Australian Government

Commonwealth Grants Commission

HISTORY OF THE MINING ASSESSMENT

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CONTENTS

INTRODUCTION

1 The Commission recommends a distribution of grants from the Commonwealth to the States (currently equal to the net collection of GST revenue) that is designed to equalise State fiscal capacities (the equalising distribution).[1]

2 In arriving at its recommendations, the Commission balances several principles, most recently articulated in the 2015 Methodology Review. These principles guide it to adopt methods that:

- reflect what States do in practice, not a view of what they should do
- provide for a distribution in a year which as far as possible reflects conditions in that year
- are policy neutral, creating no incentives or disincentives for State action
- are practical.

3 The history of the mining assessment provides an ideal prism through which to see how the relative importance of these principles can change. Shifting circumstances have shaped the methods used by the Commission to capture the impact of differential mineral endowments on the relative size of grants provided to the States.

4 By its nature, mining can see large cycles of activity. Combined with a highly skewed distribution of some minerals across States, this has meant that coming to a methodology that appropriately captures its impact on fiscal capacities has posed greater challenges than in many other areas of State revenue.

5 This paper sets out how the Commission's approach to capturing the differential impact of mining on State finances has evolved over time. This evolution reflects changes in the industry itself, the data available to analyse it and their impact on State finances, and how the Commission has balanced competing considerations in coming to a preferred methodology.

6 The main body of the paper comes in two parts.

- Part A provides an overview of mining royalties and the impact their differential distribution is having on the equalising distribution to the States.
- Part B provides an insight into the evolution of methods used by the Commission to assess the impact of mining royalties on the equalising distribution.

7 A detailed chronology of assessment methods is provided at Attachment A. Attachment B provides a comparison of assessed and actual royalty revenue.

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1 The fiscal capacity of a State is a measure of its ability to provide average services, including the associated infrastructure, to its population if it raised revenue from its own revenue bases at average rates and received its actual Commonwealth assistance (excluding the GST).

PART A: OVERVIEW

State royalties

8 States impose royalties in return for the right to exploit minerals within their jurisdictions. The Commonwealth imposes royalties on offshore minerals and in some legacy cases in the Northern Territory. For some projects the Commonwealth and States have agreed to share royalties.[2]

9 There is no uniform approach to applying royalties. Most States use a combination of specific (unit based) and *ad valorem* (value based) royalties. Specific royalties typically apply to bulk, low value commodities. *Ad valorem* rates apply to most minerals in New South Wales, Victoria, Queensland, Western Australia and South Australia. Queensland has variable *ad valorem* rates, with the rate applied increasing with mineral price. The Northern Territory has a profit based system. Tasmania applies a hybrid profit and *ad valorem* system to most minerals.

10 While States' approaches may differ, there is general agreement amongst them that they set royalty rates with a view to extracting a share of the industry's profitability. This means that royalty rates can vary by mineral, over time and even project by project within a State.

11 The practice of States and the Australian Bureau of Statistics has been to record royalties as non-tax revenue. While now separately identified, in earlier years they were recorded within larger aggregates (for example, land rentals or territorial revenue). While early Commonwealth Statisticians expressed some reservations about the appropriateness of this treatment[3], the accepted practice was to count royalties as an offset to State expenses and to record them as part of State surpluses/deficits.

12 Royalties have been collected since colonial times and, until relatively recently, were a small share of States' own revenues. Figure 1 shows royalties grew steadily until the early 2000s, before rapidly accelerating with the onset of the latest mining boom. Since 1987-88, royalties have grown by an average 11.2% per annum, with more rapid growth in some years. In 2013-14, royalties contributed $10 billion to State revenues. This represented around 10% of total State own revenue, although in some States this proportion can be much higher (for example in 2013-14 royalties represented more than 30% of Western Australia's own source revenue).

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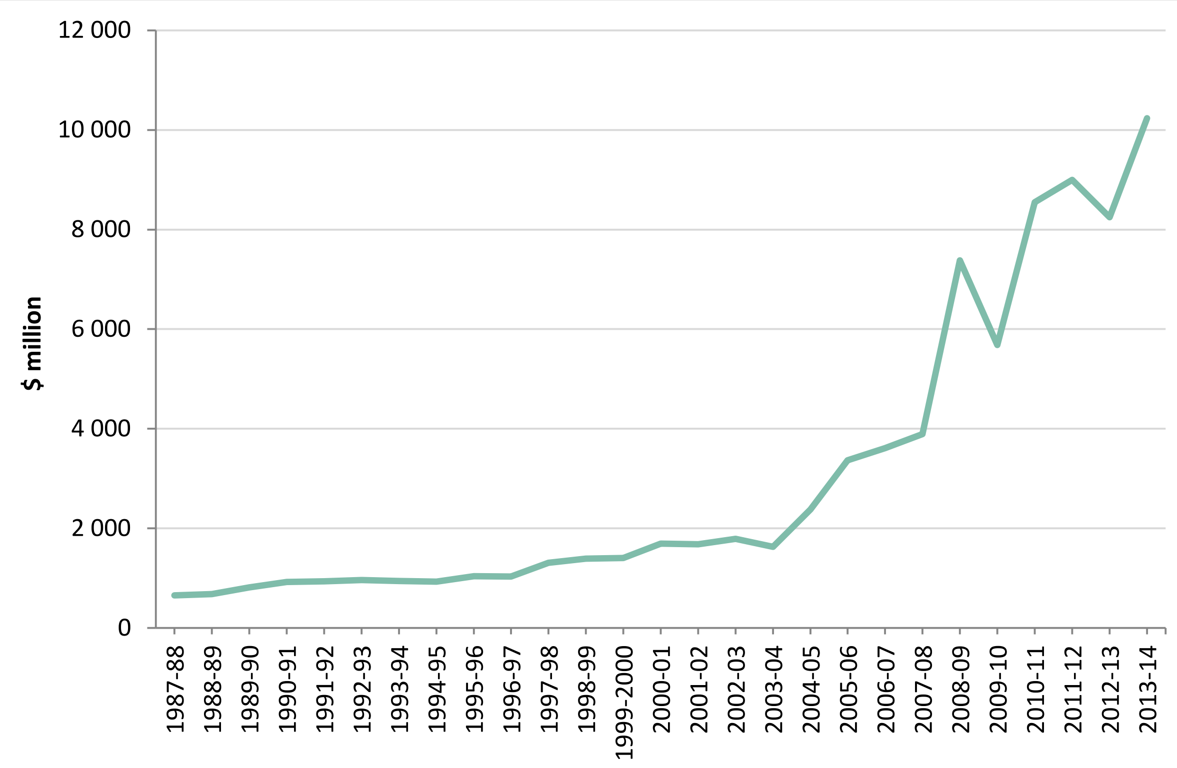
2 State payments to the Commonwealth do not affect States' equalising grants, Commonwealth payments to States do. The Commission assesses these latter payments (which it calls Grants in lieu of royalties) actual per capita because it believes the size of the payments reflects Commonwealth policy. Commonwealth payments are not included in the analyses presented in this paper.

3 Year Book Australia 1921, ABS Cat No 1301.0, page 706.

Figure 1 Royalties, 1987-88 to 2013-14



Source: Commonwealth Grants Commission mining assessments, 1987-88 to 2013-14.

13 States have experienced different rates of royalty growth because of:

- an uneven spread of minerals (see Table 1)
- differences in the rates of growth in prices and volumes of individual minerals (see Figure 2).

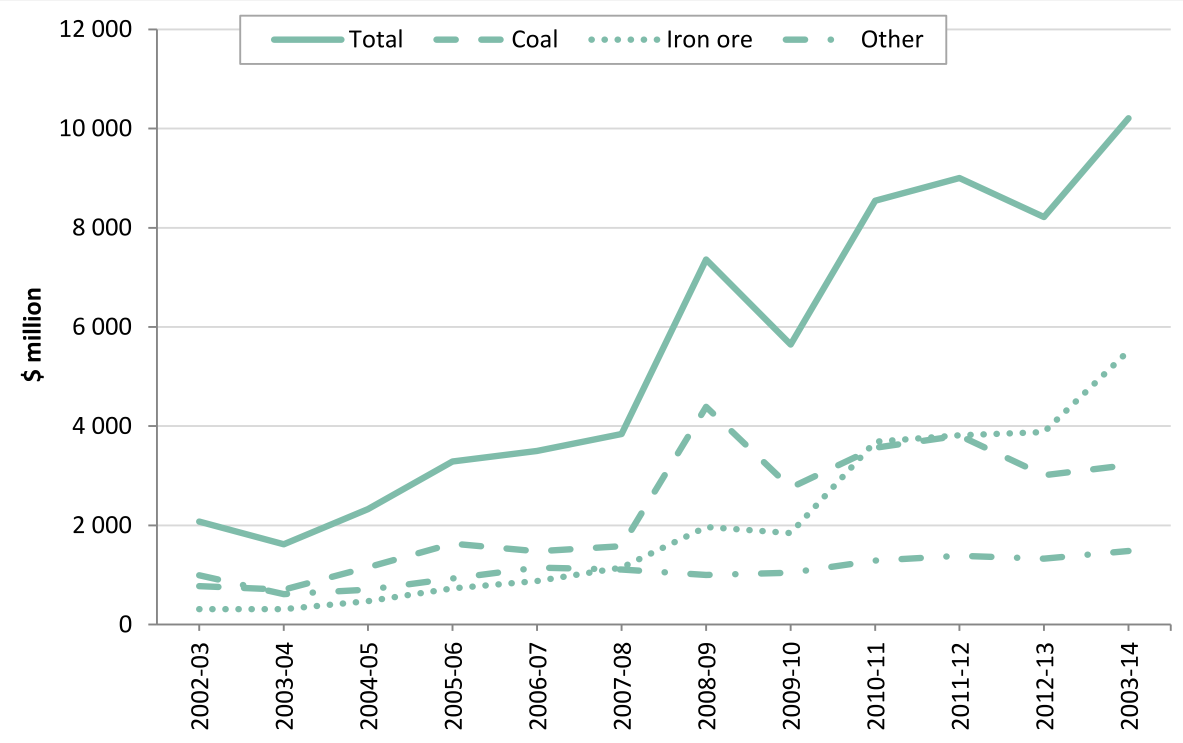
Table 1 Royalties and State shares of value of production, 2013-14

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Royalty
	%	%	%	%	%	%	%	%	$m
Iron ore	0.0	0.0	0.0	96.6	2.2	0.4	0.0	0.8	5 516
Coal	40.9	1.2	57.1	0.7	0.1	0.1	0.0	0.0	3 213
Gold	11.4	1.9	10.1	69.6	3.6	0.5	0.0	2.8	326
Copper	18.3	0.0	30.1	21.3	27.8	2.4	0.0	0.0	240
Bauxite	0.0	0.0	27.3	45.2	0.0	0.0	0.0	27.5	165
Nickel	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	88
Other (a)	5.0	5.2	33.6	18.6	24.6	3.2	0.0	9.7	687

(a) Includes onshore oil and gas.
Source: 2015 Review, mining assessment.

14 Figure 2 shows the recent growth in mining revenue has been driven by growth in coal and iron ore royalties.

Figure 2 **Composition of royalties, 2002-03 to 2013-14**



Source: Commonwealth Grants Commission mining assessments, 1987-88 to 2013-14.

15 Table 2 sets out the different rates of royalty growth experienced by States over the past three decades.

Table 2 **Annual growth in royalties, 1987-88 to 2013-14**

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m
1987-88	101	15	292	192	39	4	0	12	654
2013-14	1,338	52	2,346	6,018	291	36	0	154	10,235
Annual growth (%)	10.4	5.0	8.4	14.2	8.1	9.3	0.0	10.4	11.2

Source: Commonwealth Grants Commission mining assessments, 1987-88 to 2012-13.

16 This differential growth means States' shares of royalties have changed. Since 1987-88:

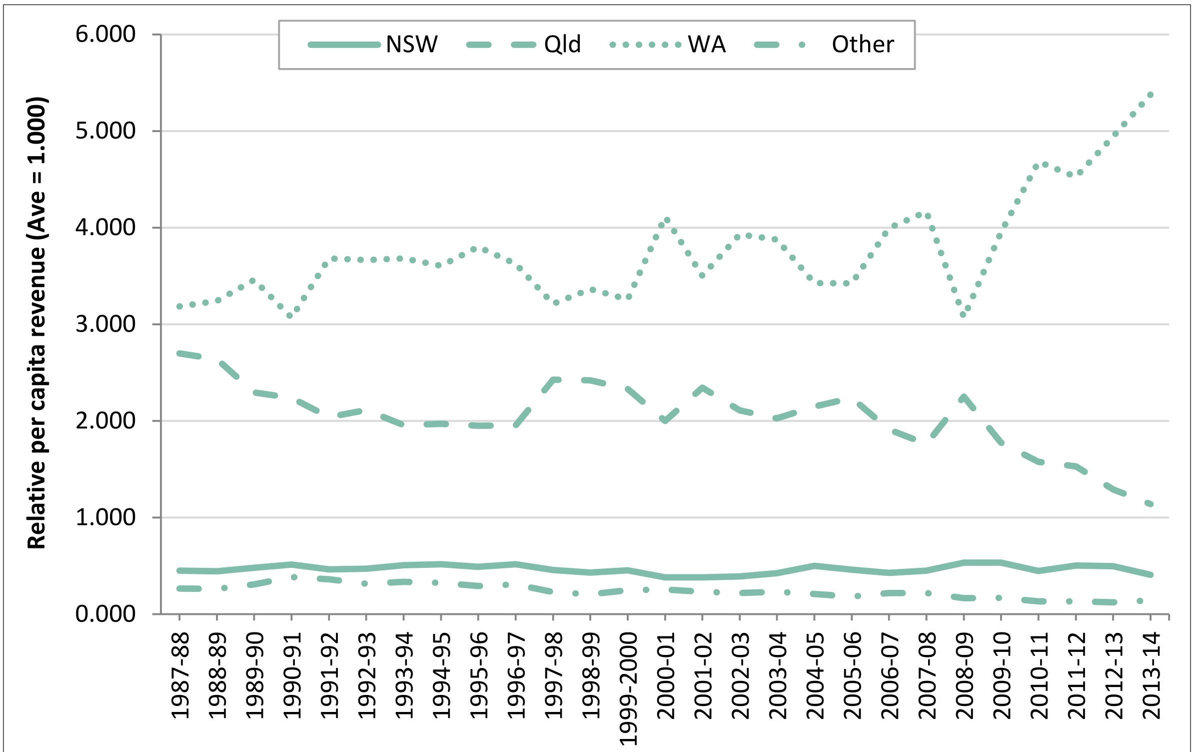
- Western Australia's share has risen from 29.4% to 58.8%
- Queensland's share has fallen from 44.6% to 22.9%
- New South Wales' has fallen from 15.5% to 13.1%
- the combined share of the other States has fallen from 10.5% to 5.2%.

Royalties and the equalising distribution

17 The rapid growth in royalties and the change in its interstate pattern mean the impact of differences in States' royalty capacity has changed over time. Royalties now play a more influential role in the distribution of GST revenue.

18 Figure 3 shows how States' shares of royalties have evolved relative to their population shares. As a State's ability to raise royalties per person relative to the national average rises, so does its fiscal capacity. The increase in Queensland (and the decrease in Western Australia) in 2008-09 is due to a spike in coal prices in that year, which was almost entirely reversed in the following year.

Figure 3 Ratio of States' relative per capita royalties (a)

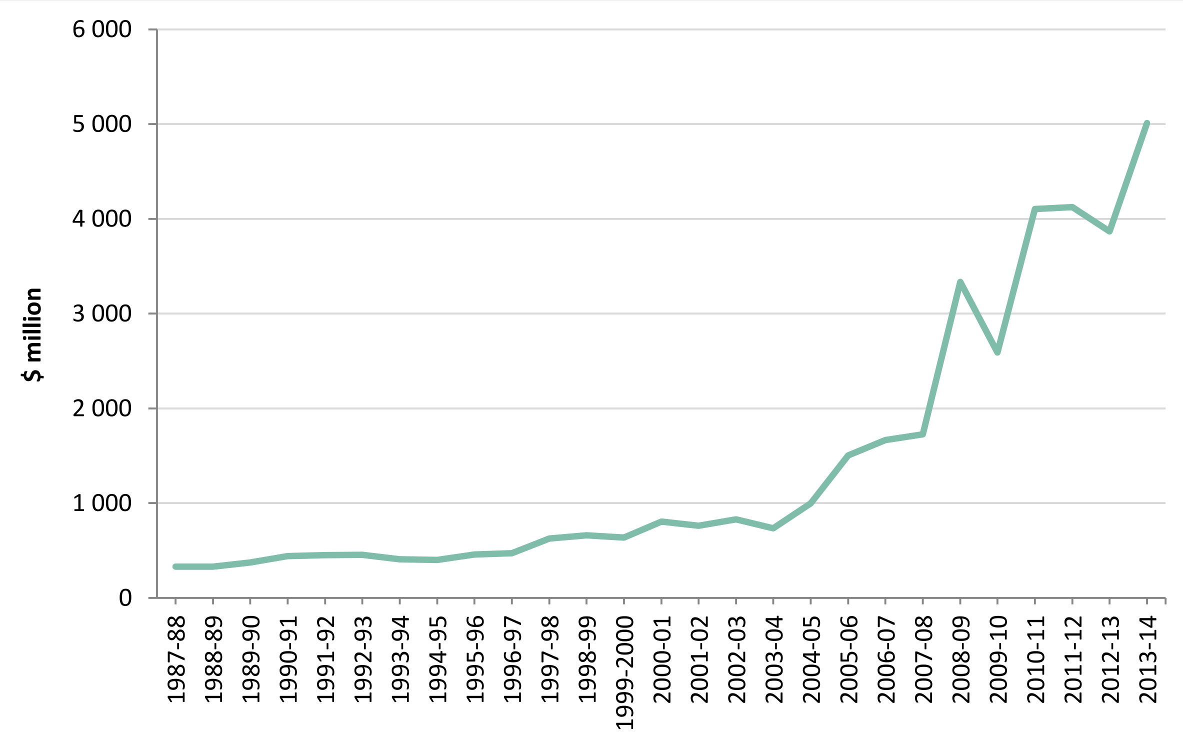


(a) This is a States' share of mining revenue divided by its share of population.
Source: Commonwealth Grants Commission mining assessments, 1987-88 to 2012-13.

19 Figure 4 shows the extent to which the mining assessment has moved away from an equal per capita assessment. The redistribution has increased in line with the rapid growth of royalties. Almost all of the change has occurred in Western Australia (see Table 3), mirroring the faster growth of its mining industry. Table 3 also shows the share of the total GST redistribution explained by the redistribution in the mining revenue assessment.

20 Attachment B provides information on the redistribution by State and provides a comparison of assessed and actual royalty revenue.

Figure 4 Royalty redistribution, 1997-88 to 2013-14



Source: Commonwealth Grants Commission mining assessments, 1987-88 to 2013-14.

Table 3 Growth in the royalty redistribution, 1987-88 to 2013-14

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Redist	Share of total redist
	$m	$m	$m	$m	$m	$m	$m	$m	$m	%
1987-88	138	158	-132	-161	13	12	11	-38	331	25.3
2012-13	1 849	2 461	-158	-4 798	362	172	169	-56	5 012	65.2
Difference	1 711	2 303	-26	-4 637	349	159	158	-19	4 681	na

Source: Commonwealth Grants Commission mining assessments, 1987-88 to 2013-14.

PART B: ASSESSING STATES' CAPACITY TO RAISE ROYALTIES

21 The differential endowment of mineral wealth has affected the size and distribution of the grants recommended by the Commission since its inception in 1933, but the size and form of that impact has evolved over time. Currently, the Mining revenue assessment is having an increased impact on States' GST distributions. This has focused attention on the appropriate methodology the Commission should use to assess revenue capacity in this area.

22 The Mining revenue assessment predominantly comprises revenue raised from State royalties levied on mining production. The assessment also includes royalties raised by the Commonwealth and shared with States under separate agreements. The assessment does not cover other revenues or expenses associated with State mining

activities. They are covered in other revenue or expense areas analysed by the Commission. Thus, the Mining revenue assessment does not determine the net impact of mining activity on State fiscal capacity. This is consistent with the Commission's general approach of considering separate types of State revenue and areas of expenditure, rather than the impact of individual industries or occupations.

23 The Commission's current views on how royalty capacity should be assessed are set out in its 2015 Review report, Volume 2, Chapter 8 pages 104 to 119. Attachment A provides a chronology of the Commission's mining revenue assessment.

The evolution of the mining revenue assessment

24 In its earliest work, the Commission focused on the gap between the budget deficits of weaker State(s) making a claim for additional assistance and the actual budget deficits of the stronger States (see Box 2). It adjusted the recorded deficits of claimant States to remove, for example, any impact of 'the extravagance of administration'. So it was the gap between their assessed deficit and the actual deficits of stronger (standard) States that formed the basis of its recommended grant.

Box 2 Special grants era

The Commission was established in 1933 and given the task of inquiring into applications by (claimant) States for special grants of financial assistance.

The Commission based its recommendations on the amount of assistance needed by the claimant State to give it the same budget result on average as the standard States — a comparison of the excess of the claimant State's *actual* budget result over the *average* budget result of the standard States.

However, it was necessary to ensure the claimant State's adverse budget result was not accentuated by the adoption of below standard revenue raising policies or above standard expense policies. For a range of (but not all) revenues and expenses, the Commission adjusted the claimant State's budget result for the difference between its actual revenues and expenses and its assessed revenues and expenses.

This approach meant the grant recommended by the Commission was equal to the excess of the claimant State's *assessed* budget deficit over the *average* budget deficit of the standard States.

25 The Commission did not make an adjustment for non-standard policies in mining until the mid-1970s. Before then, differences in actual royalties impacted directly on the claimant State's recommended grant. The implicit judgment was that differences in State royalties reflected differences in their mineral endowments. That is, they were not due to policy differences, which could have led to different royalties being collected from otherwise similar mines located in different States.

26 From the mid-1970s, it was the claimant State's assessed royalties rather than its actual royalties that impacted its grant. The Commission estimate of assessed royalties was based on the royalties the claimant State could have raised had it followed the royalty policy of the standard States (initially) or all States on average (after 1981).

27 The history of the Mining revenue assessment is the story of how the Commission moved from using actual royalties to using an estimate of the royalties States could have raised had they followed a common royalty policy (free of their individual choices on royalty rates and thresholds).

28 That evolution involves many individual steps, set out chronologically in Attachment A and (for the Review era) summarised in Table 4, but two main themes reoccur.

- What should be the standard of comparison — profitability or value of production?
- How to balance capturing the diversity of mineral endowment without giving undue influence to individual State policy?

29 As royalty revenue became more important, States raised a number of other assessment issues:

- Should royalties be treated like other State revenues?
- Should the costs State bear in developing their mineral industries be reflected in the assessment?
- How to appropriately recognise the volatility of mining revenue?

Table 4 Main features of the Commission's mining revenue assessment

Inquiry	Number of assess -ments	Assessment approach	Separate assessment of	Adjustment because State unable to raise revenue at average rates (a)	Grants in lieu of royalties
1974 to 1976	13	Value/volume of production	13 separate minerals (b)	No	No
1977 to 1980	13	Profitability Value/volume of production	Black coal (c) 12 separate minerals (b)	No	No
1981 Review	3	Profitability	Black coal (c) and other minerals	Tas	Offshore oil and gas
1982 Review	3	Profitability	Black coal (c) and other minerals	NSW, Qld and Tas	Offshore oil and gas
1985 Review	4	Profitability	Black coal (c) and other minerals	NSW, Tas and NT	Offshore oil and gas and Uranium
1988 Review	5	Profitability	Black coal (c), Gold and other minerals	NT	Offshore oil and gas and Uranium
1993 Review	1	Profitability	Mining revenue (c)	NT	Treated as SPPs
1999 Review	1	Profitability	Mining revenue (c)	No	Treated as SPPs
2004 Review	7	Value/volume of production	Domestic coal, Open cut coal, Underground coal, Onshore oil and gas, Metallic ore and other minerals and Construction and other materials	NSW and Tas	Offshore oil and gas and Uranium
2010 Review	3	Value of production	Onshore oil and gas, bauxite, export coal and lump iron ore combined; and other minerals	No	Offshore oil and gas and Uranium
2015 Review	9	Value of production	Iron ore, coal, gold, copper, bauxite, nickel, onshore oil and gas and other minerals	No	Offshore oil and gas and Uranium

(a) An adjustment was made if the Commission concluded a State was unable to apply the average tax rate to some mines because of their low profitability.
(b) Silver, lead and zinc were assessed together. Volume was used for bauxite and nickel.
(c) An adjustment was made to Queensland coal to include the profit from the haulage of export coal.
Source: Various Commission reports.

Assessment themes

What should be the standard of comparison — profitability or production?

30 What successive Commissions have sought to do is assess the royalties a State would raise, free of any unique features of that State's royalty policy.

31 The framework for giving effect to this has changed over the life of the Commission.

32 In the special grants era, the Commission's approach to most revenues was to use observed revenues, adjusted to reflect differences in the severity of State revenue regimes. If a State had comparatively high rates of tax, its observed revenue would be reduced and vice versa. For these revenues, the Commission's focus was on measures of severity (effort) of revenue regimes. For a few minor revenues, the Commission used the observed revenues unadjusted.

33 Prior to 1974, the Commission used the unadjusted royalties of the claimant State. Between 1974 and 1980, the Commission made a direct assessment of royalties. Therefore, in these years, it adjusted the claimant States' observed royalties for the severity of their royalty regimes. For mining, the end result was an estimate of the royalties the claimant State would have raised had it applied the standard royalty regime to its minerals. If the State had comparatively high royalty rates, its observed royalties were reduced and vice versa.

34 Since the commencement of reviews in 1981, the Commission's approach has been to base calculations on the national average revenue per capita, which implicitly reflects the average revenue regime, and to adjust this for differences in States' revenue bases. A State with an above average revenue base would have its revenue raised above the national average and vice versa. The Commission's focus was on measures of the revenue base. For mining, the end result was an estimate of the royalties a State would have raised had it applied the average royalty regime to its mineral base.

35 Consideration by early Commissions of the relative severity of different royalty regimes brought about by differences in policy choice were fraught with difficulty. A simple comparison of average royalty rates provided only limited guidance. Different minerals attracted different royalty rates and, when compounded with the different mix of mining in different States, meant observed averages were a mix of compositional and policy influences.

36 Further, even allowing for compositional influences, differences in observed rates could not always be attributed to differences in policy intent, particularly if mining operations in different States had different levels of profitability and States policies were directed at taxing that underlying profitability.

37 The Commission considered both profitability and production for its initial capacity measure in 1974. However, it used a simple approach for its initial assessment. It used observed production levels for a range of minerals and imputed the royalty the claimant States would have raised had they adopted the royalty rates of the standard States. There was no adjustment for differential profitability. The approach was consistent with a view that what States did was to impose royalties on a measure of production. This accorded with the mechanics of State royalty policy.

38 The discussion on whether profitability or production was the appropriate basis for an assessment continued. Profitability promised some significant advantages, not least that it captured States' policy intent.

39 During the period the Commission has been assessing mining revenue, it has observed States tailor their royalty arrangements to reflect the profitability of mining activity, both across minerals and, on occasion, mine to mine. Examples include:

- Tasmania reduced the royalty payable by some of its marginal miners. The Commission acknowledged the lower profitability of some of its mines by making an adjustment to lower its assessed capacity in the 1981, 1982, 1985 and 2004 Reviews.
- In its 2008-09 Budget, Queensland introduced a two tier royalty on coal. From 1 July 2008, a rate of 7% applied to coal revenue up to $100 per tonne and a rate of 10% applied to the portion of revenue above $100 per tonne.
- In June 2010, Western Australia announced an agreement with two mining companies to remove the concession on iron ore fines. From 1 July 2010, royalty rate of 5.625% would apply to all fines production. In its 2011-12 Budget, it announced it would increase the royalty rate on fines to 6.5% from 1 July 2012 and to 7.5% from 1 July 2013.
- Western Australia recently offered assistance to its mining producers (see Box 3).

40 There is general agreement among the States that they set royalty rates for different minerals and even mines within their jurisdictions with a view to the profitability of their extraction. This is despite individual royalty rates not being expressed as a percentage of observed profitability.

41 Conceptually, a profitability based measure is an ideal base because it accords with the policy intent of State royalty regimes and because it captures:

- the uneven distribution of mineral endowments
- differences in extraction costs
- differences in mineral prices.

42 Data on profitability were not available for different minerals or mines because, in most cases, States do not tax profitability directly. Therefore, the Commission developed an indicator based on the value added in mining production, adjusted to

remove wage costs, exploration expenditure and mining capital expenditure. Even then, data for value added were limited. Initially, the Commission could only construct its profitability measure for Black coal. Later it was able to construct a profitability measure for Gold and all other mineral combined.[4] States sought to refine the Commission's profitability measure over time to better capture the underlying tax base. This increased both its complexity and the data required for its measurement.[5]

Box 3 Recent Western Australian Government assistance to mining producers

On 21 November 2012, the State government announced assistance to magnetite projects in their start-up phase. The key features of the Magnetite Financial Assistance were:

- A magnetite rebate of up to 50% of the royalty payment will be considered on a project-by-project basis.
- The assistance will be provided to a project that meets the program requirements for a period of 12 months.
- The program ceases on 9 April 2016.

In December 2014 the State Government also made temporary assistance available to junior iron ore miners on a case by case basis. The key features of the assistance were:

- The assistance offered was a 50% rebate on eligible haematite iron ore royalties for up to 12 months, subject to the iron ore price remaining below an average of $A90 per tonne during the relevant quarter.
- The rebate took effect from the December quarter 2014 royalty payment, with the first rebates available to eligible haematite miners from February 2015.
- Royalties for Regions (RFR) will fund 25% of the cost of the payments, with this amount to be re-appropriated to RFR following repayment of the rebates.
- At the conclusion of the assistance period, the rebates will be fully repayable over a period of up to two years, with repayments to be made in accordance with a schedule negotiated between the producer and the Minister for Mines and Petroleum.

43 The practical limitations of profitability as an indicator of relative capacity were quickly apparent and grew over time. Notwithstanding these limitations, the

4 Royalties for offshore oil and natural gas, which were collected by the Commonwealth, and shared with the relevant States, were handled separately.

5 States sought to refine the measure of profitability to better capture differences in profitability amongst them. They asked the Commission to consider which exploration expenses should be included in its profitability measure. States also sought to modify the indicator to reflect State conditions. For example, Western Australia sought to have its measured profitability reduced to reflect the social infrastructure it required its mining companies to provide, arguing the companies could not both provide infrastructure and pay royalties.

conceptual appeal of profitability led the Commission to move to a profitability measure in 1977 and to retain it for as long as possible, up until the 2003 Update.

44 Aside from Black coal and Gold, the Commission used a broad measure of profitability for other minerals. This did not allow differences in profitability among minerals to be captured, which may be important when minerals are concentrated in different States.[6] The Commission also recognised it might not adequately capture the impact of concentrations of below average profitability in some States. Consequently, it made adjustments to its broad measure of profitability. For example, it reduced Tasmania's assessed capacity in some years, to reflect the lower profitability of some of their mining operations.

45 Further, constructed measures of profitability are sensitive to changes in prices and costs, much more so than the tax bases States actually use. A profitability indicator is, therefore, more volatile than the production bases States use in reality.

46 More complex issues arise when States follow different economic development strategies, which result in the profitability of mining being transferred to State Governments in different ways (see Box 4). For example in some States, companies developing mineral resources constructed and operated their own rail lines, while in others they were operated by State Governments. In the latter case, profitability could be extracted through royalties or excess freight charges. Further, the extent to which social infrastructure (for example, schools) was company funded also varied.

Box 4 How have States accessed mining industry profitability?

While there is general agreement among States that royalties are a way of extracting a share of the industry's profitability, they are not the only way of doing so.

Profitability is fungible and States can extract profitability in different ways. States can ask mining companies to pay royalties, pay freight charges for the haulage of their minerals or provide infrastructure. All three approaches have been used in Australia.

Any profitability approach needs to be comprehensive. It requires the Commission to know how States are accessing the industry's profitability and take all those ways into account. If a profitability approach is used, the Commission would need to ensure the different ways of accessing profitability are treated consistently. For example, treating excess freight charges for the haulage of minerals as mining revenue rather than railway operations.

47 In these situations, differences in royalty rates do not necessarily mean States are making different efforts to raise revenue. The full spectrum of mining company contributions to State budgets needs to be considered before such a view can be

[6] If States impose different royalty rates on different minerals, two minerals with the same level of profitability can generate different royalties. In these circumstances, differences in mineral composition can lead to different State royalty raising capacities.

formed. Further, different policies can also mean that statistical indicators are not comparable across States. For example, switching from royalties to excess freight rates would reduce the measured value added in a State with high freight rates.

48 This problem is illustrated by the Commission's treatment of Queensland's high rail freight charges for Black coal haulage. The Commission concluded these revenues were equivalent to the mining royalties. It engaged a consultant to estimate the above standard profits earned from haulage of Black coal and classified these revenues as royalties. They continued to be assessed as Mining revenue until phased out by Queensland in 2000.

49 The Commission's ability to source reliable data to implement a profitability approach faded over time. It last implemented a profitability approach in its 2003 Update. That assessment required it to stitch together a network of disparate data. As the quality of the data degraded, the Commission was increasingly required to exercise judgment. In the end, the Commission moved away from profitability because of concerns about the reliability of the measure and its reliance on Commission judgment to address data deficiencies.

50 The Commission adopted production as its capacity measure in the 2004 Review. Its initial production indicator was a hybrid. For some minerals production referred to value, while for bulk low value minerals (like quarrying) it referred to volumes.

51 A production based indicator can be structured to capture the relative profitability of mining activity. In its 2004 Review assessment the Commission separated the production of underground and open cut coal mining. This allowed it to capture the different profitability of States' coal production, as reflected in their different effective royalty rates. The Commission was also able to make ad hoc adjustments based on State profitability information. It did so for New South Wales and Tasmania.

52 In the 2010 Review, the Commission simplified its assessment to use value of production as its sole indicator of relative capacity to raise royalties. Some States sought allowances to reflect their different cost structures. The Commission considered a proposal to adjust value of production to reflect differences in State production costs, but did not do so because it did not find a reliable measure of production cost differences.

53 So, over time, practicality concerns moved the balance of considerations towards a simpler measure, away from one with conceptual appeal and which arguably was better aligned with States' underlying policy intent, to one which arguably better captured the day to day basis on which States levied royalties.

Dealing with differences in State policies

54 Because the Commission seeks to identify the innate differences among States, the impact of State policy differences should be removed from the indicator of relative capacity.

55 The Commission made such adjustments to its profitability measure when, for example, it made adjustments for Queensland's policy on rail freight and for differences in State practice on mining companies' provision of social infrastructure.

56 In the 1993 and 1999 Reviews, the Commission made elasticity adjustments for differences in State tax rate policies. It did so because it accepted a view that mining activity was sensitive to the royalty rates adopted by States. The adjustment increased the observed revenue bases of high taxing States and reduced the observed bases of low taxing States. These adjustments moved States' revenue bases closer to what they would have been had States had the same royalty regime. The Commission discontinued its elasticity adjustments in the 2004 Review and did not reintroduce them. While it accepted there was a conceptual case, data to make a reliable adjustment were not available and modelling suggested that to make a material difference, mining activity would need to be much more responsive to royalty rate differences than economic theory suggested.

57 The broader question of adjusting for different policy settings is even more difficult to resolve. While different States might have differing approaches to mining (for example, to the mining of one mineral or to mining in some parts of the State), deciding what impact that might have on observed mining activity is not amenable to analysis and would be purely a matter for judgment. Such judgments would be difficult to make. For example, while two States might differ about allowing certain mining activity, the policy differences could either reflect a different inherent approach to mining, or be the outcome of a common approach to environmental protection applied in States with different bio-diversity characteristics.

58 Reaching an assessment of the impact of differences among States in their pure policy choice on mining development (possibly stretching back several decades) is problematic. The Commission has decided no reliable material adjustment is practical and that fiscal equalisation is better achieved by recognising the differences in mining activity occurring now and which drive current differences in fiscal capacities.

59 So while there might be a conceptual case for removing further influences of differing State policy, practicality concerns have weighed sufficiently heavily to preclude such adjustments being made.

How to balance capturing the diversity of mineral endowment without giving undue influence to individual State policy?

60 Compared with an aggregate assessment, assessing mining revenue capacity mineral by mineral improves the measure of relative mining revenue capacity. It better reflects what States do — they impose different royalty rates on different minerals. However, when a State has a very large share of a mineral, its policy can dominate the average policy for that mineral and this creates scope for the State to set its policy with a view to directly influencing its equalising grant.

61 The Commission has confronted this problem over a long period. For example, when assessing a grant for Queensland in 1974, it was able to use royalty rates from the standard States for most minerals. However, for bauxite (where there was no production in the standard States) it used a rate based on judgment, recognising rates imposed by the standard States for similar minerals. This ensured Queensland's choice of royalty rate did not influence its grant.

62 The choice of how many mineral assessments to make involves balancing two concerns. The Commission seeks to:

- As accurately as possible, capture differences in capacity among States. This suggests as many separate mineral assessments as there are separate royalty rates, subject to data availability.
- Minimize the incentive for States to choose policies solely to influence their equalisation grant (policy neutrality). This can be a concern where mineral production is concentrated, giving one or two States a heightened ability to influence the effective royalty rate. While a valid concern, there is no evidence this is a practical concern. Recent evidence suggests it may be a secondary factor driving State royalty policy. Western Australia was aware removing its concession and aligning the iron ore fines royalty rate to that on lump iron ore could lead to a deleterious impact on its budget. It proceeded with its policy reform despite knowing the impact on its equalisation grant could exceed its upfront increase in royalty revenue. One commentator speculated this was a deliberate decision within a wider objective of bringing change to the equalisation system.[7]

63 Limiting the influence on its assessments of any one State led the Commission to consider grouping minerals. Grouping is a way of moderating the potential for a State to influence effective royalty rates.[8] In the 2010 Review, the Commission adopted a two group structure (a high royalty rate group and a low royalty rate group).[9]

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7 Article to be found on the Inside Story website (http://www.insidestory.org.au/the-true-story-of-western-australia-and-the-gst).

8 In the special grants era, the Commission had to confront situations where minerals were produced in the claimant State but not in the standard States and vice versa. In the case of the former, the Commission used an actual per capita assessment or modified actual per capita assessment. Therefore, the royalties for these minerals reduced its special grant. In the case of the latter, it assessed the

64 In the 2015 Review, the Commission considered a more disaggregated approach provided a better equalisation outcome, capturing State capacity differences without creating incentives for State game play.

65 The number of separate mineral assessments made by the Commission has fluctuated over time, between one and eight. The changing number, in part, reflects a changing judgment of the risks of creating an assessment method that provides States with undue ability to influence their grants and the desire to as accurately as possible capture differences in capacities. It also reflects practicality concerns in that it is not possible to obtain timely and accurate data at some fine levels of disaggregation.

Other assessment issues

Should royalties be treated like other State revenues?

66 There is a body of opinion that considers royalties to be a payment for a finite and depleting resource. Under this view, States should treat royalties as an asset sale and only use the proceeds to acquire other assets. Advocates of this view suggest it is not the royalties collected in a year that should affect a State's equalisation grant, but the interest royalties could generate had they been accumulated in a fund.

67 This alternative treatment of royalties has been raised sporadically in the course of history. For example:

- In the 1999 Review, Western Australia cited an Industry Commission 1991 report.[10] The Industry Commission said royalty payments should be regarded as a capital transfer from minerals in situ to cash and so royalties from mining should be used to retire public debt or to create capital assets of commensurate value.
- In the 2015 Methodology Review, Queensland noted that 'resource deposits are the only State owned asset of which the proceeds of its sale are redistributed to other States. Consistent treatment with other assessments would have only the revenue component, not the capital component of mining royalties, subject to equalisation'.
- Similarly, in a submission to the GST Distribution Review, Professor Jonathan Pincus advocated that 'when it comes to mining revenues, the Grants Commission be instructed to redistribute the sustainable 20-year annuity from a notional

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claimant States needs as the equal to the average of the per capita royalties of the standard States. This treatment meant the absence of the mineral had no effect on its special grant.

9 This structure was also driven, in part, by the Commission's response to terms of reference seeking greater simplicity, more aggregated revenue assessments and the introduction of materiality thresholds.

10 Report on *Mining and Minerals Processing in Australia*, found on the Productivity Commission website (http://www.pc.gov.au/inquiries/completed/mining).

sovereign wealth fund into which all State royalty and similar receipts for the previous two decades would be deemed to have been deposited.'

68 Two points can be distilled from the range of views put forward:

- States should change the way they use royalty revenues by limiting their use to the acquisition of real or financial assets. In this way there would be no change to State assets (broadly defined) by the extraction of minerals.
- Even if States did not change their behaviour, a better equalisation outcome may be achieved by treating royalties as if they were the proceeds of asset sale, either immediately or through some form of annuity.

69 One of the principles adopted by successive Commissions is that the assessment of State fiscal capacities should be based on the observed actions of States (what States collectively do), rather than on a view of what State policy should be. States do not appear to treat royalty proceeds differently from other State revenue. In general, they form part of a fungible pool from which the States fund the mix of service delivery and associated infrastructure acquisition they deem suitable on a year to year basis. Consequently, successive Commissions have not treated royalties differently from other State revenue.

70 Were States to change their treatment of royalties, then the Commission would need to consider how their changed treatment should be incorporated into the assessment process.

71 From a purely conceptual perspective it is also unclear that changing the treatment of royalties to one akin to an asset sale would not of itself necessarily improve the equalisation outcome, or even change it. For example, the current equalisation approach gives States the same capacity to hold financial assets (per capita). Unless this also changed, there would be no impact from changing the treatment of assessed royalties from a revenue to one assuming all assessed royalties were converted to financial assets.

72 To effect a change, the perspective of equalisation would also need to change to encompass natural wealth. This would raise consequential issues such as which natural wealth endowments should be brought within the calculation of equalisation grants and when and how differences in natural endowments should be equalised.

Should economic development costs be recognised in the Mining assessment?

73 Western Australia believes the Commission is inconsistent in its treatment of the costs and benefits of economic development assistance.

74 Western Australia's main concern is that all the revenue from its economic activities (especially large natural resource projects) are included in the Commission's revenue assessments, with much of it equalised away to other States. However, the State

expenses required to help establish the projects that produced those revenues are not appropriately captured by the Commission's expense assessments. It has used the Commission's treatment of royalties from the North West Shelf as an example.

75 It argued this asymmetry penalised Western Australia and created a disincentive for States to invest in projects to increase their economic activity. It said an assessment of mining should exclude economic activity attributable to State policy and/or expense assessments should recognise the disabilities States face in encouraging development.

76 The Commission has in the past recognised the costs of mining related economic development borne by companies (even in some cases the social infrastructure they contributed) will have affected their profitability and hence States ability to raise royalties from them. The Commission has also recognised that State expenditure and revenues from the regulation of mining differ from those in other industries. It has also recognised that States incur expenses in implementing their economic development polices.

77 The conceptual issue, over which States disagree, is whether mining requires higher economic development expenses than other industries. Some States have contended that it is the absence of mineral endowments which requires them to undertake more economic development expenditure. This issue remains unresolved.

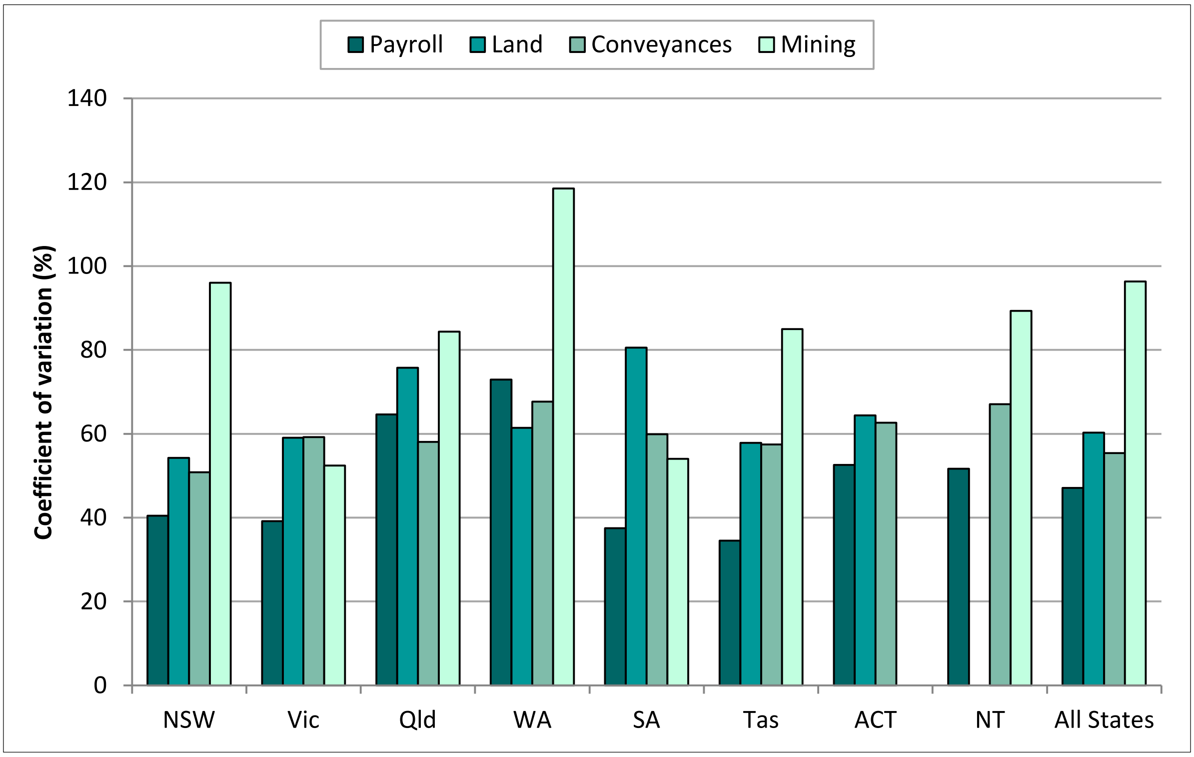
78 One of the difficulties the Commission experiences in analysing this concern is that while revenue streams are separated and easy to identify, the associated costs are dispersed in State budgets. Official statistics make it difficult to identify them and gauge their importance. Further, because some of the cost impacts of mining are already captured in assessments (for example, the Commission recognises the need for more schools and teachers in States where there is an influx of people associated with growth in mining activities) the analysis would need to focus on identifying the remaining unrecognised costs.

79 In this area, conceptual concerns that mining requires economic development expenditures greater than other industries, in addition to those expenditures that are already recognised are taken into account, along with practical problems in constructing a data base which would allow for an assessment to be structured, have worked in tandem to lead the Commission to not make an assessment.

Volatility of mining revenue

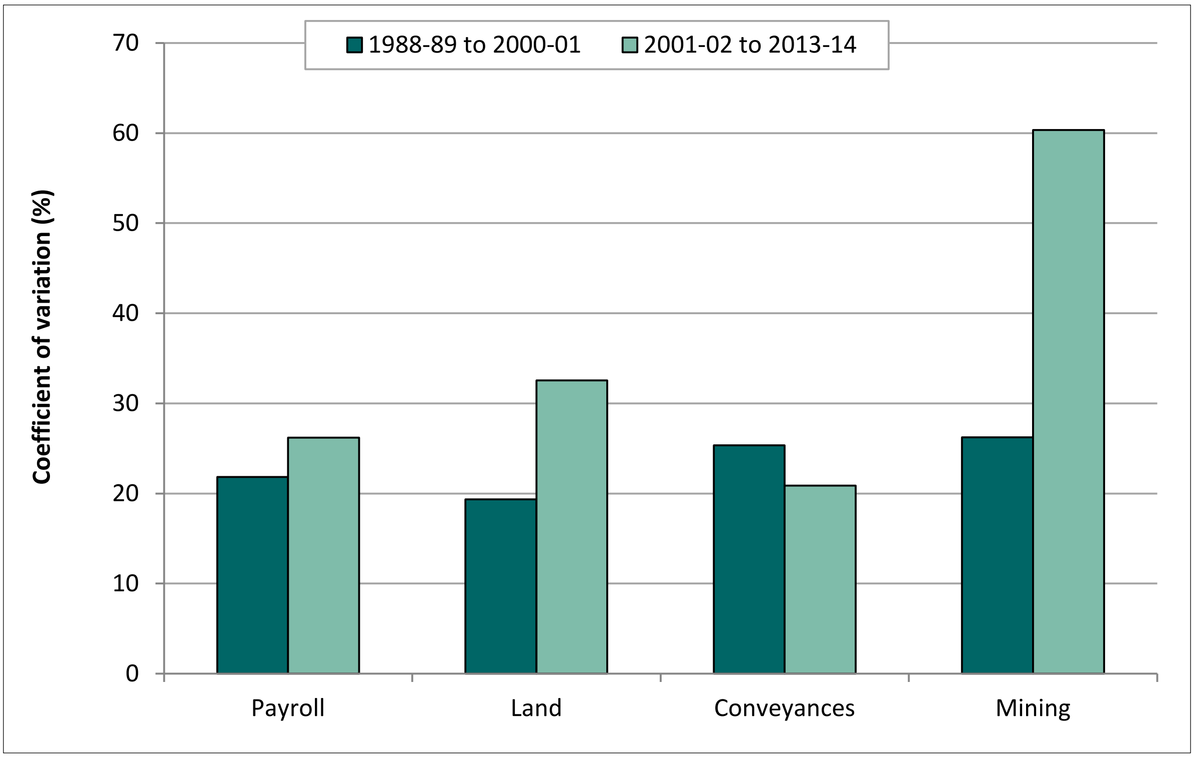
80 The volatility of mining revenue was an issue in the 2015 Review. It arose because royalties were rapidly increasing, in turn increasing the volatility of all State revenue. Figure 5 shows that mining revenues have been more volatile than other major State revenues. Figure 6 shows that mining revenue volatility has increased in recent years.

Figure 5 Volatility of major revenue streams by State, 1988-89 to 2013-14



Source: Commission analysis of ABS GFS taxation data and State mining data.

Figure 6 Volatility of major revenue streams by time



Source: Commission analysis of ABS GFS taxation data and State mining data.

81 How the Commission's process for determining equalisation grants responds to volatility is a particular concern for States with volatile mining revenues. Towards the end of the 2015 Review, Western Australia was experiencing falling iron ore prices. It said this was an exceptional circumstance and suggested the Commission anticipate the on-going deterioration of its mining capacity and make a more immediate response to that development. The Commission considered making an adjustment, but, in its final report, did not do so because it did not believe a change in its methodology was warranted.

82 Volatility also arose because of the Commission's decision to assess minerals in two groups in the 2010 Review. In that review, the Commission said disaggregating the assessment into components better reflected what States did, because States tax some minerals more heavily than others. The Commission favoured two mineral groups because it both accurately captured States' relative raising revenue capacities while achieving policy neutrality. It was concerned further disaggregation could result in the average policy (of the additional mineral groups) being dominated by one State that had a vast bulk of the revenue base. Most States agreed with two mineral groups. The Commission placed iron ore fines in the low royalty group because of its low effective rate (less than 4%) at the time.

83 Following that review, in June 2010, Western Australia announced it would remove a concession on iron ore fines, increasing its effective rate on fines to 5.625%. In its 2011-12 Budget, it announced further increases in the fines royalty rate, to 6.5% in June 2012 and to 7.5% in July 2013 (leading to parity with lump iron ore).

84 The Commission responded to the first change in its 2011 Update. It said its mineral groups were not fixed and it would consider moving iron ore fines to the high royalty group if it produced a better equalisation outcome. That change did not occur because the Commonwealth intervened and issued the Commission with terms of reference directing it to leave iron ore fines in the low royalty group.[11]

85 These terms of reference had two implications:

- While they were operational, it meant the effective royalty rate the Commission applied to iron ore fines was less than its actual effective rate. Western Australia, the State with 97% of fines production, benefited from this treatment.
- When they ceased to operate, it raised questions about whether the Commission would change its treatment of iron ore fines and, if so, whether it would transition to its new treatment slowly or quickly.

86 In its 2015 Draft Review Report, the Commission proposed assessing all iron ore together, which would almost double its effective rate on iron ore fines to 7.5%. It also proposed a slow transition (it proposed phasing out the benefit over two

[11] This instruction was included in terms of reference for the 2011, 2012, 2013 and 2014 Updates.

inquiries). Western Australia supported a slow transition, because it would avoid the situation where its loss in GST share could exceed the additional revenue it raised[12] following its decision to increase the royalty rate on iron ore fines. It said such an outcome would be an unacceptable breach of policy neutrality. Most other States opposed the proposal for a slow transition. They said it would be inconsistent with equalisation, the supporting principles, the review terms of reference and the approach taken in other assessments. In its final report, the Commission confirmed its decision to assess all iron ore together and transitioned immediately to its new assessment.

87 Towards the end of the review, the Treasurer wrote to the Commission seeking advice on the treatment of revenues that were a large and volatile proportion of State revenue. The Commonwealth was concerned about the challenges facing Western Australia because of the volatility of iron prices. The Treasurer sought approaches to mitigate the negative effects of revenue volatility. The Commission said its three year averaging approach (albeit using lagged data) provided an appropriate balance between the competing considerations of practicality, data reliability, contemporaneity, and policy neutrality and predictably smooths payment flows over time. The Government subsequently accepted the Commission's recommendations, including the new Mining assessment. However, it also provided additional assistance to Western Australia of almost $500 million.

CONCLUSIONS

88 The Commission has long preferred profitability as its measure of mining capacity. It only stopped calculating a profitability measure when the data required to support the assessment were no longer available.

89 In the absence of a profitability measure, the Commission has chosen to assess mining capacity using a mineral by mineral approach and value of production. To the extent differences in royalty rates take account of underlying profitability, the mineral by mineral approach still has its roots in profitability.

90 Value of production data have two advantages over profitability data:

- They are more current — the Commission no longer has to make adjustments because data are not available for the final year of an inquiry.
- They require no adjustments — the Commission's profitability measures were based on making adjustments to the Australian Bureau of Statistics' value added data, with the number of adjustments increasing over time.

[12] Normally, when a State increases a royalty rate, its loss in GST share is less than the additional revenue raised. However, were the Commission to transition to the new assessment immediately, Western Australia's loss in GST share would have been a combination of the impact of its increased royalty rate and the removal of the benefit previous terms of reference had bestowed on it.

91 On occasion, the Commission has determined some States were unable to raise revenue at average rates. Consequently, it introduced adjustments to reduce their assessed capacities. At various times, New South Wales, Queensland (in relation to one mine), Tasmania and the Northern Territory have benefited from these adjustments.

ATTACHMENT A: THE MINING ASSESSMENT

THE SPECIAL GRANTS ERA

1 The Commission was established in 1933 and given the task of inquiring into applications by (claimant) States for special grants of financial assistance.

2 The Commission based its recommendations on:

> 'the amount of help found necessary for a State by reasonable effort to function at a standard not appreciably below that of other States'.[13]

3 In practical terms, this meant the amount of assistance needed by the claimant State to give it the same budget result on average as the standard States (normally, but not always, New South Wales and Victoria). Thus, the starting point was a comparison of the excess of the claimant State's *actual* budget result over the *average* budget result of the standard States.

4 However, it was necessary to ensure the claimant State's adverse budget result was not accentuated by the adoption of below standard revenue raising policies or above standard expense policies. For a range of revenues and expenses (but not all), the Commission adjusted the claimant State's budget result by replacing its actual revenues and expenses with its assessed revenues and expenses.

5 Thus, the special grant recommended by the Commission was equal to the excess of the claimant State's *assessed* budget deficit over the *average* budget deficit of the standard States.

6 The Commission did not make a direct assessment of royalties until the mid-1970s. Its reasons for making an assessment were:

- Queensland had become a claimant State.
- Mining production had become an important revenue source for claimant States.

7 The Commission noted assessing mining effort was difficult because of:

- differences in mineral endowments
- differences in the arrangements between mining companies and individual States in relation to the provision of transport and other facilities[14]
- uncertainty as to the level of royalty that would be compatible with profitable operations.

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13 Commonwealth Grants Commission, Third Report, 1936, page 75.

14 In its 1973 Report, the Commission noted New South Wales and Queensland obtained significant revenues from royalties based on company profitability, but the composition of the minerals affected and the definition of profit were very different.

The 1973 Report

8 In its 1973 Report, the Commission noted Queensland's lower effort in raising revenue from mining royalties was offset by railway profits on mineral haulage. It said it was uncertain of the appropriate size of the adjustment for mining (or for business undertakings). It said whether it recommended a positive or negative completion grant for Queensland in 1971-72 would depend on the judgment it made in this area. Because of the uncertainty, it decided to assess a nil completion grant. This decision represented the first time a claimant State's grant was influenced by the Commission's view of mining royalties.

The 1974 Report

9 The Commission decided the unequal distribution of minerals and the different values of different minerals meant an aggregated assessment would not be satisfactory. It preferred a mineral by mineral approach because it weighted royalties according to States' value of production. A claimant State's needs would, therefore, reflect its distribution of minerals as well as the royalty received for each mineral.

10 The Commission's assessment approach was:

$$Revenue\ needs_c = AveRate_s\left[\left(\frac{RevBase_s}{Pop_s}\right)-\left(\frac{RevBase_c}{Pop_c}\right)\right]Pop_c$$

Where: s = denotes the standard States (usually New South Wales and Victoria)
c = denotes a claimant State.

11 The Commission chose value of production as its revenue base. The average rate was a revenue base weighting of the rates applying in the standard States. This approach is similar to the 2015 Review approach, except it uses a two State rather than an eight State standard. Data confidentiality meant volume of production had to be used for bauxite and nickel.

12 The Commission adopted a mineral by mineral approach. Silver, lead and zinc were assessed together because the Commission concluded the joint production of these minerals was common.

13 A direct assessment was not possible for bauxite or iron ore because these minerals were not produced in the standard States. The Commission exercised its judgment in assessing these two minerals.

14 Queensland earned profits from the haulage of minerals on government operated special mineral lines. While the Commission included these profits as royalty revenue, part of the revenue was treated as above standard effort. That part was retained by Queensland and did not affect its recommended grant.

The 1977 Report

15 In this report, the Commission made an important change. It took its first step towards a profitability approach.

16 The Commission said value of production did not capture all drivers of mining capacity (for example, differences in production costs). It concluded a State's capacity depended on the profitability of its mineral production and not on the quantities produced or the value of production — even though royalties were usually levied on those bases.

17 While its preference was to apply a profitability approach, it acknowledged comparative data on mining industry profits were generally not available. However, the Australian Bureau of Statistics (ABS) did publish value added data for Black coal and the Commission used that data to construct a profitability measure for Black coal. It calculated profitability as:

$$ValueAdded - Wages\&salaries - PayrollTax - WorkersCompPremiums - AveCapitalExpenditure$$

18 Data limitations prevented the Commission from applying a profitability approach to other minerals, they continued to be assessed using volume/value of production.

THE REVIEW ERA

The 1981 Review

Issues

19 The main issues considered in this review were:

- The preferred measure of capacity.
- Calculating the preferred measure of capacity.
- Whether States suffered unique disabilities preventing them from raising royalties at average rates.
- How rail profits earned from the haulage of minerals on government operated special mineral lines in Queensland should be treated.

State views

20 ***The preferred capacity measure.*** Most States favoured a profitability approach for at least Black coal. Queensland favoured a mineral by mineral approach using value of production.

21 ***Calculating the preferred capacity measure.*** Queensland and Western Australia said the Commission should deduct capital spending on infrastructure facilities and mining facilities from its value added measure.

22 Queensland said it required mining companies to provide industrial infrastructure but the State provided social infrastructure (schools, police and hospital facilities and in some cases housing). Western Australia said it required mining companies to provide much of the industrial and social infrastructure relating to mining developments. So it believed capital expenditure in relation to social infrastructure should also be deducted.

23 Western Australia said if capital expenditures were not removed, the revenue base would overstate the capacity of mining companies to pay royalties. Commonwealth Treasury disagreed, it said public provided infrastructure could be financed by mining companies through operating charges and it would be inappropriate to compare the large capacity spending in new developments with the modest spending in established areas.

24 ***Adjustment because States could not raise revenue at average rates.*** Tasmania said its revenue capacity was constrained because a greater than average proportion of its mines were marginal.

25 ***The treatment of rail haulage profits.*** Queensland said the profits on the haulage of minerals should be included as royalty revenue and treated as above average effort (that is, the profits should not affect its assessed fiscal capacity).

26 Queensland said it required its mining companies to provide loan capital for the construction of special mineral rail lines, with the loans to be repaid by the State over a period of years through mineral freights. Had it permitted the development of private rail lines (as happened in Western Australia), its legislated royalty rates would have been significantly higher.

27 Other States said the Queensland's rail profits should be classified to railway operations and treated as above average capacity not above average effort. New South Wales said the higher profitability of Queensland's mining industry enabled it to generate high railway profits. Western Australia said it could not have found the capital to construct the government operated lines and so it could not create the opportunities for profitable rail haulage that Queensland later exploited. It also considered Queensland rail profits to be largely due to a natural advantage. Commonwealth Treasury agreed saying some part of the rail profits should be treated as above average capacity.

Commission decisions

28 ***The preferred capacity measure.*** The Commission acknowledged data availability limited its choice of revenue base. It noted the ABS published data on:

- the quantity of production on an individual mineral basis
- the value of production for most minerals. Data confidentiality prevented the ABS from releasing value of production data for bauxite and nickel
- value added, but only on an aggregated basis. However, value added data for black coal were available for the main producing States.
- again on an aggregated basis, persons employed, wages and salaries, turnover, stocks, rent and leasing expenses, other selected expenses and capital expenditure.

29 The Commission dismissed quantity of production as a capacity measure because quantities did not take account of differences in grades of ore or the costs of extraction, processing and transport.

30 The Commission's preference was for a profitability approach. Even though profitability was not the basis upon which royalties were levied, profitability was taken into account implicitly because royalty collections varied with world prices and States reduced royalty rates when mining operations encountered financial difficulties.

31 ***Calculating the preferred capacity measure.*** The Commission decided it was impractical to make infrastructure comparisons (both between and within States) in relation to the purposes, methods of finances, levels and timing of capital expenditures on economic or social infrastructure. It did not include this spending in its profitability measure. The Commission defined its revenue base to be:[15]

- value added data
- less wages and salaries and related on-costs (payroll tax and workers' compensation insurance)
- less a five year average of capital expenditure.

32 Data limitations meant the Commission had to balance its preference for a mineral by mineral approach with its preference for a profitability measure. While it would have liked to apply its profitability measure to each mineral, data were not available to allow it to do so. Instead, it split mining revenue into two categories (Black coal and Other minerals) and applied its profitability measure to both.

33 Thus, the first comprehensive mining assessment comprised three categories:

- Black coal
- Other minerals
- Grants in lieu of royalties — payments accruing to Victoria from Bass Strait fields under arrangements with the Commonwealth[16].

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15 All the variables were net of amounts relating to offshore petroleum and gas.

16 These payments were the predecessor to the Grants in lieu payments to Western Australia and the Northern Territory. Grants in lieu were assessed in the 2015 Review mining revenue assessment.

34 ***Adjustment because States could not raise revenue at average rates.*** While the Commission accepted its profitability measure would take into account the lower profitability of Tasmanian mines, it concluded the disabilities facing some Tasmanian mining operations were unique and it made an adjustment to reduce Tasmania's Other minerals assessment.

35 ***The treatment of rail haulage profits.*** The Commission continued to classify excess profits from the haulage of Black coal as royalty revenue.

36 While the Commission believed Queensland enjoyed a substantial cost advantage in the haulage of coal and other minerals, it accepted Queensland's argument that it had succeeded (by means of hard bargaining with mining companies and efficiency in operating its export coal lines) in earning substantial profits from mineral haulage when other States had not done so.

37 The Commission decided to treat 75% of its excess profits from the haulage of Black coal as above average capacity. The remaining 25% was treated as above average effort and excluded from the Mining revenue assessment.[17]

38 The Commission also concluded there was no evidence Queensland was making above standard effort in relating to the haulage of minerals other than export coal, so it included 100% of the profit on these minerals as railway revenue.

Table A-1 Mining revenue assessment, 1981 Review

Categories	Measure	Adjustments
Black coal	Adjusted value added (a)	-
Other minerals	Adjusted value added (a)	Tasmania because of its inability to increase royalty rates paid by certain mines.
Grants in lieu	Actual per capita	-

(a) Value added less wages and salaries, payroll tax, workers' compensation payments and a five year average of capital expenditure.

Source: State Tax Sharing Report 1981, Volume 1, pages 85-90.

The 1982 Review

Issues

39 The main issues considered in this review were:

- The preferred measure of capacity for the Other minerals category.
- Calculating the preferred measure of capacity.
- Whether States suffered unique disabilities preventing them from raising royalties at average rates.

17 Thus, 25% of its profit from the haulage of Black coal was retained by the State.

State views

40 ***The preferred measure of capacity for Other minerals.*** Some States expressed concerns about the Other minerals assessment for 1980-81. One problem was the lags in New South Wales royalties for silver, lead and zinc production. The data related to either the previous financial or calendar year. Queensland and Western Australia suggested value of production might provide a more reasonable and stable base for assessing mining capacity for Other minerals.

41 ***Calculating the preferred measure of capacity.*** Western Australia supported the use of adjusted value added as the measure of mining capacity. However, both it and Queensland again raised concerns that adjusted value added did not remove the impact of infrastructure contributions by mining companies and that spending affected the mining companies' capacity to pay royalties.

42 Tasmania supported the use of adjusted value added, but argued the adjustment to remove average annual capital expenditure on mine development should not be made. It believed this adjustment disadvantaged States with mines that were well established or that had relatively less development potential. Queensland and Western Australia said the adjustment was necessary for a measure that was intended to capture the capacity States could exploit if they imposed royalties on profitability.

43 ***Adjustment because States could not raise revenue at average rates.*** Tasmania said it was not able to significantly increase the royalties paid by many of its mines because they were marginal. Queensland said it experienced the same problem in relation to its Greenvale nickel mine.

Commission decisions

44 ***The preferred measure of capacity for Other minerals.*** The Commission considered a range of capacity options for the Other minerals component but decided the only practicable approach was to continue to use the profitability approach it had adopted in the 1981 Review.

45 ***Calculating the preferred measure of capacity.*** The Commission accepted infrastructure spending by mining companies reduced their capacity to pay mining royalties. Although it did not have details of the agreements with States under which infrastructure was provided[18], it decided to exercise its judgment and estimate amounts for Queensland and Western Australia, which it removed from their adjusted value added revenue bases. It only estimated amounts for Queensland and Western Australia as the evidence suggested they were the States most affected.

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18 For example, the purposes or nature of the infrastructure, the methods of financing, the contributions and continuing obligations of companies.

46 The Commission introduced an adjustment for New South Wales, because of its lagged royalty data in relation to its silver, lead and zinc production.

47 ***Adjustment because States could not raise revenue at average rates.*** The Tasmanian assessment produced assessed revenues greatly in excess of its actual collections. The Commission believed Tasmania was not in a position to significantly increase the royalty rates paid by its mines without increasing the likelihood of their closure. It exercised its judgment and reduced Tasmania's assessed revenue. A similar adjustment was made for Queensland in relation to its Greenvale nickel mine.

Table A-2 Mining revenue assessment, 1982 Review

Categories	Measure	Adjustments
Black coal	Adjusted value added (a)	-
Other minerals	Adjusted value added (a)(b)	New South Wales for lagged royalty data. Queensland (Greenvale only) and Tasmania because of their inability to increase royalty rates paid by certain mines.
Grants in lieu	Actual per capita	-

(a) Value added less wages and salaries, payroll tax, workers' compensation payments and a five year average of capital expenditure.
(b) An allowance for borrowing costs associated with mining company infrastructure spending was made for Queensland and Western Australia.
Source: State Tax Sharing Report 1982, Volume 1, pages 88-91.

The 1985 Review

Issues

48 The main issues considered in this review were:

- Calculating the preferred measure of capacity.
- Whether States suffered unique disabilities preventing them from raising royalties at average rates.
- Grants in lieu of royalties — the treatment of payments accruing to the Northern Territory in relation to uranium.

State views

49 ***Calculating the preferred measure of capacity.*** Some States argued that the five year average of capital expenditure was too short. They said, by nature, capital expenditures were volatile and a longer averaging period would smooth them and reduce the volatility of the assessment.

50 Western Australia said the ABS' adjusted value added figures for Other minerals included offshore petroleum and natural gas production data in relation to the North

West Shelf. It said that in constructing its profitability measure, the Commission removed data relating to offshore petroleum and, for the Northern Territory, uranium. Therefore, capital expenditures in relation to North West Shelf should also be removed. It noted the Commission would have to derive an adjustment as the ABS did not have these amounts.

51 ***Adjustment because States could not raise revenue at average rates.*** Queensland (for the Greenvale nickel mine) and Tasmania argued the Commission should continue their 1982 Review adjustment that recognised their mines were unable to significantly increase the royalty rates paid by certain mines.

52 The Northern Territory said the Commonwealth had entered into long-term agreements with mining companies in the Territory. These agreements set rates at levels generally lower than those in other States. The long-term nature of the agreements precluded the Territory from significantly increasing royalty rates after self-government. The Territory said the Commission should make an adjustment to recognise the agreements limited its mining capacity.

53 ***Grants in lieu of royalties.*** The Northern Territory said it had received payments (in relation to uranium) under revenue sharing arrangements with the Commonwealth. It said these payments should be treated the same way as payments in relation to offshore oil and gas in other States.

Commission decisions

54 ***Calculating the preferred measure of capacity.*** The Commission made some changes to the profitability measure it had used in the 1982 Review.

55 Previously, the Commission calculated adjusted value added by deducting a five year average of annual capital expenditure on mine development. In this review, it used a ten year average. It said ten years more closely approximated the period the Taxation Office allowed for depreciation allowances for tax purposes.

56 The Commission removed capital construction expenditures for the North West Shelf. It sourced these expenditures from Western Australia's Department of Mines.

57 ***Adjustment because States could not raise revenue at average rates.*** The Commission discontinued the adjustment for Queensland as it was no longer material. It continued the adjustment for Tasmania because it concluded the State was not in a position to significantly increase the royalty rates paid by certain mines.

58 The Commission decided to introduce an adjustment for the Northern Territory because the Commonwealth had entered long-term agreements with mining companies at royalty rates generally lower than those in other States.

59 ***Grants in lieu of royalties.*** With the inclusion of the Northern Territory, the Commission expanded these payments to include payments to the Northern Territory

in relation to uranium. It treated the payments in the same way as payments to Victoria and Western Australia for offshore oil and gas. It included them in a separate category and assessed them actual per capita.

Table A-3 Mining revenue assessment, 1985 Review

Categories	Measure	Adjustments
Black coal	Adjusted value added (a)	-
Other minerals	Adjusted value added (a)(b)	Tasmania and the Northern Territory because of their inability to increase royalty rates paid by certain mines.(c)
Grants in lieu (d)	Actual per capita	-

(a) Value added less wages and salaries, payroll tax, workers' compensation payments and a ten year average of capital expenditure.
(b) An allowance continued to be made for borrowing costs associated with mining company infrastructure spending was made for Queensland and Western Australia.
(c) Northern Territory was not able to raise revenue at the average rates because the Commonwealth made long-term agreements with mining companies with royalty rates generally below those of the States.
(d) For the first time, Grants in lieu included payments to the Northern Territory in relation to uranium.
Source: State Tax Sharing Report 1985, Working Papers, Volume 1, pages 88-91.

The 1988 Review

Issues

60 The main issues considered in this review were:

- The structure of the assessment — whether Other minerals should be separately assessed.
- How should the Commission estimate assessed revenue for the last year when data are not available?
- Calculating the preferred measure of capacity. This included a discussion about the treatment of payments in relation to:
  - The North West Shelf
  - Barrow Island
  - Harriet Oilfield.
- Whether States suffered unique disabilities preventing them from raising royalties at average rates.
- How rail profits earned from the haulage of minerals on government operated special mineral lines in Queensland should be treated.

State views

61 ***The structure of the assessment.*** Queensland and Western Australia supported a separate assessment of gold. New South Wales said there was no reason to treat gold differently from other minerals and there was no reason to exacerbate the problems inherent in a tax by tax approach by breaking individual minerals into smaller assessments.

62 ***Estimating needs for the last year.*** The Commission proposed lagging the assessment one year to overcome the problem of having to estimate needs for the final year of the review.

63 Queensland opposed the use of lagging because it said lagging would be a significant departure from actual policies, which reflected short time lags. Western Australia was concerned that lagging would mean the earliest year (1983-84) would be counted twice in the Commission's assessments — once in the 1985 Review and once in the 1988 review.

64 ***North West Shelf payments.*** Western Australia said under s129 of the *Petroleum (Submerged lands)(Royalty) Act 1967*, it received two thirds of Commonwealth royalty collections from the North West Shelf project in return for administrating the Act. Under s130, it received an additional amount in return for the State complying with contract conditions relating to natural gas sales[19]. It said its Grants in lieu of royalties should comprise s129 payments, but not the s130 payments. The s130 payments arose because of Commonwealth intervention in negotiations between the joint venture partners and the State.

65 New South Wales, Queensland and Commonwealth Treasury agreed. The Treasury said this assistance was comparable to assistance provided to the Northern Territory Electricity Commission, which the Commission had previously excluded from its assessments. Victoria, South Australia and Tasmania disagreed. They said the s130 payments should be included.

66 ***Barrow Island payments.*** Western Australia said it had received compensation payments from the Commonwealth in 1983-84 and 1984-85 for reduced royalty receipts pending the introduction of a resource rent royalty. It said these payments should be excluded. New South Wales, Victoria and South Australia said the Commission should include payments if they were paid in a year that was part of the assessment period.

[19] The State government had agreed that SECWA would take or pay a prescribed amount of natural gas from the North West Shelf. In early 1985, the State was negotiating with the joint venture partners to ameliorate the financial difficulties associated with the SECWA's take-or-pay contract. The Commonwealth convened meetings with the joint ventures and the State, which culminated in an Agreed Statement of Principles.

67 In an unrelated matter, the Commission proposed to exclude the amount of resource rent royalty received by the Commonwealth in 1985-86. The Commission proposed to remove that amount from Western Australia's revenue base, consistent with past practice.[20] Western Australia said only 25% of the Barrow Island value added should be included in its onshore oil and gas assessment as this represented the State's share of the resource rent royalty.

68 ***Harriet oilfield payments.*** The Commission proposed treating Harriet as an offshore oilfield because:

- The field is classified as offshore. Western Australia's original submission said 'the location of the offshore Harriet oil field brings it under the scope of the Offshore Constitutional Settlement agreed by the Commonwealth and States'
- The revenue raised is shared with the Commonwealth
- Western Australia has no means of unilaterally varying the royalty rate.

69 Its treatment as offshore would mean State revenue would be treated as Grants in lieu. Western Australia argued the Commission should treat the Harriet oilfield as an onshore oilfield because of similarities with Barrow Island and Mereenie and because of the similarities on the mechanism used to share royalties — that is, the State collected all royalties and paid a prescribed proportion to the Commonwealth.

70 ***Adjustment because States could not raise revenue at average rates.*** Tasmania and the Northern Territory argued the Commission should continue their 1985 Review adjustment that recognised their mines were unable to raise revenue at the average rate. In the case of Tasmania it was because they had a greater proportion of marginal mines. In the case of the Northern Territory it was because the Commonwealth had negotiated long-term agreements with mining companies at rates lower than those imposed by States.

71 ***The treatment of rail haulage profits.*** The Commission proposed continuing to treat part of Queensland's rail freight charges as royalty revenue.

Commission decisions

72 ***Structure of the assessment.*** The Commission noted gold had a special status in State royalty regimes and decided it would make a separate assessment of it.

73 ***Estimating needs for the last year.*** The Commission decided it would lag its mining assessments one year. It noted the 1983-84 year was not part of the 1985 Review mining assessment. The lagging of the assessment meant the Commission no longer needed an adjustment for New South Wales (for lagged data) and the adjustment was discontinued.

20 The ABS had previously deducted Commonwealth oil levies from Western Australia's value added figures.

74 ***North West Shelf payments.*** The Commission decided that it would exclude the s130 payments under the *Petroleum (Submerged lands)(Royalty) Act 1967*. It concluded the State's options in relation to SECWA funding were constrained by the Commonwealth's intervention. The Agreed Statement of Principles was crucial to the joint ventures decision to proceed with the export phase of the project. It agreed the s130 payments were similar to other payments it had previously excluded.

75 ***Barrow Island payments.*** The Commission decided to exclude the compensation payments because their inclusion would overstate Western Australia's revenue raising effort and, when Western Australia was the standard State, would imply that other States could also have increased their effort.[21]

76 The Commission decided to reduce Western Australia's value added by the amount of resource rent royalty it had paid to the Commonwealth. This was consistent with past practice.

77 ***Harriet oilfield payments.*** The Commission decided to treat royalties in relation to the Harriet oilfield as offshore royalties because the State did not control the amount of revenue it derived from the oilfield. It noted a Western Australian Mines Department report referred to Harriet as Western Australia's first offshore oilfield.

78 ***Adjustment because States could not raise revenue at average rates.*** The Commission discontinued the Tasmanian adjustment because its actual revenue exceeded its assessed revenue in all years. The Commission retained the Northern Territory adjustment. It assumed 60% of the Territory's mining revenue base was affected by these long-term agreements.

79 ***The treatment of rail haulage profits.*** The Commission continued to treat part of Queensland's rail freight charges as royalty revenue. The amount was estimated as the difference between its black coal royalty rate and the average black coal royalty rate times Queensland's black coal revenue base.

21 This was a period when the Commission calculated assessed revenue using a six State rotating standard, in which each State in turn was chosen as the standard State. A State's assessed revenue was a population weighted average of its calculated capacity when each State was selected as the standard State. This approach meant total assessed revenues exceeded total actual revenues.

Table A-4 Mining revenue assessment, 1988 Review

Categories	Measure	Adjustments
Black coal	Adjusted value added (a)	-
Gold	Adjusted value added (a)	-
Other minerals	Adjusted value added (a)(b)	Northern Territory because of long-term agreements entered into by the Commonwealth.(c)
Grants in lieu (d)	Actual per capita	-

(a) Value added less wages and salaries, payroll tax, workers' compensation payments and a ten year average of capital expenditure.
(b) An allowance for borrowing costs associated with mining company infrastructure spending was made for Queensland and Western Australia.
(c) The Commission assumed 60% of the Territory's revenue base was affected by long-term agreements with mining companies at royalty rates generally below those of the States.
(d) These are payments to States derived from revenue sharing agreements with the Commonwealth. Previously they related to payments for offshore oil and gas. They now also include payments in relation to uranium in the Northern Territory. It was assessed as a separate category.
Source: State Tax Sharing Report 1993, Volume 2, pages 131-132.

The 1993 Review

Issues

80 The major issues for the review were:

- The structure of the assessment.
- The preferred measure of capacity — profitability or value of production.
- Calculating the preferred measure of capacity. This included a discussion of what it should do if data were not available for the last year of an inquiry.
- Whether States suffered unique disabilities preventing them from raising royalties at average rates.
- How rail profits earned from the haulage of minerals on government operated special mineral lines in Queensland should be treated.

State views

81 ***The structure of the assessment.*** The Commission proposed amalgamating the three mineral assessments (Black coal, Gold and Other minerals).

82 Queensland supported a combined assessment because it would reduce the potential grant design inefficiency arising from the concentration of the revenue base for some minerals in a few States. Other States said, providing the revenue base was measured in a consistent way, there was no reason for special treatment of any mineral.

83 Western Australia disagreed. It said minerals should not be amalgamated where there were substantial differences in revenue raising policies. It said the different

effective rates on Black coal, Gold and Other minerals suggested States applied different policies. If an amalgamated revenue base was adopted, adjustments should be made for exploration costs and to reflect differential returns on investments by the different sectors of the mining industry.

84 ***The preferred measure of capacity.*** In the 1988 Review, the Commission assessed mining revenue using a profitability approach, despite the practice of most States to raise royalties on the value of production. It did so because the Commission considered the long run ability of States to raise royalties was constrained by the mining industry's profitability.

85 Some States asked the Commission to reconsider its approach. Queensland supported a value of production approach because it reflected the practice of States. Most States supported a profitability approach and said value of production did not account for differences in costs of production. Western Australia suggested using economic profit as the revenue base. As part of its suggestion to move towards an economic profit approach, Western Australia suggested the Commission deduct an allowance for exploration costs and include a rate of return on investment.

86 ***Estimating needs in the last year.*** ABS value added data were not available for the final year of the assessment period.

87 Queensland said if the mining assessment were based on value of production data, it would eliminate the need to use lagged data because value of production data are more timely than ABS value added data.

88 ***Adjustment because States could not raise revenue at average rates.*** The Northern Territory said the Commission should continue to make an adjustment for it because long-term agreements made by the Commonwealth before self-government prevented it from applying the average effort to some major mines.

89 ***The treatment of rail haulage profits.*** In the 1988 Review, the Commission treated part of Queensland's rail freight charges as royalty revenue.

90 The Commission estimated that amount as the difference between Queensland's Black coal royalty rate and the average rate times Queensland's Black coal revenue base. This meant the estimate was almost entirely based on the policies of New South Wales (the other major coal producer). The Commission proposed estimating the amount using the excess of coal rail freight revenues over costs plus an allowance for normal profit. Several States highlighted the practical differences of measuring rail profits on a comparable basis for each State.

Commission decisions

91 ***The structure of the assessment.*** The Commission decided to combine the minerals into a single assessment. It did so because:

- It did not believe differences in the severity of royalty rates (notably gold) meant the ability of States to raise revenue differed appreciably between minerals.
- Disaggregated assessment was more prone to grant design inefficiencies.
- The data required for disaggregated assessments were not readily available.
- An aggregated assessment was simpler.

92 This approach increased the capacity of the two gold producing States, Western Australia and the Northern Territory. Under the previous method, Western Australia's decision not to tax lowered the average rate of tax and its assessed capacity to raise revenue from gold.

93 ***Calculating the preferred measure of capacity.*** While the Commission adopted a legal incidence for most revenue assessments, it considered a capacity to pay approach was relevant for mining since the mining sector was more reliant on exports and was, therefore, less able to shift tax liability forward.

94 The Commission decided to deduct an allowance for exploration costs but not to deduct an allowance for a rate of return on investment. It said it was unable to derive a realistic long-run rate of return from the available data and it was concerned about the annual volatility in rates of return.

95 The Commission introduced a -3 price elasticity adjustment because it observed large differences in States' effective royalty rates and because it accepted the mining industry was dependent on world prices and, therefore, its level of activity was sensitive to changes in royalty rates. This view was supported by a consultant's report submitted by Western Australia. The report estimated elasticity coefficients for a number of minerals. Its estimates implied that a 1% increase in royalty rates could result in decreases in production of between 1.1 and 5.5%, depending on the mineral. The Commission exercised its judgment to assess a price elasticity adjustment of -3.

96 ***Estimating needs in the last year.*** The Commission decided that, whenever revenue base data were unavailable for the last year of an inquiry, it would estimate the missing data by reference to the second last year, with adjustments for movements in actual royalty collections and changes in royalty rates.

97 The Commission believed this method would produce a better match between royalty collections and the revenue base in each assessment year than its previous method. This method continues to be used for other revenue categories, when assessment data are not available for the final year of an inquiry.

98 ***Adjustment because States could not raise revenue at average rates.*** The Commission reduced the adjustment for the Northern Territory. It obtained new information indicating the constraint imposed on the Territory's revenue capacity by these long-term agreements was less than previously estimated. It appeared only

15% of its revenue base was subject to those agreements, not the 60% previously assumed.

99 ***The treatment of rail haulage profits.*** The Commission decided to include the profits earned by Queensland as royalty revenue. It decided the amount it would include would be that amount in excess of those that would have been earned had it achieved the average rate of return on the value of assets employed in coal haulage operations and adopted the average operating policies.

100 The Commission engaged a consultant to provide it with an estimate of Queensland's profit from the haulage of Black coal. Consequently, it increased Queensland's Black coal revenue base by that amount and reduced Queensland's revenue in its railway assessment by the same amount.

Table A-5 Mining revenue assessment, 1993 Review

Categories	Measure	Adjustments
Mining revenue	Adjusted value added (a)	Northern Territory because of long-term agreements entered into by the Commonwealth. (b)
Grants in lieu	Actual per capita	-

(a) Value added less wages and salaries, payroll tax, workers' compensation payments, a five year average of exploration costs, a ten year average of capital expenditures and an adjustment for price elasticity effects.
(b) The Commission assumed 15% of the Territory's revenue base was affected by long-term agreements with mining companies at royalty rates generally below those of the States.
Source: Report on General Revenue Sharing Relativities 1993, Volume 2, pages 131-137.

The 1999 Review

Issues

101 The major issues for the review were:

- The preferred measure of capacity — profitability or value of production.
- Calculating the preferred measure of capacity. This included a discussion of:
  - The treatment of off-lease exploration expenditure.
  - The treatment of on-lease exploration expenditure.
  - Whether or not to assess a rate of return on capital expenditure.
  - Whether or not to assess an elasticity adjustment and, if so, its size.
- Whether States suffered unique disabilities preventing them from raising royalties at average rates.

State views

102 ***The preferred measure of capacity.*** New South Wales, Western Australia, Tasmania and the Northern Territory supported a profitability approach.

103 Western Australia and the Northern Territory supported economic rent or the long run profitability of the mining industry. They believed an economic rent approach would reflect the true underlying capacity that States seek to tax. While States did not directly tax profit, they said States had regard to it when setting their royalty rates. Western Australia noted that both the Industry Commission and the Bradley reports considered economic rent to be the maximum return a community could expect from a mining venture[22].

104 Victoria and Queensland supported a value of production measure because they believed it better reflected how States imposed royalties. Queensland said adjusted value added was a second best option but it opposed an economic profit approach. It said that economic profit bore little relationship to the way States levied royalties and did not correlate well with actual revenue. Queensland was also concerned with the potential problems associated with deriving a rate of return if an economic profit approach was adopted.

105 Tasmania suggested the Commission treat employer contributions to superannuation as a cost. Victoria disagreed. It acknowledged the lack of data and the small size of the contributions might make the adjustment difficult to implement.

106 ***Off-lease exploration.*** New South Wales, Victoria and Queensland said that off-lease exploration expenditure should not be deducted because it was not directly related to future income streams and it could be considered a sunk cost.

107 Western Australia, Tasmania and the Northern Territory supported the deduction of all exploration expenditure because those costs were part of the full economic costs of mining. They argued both successful and unsuccessful exploration reduced profit and mining companies undertook exploration in the expectation that the proportion that was successful would lead to productive mines, which would recover all of the previous exploration outlays. They also noted profit based royalty regimes generally allowed such expenditures to be deducted. This view was supported by the findings of the Bradley Report and the Industry Commission.

108 ***On-lease exploration.*** Initially, the Commission assumed all on-lease exploration expenditure had been removed from the ABS's adjusted value added data and so it did not propose to make an adjustment. The Northern Territory said this assumption was not valid. It suggested the Commission make a downward adjustment using data from separate exploration units.

[22] Productivity Commission, op cit. The Bradley Report is the *Report of the Mineral Revenues Inquiry in Regard to the Study into Mineral (including Petroleum) Revenues in Western Australia*, 1986.

109 The ABS said its value added data netted of some but not all on-lease exploration expenditure and the data used for the wages and salaries adjustment might also contain some on-lease exploration amounts.

110 ***Rate of return.*** Western Australia and the Northern Territory favoured the introduction of a rate of return on unamortised capital expenditure because they believed a certain proportion of profit cannot be accessed by States. This proportion represented the minimum return a company expected on its investment. If the Commission did not remove a rate of return but left this minimum return in its revenue base, the capacity of mining companies to pay royalties would be overstated.

111 New South Wales, Victoria, Queensland, South Australia and Tasmania opposed the introduction of a rate of return.

112 ***The size of the elasticity adjustment.*** In the previous review, the Commission used a price elasticity of -3 for all States.

113 Western Australia and Tasmania supported the use of a different elasticity for the Northern Territory as it had a profit based royalty regime. Victoria argued its own price elasticity should be -4, to reflect the greater sensitivity of mining activity in Victoria.

114 Queensland disagreed with the need for an elasticity adjustment but said that, if it was retained, an elasticity of -1 should be used for all States. Tasmania favoured a mid-point elasticity between -1 and -3.

115 ***Adjustment because States could not raise revenue at average rates.*** The Northern Territory said the Commission should continue to make a downward adjustment to its assessed capacity because of long-term agreements entered into by the Commonwealth before self-government. These agreements prevented it from applying the average effort to some major mines.

Commission decisions

116 ***The preferred measure of capacity.*** The Commission decided to retain its profitability approach. It said profitability was the most appropriate measure of capacity because:

- It allowed disabilities to be properly recognised. The main difference between profitability and value of production was the recognition of costs of production as disabilities
- Disabilities can be easily changed, by deducting more or fewer costs. Thus, the Commission can draw the line between policy and disabilities at different points.

117 ***Off-lease exploration.*** The Commission decided not to deduct off-lease exploration expenditure because the link between successful off-lease expenditure

and revenue capacity was more tenuous than other costs (wages and salaries, and capital expenditure). Even if off-lease expenditure did lead to a productive mine, the increased revenue capacity may not come on-stream until many years into the future.

118 ***On-lease exploration.*** The Commission decided to make a separate adjustment as proposed by the Northern Territory. After discussions with the ABS, the Commission decided 50 per cent of the on-lease exploration expenditure of the separate exploration units would be deducted from the revenue base.

119 ***Rate of return.*** The Commission decided not to introduce a rate of return because, even if the opportunity cost of capital were regarded as a cost that reduced revenue capacity, it would not follow that the introduction of a rate of return adjustment would increase the accuracy of the assessment or the degree of fiscal equalisation. The Commission also accepted that capital was written off as a cost under its profitability approach and, as such, there was no unamortised capacity on which to apply a rate of return.

120 The major differences between the Commission's profitability approach and an economic profit approach were:

- An economic profit approach would deduct all exploration expenditure. The Commission's profitability approach deducted only on-lease expenditure.
- An economic profit approach would allow a rate of return on capital. The Commission's profitability approach did not.

121 ***The size of the elasticity adjustment.*** The Commission's research into elasticity and mobility effects in revenue assessments found evidence of tax induced elasticity effects for mining. It said the effect was large enough to warrant an elasticity adjustment. The Commission decided to retain its elasticity adjustment with a price elasticity of -3.

122 The Commission considered reducing the Northern Territory's elasticity to -1. After considering the effect of both different tax rates and royalty regimes of the States, it concluded the elasticity for the Northern Territory should be the same as that of the other States.

123 ***Adjustment because States could not raise revenue at average rates.*** The Commission decided to discontinue the adjustment for the Northern Territory. It concluded the contracts signed by the Commonwealth and mining companies did not limit the Northern Territory's ability to raise revenue at average rates.

Table A-6 Mining revenue assessment, 1999 Review

Categories	Measure	Adjustments
Mining revenue	Adjusted value added (a)(b)	-
Grants in lieu	Actual per capita	-

(a) Value added less wages and salaries, payroll tax, workers' compensation payments, superannuation payments, a five year average of on-lease exploration costs, a ten year average of capital expenditures and an adjustment for price elasticity effects.

(b) Queensland phased out its special rail haulage contracts from 1 July 2000 and applied one royalty rate across all its mines.

Source: Report on General Revenue Grant Relativities 1999, Volume 2, pages 211-216.

The 2004 Review

Issues

124 The major issues for this review were:

- The preferred capacity measure — profitability or value of production.
- Calculating the preferred capacity measure.
- Whether States suffered unique disabilities preventing them from raising royalties at average rates.

State views

125 ***The preferred capacity measure.*** The Commission said the profitability approach adopted in the 1999 Review was becoming unsustainable because much of the data required to implement the method were no longer available. While profitability remained its preferred capacity measure, it proposed assessing capacity using value and/or volume of production.

126 New South Wales, South Australia, Tasmania and the Northern Territory favoured an approach based on profitability because it recognised differences in costs of production. New South Wales and South Australia said data difficulties were not a sufficient reason to change the method. Western Australia said economic rent was the most appropriate measure of revenue capacity because it defined what States could ultimately tax.

127 Victoria and Queensland supported a value of production approach because they considered it better reflected the way States imposed royalties.

128 ***Adjustment because States could not raise revenue at average rates.*** New South Wales, Tasmania and the Northern Territory raised the issue of whether it was possible to apply the average rate to all minerals. New South Wales and Tasmania said it would overstate their true capacity to raise royalty revenue.

Tasmania said its mining industry had been in rapid decline in recent years and it could not collect higher royalties than it was currently imposing.

129 Western Australia said it provided assistance to some mines, although not always in the form of direct royalty relief. The assistance could be in the form of relief from other State charges or infrastructure assistance. To preserve policy neutrality, it suggested all assistance should be treated consistently, regardless of the form in which it was provided.

Commission decisions

130 ***The preferred capacity measure.*** The Commission said its preferred revenue base for mining royalties was profitability because it reflected the underlying capacity of the industry to pay. However, much of the data required for a profitability measure were either no longer available or not reliable. The ABS said current data collection processes meant an output-based assessment was more likely to be supported by robust and accurate data and require less estimation than a profitability measure.

131 The Commission noted that while States said that they took account of the capacity of the industry to pay when setting the royalty rates, most did not impose royalties on profitability. The Northern Territory and Tasmania aside, most imposed royalties on the value of production. The Commission said it would use value of production as its measure of the revenue base because it reflected what States did.

132 The Commission said its assessment should also recognise the practice of States to tax some minerals more heavily than others. So, it split mining into Onshore oil and gas, Coal, Other minerals where royalties were imposed on values (mainly metallic minerals) and minerals where royalties were imposed on volumes.

133 ***Calculating the preferred measure of capacity.*** The Commission discussed the collection of value of production data with States, the ABS and the Australian Bureau of Agricultural and Resource Economics (ABARE). The Commission sought data that would be comparable across States.

134 ABARE recommended the Commission use the value of the metal content of mine output, valued at the metal free-on-board export unit value. Its recommendation had the general support of the States and the Commission adopted it.

135 ***Adjustment because States could not raise revenue at average rates.*** The Commission believed the value of production approach would overstate the capacity of New South Wales and Tasmania to raise royalty revenue at average rates. It had concerns about the profitability of some mines in both New South Wales and Tasmania, particularly the profitability of the coal industry in New South Wales. It decided to make a downward adjustment for those two States because of the cost structures of certain mines.

Table A-7 Mining revenue assessment, 2004 Review

Categories	Measure	Adjustments
Onshore oil and gas	Value of production	-
Export open cut coal	Value of production	-
Export underground coal	Value of production	New South Wales because of the cost structures of certain mines.
Heat coal	Value of production	New South Wales because of the cost structures of certain mines.
Value based minerals	Value of production	New South Wales and Tasmania because of the cost structures of certain mines.
Volume based minerals	Volume of production	-
Grants in lieu	Actual per capita	-

Source: Report on State Revenue Sharing Relativities 2004 Review, Volume 2, pages 58-60.

The 2010 Review

Issues

136 The major issues for this review were:

- The preferred capacity measure — profitability or value of production.
- The structure of the assessment.
- Calculating the preferred capacity measure.
- Whether States suffered unique disabilities preventing them from raising royalties at average rates.

State views

137 ***The preferred capacity measure.*** Profitability remained the Commission's preferred capacity measure. However, the absence of reliable data meant it could not implement a profitability approach. Primarily, the problem data related to the adjustments the Commission made to the ABS' value added data to derive its profitability measure. However, obtaining reliable value added data by State was also becoming problematic.

138 The Commission initially considered a broad indicator approach (total factor income and gross operating surplus) but found those measures did not reflect the spread of revenue capacities across States nor the sensitivity of royalty revenue to different royalty regimes and commodity cycles. The measures were also less consistent with the way States imposed royalties. Consequently, the Commission proposed using value of production as its capacity measure as it better reflected what States did and was simple.

139 New South Wales, Tasmania and the Northern Territory supported a profitability approach because value of production did not take account of differences in the cost structures of mines. New South Wales said a measure based on the profitability of the industry was the best indicator of capacity because it reflected the industry's capacity to pay royalties. This was important for an industry that was heavily reliant on exports. Tasmania suggested the Commission adjust value of production for relative differences in gross operating surplus.

140 Victoria, Queensland, Western Australia and the ACT supported a value of production measure. They said it reflected what States did. Western Australia said factor income or gross operating surplus did not capture underling economic rent nor reflect what States did.

141 ***Structure of the assessment.*** The Commission proposed to continue to assess payments from the Commonwealth by the actual per capita approach. It also proposed splitting the remaining minerals to reflect that States taxed some minerals more heavily than others. It favoured splitting minerals into two groups because it would provide a balance between the competing issues of accurately capturing States relative revenue raising capacities and policy neutrality. The Commission was concerned higher levels of disaggregation may result in the average policy for some minerals being dominated by a State that had the bulk of that tax base.

142 The Commission proposed splitting minerals into energy and non-energy. Data were readily available on this basis and the split recognised energy minerals were more heavily taxed than non-energy minerals. Most States supported two mineral groups as a robust way of capturing differences in royalty rates and a way of simplifying the previous assessment. However, there was disagreement about whether the groups should be energy and non-energy minerals or high and low royalty minerals. Some States said low grade coal should be grouped with the non-energy minerals because its royalty rate was closer to those that applied to non-energy minerals than those that applied to energy minerals.

143 ***Calculating the preferred measure.*** The Commission had concerns over States' differing valuation methods for different minerals. Most States valued production at the *mine gate* or *wellhead*. However, the valuation for some metals (copper, gold) was based on the value of the concentrate or metal, as this was the usual form of production at mine gate. The valuation point for coal was the point at which the coal was sold. For export coal the valuation was at the port, whereas for domestic coal the valuation was close to the mine gate.

144 The Commission considered three sources for its value of production data: State mines departments; the ABS; and ABARE. New South Wales was concerned data from the ABS and ABARE might not be fit for purpose because of differences across States in the data collection and valuation processes. Discussions with ABARE and the ABS

indicated their data were comparable across the States and were fit for the Commission's purposes. Nevertheless, there were differences between the two agencies in their approach to valuing production:

- ABARE used data on metal prices (from the London Metal Exchange, for example) to value production. It also determined values on the basis of metal content, which included value added by processing beyond the 'mine gate'.
- The ABS used data from similar sources to value production, but it valued the minerals at as close as possible to the mine gate.

145 The difference in the valuation point could have implications for the estimated value of production (particularly for bauxite and iron ore).

146 ***Adjustment because States could not raise revenue at average rates.*** The Commission had assessed an adjustment for New South Wales and Tasmania in the 2004 Review. However, increases in commodity prices led it to discontinue those adjustments in the 2006 Update.

147 New South Wales and Tasmania supported a reintroduction of the adjustment for their marginal mines. Queensland said the reasons for discontinuing the adjustment were still valid and they should not be reinstated.

Commission decisions

148 ***The preferred capacity measure.*** Given reliable data were no longer available to support a profitability measure, the Commission retained value of production as its capacity measure.

149 ***The structure of the assessment.*** The Commission decided to continue to assess Grants in lieu of royalties[23] as a grant from the Commonwealth, assessing the revenues actual per capita in a separate component.

150 While the Commission initially proposed two mineral groups: energy and non-energy, it reviewed its proposed treatment of coal and iron ore because of a sharp increase in coal and iron ore royalties in 2008-09. It accepted States applied different royalty rates to different types of coal and iron ore and they applied higher royalty rates to export coal and lump iron ore. While export coal and lump iron ore royalties were large enough to assess separately, the Commission decided not to do so because of its policy neutrality concerns of separately assessing minerals when a State dominated the tax base.

151 As a result of these considerations, the Commission decided to assess mining revenues in three components:

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23 Western Australia receives a share of the revenue from offshore oil and gas production (predominantly from the North-West Shelf) and the Northern Territory receives a share of the revenue from uranium mining.

- high royalty minerals — minerals in this group were onshore oil and gas, export coal, lump iron ore and bauxite
- low royalty minerals — the remaining minerals
- Grants in lieu of royalties.

152 ***Calculating the preferred measure.*** The Commission chose the ABS as its data provider because it excluded the effects of downstream refining and so its valuations were closer to mine gate values.

153 ABS data had two shortcomings. They were available with a one year lag and the data did not always have the same scope as the Mining revenue assessment. For example, the ABS oil and gas data included offshore oil and gas production, whereas the mining assessment is restricted to onshore oil and gas. The Commission overcame both shortcomings using data provided by State mines department.

154 ***Adjustment because States could not raise revenue at average rates.*** Despite a downturn in commodity prices, the Commission decided its assessment method was sufficiently robust that an adjustment was not required. It accepted there could be circumstances in the future that required it to reinstate an adjustment for one or more States.

Table A-8 Mining revenue assessment, 2010 Review

Categories	Measure	Adjustments
High royalty mineral group	Value of production	-
Low royalty mineral group	Value of production	-
Grants in lieu	Actual per capita	-

Source: Report on GST Revenue Sharing Relativities 2010 Review, Volume 2, pages 129-139.

The 2015 Review

Issues

155 The major issues for this review were:

- The preferred measure of capacity.
- Calculating the preferred measure of capacity. This included a discussion of grouping minerals and a discussion of the treatment of iron ore.
- Grants in lieu of royalties — the treatment of payments accruing to the Western Australia in relation to offshore oil and gas.

156 The Commission also sought State views on a range of other issues:

- Should the Commission adopt external standards?
- Should the Commission treat royalties as the price for a State asset?
- Should the mining revenue assessment provide incentives to resource States to develop and expand their mining sectors?
- Should the mining revenue assessment be discounted?

State views

157 ***The preferred measure of capacity.*** While profitability remained the Commission's preferred capacity measure, reliable data to support that measure were not available. The Commission proposed retaining value of production as its capacity measure.

158 States accepted reliable data were not available to support a profitability measure.

159 ***Structure of the assessment.*** The Commission said its biggest concern in developing a mining assessment was finding an appropriate balance between fiscal capacity, what States collectively do and policy neutrality.

160 If policy neutrality was not an issue, a mineral by mineral assessment would accurately capture differences in States' mining revenue capacities. If policy neutrality was the sole issue, it would group all minerals together. While grouping minerals together would address policy neutrality concerns, it would come at a cost of producing an assessment that did not reflect the underlying differences in States' capacities. The Commission asked States for their views on how it should disaggregate mining.

161 Western Australia supported a full disaggregation. Its preference was for a mineral by mineral assessment[24] as it would reflect States' differential revenue raising capacities. Tasmania's supported a disaggregated assessment, with as many disaggregations as was material. It also sought an adjustment for its ageing mines due to their higher costs and lower profitability.

162 New South Wales and Queensland favoured no disaggregation. They preferred assessing minerals in a single group to improve policy neutrality. New South Wales said a single group would also increase transparency and reduce complexity compared to the 2010 Review method. Western Australia, Tasmania and the ACT said a single group option would not capture differences in States' revenue capacities. While Victoria preferred a two-group assessment, it would support a single group if an adjustment was made to recognise the lower royalty rates applying to non-export

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[24] It said discounting the mining assessment was essential to reduce policy influences, to address the uncertainty generated by observed revenue bases rather than the revenue bases that would exist under average policy and because the Commission was unlikely to adequately assess mining-related expenses.

minerals. South Australia said a single group assessment would need to take account of differences in mine profitability.

163 Victoria, South Australia and the ACT favoured two mineral groups. Victoria and the ACT proposed grouping based on average royalty rates. They said grouping was necessary to avoid the policy non-neutrality associated with a mineral by mineral assessment. South Australia proposed a two group structure with Bauxite, Onshore oil and gas, Coal and Iron ore in one group and other minerals in the other.

164 The Northern Territory preferred disaggregating minerals into three to five groups, with the groupings dependent on average royalty rates.

165 ***Treatment of iron ore.*** In the preceding updates, terms of reference directed the Commission to leave iron ore fines in the low royalty group. Thus, the assessment did not capture the full impact of Western Australia's decision to raise iron ore fines royalty rates. The Commission proposed phasing-in the higher fines royalty rates.

166 Western Australia agreed with the proposal because it would avoid the situation where its loss in GST would exceed the additional revenue raised as a consequence of its decision to raise royalty rates in 2012-13. It viewed this outcome as an unacceptable breach of policy neutrality. Most States opposed phasing because it was inconsistent with HFE, the supporting principles, the terms of reference and the approach taken in other assessments. Victoria said Western Australia had received the benefit of a higher than warranted GST share because its full revenue raising capacity had not been taken into account. In the absence of terms of reference, the continuation of this benefit (whether in whole or in part) would not be consistent with the equalisation objective.

167 ***Grants in lieu of royalties.*** Most States supported a continuation of the previous approach of applying an actual per capita assessment to these revenues.

168 Western Australia did not. It believed the Commission should reduce or remove payments in relation to the North West Shelf project because of past State investment on that project.

169 ***Other issues — external standards.*** The Commission suggested another option for improving the policy neutrality of the assessment — to use external standards. It suggested historical State royalty rates or international royalty rates as options for combining the value of production of different minerals.

170 No State supported moving to an external standard. Most said international royalty rates would represent a major departure from usual Commission practice and it would move away from 'what States collectively do'. Several cited the significant differences between Australia and other countries in royalty policies and mining operating costs.

171 Tasmania said that while, in theory, an external standard could address some of the potential policy non-neutrality, significant development of the option was required before it could support it.

172 Some States questioned whether the use of historical State royalty rates would address policy neutrality concerns or merely delay them.

173 ***Other issues — price of a State asset.*** The Commission proposed treating royalties like other State revenue. It said the practice of States was to treat royalties as recurrent revenue and make them available to meet recurrent expense needs.

174 All States except Queensland and Western Australia supported the proposal to continue to treat royalties like other State revenues. Queensland said mining revenue was more like the sale of a State asset than a State tax. It said mining revenue should be treated as a State asset sale. Under this approach, mining revenue would not be equalised when it was received, rather the return on the investment of royalties would be equalised. Western Australia said that while treating royalties as the price for an asset had theoretical merit, it would be difficult to implement that approach now.[25]

175 In its report, the GST Distribution Review said 'the longstanding practice of all Australian governments has been to treat royalties as recurrent revenue for accounting and budgeting purposes. Current royalty revenue is available to meet current expenditure needs, and in that sense is a close substitute for revenue from State taxes'. It concluded the case had not been made that mining revenue should be treated differently to States' other own-source revenue, leading to a finding that:

- States' mining revenue should continue to be equalised through the HFE system, on the same basis as other own-source revenue (Finding 7.1).

176 ***Other issues — provide incentives to resource States.*** Queensland and Western Australia said the mining revenue assessment should provide an incentive for States to develop their mining sectors. They said this could be achieved by applying a discount.

177 New South Wales, Victoria and the ACT said providing an incentive for development of the industry would be contrary to the equalisation objective and policy neutrality.

178 ***Other issues — discount the assessment.*** Queensland said the Commission should discount the mining revenue assessment because of problems with the assessment, including unassessed mining expenses, grant design inefficiencies and

[25] Up to now, the Commission has assessed royalties as they were raised. Under an asset approach the Commission would assess the return on the investment of royalties. Were the Commission to switch to the latter approach now, it could not assess the return on the investment of prior royalties (it has already assessed those royalties). It would only assess the return on investment of future royalties. This would mean that the mining assessment would fall to zero until such time as future royalties grow sufficiently for an assessment of the return on their investment to be material.

any potential impact of perverse incentives. Western Australia agreed. It said a discount was warranted because:

- States' revenue bases were sensitive to their industry policies.
- The assessments were sensitive to changes in royalty rates.
- The assessments required considerable judgment by the Commission.
- States with larger mining industries incur additional expenditures that are not readily quantified.
- There were intergenerational risks from future changes to the HFE process.

179 The other States opposed a discount. Victoria said the Commission did not apply a discount in the 2010 Review, implying it did not have concerns about the reliability of its assessment method or the data used. Victoria did not envisage the Commission moving from a reliable methodology to one that required a discount because of unreliability concerns.

Commission decisions

180 ***The preferred measure of capacity.*** While profitability remained the Commission's preferred capacity measure, reliable data to support that measure were not available. The Commission decided to retain value of production as its capacity measure.

181 ***Structure of the assessment.*** The Commission decided to adopt a mineral by mineral approach. It did this because it concluded a mineral by mineral approach achieved HFE more accurately. It acknowledged this had the potential to make the assessment less policy neutral as changes in State policies could have a large impact on their GST shares. However, it considered that the goal of policy neutrality was subsidiary to the requirement to achieve HFE. It also said that while it was theoretically possible for changes in State mining policies to affect their GST shares, in practice it had not observed this to be an issue.

182 Under its mineral by mineral approach, it separately assessed minerals that generated most royalty revenue: Iron ore, Coal, Gold, Onshore oil and gas, Copper, Bauxite and Nickel. It assessed the remaining minerals in one group.

183 The Commission said its new mining assessment would avoid excessively large GST share effects arising from minerals moving groups because the only movement would relate to entry or exit from the balance of minerals group. The minerals in this group generated small royalties (less than $20 million) and a separate assessment of one of them would not materially affect the GST distribution.

184 ***Treatment of iron ore fines.*** In the absence of terms of reference on the treatment of the increase in iron ore fines royalty rates, the Commission decided not to phase-in the increase in royalty rates.

185 ***Grants in lieu of royalties.*** While the Commission accepted there could be a case that Western Australian Government assistance affected when the project started, there was insufficient evidence to conclude that the current revenue from the project would have been less (or possibly more) in the absence of its assistance. Accordingly. The Commission concluded there was no case for excluding part of the current payment.

186 ***Other issues — external standards.*** The Commission decided not to adopt an external standard. Differences between Australia and other countries in royalty policies and mining operating costs meant a reliable external standard would be difficult to construct. Also, the Commission did not believe that an assessment based on historical royalty rates could adequately capture State fiscal capacities when mineral prices and value of production varied substantially year to year.

187 ***Other issues — price of a State asset.*** The Commission noted the GST Distribution Review panel considered this issue. It concluded the case had not been made that mining revenue should be treated differently to States other own-source revenue. The States and the Australian Statistician treat mining revenue like other State revenue and most States supported treating royalties like other State revenue. The Commission agreed and decided to continue treating royalties like other State revenue.

188 ***Other issues — provide incentives to resource States.*** The Commission concluded it was not asked to pursue objectives other than equalisation. For that reason, its mining assessment was not designed to provide either an incentive or a disincentive for resource States to develop and expand their mining sectors.

189 In the discussion paper, staff said the question of whether a discount was warranted for the mining revenue assessment should be considered once an assessment methodology had been determined.

190 ***Other issues — discount the assessment.*** Most States opposed the application of a discount. The Commission said discounting was appropriate when it helped it achieve a better equalisation outcome, for example when it was concerned about data quality. The Commission did not discount the assessment because it did not have concerns about the reliability of its mining revenue assessment.

Table 9 Mining revenue assessment, 2015 Review

Categories	Measure	Adjustments
Iron ore	Value of production	-
Coal	Value of production	-
Gold	Value of production	-
Copper	Value of production	-
Bauxite	Value of production	-
Nickel	Value of production	-
Onshore oil and gas (a)	Value of production	-
Other minerals	Value of production	-
Grants in lieu	Actual per capita	-

(a) Separate assessments were undertaken for onshore oil and gas and Other minerals but, for data confidentiality reasons, their results were presented together.

Source: Report on GST Revenue Sharing Relativities 2015 Review, Volume 2, pages 104-119.

ATTACHMENT B: A COMPARISON OF ASSESSED AND ACTUAL ROYALTY REVENUE

1 This attachment compares States' assessed and actual royalty revenue.[26] We have constructed this series from the Commission's Mining revenue assessments from the 1993 Review[27] until the 2015 Review.

2 As the Commission uses a multi-year assessment period, an individual year will appear in more than one inquiry. For this analysis we have constructed our series using the second last year of each inquiry. This provides a 23 year time series. We have extended the time series at either end by adding:

- the first three years of the 1993 Review
- the last year of the 2015 Review.

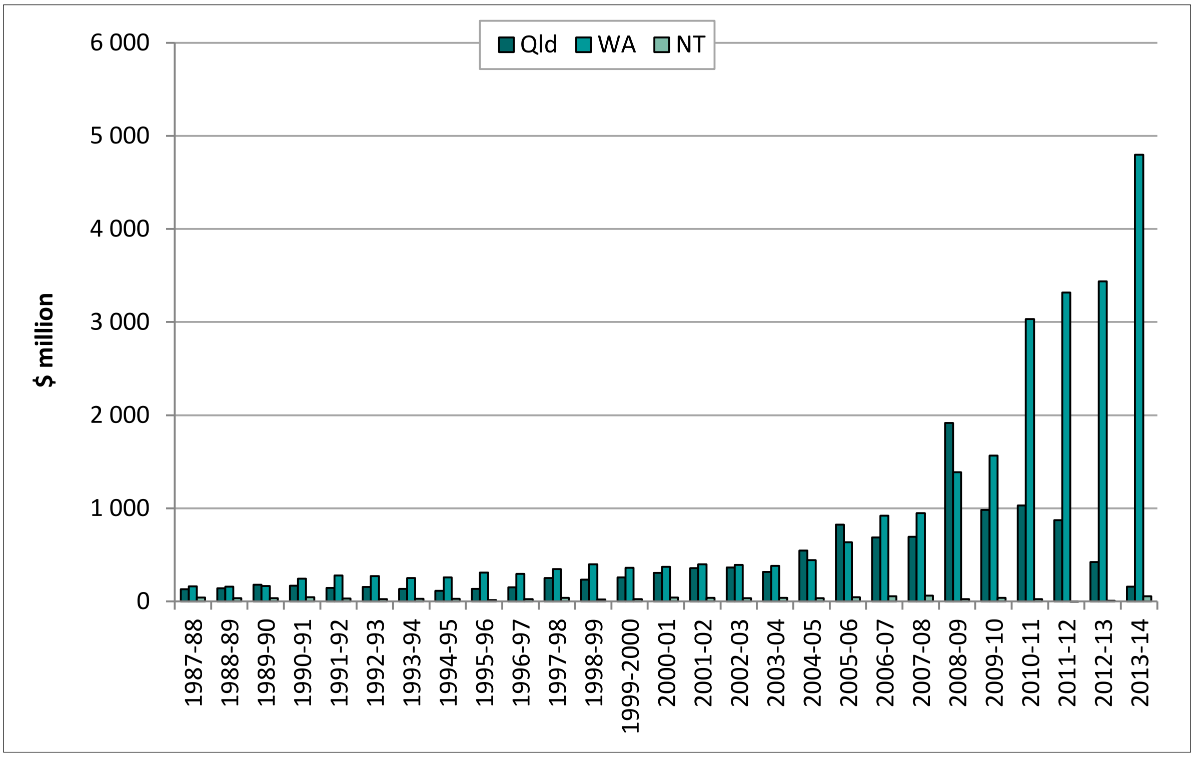
3 Consequently, the time series comprises 27 observations.

4 Figure B-1 shows the GST impact of the various mining revenue assessments for States assessed to have a mining revenue advantage — Queensland, Western Australia and the Northern Territory. The main driver of the change in their redistributions has been their changing mineral composition over time, coal and iron ore especially. Since 2008-09 (the year of the coal price spike), Queensland's revenue advantage has declined, while Western Australia's revenue advantage increased. This was a period when iron ore prices and value of production increased rapidly.

[26] Payments from the Commonwealth (Grants in lieu of royalties) are excluded.

[27] There are two reasons for starting with the 1993 Review. First, it was the first inquiry in which total assessed revenue summed to total actual revenue. Second, the Commission's report set out States assessed revenue. Earlier reports published the difference between an equal per capita assessment and assessed revenue per capita.

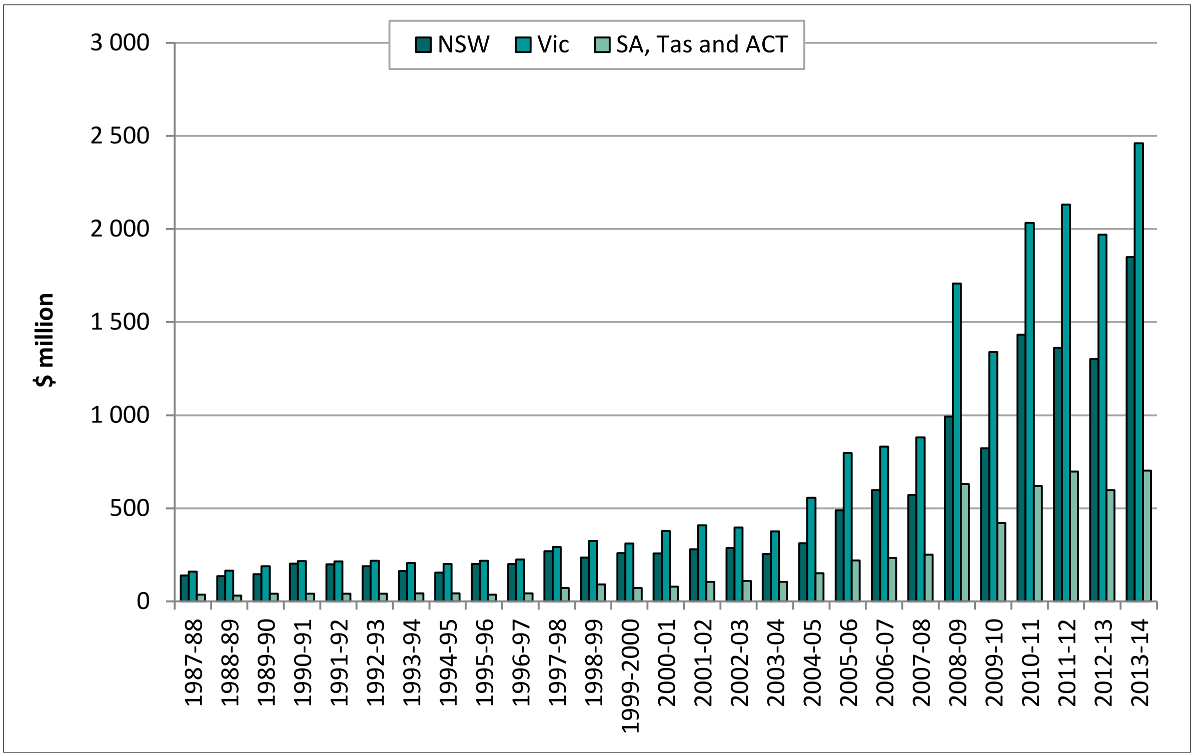
Figure B-1 Royalty revenue redistribution, States assessed to have a mining revenue advantage, 1987-88 to 2013-14



Source: Commission assessments.

5 Figure B-2 shows the GST impact of the various mining assessments for States assessed to have a mining revenue disadvantage. Again, the main driver of the change in the redistribution has been States' changing mineral composition over time.

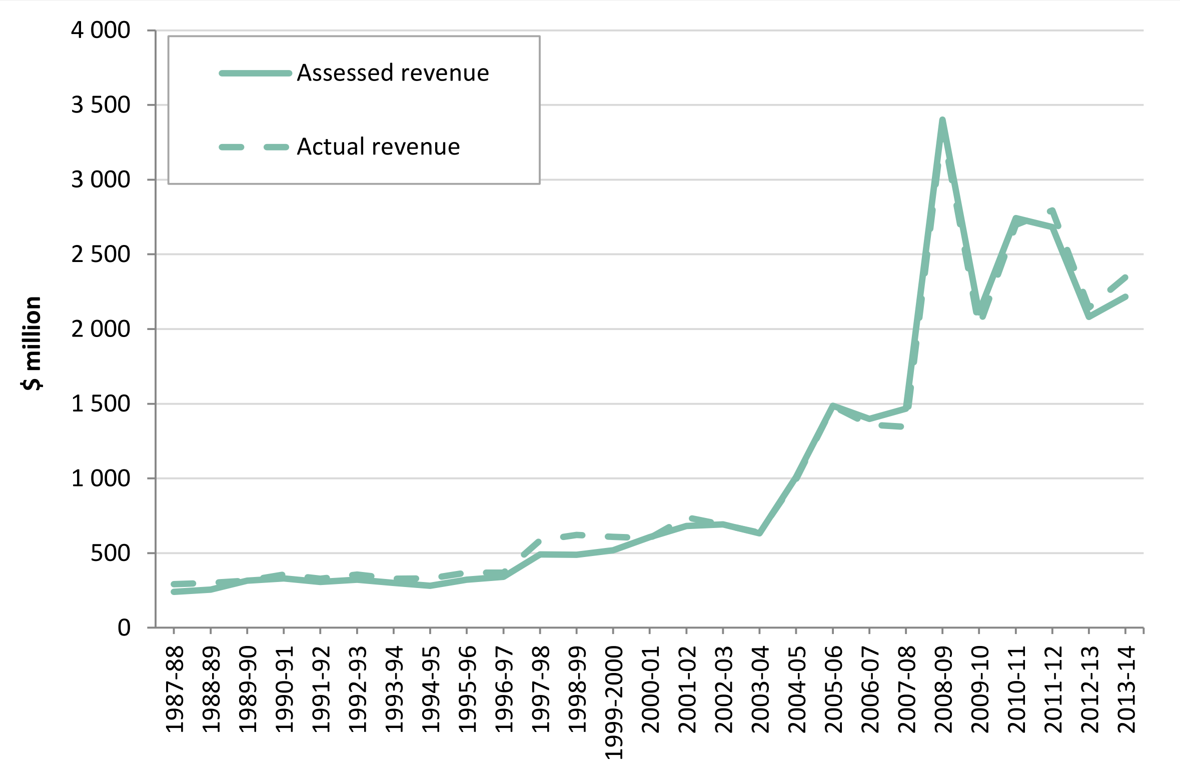
Figure B-2 **Royalty revenue redistribution, States assessed to have a mining revenue disadvantage, 1987-88 to 2013-14**



Source: Commission assessments.

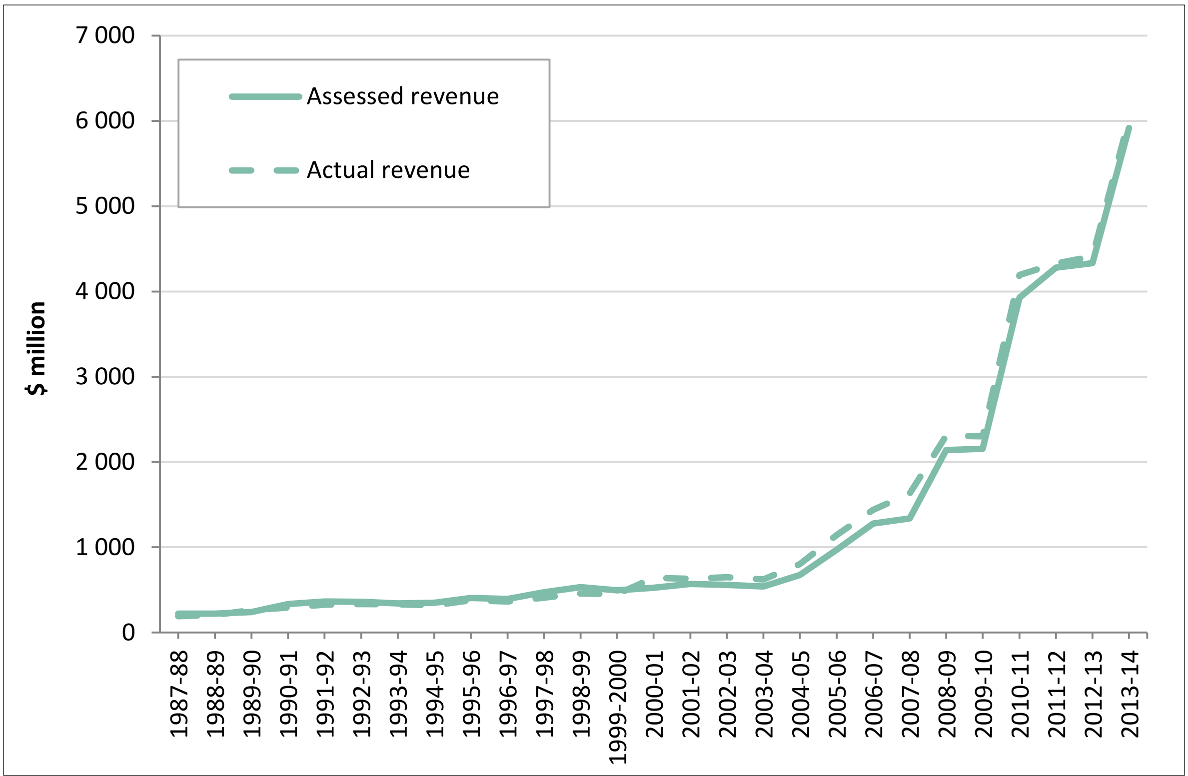
6 Figure B-3 to Figure B-5 compare assessed revenue and actual royalty revenue for States assessed to have a revenue advantage. It shows that over that last three decades, the Commission's methods have tracked the change in revenues for the two major mining States reasonably well.

Figure B-3 Actual and assessed revenue, Queensland, 1987-88 to 2013-14



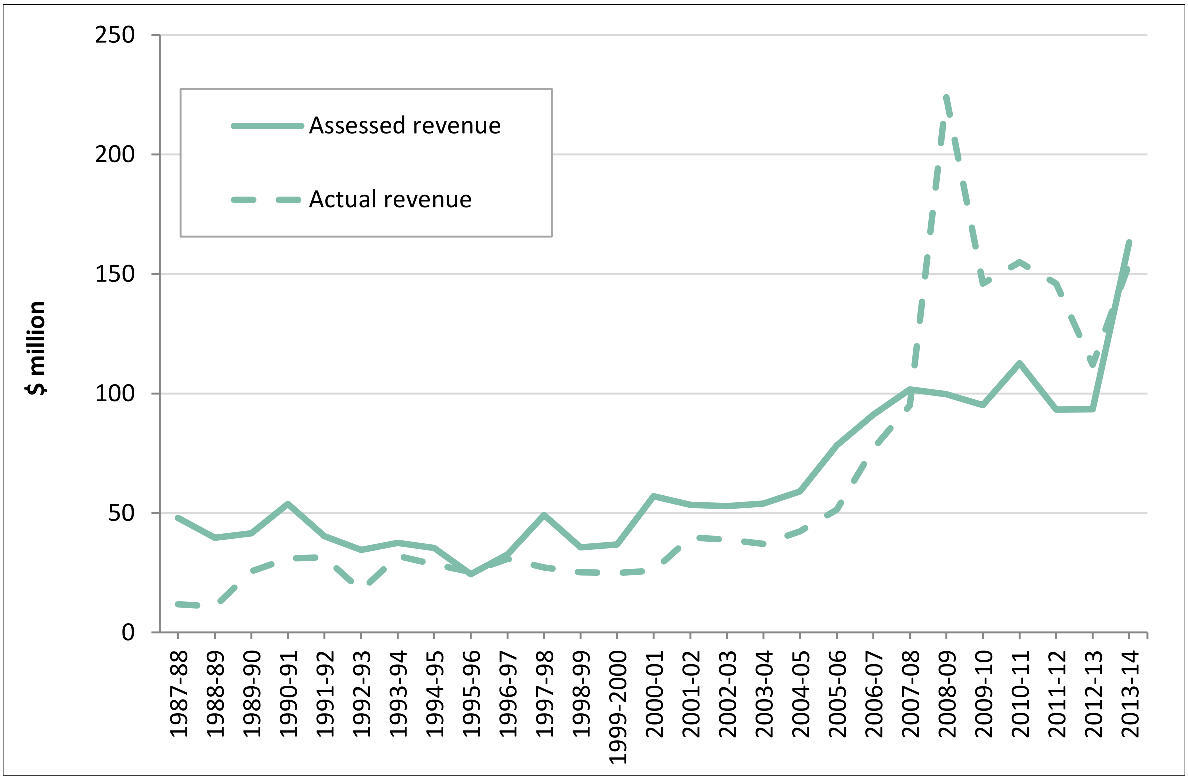
Source: GFS and State data and Commission assessments.

Figure B-4 Actual and assessed revenue, Western Australia, 1987-88 to 2013-14



Source: GFS and State data and Commission assessments.

Figure B-5 Actual and assessed revenue, Northern Territory, 1987-88 to 2013-14



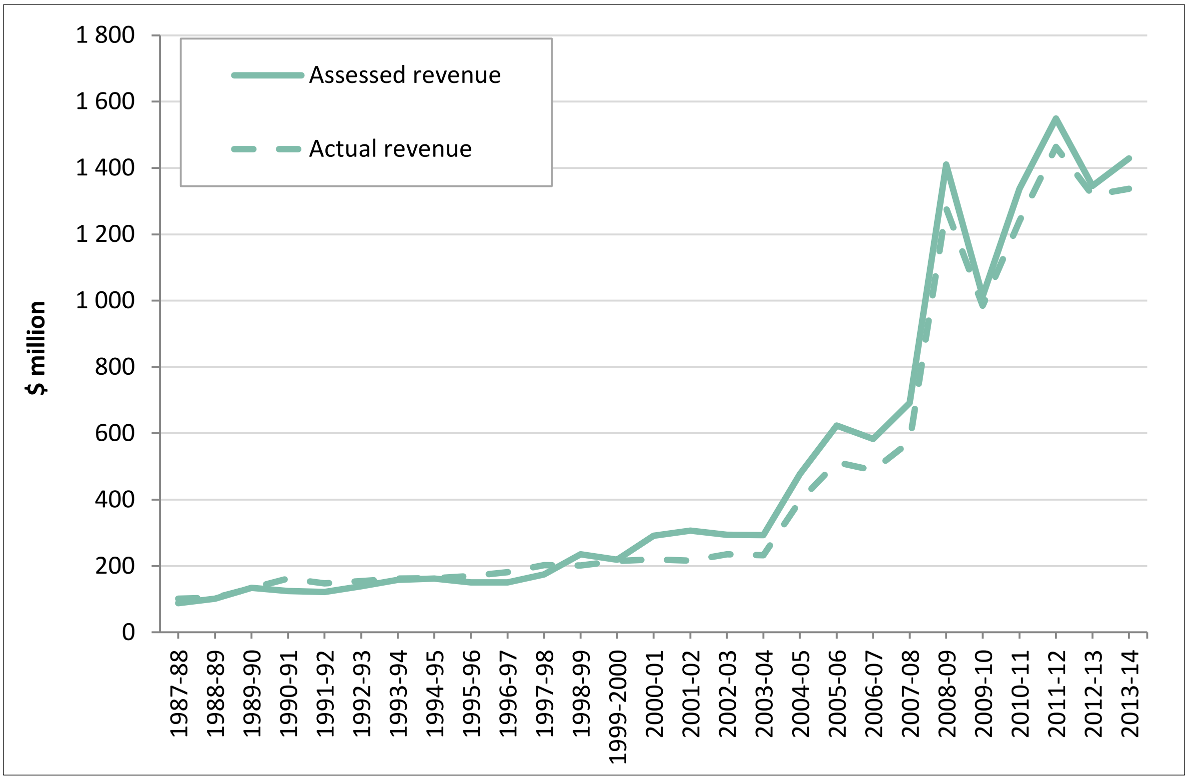
Source: GFS and State data and Commission assessments.

7 Figure B-6 to Figure B-9 compare assessed revenue and actual royalty revenue for States assessed to have a revenue disadvantage. It shows that the Commission's methods tracked the change in revenues reasonably well until 2008-09. The divergence after this point could be due to:

- The adoption of two mineral groups in the 2010 Review.
- The constraint on iron ore fines, which meant they were assessed in the low royalty group despite increases in their effective royalty rate.
- the big changes in coal (the spike in 2008-09) and iron ore prices.

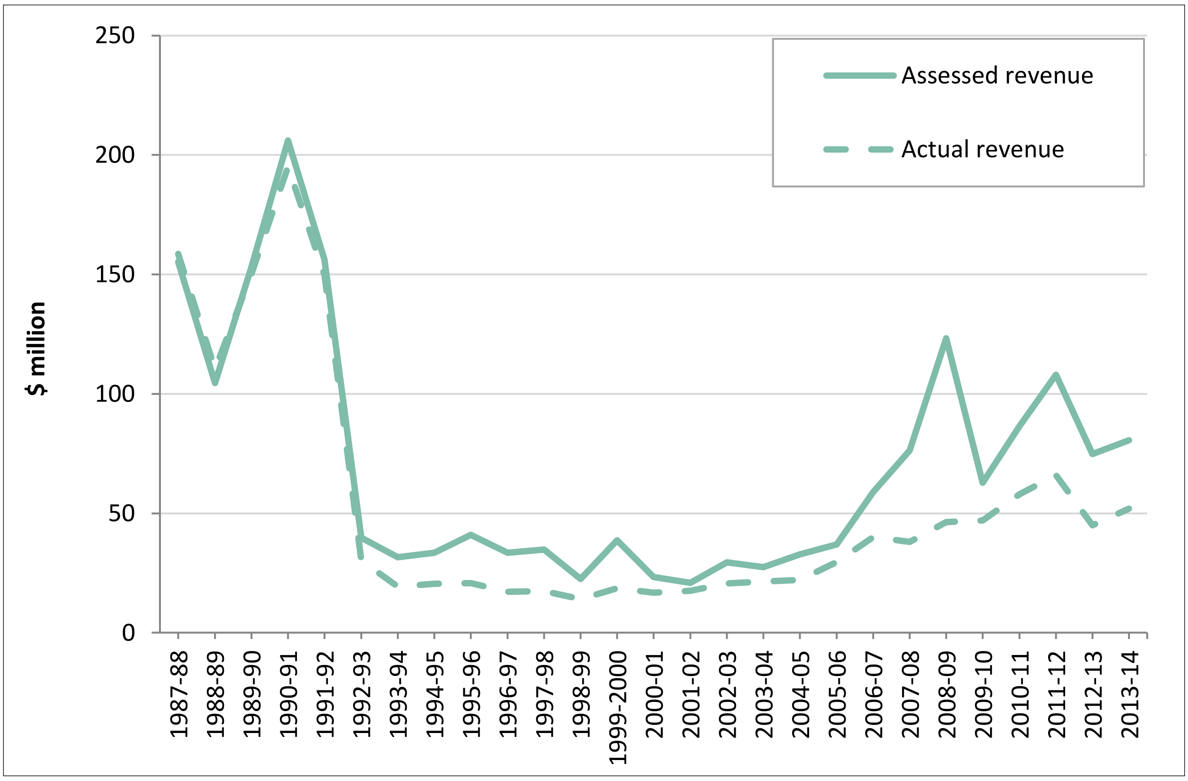
8 It is not clear which of these factors had the biggest impact.

Figure B-6 Actual and assessed revenue, New South Wales, 1987-88 to 2013-14



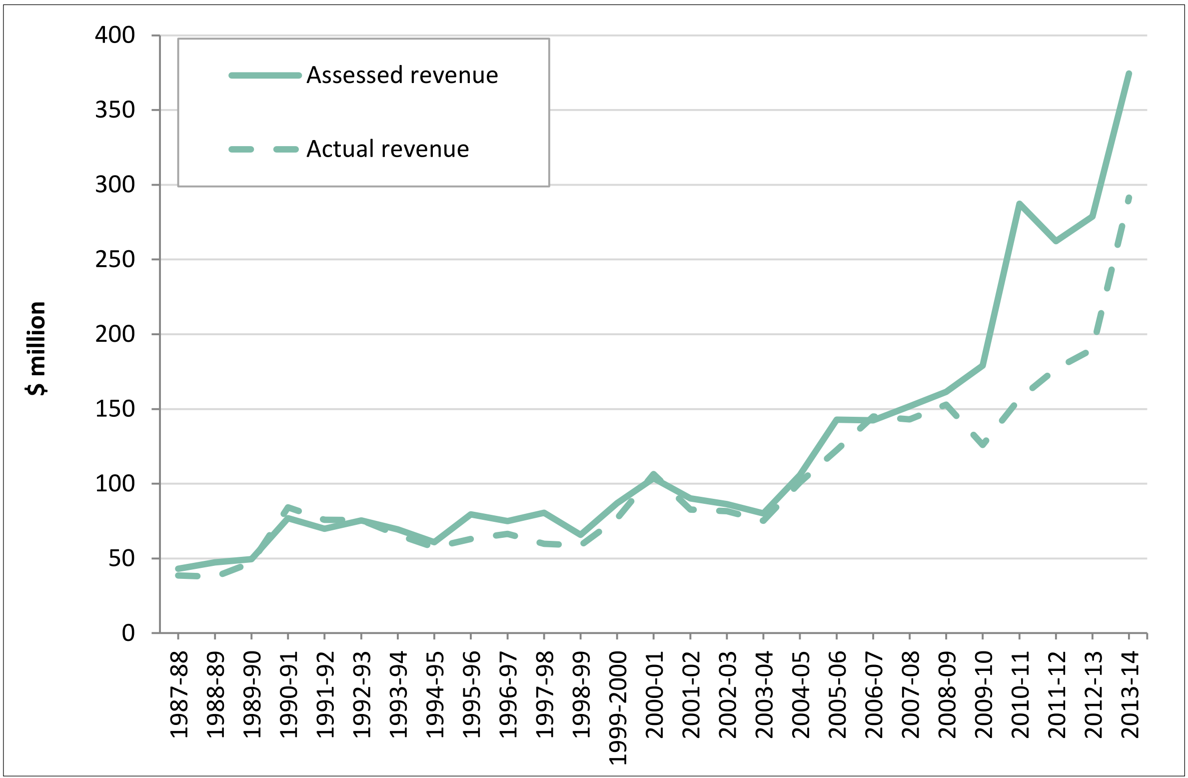
Source: GFS and State data and Commission assessments.

Figure B-7 Actual and assessed revenue, Victoria, 1987-88 to 2013-14



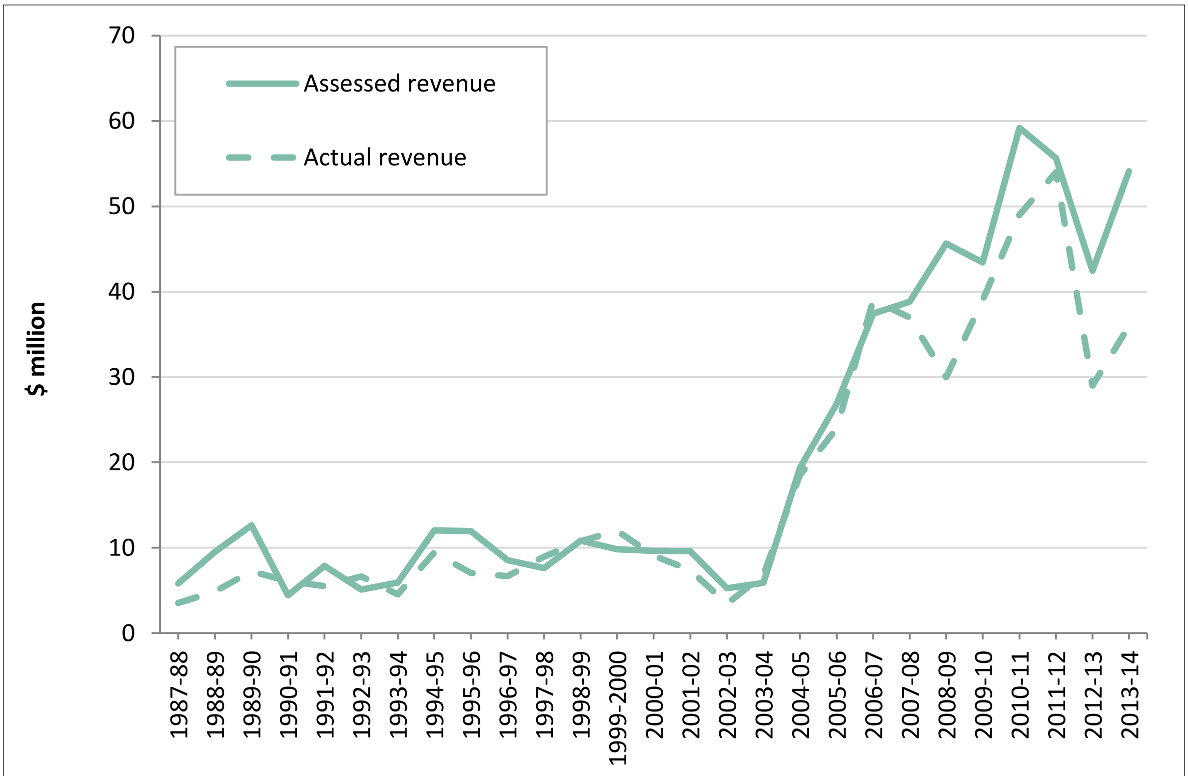
Source: GFS and State data and Commission assessments.

Figure B-8 Actual and assessed revenue, South Australia, 1987-88 to 2013-14



Source: GFS and State data and Commission assessments.

Figure B-9 Actual and assessed revenue, Tasmania, 1987-88 to 2013-14



Source: GFS and State data and Commission assessments.