Structural Limits to Resource Rent Taxation: Evidence from Australia's LNG Industry

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Structural Limits to Resource Rent Taxation: Evidence from Australia's LNG Industry

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Abstract

Australia is one of the world's largest exporters of liquefied natural gas (LNG), which is natural gas cooled into liquid form for transport and export. Yet Petroleum Resource Rent Tax (PRRT) collections remain modest relative to LNG production and export revenues. This paper argues that low PRRT revenues are primarily structural, reflecting incompatibilities between the design of the tax and the economics of modern LNG projects.

Two mechanisms are central. First, tax base measurement: gas transfer prices used to value upstream sales are not publicly observed, introducing uncertainty about how LNG-related rents are reflected in the tax base. Second, intertemporal deferral: large upfront capital expenditures generate carried-forward deductions that are uplifted over time, delaying the recognition of taxable rents.

As a result, PRRT liabilities are confined to a narrow upstream base and deferred over the life of projects. Despite strong underlying profitability, observed PRRT revenues remain limited.

Given this, incremental reforms such as increasing the statutory tax rate, are unlikely to materially improve rent capture, because the underlying tax base is constrained. More substantive gains are likely to arise from reforms that broaden or more accurately define the tax base. Capturing a larger share of LNG-related rents will require fiscal instruments that more directly target observable project values, or better align taxation with the full LNG value chain.

JEL Codes: H21; H25; Q38.

Keywords: Petroleum Resource Rent Tax; Resource rent taxation; Uplift; Deductions.

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1 Introduction

The paradox in Australian gas taxation is straightforward: Australia has become one of the world's largest exporters of liquefied natural gas (LNG) while Petroleum Resource Rent Tax (PRRT) collections have remained relatively small. This is despite a period of exceptionally strong world gas price growth, particularly following Russia's invasion of Ukraine, and again in 2026 following further disruptions to global energy markets. Despite exceptional increases in corporate income tax (CIT) receipts from Australia's oil, gas and LNG industries during these periods, PRRT revenues have exhibited very little growth. This is illustrated in Figure 1, where we also include industry-specific CIT receipts for other key mineral resource industries in Australia.

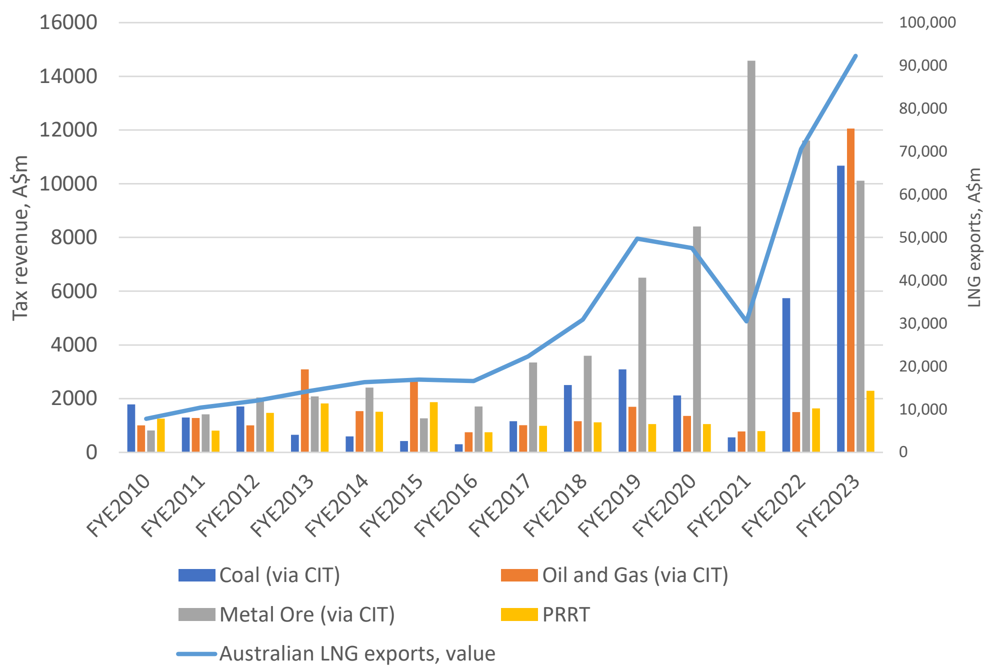

Figure 1: CIT receipts by industry, and PRRT receipts, in Australia, 2009/10 to 2022/23.[4]

Public debate has intensified because LNG export values have reached many tens of billions of dollars annually from Australia (see the light blue line in Figure 1), while PRRT receipts have frequently remained limited (yellow bars, Figure 1). A key question arises when we consider Figure 1: is the PRRT failing to capture resource rents, or does this reflect a standard result in the resource taxation literature, where rent-based taxes generate little

[4] We source exports from the DISR Resources and energy quarterly (December 2025), see https://www.industry.gov.au/sites/default/files/2025-12/resources-and-energy-quarterly-december-2025-historical-data.xlsx. We source revenues by industry from ATO Company Tax Statistics 2022/23 Table 5, see https://data.gov.au/data/dataset/03326c3f-c0d3-4af4-afc7-c6ccc0a02223/resource/2a2b576d-a59a-4889-96ff-9d03df834a6d/download/ts23company05keyitembyindustrybyyear.xlsx. We source PRRT historical revenues from Table 5 of the PBOs Mid-year Economic and Fiscal Outlook (MYEFO 2025-26), see https://budget.gov.au/content/myefo/index.htm.

revenue during early project phases, with collections emerging only once capital costs have been recovered [Garnaut and Clunies Ross (1983); Boadway and Keen (2010)]?

More broadly, this question sits within a well-established literature on the taxation of natural resources, which examines the extent to which alternative fiscal regimes can capture economic rents while preserving efficient investment incentives [Daniel et al. (2010); Boadway and Keen (2010)]. Australia's PRRT was designed with this objective in mind. However, as we discuss herein, its tax base design has contributed to relatively low revenue collections and may continue to constrain revenues in the future.

When the PRRT was introduced in 1987, it was designed principally for an industry dominated by offshore crude oil and established pipeline gas projects. In this setting, many of the concepts underpinning a rent-based tax, including the determination of wellhead values and the measurement of project-specific economic rents, were relatively straightforward and broadly understood. By contrast, the rise of integrated LNG developments has complicated the identification of the PRRT base. Because the tax applies only to upstream gas extraction, isolating this from the value generated downstream through liquefaction, shipping, and export activities, is challenging. In Australia's vertically integrated LNG facilities, the upstream value on which PRRT is levied must be estimated using gas transfer pricing (GTP) rules.

At the same time, the capital-intensive nature of LNG developments generates large stocks of deductions under the PRRT, delaying the emergence of taxable profits. Together, these features both limit the share of value entering the tax base and defer its taxation.

A key distinction in the resource taxation literature is made between pure economic rents and quasi-rents. Pure rents arise from the scarcity of non-renewable resources and, in principle, are taxable without distorting investment. Quasi-rents, on the other hand, reflect returns to sunk, project-specific investments, and are therefore more sensitive to taxation. This distinction is central to the Australian debate. Garnaut (2010) emphasises that well-designed rent taxes can target pure rents while preserving neutrality, while Freebairn (2015) argues that observed returns in mining often combine pure rents and quasi-rents, making the effective tax base difficult to identify in practice. Ergas et al. (2010) and Ergas and Pincus (2014) further stress three related concerns: (i) difficulties in measuring the tax base in integrated and capital-intensive resource projects; (ii) the inherently uncertain and risky nature of resulting revenue streams; and (iii) the tendency for policy discussions to overstate expected revenues by failing to account for that risk, giving rise to fiscal illusion. Building on this literature, this paper argues that in the Australian LNG context, divergence between realised and expected PRRT revenues reflects structural features of the tax base, rather than being driven solely by revenue risk.

In developing this argument, this paper makes two contributions. First, it provides a structural explanation for why resource rent taxation may underperform in the context of modern, integrated LNG production. Specifically, it identifies two mechanisms: (1) tax base compression arising from upstream-only taxation and transfer pricing; and (2) intertemporal deferral driven by uplifted deductions. Taken together, these explain the weak responsiveness of PRRT revenues to underlying rents. Second, it evaluates five alternative reform options considering these mechanisms, distinguishing between measures that improve outcomes within the existing system, and those that address its underlying structural limitations.

The analysis is organised as follows. Section 2 introduces the PRRT and conceptual framework; in Section 2.1, we develop the two mechanisms we outline as key structural issues facing PRRT, specifically tax base mismeasurement and deferral of deductions. Section 2.2 then examines whether PRRT responds to observable changes in rents. Section 3 compares Australia's PRRT to the system in place in Norway. Section 4 presents and evaluates the five proposed reform options against a set of evaluation criteria. Section 5 concludes.

2 Conceptual Framework and PRRT in the LNG Context

It is useful to distinguish between three broad approaches to taxing natural resources: royalties, rent taxes, and the PRRT as implemented in Australia. The distinction between royalties and rent taxes has been extensively analysed in the Australian literature [Ergas et al. (2010); Garnaut (2010); Freebairn (2015)]. A useful benchmark is a symmetric rent tax, in which the government taxes net cash flows with full loss offset or refundability, thereby sharing proportionately in both gains and losses. In such a system, the government shares in both upside and downside outcomes, preserving investment incentives by ensuring that only economic rents are taxed in present value terms. Garnaut (2010) argues that, under these conditions, rent taxation can achieve neutrality.

However, this benchmark has been questioned in applied settings. Freebairn (2015) notes that when observed returns include quasi-rents tied to location, risk, or sunk investment, identifying the appropriate tax base becomes more complex. Ergas et al. (2010) further emphasise that, in the presence of foreign ownership and investment responses, production-based royalties may capture a share of resource value with relatively low welfare cost. The focus of this Section is to formalise the tax base for royalties, rent taxes, and the PRRT, which is the central focus of this paper.

A royalty taxes production or revenue directly. In its simplest form, revenue from a royalty T_t^R in year t is:

$$T_t^R = \tau_R \cdot (P_t \cdot Q_t), \tag{1}$$

where τ_R is the royalty rate, while P_t is the commodity price and Q_t is output in year t. Usually, τ_R is static, however some royalty regimes are sliding, with the rate itself rising above upper bound thresholds, e.g., during large commodity price spikes.[5]

Under this approach, taxation is independent of costs: revenue is collected immediately, but the system does not distinguish between normal returns and economic rents; higher cost projects may therefore not proceed under an arrangement such as this. This illustrates the principal drawback of royalties: by taxing production rather than rents, they discourage marginal investment and can reduce economic efficiency.

In theoretical terms, an economic rent tax differs markedly; whereas equation (1) implies royalty revenues are always positive, a rent tax is levied on the net present value (NPV) of project cash flows, with symmetric treatment of gains and losses:

$$T_t^{RT} = \tau_{RT} \cdot \sum_t \frac{P_t \cdot Q_t - C_t}{(1+r)^t} \quad , \tag{2}$$

where C_t is total cost (including capital expenditure), T_{RT} and τ_{RT} are the cash flow tax revenue and rate (respectively), and r is the appropriate discount rate. This is closest in spirit to the definition advanced by Boadway and Flatters (1993). Because we assume fully symmetric design in equation (2), negative NPV outcomes would imply a tax refund, i.e., $T_t^{RT} < 0$. In a stylised single-period representation, this can be written as:

$$T_t^{RT} = \tau_{RT} \cdot (P_t \cdot Q_t - C_t), \tag{3}$$

where P_t, Q_t, C_t, T_{RT}, and τ_{RT} are the price, output, cost, tax revenue and tax rate in year t as before. This framework can produce both positive tax liabilities (if $P_t \cdot Q_t - C_t > 0$), or government refunds if costs exceed revenues in any particular year [Boadway and Keen (2010); IMF (2012)].

While closely related, it is useful to distinguish between a *cash flow tax* and a *rent tax*. In this paper, we use the term "rent tax" to refer to the ideal benchmark in which taxation applies to the net present value of project cash flows; see equation (2) and Boadway and Keen (2010). A "cash flow tax" is similar to equation (3) in design.

By contrast, the PRRT is a cash-flow-based tax and so is assessed on a period-by-period basis; unlike equation (3) however, the PRRT carries an asymmetric treatment of gains and

[5] An example is the Modernized Royalty Framework (MRF) governing natural gas and crude oil royalties in Alberta, Canada, which can be characterised as a bi-variate sliding royalty. While the royalty rate increases with prices, it also varies with production levels, so that the overall formula depends on both price and output. This introduces a limited degree of differentiation across projects, with production serving as a rough proxy for underlying costs.

losses.[6] While positive cash flows are taxed, negative cash flows do not give rise to refunds. Instead, losses are carried forward on a project-by-project basis and augmented through uplift provisions; a $1 loss today may be deducted against future positive cash flows at a value exceeding its original nominal amount. These features allow the PRRT to approximate, but not fully replicate, the properties of a rent tax, because the absence of loss refunds means the government does not share fully in downside risk.

This distinction between theoretical benchmark and practical implementation is important when comparing policy designs such as the PRRT [Callaghan (2017); The Treasury (2023)]. In practice, it is a project-level profit tax with intertemporal adjustment, applying a tax rate to positive net cash flow after the recovery of accumulated deductions:

$$T_t^{PRRT} = \tau_{PRRT} \cdot \max\{R_t - D_t, 0\}, \tag{4}$$

while the evolution of deductions can be expressed as:

$$\widetilde{D}_t = D_t + C_t - R_t, \tag{5a}$$

$$D_{t+1} = (1 + u) \cdot \max\{\widetilde{D}_t, 0\}, \tag{5b}$$

where $R_t = P_t^U \cdot Q_t^U$ is PRRT assessable receipts in year t, P_t^U and Q_t^U are the upstream/well head (often imputed or calculated as an arm's-length transfer price) prices and quantities that define assessable receipts, C_t is within-period costs, and D_t is the stock of carried-forward deductions, while $\widetilde{D}_t$ denotes the net deduction position before uplift at a rate u. This formulation separates within-period cash flows from the intertemporal accumulation of deductions via uplift. These deductions evolve over time according to (5b), where u can vary depending on the tenure and category of undeducted expenditure.

Relative to the year-on-year benchmark in equation (3), the PRRT differs in two important respects. First, losses are not refunded as in (3), but are instead carried forward and uplifted, introducing an asymmetry in the treatment of gains and losses. Under a true cash flow tax, the government shares both upside and downside risk through immediate loss offsets or refunds. Under the PRRT, downside risk is borne more heavily by firms because losses are carried forward rather than immediately refunded. While uplift provisions preserve the value of deductions, their utilisation depends on future project profitability. They are compensated for this in two ways. First, uplift rates are typically benchmarked to the long-term government bond rate (LTBR), which compensates fully for the time value of money. Second, additional loadings are intended to provide compensation for the risk that accumulated deductions may not be fully utilised [Callaghan (2017)].

Taken together, equations (1) to (5) highlight four key points:

[6] In Garnaut and Clunies Ross (1983) and Garnaut (2010), our cash flow tax is similar to "BT", while the PRRT is "RRT".

1. Royalties tax gross output;
2. Rent taxes apply symmetrically to the net present value (NPV) of project cash flows;
3. Cash flow taxes are an implementation of this benchmark on a period-by-period basis, applying symmetrically to net cash flows in each period; and
4. The PRRT is not a pure cash flow tax, applying asymmetrically to gains and losses and taxing positive upstream cash flow only after the recovery of uplifted deductions.

2.1 LNG Project Characteristics and PRRT Design

The focus of this Section is to discuss the PRRT and how it applies in the case of Australia's LNG industry. We begin with a discussion of an LNG project, and LNG industry cost structures. Throughout this Section, 'cash flow tax' refers to the theoretical benchmark in equation (3) with symmetric treatment of gains and losses, which differs from the treatment of gains and losses under the PRRT.

2.1.1 Capital intensity and investment structure

Large LNG projects involve:

- offshore platforms;
- pipelines;
- liquefaction plants;
- export terminals; and
- associated infrastructure.

Investment costs commonly reach tens of billions of dollars. For example, projects such as the Gorgon LNG facility and the Ichthys LNG facility involved very large up-front expenditures, with final costs of approximately US$54 billion, and development timelines of 5 to 10 years from the final investment decision [Martinuka (2024)]. These features of LNG development are well-documented in the industry and policy literature, reflecting the capital-intensive and integrated nature of LNG supply chains [International Energy Agency (2020); Shell (2024)].

The costs are particularly large because of the greenfield nature of the developments, stretching from offshore gas fields and platform developments, subsea gathering systems and pipelines, through to liquefaction and export facilities. They span both upstream extraction and downstream liquefaction infrastructure, although only the upstream component enters the PRRT base as a deduction. From equation (4), sustained capital expenditure can increase D_t, and when coupled with uplift at rate u, can generate a growing stock of accumulated deductions over time. Compared to traditional gas distribution pipelines, such as those typically developed in Norway, LNG facilities are expensive to build and operate, meaning D_t is large. Based on the structure of the PRRT, these deduction pools can suppress PRRT liabilities for many years.[7]

In terms of equations (4) and (5), these features affect both components of the PRRT base: large capital expenditures increase the stock of deductions D_t, while the complexity of LNG projects affects the measurement of upstream revenue R_t.

2.1.1.1 Cost structure and gross operating surplus

An explanation for low PRRT collections in Australia is that LNG production may be intrinsically high-cost, leaving limited economic rent to tax. This view reflects the capital-intensive and multi-stage nature of LNG projects, as discussed in Section 2.1, as well as evidence that many developments face relatively high breakeven costs [IEA (2025); Chong et al. (2019); Fazeliyanova (2026)]. However, this explanation sits uneasily with periods of elevated commodity prices in which substantial rents appear to have been realised. In a national accounts framework, low economic rents may appear as a relatively low gross operating surplus (GOS) share, alongside a high share of intermediate inputs reflecting energy-intensive liquefaction processes.

However, available input–output evidence does not suggest that the gas and LNG sector exhibits unusually low operating margins prior to capital cost recovery, indicating that low PRRT collections are unlikely to be explained solely by weak underlying activity. In Australia's Input-Output tables, both upstream gas extraction and downstream LNG are bundled together with Oil mining in a single "Oil and Gas Extraction" industry. Australia's oil sector is relatively small compared with its gas and LNG sector, and the total value of costs and sales by the oil/gas/LNG aggregate industry can be thought of as overwhelmingly driven by gas and LNG.[8] Despite the energy-intensive nature of liquefaction, Australia's oil, gas and LNG industry still exhibits relatively high gross operating surplus shares; see Table 1. While the aggregation of oil, gas, and LNG in available input-output data introduces measurement limitations, the magnitude of observed gross operating surplus shares suggests that the sector generates substantial operating margins prior to capital cost recovery.[9]

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[7] A related issue concerns the integrity of the deductible cost base. An extensive literature on base erosion and profit shifting (BEPS), spearheaded in recent years by the OECD, highlights risks associated with intra-group cost allocations, including management fees, financing structures, and intellectual property charges [OECD (2017)]. While these issues are not unique to petroleum taxation, they are particularly relevant in capital-intensive, vertically integrated industries such as LNG. Although Australia's transfer pricing and anti-avoidance rules are designed to address such risks, their application in complex project settings remains inherently challenging. As such, while large deduction pools are an expected feature of the PRRT, broader cost-allocation issues identified in the international literature may also influence the effective tax base and merit consideration in policy design.

[8] For example, the 2022/23 Product Details from the ABS report domestic production of crude oil, LNG and natural gas of A$13.4b, A$91.5b, and A$13.5b respectively at basic prices; close to 90% of total costs from the oil, gas and LNG industry can thus be attributed to LNG/gas.

[9] While gross operating surplus is not equivalent to economic rent, the magnitude of these margins suggests the presence of rents, after allowing conceptually for normal returns to capital. Cost

Also from Table 1, where we include for comparison purposes the cost structure for Norway's Mining and Quarrying industry (adjusted to reflect an approximate cost base for their oil, gas and LNG industry), GOS shares for Australian oil, gas and LNG are comparable to those observed in another major gas-producing jurisdiction, albeit one that supplies exports of gas and oil via pipeline rather than liquefaction. This suggests that, prior to the application of tax deductions, Australia's oil, gas and LNG sector can generate significant GOS.

Table 1: Indicative cost structure, Australian versus Norwegian oil and gas industries, with associated tax collections.

	Australia[10] *Oil and Gas Extraction*		**Norway[11]** *Inferred Oil and Gas from aggregate Mining and Quarrying*	
Cost Structure 2022/23	Value, A$m	Shares	Value, A$m	Shares
Intermediate costs	29,487	23%	23,211	13%
Wages	4,739	4%	11,800	7%
Gross Operating Surplus	95,962	73%	138,064	79%
Other taxes	450	0%	1,311	1%
Total costs	130,638	100%	174,386	100%
Tax collections, 2022/23[12]	14,338		66,309	
Implied rate relative to gross GOS	*15%*		*48%*	

heterogeneity across projects does however complicate the mapping from observed margins to project-specific economic rents, as noted by Freebairn (2015).

[10] We source Oil and Gas Extraction costs from the Australian Bureau of Statistics (ABS) National I-O tables, see Table 2 of ABS 5509.0 from https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-input-output-tables/2022-23/5209055001DO001_202223.xlsx

[11] Authors calculations, see https://www.ssb.no/en/nasjonalregnskap-og-konjunkturer/metoder-og-dokumentasjon/supply-and-use-and-input-output-tables/_/attachment/inline/96a60938-9962-4df4-989b-53d967292128:9a83189bd22c3b974b9f696ca14430f6abff2d87/IOT_1750_2023.xlsx sourced from Statistics Norway. We apply a 0.1426 AUD/NOK exchange rate to infer AUD equivalents for Norwegian Mining and Quarrying costs. To split Oil and Gas from Mining and Quarrying, we assumed that the NOK value of total Oil and Gas sales reported by https://www.regjeringen.no/en/documents/norways-first-biennial-transparency-report-under-the-paris-agreement/id3086147/?ch=4 was equivalent to total value of output at basic prices, and rescaled, assume identical costs structure, Mining and Quarrying costs. Converting this using the stated conversion factor yields the results reported.

[12] We source revenues by industry from ATO Company Tax Statistics 2022/23 Table 5, see https://data.gov.au/data/dataset/03326c3f-c0d3-4af4-afc7-c6ccc0a02223/resource/2a2b576d-a59a-4889-96ff-9d03df834a6d/download/ts23company05keyitembyindustrybyyear.xlsx. We source PRRT historical revenues from Table 5 of the PBOs Mid-year Economic and Fiscal Outlook (MYEFO 2025-26), see https://budget.gov.au/content/myefo/index.htm. We source Norwegian Petroleum-related revenues from Statistics Norway item 14668: General government revenue and expenditure 2023, see https://www.ssb.no/en/statbank/table/14668. Here we report line item A12, Taxes on income and wealth from extraction of petroleum, for reporting year 2023, which is then converted to AUD from NOK assuming an exchange rate of 0.1426 AUD/NOK.

Low PRRT collections therefore cannot be explained directly by an absence of underlying profitability or unusually high operating costs. In Australia's case, a key mechanism instead lies in the temporal treatment of large capital expenditures. While operating margins may be strong once production is established, as reflected in Table 1, these returns are offset against a stock of accumulated and uplifted deductions, substantially delaying the point at which taxable resource rents are observed. In terms of equation (4), this suggests that R_t is not intrinsically low due to weak operating margins in Australia. Rather, the limitation arises from how total project value is partitioned between upstream and downstream components, and over time.

In Table 1, for completeness in our discussion of taxation, we also report tax collections from oil, gas and LNG in each country, and calculate a simple ratio of tax collections to GOS on gross terms, i.e., before any deductions such as depreciation. The implied Australian rate is close to the average effective corporate income tax rate of 17 percent for Australia reported by the US CBO (2017). This is reflective of Figure 1, where most of the taxation revenue from oil, gas and LNG materialises via CIT receipts rather than PRRT. The 48 percent inferred rate for Norway lies below the combined statutory 22% CIT plus 56% special petroleum tax surcharge for two reasons: (1) we make no allowance for the actual CIT tax base in the denominator used to calculate the tax rate; and (2) our scaling of aggregate Mining and Quarrying costs does not take account of potential differences in cost structures between oil, gas and LNG, and other mining in Norway.

In what follows, we examine the mechanisms that contribute to Australia's low PRRT revenues, specifically uplift and gas transfer pricing (GTP). Section 2.2 expands on our analysis of cross-country GOS, using subsoil asset valuations and resource depletion data in Australia to explore whether resource rents are present in the LNG and gas sector.

2.1.1.2 The Role of Uplift Rates and Carried-Forward Expenditure

A central feature of the PRRT is the treatment of deductible expenditure over time. When project costs exceed R_t, these unused deductions are not lost. Instead, they are carried forward and augmented by statutory "uplift" rates, intended to compensate investors for the time value of money and project risk. This approach is designed to approximate the neutrality properties of a cash flow tax in the absence of full loss refundability [Garnaut and Clunies Ross (1983); Boadway and Keen (2015)].

In practice, deductible expenditures fall into several categories, each subject to different uplift provisions. Exploration and development expenditures are generally uplifted at a rate linked to the long-term government bond rate (LTBR) plus a margin, while some legacy expenditures are uplifted at lower benchmark rates. These distinctions directly influence the rate at which unused deductions accumulate over time. While the margins on top of LTBR uplift rates are time-limited, unused deductions can be carried forward indefinitely. This means that expenditure incurred during long construction and ramp-up phases can accumulate and compound over extended periods.

2.1.1.3 Why Uplifts Matter: A Simple Illustration

The interaction between carried-forward deductions and uplift can be illustrated with a stylised example.

Suppose an LNG project incurs *A*$10 billion in development expenditure, and for simplicity assume it is incurred upfront. In reality, these expenses occur over the entire construction phase. Assume also that the project earns no revenue during construction and that the uplift rate is 10 per cent per year (approximately LTBR + 5%).

1. After 5 years, the carried-forward deductions grow to:

$$A\$10\ \text{billion} \cdot 1.10^{5} \approx A\$16.1\ \text{billion} \tag{6}$$

2. After 10 years, which for some projects is a reasonable upper bound on the length of the construction phase, carried-forward deductions are:

$$A\$10\ \text{billion} \cdot 1.10^{10} \approx A\$25.9\ \text{billion} \tag{7}$$

By the time production begins, the project does not just need to recover its original *A*$10 billion in costs, but for a 10-year construction period, available deductions may exceed *A*$25 billion. More generally, equation (4) implies that, in the absence of sufficient upstream revenue, the stock of deductions grows approximately at the rate u, reinforcing the intertemporal deferral of tax liabilities.

If a project earns, say, A$3 billion in year t, i.e., $R_t = A\$3\ \text{billion}$, it may take many years of production before these accumulated deductions are fully absorbed, particularly if new expenditures continue to be incurred and added to the carried-forward stock.

2.1.1.4 Implications for PRRT Liabilities

The carried-forward deductions with uplift mechanism has important implications for the timing of PRRT revenue.

First, because LNG projects are characterised by large upfront costs and long lead times, they generate substantial deductible balances prior to production. The uplift mechanism allows these balances to grow even in the absence of new spending, increasing the revenue threshold that must be exceeded before PRRT is payable.

As we have seen in the Australian LNG case, the result is that early project revenues are often fully offset by accumulated deductions, creating a form of intertemporal tax deferral. In effect, firms build up a stock of uplifted deductions that delays PRRT liabilities, particularly where uplift rates exceed the long-term government bond rate and provide compensation above the time value of money.

A natural question is whether this deferral is temporary. In principle, a sufficiently long project life should allow accumulated deductions to be exhausted, eventually triggering PRRT liabilities. In practice, this is not guaranteed for large LNG developments.

Projects such as Gorgon are designed to operate over multi-decade horizons, often 40 to 50 years, and are sustained through ongoing reinvestment, including through additional wells. Dynamic investment behaviour of this form is well recognised in extractive industries, where sustaining capital expenditure plays a central role in maintaining production levels [International Energy Agency (2020); IMF (2012)]. As a result, the stock of deductible expenditure is not fixed at the point of project completion but can continue to grow during the production phase. In terms of equations (4) and (5), ongoing reinvestment increases C_t, while uplift expands the deduction stock D_t. Even over long horizons, revenues may be persistently offset by a moving stock of uplifted deductions.

This implies that project longevity alone does not ensure the emergence of taxable resource rents.

2.1.1.5 The Deductions Cap

Recent reforms have sought to moderate this effect [Chalmers (2023)]. Under the PRRT deductions cap, applicable to certain LNG projects, deductible expenditure that can be applied in any year is limited to 90 per cent of R_t (once projects reach a specified stage of production). This ensures that at least 10 per cent of revenues are taxable each year.

However, the cap does not eliminate the underlying mechanism. Denied deductions are carried forward and continue to be uplifted (albeit at the base LTBR), preserving most of their economic value. As such, the reform partially accelerates revenue but does not fundamentally alter the long-run interaction between uplifted deductions and PRRT liabilities.

2.1.1.6 Contrast with Norway

These features stand in sharp contrast to Norway's petroleum tax system. While both systems aim to tax economic rents, Norway provides immediate expensing (or cash refunds) for losses, eliminating the need for large stocks of carried-forward deductions. In terms of equations (4) and (5), this prevents the accumulation of the large deduction balances D_t that characterise the Australian PRRT.

As a result, Norway's system delivers earlier and more stable tax revenues, once projects become profitable. By comparison, Australia's reliance on uplifted carried-forward deductions shifts the timing of taxation further into the future, particularly for capital-intensive LNG developments.

2.1.1.7 Overall Effect

Taken together, these features can substantially delay the emergence of PRRT liabilities in large LNG developments. This helps explain why PRRT revenues may remain modest, even during periods of strong project profitability.

2.1.2 Design mismatch: Oil vs LNG systems

Oil projects generally involve limited processing beyond extraction. In LNG projects, however, substantial value is generated through capital-intensive liquefaction and processing activities. Because the PRRT taxes only upstream resource rents, returns from integrated LNG projects must be apportioned between upstream and downstream activities using transfer pricing rules. This makes the measurement of taxable rents inherently uncertain. We expand on this in Section 2.1.3, where we introduce and discuss gas transfer pricing.

2.1.3 Transfer pricing and upstream value allocation

The distinction between upstream and downstream activity is operationalised through Australia's gas transfer pricing (GTP) rules [Callaghan (2017); The Treasury (2023)]. Because LNG projects are vertically integrated, there are usually no observable market transactions for gas at the point where PRRT applies. Instead, the tax base is constructed using an imputed price for "sales gas", rather than the realised LNG export price.

In practice, the dominant approach is the Residual Pricing Method (RPM), which determines a hypothetical transfer price between an upstream entity (subject to PRRT) and a downstream entity (responsible for liquefaction, shipping, and marketing, all of which sit outside the PRRT base); see OECD (2017) and The Treasury (2023). The RPM constructs a range bounded by:

- a *cost-plus price* for the upstream segment, and
- a *netback price* derived from LNG export revenues less downstream costs.

This approach reflects standard arm's length pricing methodologies adapted for integrated resource projects. In the context of equation (4), the GTP framework determines the level of P_t, which may differ substantially from realised LNG prices per unit quantity. This introduces an additional layer of uncertainty and potential compression in the PRRT tax base [The Treasury (2023)].

Where positive residual value exists, it is typically split between upstream and downstream components. However, where the project is in a notional loss position, the framework can allocate losses in a way that disproportionately reduces upstream taxable income. The Treasury (2024) identified this asymmetry as a key reform priority, arguing that profit and loss allocations should be treated consistently when determining upstream taxable rents.

Asymmetric treatment of losses has important implications. It tends to compress the share of total project value attributed to the upstream resource, particularly in early project phases or when costs are high. As a result, even where LNG export revenues are substantial, the portion of value entering the PRRT base may be significantly lower. Direct empirical evidence on the magnitude of any compression is limited due to the confidential nature of project-level transfer pricing arrangements. However, the reliance on constructed prices, rather than observed market transactions, introduces scope for systematic differences between realised LNG revenues and the upstream tax base [OECD (2017); The Treasury (2023)].

In combination with large, uplifted deductions, these mechanisms further delay and reduce observed PRRT liabilities. These issues reflect a broader concern, raised in different forms in the Australian literature, that the practical implementation of cash flow taxes can diverge significantly from their theoretical benchmark. While Garnaut (2010) emphasises neutrality under ideal design, Ergas et al. (2010) highlight the scope for measurement error, administrative discretion, and strategic behaviour to distort the tax base in practice. The LNG case provides a specific illustration of these concerns.

2.1.4 Summary and implications for PRRT

The preceding discussion highlights two issues. First, transfer pricing arrangements may constrain the share of LNG sales entering the PRRT base. Second, uplifted deductions may delay taxable rents flowing into PRRT revenue. If these mechanisms are present, PRRT revenues should respond only weakly to periods of elevated resource rents. We study this further in Section 2.2.

2.2 Price shocks, implied resource rents, and PRRT outcomes

A central question raised by the preceding discussion is whether PRRT revenues respond to large changes in underlying resource rents, particularly during periods of elevated commodity prices. The mechanisms described above suggest that PRRT may be slow to respond to changes in project profitability. However, periods of sharp price increases provide a useful test of whether the tax captures windfall gains when they arise.

To examine this, we construct a forward-looking measure of resource depletion based on subsoil asset valuations for Australia. The Australian Bureau of Statistics (ABS) publishes estimates of the net present value (NPV) of petroleum subsoil assets, along with measures of economically demonstrated resources (EDR) and annual production.[13] The NPV_t series reflects the discounted value of expected future resource rents at current prices and costs in period t. Dividing NPV_t by the corresponding stock of economically demonstrated resources, EDR_t, yields an implicit unit value of reserves. Applying this unit value to current production Q_t provides a measure of implied resource depletion in A$m:

[13] See ABS 5204.0 Table 62 at https://www.abs.gov.au/statistics/economy/national-accounts/australian-system-national-accounts/latest-release.

$$Depletion_t = \left(\frac{NPV_t}{EDR_t}\right) \cdot Q_t. \tag{8}$$

This measure captures the value of extraction consistent with the balance sheet valuation of subsoil assets. Because it is derived from NPV, it incorporates forward-looking price expectations and therefore provides a proxy for resource rents, rather than realised project-level profits.

Figure 2 plots implied resource depletion alongside PRRT revenues for the period 2014 to 2023. Two features are immediately apparent. First, implied resource depletion rises sharply during periods of elevated gas prices, most notably in 2022 and 2023 following Russia's invasion of Ukraine. Second, PRRT revenues also increase over this period.

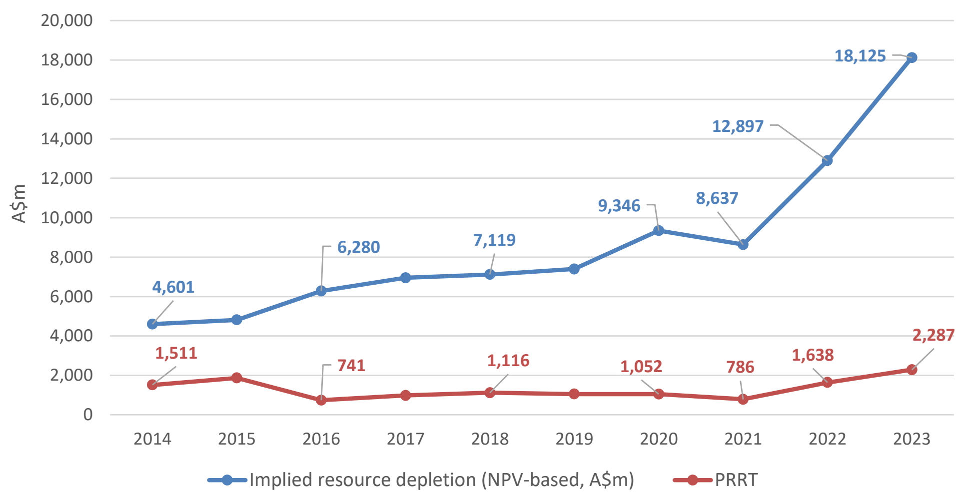

Figure 2: Implied resource depletion in A$m relative to PRRT revenue in A$m, year-on-year.

The level of the ratio between the series in Figure 2 is more revealing. Despite the increase in PRRT revenues, the ratio of PRRT to implied resource depletion remains low and relatively stable over time; see the green line in Figure 3. During the period of elevated prices in 2022 and 2023, PRRT receipts amount to only a modest share of estimated resource rents, with the ratio remaining well below the statutory 40 per cent PRRT rate, and far below the effective rates observed in jurisdictions such as Norway.

To better understand the drivers of implied resource depletion and whether spikes can be attributed to rents, Figure 3 plots a decomposition of this series into volume and rent components. Writing $p_t^* = NPV_t/EDR_t$, we can express implied resource depletion in period t as:

$$Depletion_t = p_{t-1}^* \cdot Q_t + (p_t^* - p_{t-1}^*) \cdot Q_t. \tag{9}$$

The first term in (9) captures production evaluated at lagged unit values, while the second reflects changes in the implicit unit value of reserves; we interpret this second term as the rent component. We plot both components as a stacked bar chart in Figure 3, which shows that the increase in implied resource depletion during the price spike in 2022 and 2023 is driven in large part by the rent component (red bars), rather than the volume response (blue bars).

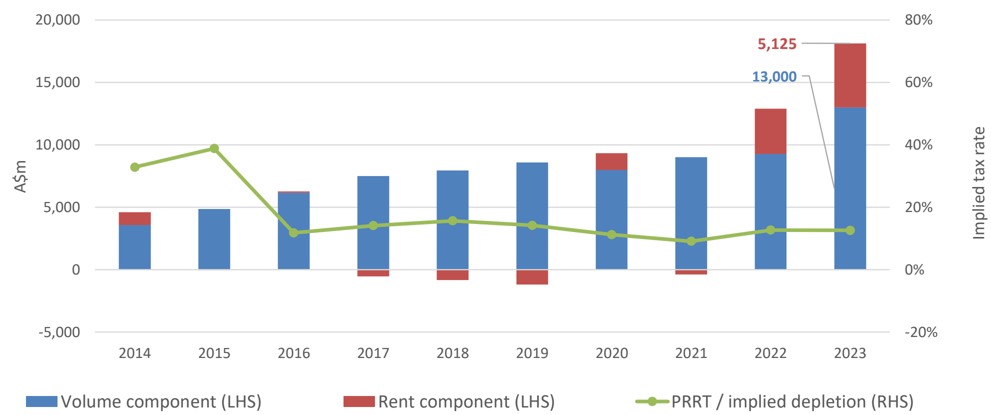

Figure 3: Volume versus rent contributions to implied resource depletions, and the PRRT rate relative to implied resource depletions.

A related argument in the literature is that revenues from rent-based taxes are both highly uncertain and easily overstated in policy discussions. Ergas et al. (2010) emphasise that projected "rivers of gold" from such taxes often neglect the risky nature of the underlying income stream. The decomposition in Figure 3 provides a useful perspective on this claim. It shows that implied resource depletion in Australia has been subject to large positive shocks driven primarily by increases in rents, particularly during periods of elevated global gas prices. These episodes represent precisely the type of upside outcomes that, in principle, could generate substantial fiscal returns under a rent-based tax. However, the corresponding increase in PRRT revenues remains limited relative to the implied rent component. Figure 3 goes further, suggesting that PRRT behaves as a proportional claim on a constrained and deferred base, even in the presence of large, realised rent shocks.

This result also speaks to a broader debate regarding the performance of alternative fiscal regimes. Ergas and Pincus (2014) argue that royalties may perform better than commonly assumed, particularly in the presence of foreign ownership, where a significant share of the tax burden falls on non-residents. In this sense, the comparison to be made between royalties and the PRRT in Figure 3, is not between a textbook cash flow tax and a distortionary royalty, but between alternative imperfect instruments, each of which captures different components of resource value.

2.3 Why Company Income Tax Appears More Responsive

Australia collects revenue from LNG production through multiple tax instruments, with company income tax (CIT) the dominant channel. As shown in Figure 1, CIT receipts from

LNG/gas are strongly correlated with the value of LNG exports. Additional revenues arise from state royalties[14], primarily applying to onshore production and some state-controlled offshore areas, and from payroll taxes[15]. PRRT revenues have also increased over time; however, as shown in Figure 3, they track measures of implied resource depletion more closely than movements in LNG prices or inferred rents.

At first glance, this mix of revenues may appear to mitigate concerns about weak PRRT collections. It is possible that CIT is performing part of the role often assigned to resource rent taxation. As emphasised by Ergas et al. (2010) and Ergas and Pincus (2014), when resource projects are predominantly foreign-owned, taxes like corporate income tax can act as a mechanism for capturing returns that would otherwise accrue offshore. In the Australian LNG context, where ownership is highly international as noted by Dixon and Nassios (2025), CIT may therefore secure a share of project returns for the domestic fiscal authority.

Moreover, CIT is applied at the company level and spans the full LNG value chain, including upstream extraction and downstream liquefaction and processing. This broader base may, in practice, reduce some of the measurement challenges faced by project-based rent taxes. To the extent that these transfer pricing and carried-forward deductions constrain the PRRT base, CIT may provide a more robust, if less targeted, source of revenue.

However, this does not imply that CIT is an effective substitute for a resource rent tax. Corporate income taxation is not designed to isolate economic rents arising from the depletion of non-renewable resources; it applies to accounting profits that reflect financing choices, cross-project aggregation, and jurisdictional structuring. As a result, while CIT may capture some share of resource-related surplus, it does so imperfectly and without the neutrality properties associated with well-designed rent taxes [Boadway and Keen (2010); IMF (2012)].

The distinction is therefore not between “taxed” and “untaxed” LNG production, but between different forms of taxation with different objectives and incidence. Strong CIT revenues alongside weak PRRT collections are consistent with a system in which broad-based corporate taxation captures part of the returns to LNG investment, including those accruing to foreign owners, but where the project-specific taxation of resource rents is limited in scope and delayed in time.

From this perspective, aggregate tax receipts are not a sufficient indicator of whether Australians are receiving an appropriate return for the depletion of finite resources. That assessment depends on the performance of the PRRT as a rent-targeting instrument. While

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[14] In 2022/23 for example, Ogge and Campbell (2024) note WA collected approximately $1.5b in gas royalties, while PwC (2024) note Queensland raised $1.7b in royalty revenue in the same year from petroleum and gas.

[15] ABS 8155.0 reports payroll tax collections from Oil and Gas Extraction nationally at $216m, which is trivially small and reflects the capital-intensive nature of gas and LNG facilities.

the presence of CIT may partially offset weaknesses in PRRT design, it does not eliminate the underlying issue that the rent tax itself is not responding strongly to periods of elevated prices and rents.

3 Norway's Petroleum Fiscal Regime: Structure, Institutions, and Taxation

Norway provides a clear contrast to Australia, but not only in its choice of fiscal instruments. The two countries differ fundamentally in how value is created along the gas supply chain. Norwegian gas exports are overwhelmingly pipeline-based, with approximately 95 per cent of production delivered directly to European markets, implying that a greater share of value is realised at or near the point of extraction [Norwegian Petroleum (2024)]. By contrast, Australian LNG projects are highly integrated systems, as discussed in Section 2.1. A large share of value is generated beyond the wellhead, through liquefaction and transport.

This distinction has important fiscal implications. In Norway, the taxable base more closely aligns with realised values at or near the point of extraction. In Australia, a share of project value arises downstream or is embedded in transfer prices between project stages, complicating the measurement and allocation of upstream rents.

Against this background, Norway combines high marginal tax rates with refundability and direct state participation in petroleum projects [Greaker and Lindholt (2019); Norwegian Ministry of Finance (2023)]. At a high level, Norway's petroleum tax regime consists of:

- An ordinary company tax of 22 per cent;
- An additional petroleum tax of 56 per cent, which approximates a cash flow tax through immediate expensing and refundability of losses;
- Direct state participation in petroleum projects, via the State's Direct Financial Interest and majority ownership of Equinor; and
- The transfer of government surpluses into a sovereign wealth fund.[16]

The combined marginal legislated tax rate on petroleum activities, ignoring any deductions and differences in tax base across instruments, is approximately 78 per cent. As highlighted here, a feature of the Norwegian system that is largely absent in Australia is that the state captures resource rents through multiple, mutually reinforcing channels, including both taxation and direct participation in project cash flows. These institutional arrangements should be understood in the context of the underlying industry structure. Norway's pipeline-based system, combined with extensive state participation, provides the government with

[16] It is important to note that Norway's sovereign wealth fund does not itself own petroleum assets [Norwegian Ministry of Finance (2023)]. Rather, oil and gas revenues, arising from taxes, dividends, and direct project participation, are transferred into the fund and invested in a diversified global portfolio. The fund therefore manages resource wealth after it has been captured, rather than being the mechanism through which it is generated.

direct visibility over production costs, pricing, and realised revenues. This strengthens the administration of the tax base. State participation therefore complements the tax system by mitigating information asymmetries, rather than serving solely as an independent mechanism for rent extraction.

Australia differs in several respects, as summarised in Table 2.

Table 2: Norway gas investments vs Australia, high-level similarities and differences

Characteristics	Australia	Norway
Tax	PRRT plus ordinary company tax	Ordinary tax plus high petroleum tax, with loss offsets/refunds
Means of export	Liquefaction and transport	Pipeline
Ownership	Minimal direct ownership	Significant direct ownership (Equinor)
Resource rent capture	Primarily through taxation of upstream gas	Through both taxation and direct profit participation
Government surpluses	No national resource wealth fund	Large sovereign wealth fund (invested overseas)
Funding model	Private project development	Greater state participation and risk sharing

From Table 2, Australia relies heavily on taxation, specifically the PRRT and corporate income tax, with the PRRT applying only to upstream gas extraction. As discussed in Section 2.1, a significant proportion of value in LNG projects in Australia is generated in downstream liquefaction and transport activities, which fall outside the PRRT base.

These structural features complicate the measurement of upstream rents and contribute to the divergence in observed revenue outcomes between the two countries.

4 Reform Options

Reform of Australia's approach to taxing petroleum and LNG requires clarity on both objectives and evaluation criteria. The preceding discussion has highlighted structural features of the PRRT that limit its ability to capture near-term resource rents, particularly in the context of large, integrated LNG projects. It is therefore useful to outline the aims of reform, and the criteria against which alternative policy options should be assessed.

Three primary objectives can be identified. First, to increase the share of project-level economic rents captured by the public sector, particularly during periods of elevated commodity prices. Second, to address challenges in defining the PRRT tax base, including the division of value between upstream and downstream components in integrated LNG projects. Third, to improve the treatment of deductions over time, including the role of uplift rates and the accumulation of carried-forward deductions.

These objectives reflect both the theoretical benchmark of a cash flow tax, and the empirical evidence presented above. In particular, the results in Section 2.2 suggest that the current system captures a relatively constant share of resource value, rather than a rising share of rents during price spikes, highlighting the importance of both tax base design and intertemporal treatment of costs.

Policy options are evaluated against a common set of criteria. These include:

- **Efficacy in meeting stated objectives:** The extent to which the reform increases the capture of economic rents. Assessed along two dimensions highlighted in Section 2: (i) the extent to which the reform expands the scope of the tax base; and (ii) the extent to which it reduces intertemporal deferral.
- **Economic neutrality and distortion risk:** Whether the reform preserves incentives for efficient investment and production, consistent with the principles of rent taxation.
- **Administrative and enforcement complexity:** The practicality of implementation, including data requirements, compliance costs, and scope for dispute or avoidance.
- **Investment and sovereign risk considerations:** A central concern in the Australian debate, emphasised by Ergas et al. (2010), is that retrospective changes to rent-based taxation may reallocate quasi-rents and thereby increase sovereign risk. This risk is assessed in this criterion; and
- **Transitional fairness:** The treatment of existing investments, including the distribution of gains and losses arising from changes to established fiscal arrangements.

Taken together, these criteria provide a structured basis for assessing the reform options introduced herein. While no single approach is likely to satisfy all objectives simultaneously, the framework helps clarify the trade-offs inherent in alternative designs.

The reform options considered in this Section can be interpreted as different ways of resolving these tensions, either by refining the existing PRRT framework, supplementing it with production-based instruments, or moving toward alternative mechanisms for capturing resource value.[17]

[17] The analysis we present focuses on the structure of the tax base and its responsiveness to economic rents, rather than on economy-wide welfare effects. As such, the evaluation emphasises institutional and design considerations rather than general equilibrium impacts, although each of the options in Section 4 could be conceived as counterfactual simulations with a general equilibrium modelling framework, such as the Victoria University Regional Model with Taxation detail [VURMTAX, see Nassios et al. (2019)].

4.1 Option 1: Reform deduction treatment and uplift rates

This option targets the intertemporal dimension of PRRT design, by reducing the rate at which deductions are carried forward and by introducing elements of symmetry through refundability. Measures that fall under Option 1 would include reducing total uplift rates toward the nominal long-term government bond rate by removing uplift premia, in compensation for introducing refundability of unused deductions at the end of project life.

Another option would be to strengthen reporting and public disclosure requirements. While both Callaghan (2017) and The Treasury (2023) identified concerns regarding the potential for the RPM to undervalue upstream gas, a lack of transparent, public data limits the ability of policymakers and researchers to assess the magnitude and direction of any bias. Introducing publicly available, project-level reporting, potentially in aggregated or anonymised form, could significantly enhance transparency, support independent scrutiny, and enable empirical analysis of the relationship between PRRT outcomes and global gas market conditions. This would, in turn, provide a stronger evidentiary basis for ongoing reform. Below, we assess trimming of uplift rates with refundability, rather than strengthened reporting, as being our core proposal under Option 1.

- *Efficacy:* **Moderate**. Reducing uplift premia limits over-compensation of carried-forward deductions and improves the responsiveness of PRRT to underlying project profitability. This strengthens the link between tax liabilities and economic rents but does not address limitations in the upstream tax base, or deductions that have already undergone significant uplift at the original uplift rates.
- *Economic neutrality:* **High** if combined with refundability.
- *Administrative complexity:* **Moderate**. Rate changes are simple; refundability requires additional administrative design.
- *Investment and sovereign risk:* **Moderate**. Lower uplift premia may be perceived as reducing risk compensation, although refundability offsets this by sharing downside risk.
- *Transitional fairness:* **Moderate**. Changes affect the value of existing deduction pools; transitional arrangements may be required.

4.2 Option 2: Introduce production- or value-based charges

This option introduces a production- or value-based charge that establishes a baseline return to resource ownership, independent of profitability. In settings where supply is relatively inelastic, or where foreign ownership is high, the latter of which is particularly pertinent in the Australian LNG context, such charges may capture a share of resource rents with limited impact on real national income [Ergas and Pincus (2014)].[18] This could take the form of a royalty, export levy, or production-based fee, similar to proposals advanced by Pocock (2026) and Bennett (2026).

- *Efficacy:* **High** for revenue stability. Ensures a baseline return but does not target rents directly.
- *Economic neutrality:* **Low**. Applies regardless of profitability and may discourage marginal investment, but this must be balanced against the national income response if foreign investment penetration is high.
- *Administrative complexity:* **Low**. Based on observable production or capacity measures, with many firms familiar with the instrument at state/territory levels or internationally.
- *Investment and sovereign risk:* **Moderate**. May affect project viability for higher-cost developments.
- *Transitional fairness:* **Moderate**. Applying to existing projects may alter expected returns.

4.3 Option 3: Increase state participation

This option increases public participation in LNG projects in a similar vein to the Norwegian system, either directly through equity ownership or indirectly through the design of the tax system.

The empirical results presented in Section 2.2 show that PRRT increases with prices but does not rise relative to implied resource rents. As a result, the tax captures a relatively constant share of value rather than a larger share of rents during price spikes.

Direct state participation addresses this by providing a claim on realised project-level profits, including windfall gains, without relying on the measurement of a constructed upstream base.

An alternative, but conceptually equivalent, approach is to implement participation through the tax system. This involves moving to a cash flow tax by refunding unused deductions at end-of-life and limiting uplift to the nominal bond rate. Under such a system, the government shares in both upside and downside risk, replacing compensation via uplift premia with direct risk sharing. This approach would resemble Option 1.

In what follows, we evaluate direct ownership against our evaluation criteria.

- *Efficacy:* **High**. Direct ownership provides a claim on realised project-level profits, including windfall gains, without reliance on measuring a constructed upstream base.

[18] Nassios and Dixon (2018; 2025) also discuss the impact taxing largely foreign-owned entities can have on GDP versus GNI, in the context of Australia's corporate income tax system.

By replacing tax base risk with project risk however, the public becomes exposed to commodity price downturns.

- *Economic neutrality:* **Moderate.** While proportional profit sharing can preserve incentives in principle, state participation may influence project design, timing, and operations through governance and political economy channels.
- *Administrative complexity:* **High.** Direct ownership requires the state to undertake functions currently performed by private operators, including project oversight, cost monitoring, and commercial decision-making, necessitating substantial institutional and technical capability.
- *Investment and sovereign risk:* **High.** Direct participation increases fiscal exposure to project-level risks, including commodity price volatility and cost overruns; it may also affect investor perceptions of the investment environment and sovereign risk.
- *Transitional fairness:* **Moderate.** Introducing state participation raises distributional issues across incumbent and prospective projects, particularly depending on whether existing assets are affected.

4.4 Option 4: Introduce price-sensitive LNG-targeted fiscal instruments

This option directly addresses the tax base compression identified in Section 2 by aligning the tax base more closely with realised LNG values rather than inferred upstream prices. This could include price-triggered fiscal instruments, such as the progressive LNG royalty proposed by Spender (2026), or a cash flow tax applied to the integrated LNG project (the LNGRT), covering both upstream and downstream activities, similar to the mechanism proposed by The Superpower Institute; see Finighan (2026).

The motivation arises from the limitations of the current system. PRRT applies to a constructed upstream base, requiring value to be partitioned across integrated production stages. The evidence presented herein shows that this structure prevents the tax from capturing a larger share of rents during price spikes.

A full-project cash flow tax would avoid this partitioning and align the tax base with observable market prices.

- *Efficacy:* **High.** Captures rents across the full value chain by aligning the tax base with realised LNG project outcomes, removing the need to allocate value between upstream and downstream stages and allowing the tax to respond directly to price shocks.
- *Economic neutrality:* **High** if implemented as a pure cash flow tax; see Finighan (2026). Price-based instruments, such as export levies or trigger taxes, would weaken neutrality by distorting production and investment decisions.
- *Administrative complexity:* **Moderate.** Removes upstream allocation and transfer pricing issues, but introduces new challenges in defining project boundaries,

integrating upstream and downstream activities, and coordinating with existing tax instruments.

- *Investment and sovereign risk:* **Moderate.** Expanding the tax base to integrated LNG projects increases fiscal exposure to project-level variability and may raise investor concerns regarding policy stability, particularly for capital-intensive projects with large sunk investments. Alternatively, pure cash flow taxes do not impact incentives, so investment risks may be low pursuing Finighan (2026).
- *Transitional fairness:* **High.** Outcomes depend on the treatment of existing projects, including the recognition of sunk costs and prior investments.

4.5 Option 5: Increase the PRRT rate

This option increases the statutory PRRT rate with the aim of aligning Australia's overall tax burden with international benchmarks such as Norway.

In assessing this option, a whole-of-system perspective is required. Australia's effective tax rate reflects both PRRT and company income tax. Given a higher CIT rate than Norway, Australia may adopt a lower PRRT rate than the 56 percent rate in Norway, yielding comparable overall taxation outcomes.

However, the evidence presented herein, particularly in Section 2.2, suggests that PRRT revenues do not increase relative to underlying rents during price spikes. This indicates that limitations are driven primarily by tax base design and intertemporal treatment, rather than the statutory rate alone. Increasing the statutory rate does not resolve either of these structural limitations.

- *Efficacy:* **Moderate.** Raises revenue where taxable profits exist but does not expand the tax base or address deferral.
- *Economic neutrality:* **Moderate.** Consistent with cash flow taxation in principle but may amplify distortions if the tax base is incomplete.
- *Administrative complexity:* **Low.** Simple to implement.
- *Investment and sovereign risk:* **Moderate**. May affect expected returns and investment decisions.
- *Transitional fairness:* **Low.** Applying higher rates to existing projects may alter expected returns, however setting the PRRT rate such that whole-of-system tax rates are comparable with international peers seems a reasonable approach.

4.6 Summary

The reform options introduced in this Section can be ranked along two distinct dimensions. First, by assessing whether each option addresses the two key structural limitations of the PRRT identified in Section 2: tax base compression and intertemporal deferral of revenue. This is summarised in Table 3.

Table 3: Summary of Reform Option performance versus shortcomings in PRRT.

Reform Option	Expands tax base?	Reduces deferral?
1 (Reform uplift rates)	No	Yes
2 (Production / value charge)	Yes (partially)	No
3 (Symmetric tax / state participation)	Yes	Yes
4 (Price-sensitive LNG taxation)	Yes (strongly)	Yes (indirectly)
5 (Increase PRRT rate)	No	No

Using this lens, Options 3 and 4 perform most strongly because they address both tax base compression, and intertemporal deferral. Option 1 addresses only deferral, while Option 2 partially broadens the effective tax base without altering deduction treatment. Option 5 does neither; it raises the tax rate applied to the existing base but leaves the underlying structure unchanged.

While Table 3 identifies the reforms most capable of addressing the structural limitations of PRRT, governments must also consider implementation constraints. Table 4 therefore evaluates options against our broader policy criteria, including neutrality, complexity, sovereign risk and transitional fairness. To incorporate these dimensions, we apply a simple additive weighting method, assigning equal weights across the five evaluation criteria introduced above and mapping qualitative assessments to an ordinal numerical scale. The resulting ranking is summarised under the Score column in Table 4. The purpose of this scoring is illustrative rather than definitive, providing a structured way to compare options across multiple dimensions rather than a precise quantitative ranking.

Table 4: Heat map summary of ordinal scale ranking used to assess reform options 1 – 5.[19]

Reform Option	Efficacy	Neutrality	Complexity	Sov. Risk	Transition	Score
1 (Reform uplift rates)						**0.6**
2 (Production / value charge)						**0.6**
3 (Symmetric tax / state participation)						**0.4**
4 (Price-sensitive LNG taxation)						**0.6**
5 (Increase PRRT rate)						**0.7**

Under this broader framework, Option 5 performs strongly because it is simple to implement and creates relatively few administrative and transitional challenges. However, its

[19] For efficacy and neutrality, we rank each option from *low* (assigned a numerical value of 0) to *high* (assigned a value of 1). For complexity, sovereign risk and transition risk, we rank each option from *high* (assigned a value of 0) to *low* (assigned a value of 1). The score is a uniformly weighted sum of the criteria scores, meaning we do not overweight one criteria over another.

strong ranking reflects these implementation advantages rather than an ability to address the structural weaknesses identified earlier.

Option 4 is unusual, in that it performs relatively well under both frameworks. It directly targets tax base definition by aligning taxation more closely with realised LNG values, while also avoiding many of the administrative and fiscal exposures associated with state participation. Although more complex than a simple rate increase, it achieves a balance between structural effectiveness and practical feasibility.

The central finding in this paper is that low PRRT collections are largely structural, rather than statutory. Reforms focused solely on tax rates, like Option 5, are therefore unlikely to materially change revenue outcomes now or moving forward. However, reforms that improve the definition of the tax base, like Option 4, are more likely to strengthen rent capture.

5 Conclusion

The debate over the PRRT is often framed as a question of whether Australia is taxing its petroleum resources appropriately. This paper suggests that the more important question is how the tax base is defined. Our analysis shows that even a theoretically efficient rent-based tax can generate limited revenue when applied to large, vertically integrated LNG projects, particularly where significant value lies outside the tax base and deductions accumulate over extended periods.

Herein, we identify two broad mechanisms through which these limitations arise in the LNG context: tax base compression, and intertemporal deferral. As we discuss, low PRRT collections are a structural consequence of applying a rent-based tax, originally designed for conventional petroleum extraction, to large, vertically integrated LNG projects with very different economic characteristics.

In practice, these mechanisms operate through three interrelated features of Australia's resource rent tax: (i) the accumulation of uplifted deductions; (ii) the need to partition value between upstream and downstream components; and (iii) the use of transfer pricing to define an imputed upstream tax base. While our paper is grounded in the Australian case, these findings have broader relevance for jurisdictions applying upstream-only rent taxes to vertically integrated resource projects, where similar challenges in defining the tax base and timing deductions may arise.

The evidence presented in this paper suggests that these features affect not only the timing of PRRT liabilities, but also the extent to which rents are captured. Even during periods of elevated commodity prices, where implied resource rents rise sharply, PRRT revenues increase broadly in proportion to overall activity rather than rising as a share of implied resource depletions.

In the LNG context, gas transfer pricing rules limit the share of total project value attributed to the taxable (upstream) resource, while the treatment of carried-forward deductions through uplift affects the measurement and timing of taxable income. In principle, the deferral of deductions is not problematic if uplift rates reflect the time value of money. However, where uplift rates include a premium above the long-term government bond rate, as they do in Australia, the accumulation of deductions may be overcompensated, reducing the effective tax base over time.

Taken together, these features limit both the scope and responsiveness of PRRT. Even during periods of elevated prices, the tax captures only a modest and largely constant share of underlying rents. More generally, the results highlight how the performance of rent-based taxes depends on the interaction between project structure and tax design, particularly where value is generated across multiple stages of production and the tax base is constructed rather than directly observed.

If a substantial share of economic rents arises from integrated LNG production and export, a tax confined to upstream gas extraction will only partially capture those rents. This highlights the potential role for alternative fiscal instruments that apply more directly to observed outcomes. A resource rent tax applied to the full LNG project, rather than to the upstream segment alone, would avoid the need to partition value between stages of production and could align more closely with the underlying source of economic rents identified in Section 2.2 herein, specifically world gas price spikes.

The policy question is therefore not whether PRRT is "broken" in an absolute sense, but whether it is appropriately targeted for the structure of the modern LNG industry. The evaluation of reform options in Section 4 highlights an important distinction between measures that improve revenue outcomes within the existing system, and those that address its underlying structural limitations. Increasing the PRRT rate ranks strongly on administrative and transitional criteria but does not resolve PRRT base compression or the deferral of revenues. By contrast, reforms that target the definition of the tax base, particularly in relation to LNG value and transfer pricing, more directly address these structural issues, while performing relatively strongly across the broader evaluation criteria.

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