiting the level of harvest to the point where society’s marginal cost curve (which incorporates a return on future rents) intersects marginal benefit (the demand curve), the quantity harvested will be lower than the competitive outcome where price equals average cost (Kalymon 1981). Such a restriction on harvest would generate scarcity rents similar to that shown in Figure 3. Kalymon (1981) shows that there will generally be two equilibrium harvest levels for a renewable resource: (i) low
population – low sustainable harvest; and (ii) high population – high sustainable harvest, and claims that the former is the least stable and associated with resource extinction due to the economic incentives associated with temporary over exploitation. However, Kalymon suggests that temporary under-harvesting in the low population – low sustainable harvest situation would lead to population increase and consequent increase in sustainable harvest and associated rents through time.

RESOURCE RENT TAXES
There are both equity and efficiency grounds for government to aim to appropriate a portion of any resource rent that arises from the granting of an exclusive property right in certain natural resources on behalf of the community.

While government may be willing to grant exclusive property rights over natural resources in order to ensure efficiency in their discovery or extraction, the ability of the resource extractor to appropriate resource rents from consumers through the use of a resource that belongs to society is typically viewed as inequitable. There is therefore a community expectation that those that are allowed to use natural resources for profit will be made to return some of the associated revenues to society.

The previous section explained the theoretical efficiency underpinnings of resource rent taxes, the existence of which rely heavily on their assumptions. For instance, the ability of miners to extract scarcity rents depends on their ability to control the rate of extraction over the resource. However, if government imposes expiry dates on exploration and development licenses, as they typically do, the consequent inability of miners to delay extraction could lead to a ‘common property’ problem, whereby miners are obliged to extract immediately and, in doing so, compete scarcity rents away (Anderson 1985). Such an outcome would be sub-optimal for both extractors and society and require deliberate public policy designed to prevent its occurrence.

Given that it is uncertain whether scarcity rents will be present, most resource rent taxes focus on the public appropriation of differential rents. The ideal resource rent tax would collect a constant percentage of the differential rent, as illustrated in Figure 4 (Hogan 2007), where government collects \( p_w - b - e \), leaving industry with \( e - b - a \). Such a RRT is known as a ‘neutral’ profit based royalty, as it would not affect private
investment and production decisions. However, as it requires precise knowledge of each firm’s cost structure and revenue stream, the practical implementation of such an accurate RRT is not possible, but does provide a good point of comparison when considering the efficiency of real-life resource rent taxation schemes.

Given that even the highest resource rent taxes around the world generally do not exceed 50 per cent of total rents, it might be asked why government does not attempt to transfer a greater proportion to society. Theoretically, any level of rent left with extractors should provide an incentive to maximise rents through cost minimisation. However, it is believed in practice that high levels of rent transfer away from extractors greatly reduces their incentive to minimise costs (and hence maximise rents), as most of the benefits of doing so would accrue to government under a neutral RRT, given that rent would be calculated as revenue less costs. Consequently, at some point higher levels of RRT would recover a higher proportion of a smaller rent pool, resulting in decreasing returns to society (Anderson 1985).

**RESOURCE RENT TAX IMPLEMENTATION**
Designing and managing resource rent taxes can be a costly operation and should only be considered if the value of rent collected is known to exceed the costs involved in collecting the rent. When designing resource rent taxes, consideration must be given
to whether the selected mechanism is equitable, transparent, cost-effective, efficient and applicable. These characteristics are explained further in Figure 5.

**Figure 5:** Design considerations for resource rent taxation arrangements

<table>
<thead>
<tr>
<th>PRINCIPLE</th>
<th>MEANING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equitable</td>
<td>Charge should be consistent and not imposed differently for different groups</td>
<td>This may be a problem for a fixed fee approach which imposes higher costs on smaller industry participants</td>
</tr>
<tr>
<td>Transparent</td>
<td>Calculation of charges imposed should be clear to all parties involved and based on rules known in advance</td>
<td>Could be difficult if calculations depend on confidential commercial data</td>
</tr>
<tr>
<td>Effective</td>
<td>Costs of calculating, imposing and collecting of the charge (including reviews, dispute resolution) should be low relative to revenue raised</td>
<td>This may conflict with charges that demand regular monitoring and review eg multi-species fisheries</td>
</tr>
<tr>
<td>Efficient</td>
<td>Perverse incentives should not arise that undermine an industry.</td>
<td>Often a trade-off between efficiency and effectiveness and may conflict with a fixed fee or ad valorem charge</td>
</tr>
<tr>
<td>Applicable</td>
<td>The chosen overall framework should be applicable across all relevant industry members where possible.</td>
<td>Nonetheless calculation details may vary</td>
</tr>
</tbody>
</table>

(Source: NSW Treasury Comments Paper 2004)

**TAXATION OF MINERAL RESOURCES IN AUSTRALIA**

**Assigning property rights**

The Commonwealth Government is responsible for all oil and gas resources that are positioned offshore and outside the three mile territorial sea limit and also for uranium and bauxite resources located in the Northern Territory. All other mineral resources fall under the jurisdiction of state and territory government authorities (Hogan & Donaldson 2000).
The Commonwealth and state governments allocate exploration and production property rights through three main mechanisms:

- **first come, first served** - resource rights are allocated to the first applicant;
- **work program bidding** - resource rights are assigned according to which applicant is deemed to be most likely to develop the resource to its full potential and optimise development of the surrounding area; and,
- **cash bonus bidding** - resource rights are granted to the applicant with the highest bid.

Cash bonus bidding is theoretically the most efficient approach, whereby the government allocating the rights receives a rent payment and benefits from an efficient allocation system (as the most efficient miner can afford to bid the highest). Cash bonus bidding has been used in relation to exploration permits that were assigned in several Australian highly prospective petroleum areas between 1985 and 1992, with values of winning cash bids ranging from A$1 million to A$20 million.

However, the inherent uncertainty regarding the quality of a particular deposit means that bidders will discount their cash bonus bids accordingly. Royalty payments on actual production are therefore used to take account of this practice (Hogan 2003).

Once exploration permits are allocated, the government then sets a framework for collecting the resource rents within these property right allocations. There are a number of alternative methods for resource rent collection that can be grouped under either profit-based royalties or output based royalties.

**Profit-based royalties:**

- **Brown tax** – government receives payments that represent a constant percentage of the project’s net cash flow for a specified project for each year of the project’s operation. The government collects a set percentage of a project’s net cash flow (defined as difference between total revenue and total costs) when the project incurs profit, however the government provides the firm with a cash rebate in years when profits are negative (Hogan 2007); and
• **resource rent royalty or tax** – payment is made to government that is a constant percentage of the project’s accumulated net profit for each year of the project’s operation. Exploration and development costs are accumulated at a threshold rate and offset against future revenues.

The Brown tax is considered to be the most efficient collection mechanism but not employed due to ‘concerns with government providing cash’ rebates to private business (Hogan & Donaldson 2000 p. 524).

The resource rent tax is similar to the Brown tax, though it too has its drawbacks in accurately calculating the appropriate threshold rate for costs incurred in the exploration/development stages of a project. The resource rent royalty is ‘relatively efficient as the levy is set on accumulated profit and fluctuates with changes in prices, costs and output’ (Hogan & Donaldson 2000 p. 524). Ideally the resource rent tax should be set so that the government does not receive in excess of the economic rent from the private firm and also so that it minimises distortionary effects on private decision making (Hogan 2003).

**Output based royalties:**

• **ad valorem royalty** – payment is made to the government as a constant percentage of the value of production;

• **excise** – similar to an ad valorem royalty but payment is based on an increasing percentage of the value of production (the excise increases as production levels increase); and

• **specific or quantum royalty** – payment to the government is based on a constant amount per physical unit of production. (Hogan 2003).

The ad valorem royalty varies with price and output, while the specific royalty varies only with output and is accordingly considered ‘a more distorting form of royalty than the ad valorem’ alternative (Hogan & Donaldson 2000 p. 524). The quantum royalty is relatively simple to calculate and administer and usually applied for low value minerals such as coal and limestone (Mineral Resources NSW 2003). Ad valorem
royalties are usually applied to high value and/or high volume minerals (Mineral Resources NSW 2003).

The dilemma with output based royalties is calculating a tax rate that does not negatively affect low quality or marginal projects. When there is a varied range of both low and high profit projects, which there generally is, output based royalties are inclined to overtax low profit earners and undertax high profit earners (Hogan 2007).

For most state and territory based projects, output based royalties are applied, though there is considerable variation between jurisdictions. A few profit based royalty projects exist, such as the Argyle Diamond mine and projects located at Broken Hill, which are a combination of *ad valorem* and profit based resource rent (Hogan & Donaldson 2000).

**JURISDICTIONAL MINERAL RESOURCE COMPARISONS**

*Petroleum*
Specific and *ad valorem* royalties are mainly applied to minerals under Commonwealth jurisdiction. However, a key exception is the petroleum resource rent tax (PRRT). The PRRT was first introduced in Barrow Island in 1985 and introduced by the Commonwealth Government in 1987 to apply to all new offshore projects not already covered by existing licences and permits (Hogan 2003). The PRRT is governed by the Commonwealth *Petroleum Resource Rent Tax Assessment Act 1987* on all offshore petroleum projects with the exception of the North West Shelf. The PRRT is a profit based tax levied on all petroleum projects in Australian Government waters including crude oil, natural gas, LPG condensate and ethane (Hogan 2003).

The PRRT is a fiscal regime with the objective of encouraging the exploration and production of petroleum and simultaneously providing a satisfactory return to the community. PRRT is levied at a rate of 40% of a project’s taxable profit. In 2000-01 financial year collections were significant at $2.4 billion (ATO 2005).

The predominant state or territory petroleum projects are located in the offshore North West Australia and Bass Strait areas and in Queensland and South Australia. A profit
based royalty agreement set between the Commonwealth and the Western Australian Governments is specific to Barrow Island.

The crude oil excess is calculated on annual production, date of discovery and the date of start of production, with the first 30 million barrels exempt. It applies to all Commonwealth onshore projects and offshore projects within Australian waters as well as the North West Shelf (NWS) permit area (Hogan 2007).

A summary table of all resource rent royalties applied to Australian petroleum projects, including the PRRT and state arrangements, is provided in Table 1.

Table 1: Resource rent arrangements for Australian petroleum resources

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Arrangement</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>AD VALOREM</td>
<td>0-10.0%</td>
</tr>
<tr>
<td>WA</td>
<td>AD VALOREM</td>
<td>10-12.5%</td>
</tr>
<tr>
<td>QLD</td>
<td>AD VALOREM</td>
<td>10%</td>
</tr>
<tr>
<td>VIC</td>
<td>AD VALOREM</td>
<td>10%</td>
</tr>
<tr>
<td>NT</td>
<td>AD VALOREM</td>
<td>10%</td>
</tr>
<tr>
<td>SA</td>
<td>AD VALOREM</td>
<td>10%</td>
</tr>
<tr>
<td>PRRT</td>
<td>PROFIT</td>
<td>40%</td>
</tr>
<tr>
<td>NWS</td>
<td>AD VALOREM</td>
<td>10-12.5%</td>
</tr>
<tr>
<td>BARROW ISLAND</td>
<td>PROFIT</td>
<td>40%</td>
</tr>
<tr>
<td>JPDA</td>
<td>Consultation with East Timor</td>
<td>●</td>
</tr>
<tr>
<td>CRUDE OIL EXCISE</td>
<td>AD VALOREM</td>
<td>0-35%</td>
</tr>
</tbody>
</table>

(Source: Hogan 2007)

JPDA- Joint Petroleum Development Area
NWS- North West Shelf

NB: The jurisdictions in italics represent Commonwealth jurisdictions (with the exception of Barrow Island which is a combined Commonwealth/State arrangement).

Coal
Coal is the dominant mineral in New South Wales and Queensland, where it is extracted for domestic energy production and for export. A 7% ad valorem tax applies to coal mines in Queensland and open cut mines in NSW, with a lower rate applying to underground mines (to incorporate risk in extracting the resource) (Hogan 2007).
The less prevalent and lower quality brown coal is produced in Victoria for electricity generation. The specific rate applying to the Victorian resource is based on energy content and is adjusted annually for inflation (Hogan 2007).

In Western Australia arrangements vary according to whether the mineral is exported. If the coal is not exported then a specific rate is applied. If the coal is exported an ad valorem rate is applied. A summary table for the resource rent royalties applying to Australian coal resources is provided in Table 2.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Arrangement</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>AD VALOREM</td>
<td>5-7%</td>
</tr>
<tr>
<td>WA</td>
<td>AD VALOREM</td>
<td>7.50%</td>
</tr>
<tr>
<td></td>
<td>SPECIFIC</td>
<td>$1.00/t</td>
</tr>
<tr>
<td>QLD</td>
<td>AD VALOREM</td>
<td>7%</td>
</tr>
<tr>
<td>VIC</td>
<td>SPECIFIC</td>
<td>$0.588/GJ*</td>
</tr>
<tr>
<td>SA</td>
<td>AD VALOREM</td>
<td>2.50%</td>
</tr>
<tr>
<td>TAS</td>
<td>AD VALOREM/SPECIFIC</td>
<td>1.6-5.0%</td>
</tr>
</tbody>
</table>

(Source: Hogan 2007)
* Victoria’s taxation for coal is levied per gigajoule.

NB: Coal production is zero in the Northern Territory

**Metallic Minerals**

Western Australia is particularly abundant in metallic minerals including gold, nickel, iron ore and bauxite. Western Australia is closely followed by Queensland with substantial deposits of gold, bauxite and mineral sands, as well as being the largest producer of base metals including copper, lead and zinc. Large quantities of uranium exist in the Northern Territory along with some metallic commodities. South Australia and Tasmania also have deposits of metallic minerals. Gold is common to all jurisdictions (Hogan 2007).

Ad valorem royalty arrangements are applied to metallic mineral extraction in most jurisdictions. In Western Australia, the rate is set “according to extent of processing, ranging from 7.5 % for bulk material, 5% for concentrates material and 2.5% for metal” (Hogan 2007 p.17).

In Queensland the rate is 2.7%, though a variable option (1.5%-4.5%) is available that is set for 5 years after production commencement. Exemptions include the first
$30,000 produced and tax reductions between 20-35% are available if processing is carried out in Queensland. Bauxite and mineral sands are not included in this rate, and instead are exposed to a 5% ad valorem rate or 10% if bauxite is processed outside Queensland (Hogan 2007).

New South Wales, South Australia and Victoria have ad valorem rates of 4%, 2.5% and 2.75% respectively. Project specific arrangements do apply in New South Wales and South Australia concerning operations in Broken Hill and Olympic Dam. Victoria has no royalty on gold production (Hogan 2007).

In Tasmania, rates of between 1.6%-5.0% are applied, depending on profit (the rate is applied on an increasing profit scale), and a 20% rate reduction is available if processed within Tasmania (Hogan 2007).

A summary table for the resource rent royalties in Australian metallic resources is provided in Table 3.

Table 3: Resource rent arrangements for Australian metallic resources

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Arrangement</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>AD VALOREM</td>
<td>4%</td>
</tr>
<tr>
<td>WA</td>
<td>AD VALOREM</td>
<td>1.25-7.5%</td>
</tr>
<tr>
<td>QLD</td>
<td>AD VALOREM</td>
<td>1.5-10%</td>
</tr>
<tr>
<td>VIC</td>
<td>AD VALOREM</td>
<td>0-2.75%</td>
</tr>
<tr>
<td>NT</td>
<td>PROFIT</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>AD VALOREM*</td>
<td>5.50%</td>
</tr>
<tr>
<td>SA</td>
<td>AD VALOREM</td>
<td>2.5-3.5%</td>
</tr>
<tr>
<td>TAS</td>
<td>AD VALOREM/SPECIFIC</td>
<td>1.6-5.0%</td>
</tr>
</tbody>
</table>

(Source: Hogan 2007).
* Commonwealth jurisdiction

Non-metallic minerals
Western Australia is the main deposit location for non-metallic minerals, in particular diamonds and salt while the Eastern states of New South Wales, Queensland, Victoria and also South Australia are dominant in construction minerals. Other important non-metallic minerals include phosphate rock which is predominant in Queensland, opals predominant in New South Wales and South Australia and limestone in most states/territories (Hogan 2007).
The ad valorem arrangements in South Australia, Victoria and the Northern Territory for non-metallic minerals are equivalent to that of metallic minerals in those jurisdictions, except for construction materials in the Northern Territory (Hogan 2007). An exemption of the first $50,000 is also available in the Northern Territory. A summary table for the resource rent royalties in Australian non-metallic resources is provided in Table 4.

**Table 4: Resource rent arrangements for Australian non-metallic resources**

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Arrangement</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>AD VALOREM</td>
<td>4.00%</td>
</tr>
<tr>
<td></td>
<td>SPECIFIC</td>
<td>$0.35-$0.70/t</td>
</tr>
<tr>
<td>WA</td>
<td>AD VALOREM</td>
<td>5.75%</td>
</tr>
<tr>
<td></td>
<td>SPECIFIC</td>
<td>$0.30-$0.50/t</td>
</tr>
<tr>
<td></td>
<td>PROFIT/AD VALOREM *</td>
<td>22.50%/7.5%</td>
</tr>
<tr>
<td>QLD</td>
<td>SPECIFIC</td>
<td>$0.25-$1.00/t</td>
</tr>
<tr>
<td>VIC</td>
<td>AD VALOREM</td>
<td>2.75%</td>
</tr>
<tr>
<td>NT</td>
<td>PROFIT</td>
<td>18%</td>
</tr>
<tr>
<td>SA</td>
<td>AD VALOREM</td>
<td>2.50%</td>
</tr>
<tr>
<td>TAS</td>
<td>SPECIFIC</td>
<td>$1.20/t</td>
</tr>
</tbody>
</table>

(Source: Hogan 2007).

* - Ellendale Diamond Project hybrid profit/ad valorem arrangement

**JURISDICTIONAL FISHERIES RESOURCE COMPARISONS**

Resource rent taxes are not as prevalent with respect to Australian fishery resources as they are with mineral resources. Currently only NSW, Victoria and Tasmania have resource rent collection frameworks in place, and these rely on administratively based tax collection rather than automatic collection through auction-like methods. Other states and territories use various schemes to recover management costs, though this policy is considerably different from resource rent taxation. In fisheries there is an array of licence fees (eg annual pot licences in the rock lobster industry). However, these are not designed as resource rent collection mechanisms but rather to help defray regulatory costs (R. Kingwell 2007, pers. comm., 8 January). Other state and territory governments are currently reviewing framework alternatives to potentially implement in the near future.

Similar resource rent frameworks (ad valorem, specific) that exist in mineral resources can be applied to fishing resources (these have been discussed in detail in the previous section). A look at the specific structure of the systems in NSW, Victoria and Tasmania is provided in the following section.
NSW
The NSW Government manages fishery resources on behalf of the community through various regulatory mechanisms to encourage a sustainable and viable fishing industry. Just as mineral resource owners pay royalties, fishers pay ‘community contribution’ charges.

Abalone
The NSW abalone industry was declared a category one share management fishery in 1995 under the *Fisheries Management Act 1994*. The community contribution (resource rent) charge was introduced in the Abalone Share Management Fishery in 2000. Originally, the charge was set at 6% of the annual gross value of the fishery and was calculated using average beach price from the previous fishing period. This charge was phased in over a four year period (0% in 2000, 2% in 2001…6% in 2003).

In April 2004, shareholders in the NSW abalone industry expressed concern that this charge was too difficult to meet due to poor economic conditions resulting in low beach prices. The NSW Government subsequently established a Working Group in August 2004 to review the system. A new method of calculation for the community contribution scheme was subsequently introduced that is still levied as a proportion of gross revenue per share, but it is now based on an indexed sliding scale that relates to the average annual beach price (AABP) (R. Gale 2007, pers. comm., 18 January).

If the AABP falls under $43/kg then no charge is payable. If the AAPB is estimated at between $43/kg and $52/kg, then the charge is increased by 0.5% per dollar to 5% of the revenue at $52. The charge then increases by 1% per dollar to a maximum of 15% at $52/kg or more. The guidelines stipulate that the AABP will be set annually and the charge reviewed every 5 years.

The rate of charge (sliding scale) for the 2004/05 period is shown in Figure 6.
Figure 6: Community Contribution Charge rates for NSW abalone

<table>
<thead>
<tr>
<th>Beach $P</th>
<th>&lt; $43</th>
<th>$43</th>
<th>$44</th>
<th>$45</th>
<th>$46</th>
<th>$47</th>
<th>$48</th>
<th>$49</th>
<th>$50</th>
<th>$51</th>
<th>$52</th>
</tr>
</thead>
<tbody>
<tr>
<td>% rate</td>
<td>0</td>
<td>0.5</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>2.5</td>
<td>3</td>
<td>3.5</td>
<td>4</td>
<td>4.5</td>
<td>5</td>
</tr>
<tr>
<td>Beach $P</td>
<td>$53</td>
<td>$54</td>
<td>$55</td>
<td>$56</td>
<td>$57</td>
<td>$58</td>
<td>$59</td>
<td>$60</td>
<td>$61</td>
<td>$62</td>
<td>&gt;$62</td>
</tr>
<tr>
<td>% rate</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>


Lobster

In 1995, the NSW lobster fishery was declared as a “share management fishery” and, in 1996, lobster endorsement holders were issued with shares and more rigid measures such as catch quota, shares and tags were introduced (DEH 2006).

The reported value for commercial harvest of NSW lobsters in 2003/03 was $5.43 million, in 2002/03. Unlike other rock lobster fisheries, the NSW fishery is small compared with other fishery operations. However, the high prices and popular market (particularly local markets for premium seafood) have caused management problems including illegal and unreported fishing. Restrictive management measures are in place to resolve such problems.

There are currently 146 shareholders in the NSW lobster industry with 10,051 shares. The current community contribution charge is $122 per shareholder for the 2005/06 period. However, the Lobster Share Management Fishery is currently reviewing the community contribution charge and so the charge has been deferred until 1st July 2008 (R. Gale 2007, pers. comm., 18 January).

Victoria

The Abalone industry began in Victoria 1962 and grew rapidly throughout the 1960's, with over 300 divers by 1968. The industry was considered to have considerable
instability, poor quality control and fluctuating markets reflecting inconsistent catches. A new management regime was introduced whereby Victorian abalone fishers hold tradeable renewable 12-month ‘proprietary rights’ that can be cancelled (with compensation) by the Government should it be deemed to be in the public interest (P. Rawlinson 2007, pers. comm., 25 January). More effective management of the industry has improved its status and the industry now provides over 12% of world production of wild abalone (Victorian Abalone Divers Association 2004).

Royalty payments for access to the Victorian abalone resource have been established for over 15 years. The abalone industry is the only Victorian fishery that pays 100% of the Victorian Department’s costs for managing the fishery as well as an added royalty. The royalty rate is based on a percentage of GVP per kilogram harvested by industry. It is calculated by the following equation:

\[
\text{Royalty Rate} = (0.072 \times \text{GVP}) - (\text{FMS} + \text{FRDC})
\]

Where:
- GVP is the average weighted beach price per kilogram (for the financial year preceding the year to which the royalty relates) multiplied by the weight of the abalone in kilograms;
- FMS represents the levies paid to Fisheries Management Services (also known as the cost recovery levies including management, compliance and research levies); and,
- FRDC represents the levies payable to Fisheries Research and Development Corporation.

The royalty rate fluctuates from year to year, but the rate is usually charged at approximately 3.5% of GVP (P. Rawlinson 2007, pers. comm., 25 January).

**Tasmania**

Abalone is Tasmania’s most valued wild fisheries resource with roughly 3000 tonnes produced per annum representing over 50% of Australia’s total catch. The Tasmanian wild abalone fishery is the largest in the world representing approximately 25% of the market. Prior to 1962 the Tasmanian abalone industry was unregulated. Minor
regulations were then introduced such as size limits and diving licences. In the 1980’s abalone divers began expressing concerns of over-fishing of the abalone resource. This prompted a significant restructuring of the industry, where Tasmanian abalone fishers now hold tradeable renewable 10 year property rights (Tasmanian Abalone Council 2003).

Tasmania’s royalty system is based on a Deed of Agreement between the Government and individual licensees. The previous framework was based on a sliding scale structure and community return rates were dependent on an increasing scale of beach prices.

Following a decision by the Premier in 2004, changes were made to the royalty arrangements and these changes were introduced on 1st January 2005. Under this arrangement the rate is now set at a fixed rate of 8% of the average beach price. This is over and above the annual licence fee (approximately $60 pa) per quota per unit.
OBSERVATIONS AND ISSUES

Despite the theory associated with resource rent taxation having been well developed for 30 years, the present inconsistency of resource rent taxation arrangements in Australian primary industries indicates that there is potential for inefficiency in the collection of such taxation. This in turn may be leading to over exploitation of public resources in jurisdictions that do not levy a sufficient rate of taxation, under exploitation where the rate of taxation is too high and/or a poor use of public wealth that could otherwise be used to fund social services. Inter-jurisdictional taxation inconsistency may also distort initial mineral exploration and development decisions.

The presence of inter-jurisdictional inconsistency in resource rent taxation arrangements appears to highlight a need for greater cross-jurisdictional and cross-industry comparisons with respect to these arrangements so that policy makers can act to minimise the distortions described above. Both qualitative and quantitative analysis might be usefully employed to this end. Specifically, there may be merit in quantitative modelling of specific mineral projects with the aim of estimating the magnitude and type of any rents generated, as well as the proportion appropriated by government.

The regenerative nature of renewable resources has also presented government with ongoing difficulties in relation to both the maintenance of rents and the appropriation of a portion of such rents by government on behalf of society. It is known that open access to such resources tends to precipitate the competing away of rents and the over-exploitation of the resource. However, the apparent antidote to such ‘common property’ problems – the assignment of permanent property rights over renewable resources – may make the public appropriation of a portion of the rents by government more difficult, as the flow of rents to the resource owner tends to be capitalised into the value of the property right. This phenomenon highlights the importance of early consideration being given to the design of property rights systems that not only encourage resource use efficiency but also provide for the efficient collection of resource rents.
As described earlier in this paper, a number of different jurisdictions have granted permanent tradeable property rights over certain fisheries, predominantly abalone, to guard against over-exploitation. However, this has then necessitated administratively-based RRT arrangements that can be subject to ongoing debate between government and industry, often leading to arbitrary policy settings.
REFERENCE LIST


NSW Department of Primary Industries (2005), ‘Resource rent mechanisms: Analysis of Options DRAFT’, April 2005


