

Submission to the Productivity Commission

Inquiry into GST Distribution Reforms — Response to the Interim Report

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1. Summary

This submission **accepts the Commission's central findings** and does not contest them. It addresses only what should replace the current arrangements.

The Commission's own analysis establishes three propositions which, taken together, define a trilemma:

Commission finding	Implication
Figure 3.7 (p.57) — the no-worse-off guarantee's cost rises with the iron ore price " with no ceiling " (the Commission's own heading)	Under the status quo, the Commonwealth bears an uncapped liability
Figure 3.8 (p.60) — removing the guarantee while retaining the floor shifts the cost to other jurisdictions	Removing the guarantee alone makes the other states bear it
Figure 2.7 (p.34) — Western Australia's relativity volatility fell 75% under the current arrangements	Full reversion returns Western Australia to the most volatile position in the federation on the Commission's own certainty measure (Table 4.3, p.77) — the condition that produced the 2018 Act

Each of these options allocates the entire cost to a single party. That is why each has proved difficult to sustain.

The Commission's interim recommendation 4.1 points to a way through: return towards the pre-2018 system, and direct the CGC to address dominant-state effects in the mining assessment. **We support that recommendation. This submission addresses the question it leaves open — by what method.**

Box 4.1 (p.78) sets out five candidate methods: across-the-board discounts, dominant-state discounts, Hotelling-rule discounts, **sustainable income approaches** — which assume royalties are *notionally* paid into a sovereign wealth fund — and commodity bundling. The Commission has modelled two of them.

We note that the sustainable income approach in Box 4.1 is closely related to what we propose, and we set out at §5 and R8 how the two differ in a way we think material: in Box 4.1 the fund is notional and no money moves, so the state retains the cash **and** receives a higher assessed need. We propose a sixth method, and ask that it be considered alongside the others:

Assess mining revenue in full up to a transparent, independently determined price threshold. A defined share σ of the revenue attributable to prices above that threshold is excluded from the assessment.

σ is a policy choice, not a technical one. **$\sigma = 100\%$ is complete exclusion of the above-threshold component**, and is the natural reading of the proposal standing alone. We report $\sigma = 70\%$ alongside it because that is the value used in the illustrative fund at §5, where the excluded share is what the fund receives; it is not a default, and nothing in §4 requires it.

This is a change to *what is equalised*, not to *how much* equalisation occurs. Below the threshold, nothing changes. It is compatible with interim recommendations 4.1, 4.2 and 4.3 alike, and with whichever equalisation standard the Commission ultimately recommends.

Its principal advantage over the across-the-board mining discount the Commission has modelled is structural rather than quantitative: a discount reduces assessed revenue in **every** year, including years of depressed prices, and — as the Commission's own Figure 4.4 shows — it lowers measured volatility not by damping the commodity cycle but by permanently moving one state closer to the others. A threshold leaves the assessment untouched in ordinary conditions and operates only on the volatile tail (§4.5).

In the Commission's own terms: Figure 3.7 identifies the absence of a ceiling. This submission supplies one — and proposes it as the method by which interim recommendation 4.1 could be given effect.

We note the Commission's statement at p.73 that it "would welcome additional proposals in submission responses to this interim report", and offer this submission in that spirit.

1.1 Relationship to the Terms of Reference

The Terms of Reference direct the Commission to investigate the extent to which current arrangements are:

ToR criterion	How this proposal responds
1. Delivering a reasonable level of horizontal fiscal equalisation	Unchanged below the threshold. Equalisation continues to operate normally in ordinary conditions.
2. Appropriately balancing responsiveness with reducing volatility and improving certainty	This is the proposal's central purpose. It removes the single most volatile component from the assessment while leaving responsiveness to genuine capacity intact.
3. Supporting states to pursue reforms, including to their revenue bases	The threshold is denominated in price, not revenue, precisely so that a state expanding production is not penalised (see §4.3).
4. Fiscally sustainable for the Commonwealth and the states	A threshold makes the maximum exposure knowable in advance, which the present arrangements do not (§2.1, §3.1).

The Terms of Reference further ask "**whether alternative arrangements would better achieve some or all of these outcomes**", and direct that recommendations "**provide a range of options including options with a funding relativity floor comparable to the current level, with and without top-up funding from the Commonwealth.**"

We note this direction carefully. It indicates that **options preserving some protection for the resource state remain within the Commission's remit** — and that full reversion is not the only outcome the Commission has been asked to model. This submission proposes a way of providing that protection **without an open-ended Commonwealth top-up.**

2. Agreement with the Interim Report

We accept, and do not argue against, the following:

- The 2018 arrangements have achieved almost none of their stated aims.
- They have made the system less equitable and more complex.
- The cost has been substantial and has grown well beyond what was projected.

- The extension of the guarantee to 2029-30 defers rather than resolves the problem.

2.1 The costing failure is itself material

From the Commission's Figure 1 (p.3) and Figure 2.5 (p.30) data, the annual cost of the 2018 reforms (nominal, \$bn):

	18-19	19-20	20-21	21-22	22-23	23-24	24-25	Total
Initial estimate	0.4	0.9	0.6	0.9	0.6	0.7	0.9	5.0
Actual	0.4	1.1	1.5	2.9	4.8	5.6	6.4	22.7

Disaggregated, the no-worse-off guarantee component was **initially costed at zero in every year** and has cost **\$14.6 billion**, of which **\$5.4 billion** fell in 2024-25 alone (Figure 2.5, p.30, *NoWO payments* panel).

We draw one conclusion from this, and it is not a political one: **a mechanism whose cost is a function of an unbounded commodity price cannot be reliably costed at all**. That is a structural property, not a forecasting error — and it is the same property Figure 3.7 documents. Any replacement should be designed so that its maximum cost is knowable in advance.

3. The trilemma established by the Commission's own analysis

3.1 Option A — status quo: the Commonwealth bears an uncapped liability

Figure 3.7 (p.57) shows estimated guarantee cost as a function of the iron ore price (AUD per tonne, fob):

Iron ore price	Annual cost
\$0/t	\$0.4bn — <i>the cost does not fall to zero even at zero price</i>
\$100/t	\$5.5bn
\$140/t	\$8.3bn
\$200/t	\$12.5bn — <i>and the relationship does not flatten</i>

(All prices AUD per tonne, fob. Source: PC estimates using CGC (2025) and DISR (2025) data.)

The relationship has two linear segments. It is flat at \$0.4bn to A\$21/t; rises at about **\$54 million per additional dollar per tonne** from A\$22/t to A\$46/t; and from **A\$47/t to the A\$200/t limit of the chart rises at \$70.2 million per dollar per tonne**, without flattening. (Derived from the Commission's published chart data workbook, *Figure 3.7*.)

Table 3.4 (p.59) confirms the exposure does not resolve itself. Across all four of the Commission's 2030-35 hypotheticals — **including the fastest decarbonisation scenario** — estimated annual guarantee payments remain between **\$3.7bn and \$7.6bn**.

There is no plausible commodity price path in the Commission's own scenario set under which this liability disappears.

Two further observations from the same page:

- The Commission estimates that **had the current system operated from 2001-02 to 2024-25, cumulative guarantee payments would have reached \$65.4 billion** in 2024-25 prices (p.57). That is

the cost of the mechanism across a full commodity cycle, as distinct from the seven years it has actually operated.

- The Commission notes that in its model **Western Australia's assessed relativity becomes negative above an iron ore price of US\$154 per tonne**, and that it is unclear how the CGC would treat a negative three-year average (p.57). We note that the chart's axis is denominated in Australian dollars while this threshold is quoted in United States dollars: at the US\$0.65 exchange rate the Commission assumes at Table 3.4, US\$154 is about A\$237, which lies beyond the A\$200 right-hand limit of Figure 3.7. The undefined region is therefore just off the chart rather than within it. We read this as the Commission identifying that the interaction is not merely expensive but **undefined** at the upper end.

We do not overstate the fiscal significance. The Commission is explicit that these payments are "unlikely, on their own, to threaten the Australian Government's fiscal sustainability", amounting to less than 1% of annual Commonwealth revenue (p.57). We adopt the Commission's own characterisation instead: the cost is **"material, volatile and open-ended"**. It is the third of those properties this submission addresses. A liability that is merely large can be budgeted for; one that is open-ended cannot.

3.2 Option B — remove the guarantee, retain the floor: the other states bear it

Figure 3.8 (p.60) shows the estimated distributional effect. At an iron ore price of AUD\$110/t fob:

NSW	VIC	QLD	SA	TAS	ACT	NT	WA
-\$2.36bn	-\$1.95bn	-\$1.04bn	-\$0.52bn	-\$0.16bn	-\$0.13bn	-\$0.07bn	+\$6.23bn

The cost is not eliminated. It is transferred from the Commonwealth to the states — **at AUD\$200/t, New South Wales alone would forgo \$4.6bn annually.**

3.3 Option C — full reversion: Western Australia bears it, and the 2018 conditions return

We support the Commission's finding that the current arrangements should not continue. We ask it to consider whether reversion *without structural change* is stable.

The Commission's own Table 4.3 (p.77) sets out average annual absolute change in year-on-year adjusted real GST revenue per capita, 2001-02 to 2025-26:

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT
Pre-2018 system	2.5%	2.3%	3.4%	14.8%	2.4%	3.0%	3.9%	4.5%
Current system	2.3%	2.7%	2.8%	1.8%	2.5%	3.0%	3.9%	4.4%
Current + NoWO	2.5%	2.3%	3.1%	1.8%	2.4%	3.0%	3.9%	4.5%

Three observations:

1. **Under the pre-2018 system, Western Australia's induced volatility was 14.8% — between three and six times that of every other jurisdiction.** This is not a marginal difference of degree. Reversion restores that condition.
2. The Commission's Table 4.3 is titled "The 2018 reforms have minimal impacts on certainty for all states **except** Western Australia". We read this as confirming that the certainty problem the 2018 Act responded to was **real, specific and confined to one state** — and that the Act's defect was its instrument, not its diagnosis.

3. The 2018 arrangements delivered that certainty benefit **almost entirely to one state, funded by the Commonwealth**. That is why they are neither equitable nor affordable. It does not follow that the underlying volatility was imaginary.

We note for completeness that on the different measure used in Figure 2.7 — year-on-year change in the assessed relativity itself — the Northern Territory records larger average movements than Western Australia (0.22 against 0.07 under the pre-2018 system). That reflects the arithmetic of a very high relativity rather than a comparable volatility in revenue per capita, which is what Table 4.3 measures and what bears on certainty. We rely on Table 4.3, and set out the point here rather than leave it to be raised against us.

The 2018 Act was a response to a real defect, implemented through an indefensible instrument. Removing the instrument without addressing the defect invites its return. The Commission's Table 4.3 is, in our view, the clearest statement in the Interim Report of why a targeted mining-assessment reform is necessary rather than optional.

3.4 The defect: three properties of mining revenue that equalisation handles poorly

Property	Consequence
Extreme volatility	Relativities swing far more than underlying service needs
Geographic concentration	Redistribution is experienced as a transfer between named states, which politicises it
Assessment lag (three-year averaging) — the Commission refers to "the CGC's 3-year averaging" at p.57	A state's GST share falls on the basis of a boom that has already ended

The third warrants emphasis: in 2015-16 Western Australia recorded its lowest relativity while iron ore prices were near a multi-year low. This is not a criticism of the Commission's intent; it is an arithmetic property of applying a lagged moving average to a volatile base.

4. Proposal: a threshold on assessed mining revenue

4.1 Mechanism

Mining revenue enters the equalisation assessment **only up to a threshold**, defined as:

*A rolling ten-year average of the relevant commodity price, expressed in **Australian dollars**, indexed annually, plus a defined band (illustratively +20%).*

- Revenue attributable to prices **at or below** the threshold is assessed exactly as at present.
Equalisation is unchanged in normal conditions.
- A defined share σ of the revenue attributable to prices **above** the threshold is **excluded** from the assessment. At $\sigma = 100\%$ the whole of the above-threshold component is excluded; §4.5 reports both $\sigma = 100\%$ and the $\sigma = 70\%$ used by the illustrative fund at §5.

The calculation

The mechanism is arithmetic and can be specified completely. For a commodity c , a state s and an assessment year t :

Term	Definition
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P	the commodity's Australian-dollar price in year t , in its own unit of quantity (per tonne for iron ore and coal, per MMBtu for LNG, per troy ounce for gold)
B	the rolling average of P over the preceding ten years, in the same unit and the same real terms
T	the threshold, $B \times (1 + b)$, where b is the band (illustratively 0.20)
R	the state's royalty revenue from that commodity, as assessed at present
σ	the share of the above-threshold component excluded. $\sigma = 1$ is complete exclusion; $\sigma = 0.70$ is the value used by the illustrative fund at §5 and is not a default

Where the royalty is *ad valorem* — levied as a rate on the value of output — the excluded amount is

$$E = \sigma \times R \times \max(0, 1 - T/P)$$

and the revenue entering the equalisation assessment is $R - E$. Assessed revenue is therefore unchanged whenever $P \leq T$, and above the threshold the excluded share rises with the price rather than jumping at it.

Two properties follow directly and are the reason for this form:

- **It requires no new data collection.** P is a published price, B is derived from it, and R is already assessed by the CGC commodity by commodity. Quantity and the royalty rate need not be observed separately, because in the *ad valorem* case they cancel: $R = \text{rate} \times \text{quantity} \times P$, so $R \times (1 - T/P) = \text{rate} \times \text{quantity} \times (P - T)$.
- **It is denominated in price, not revenue.** A state that expands output raises R and E in the same proportion, so the share of its revenue excluded is unaffected by how much it produces (§4.3, R4).

Where a royalty is specific (a fixed amount per unit), tiered, or profit-based, the *ad valorem* identity does not hold and the exclusion must be computed on the price-attributable component, $\text{rate} \times \text{quantity} \times \max(0, P - T)$, using the quantity the CGC already assesses. Queensland's tiered coal royalty is the live example, and we would expect the Commission to specify the treatment of tiered regimes rather than leave it to the formula.

Because the threshold enters only through the ratio T/P , **the choice of unit does not affect the result**, provided P and B are expressed in the same unit and the same real terms. This matters in practice: the World Bank iron ore series our model uses is quoted per dry metric tonne unit rather than per tonne, and the Commission's Figure 3.7 is per tonne fob, yet the exclusion is identical either way (§7).

This is the calculation implemented in our model, and §4.5 reports it at $\sigma = 0.70$ and $\sigma = 1.00$ for three band widths.

The threshold should be determined by an independent statutory body publishing its method and inputs in full, so any party can reproduce the calculation. Chile's use of an independent expert committee to set a long-run reference copper price, under its structural balance rule, is an established precedent.

What becomes of the excluded revenue is a separate question, and the threshold does not depend on how it is answered: the exclusion changes what is equalised, whether the revenue is retained by the state, returned to the pool, or directed elsewhere. We set out one option at §5 and recommend there that it be examined separately.

4.2 Why a threshold rather than exclusion of mining revenue altogether

Full exclusion would materially advantage resource states and would not be defensible. This proposal excludes only the volatile tail — the component that generates the swings — not the component reflecting genuine ongoing fiscal capacity.

4.3 Why the threshold should be denominated in Australian dollars

We tested three defensible bases against Western Australian official data (DMPE, *Major Commodities Resource Data File 2025*, sheets *Iron Ore – Prices* and *Iron Ore – Q&V*). They differ by a factor of two to three:

Basis	Implied 2018–25 ratios	Assessment
US dollar price	0.67, 0.92, 1.32, 1.52, 1.16, 1.29, 1.08	Ignores exchange-rate movement, which accrues to the state budget without any action on its part
Australian dollar price	0.84, 1.24, 1.40, 1.83, 1.43, 1.43, 1.28	Recommended
Royalty revenue	1.49, 1.75, 2.33, 1.80, 1.49, 1.60, 1.28	Rejected — captures production growth, and would therefore penalise investment in expanded output

We draw the Commission's attention to the third row. A revenue-based threshold would produce substantially larger exclusions and a larger apparent benefit for our proposal — and we reject it, because it captures production growth and would therefore **cut directly against Terms of Reference item 3**, which asks whether the arrangements support states in developing their revenue bases. A state that invested to expand output would find a growing share of that output excluded from its own budget.

We recommend the Australian dollar basis, and we note that it is the least favourable of the two we regard as defensible.

The basis on which our 25-year figures are actually computed

We disclose a limitation in our own modelling rather than leave the Commission to find it.

The test above uses Western Australian official data and covers the seven years 2018-19 to 2024-25 only — the seven ratios shown in each row above. **Our 25-year model runs on World Bank Pink Sheet real annual prices, which are denominated in United States dollars** — the basis this section recommends against. We use it because it is the only complete, published, real-terms series covering, back to 1991, the five price series from which our six state-commodity components are built (iron ore; coal, used for both Queensland and New South Wales; LNG; copper; gold), which the rolling ten-year baseline requires from 2001-02. Assembling an equivalent real-Australian-dollar series requires RBA exchange rates and ABS CPI applied to each commodity, which we have not done to a standard we would ask the Commission to rely on.

The choice is not immaterial, and it does not favour us. The Australian dollar is a commodity currency: it was near parity through the 2011 peak and near US\$0.75 through the 2015 trough, so converting to Australian dollars compresses the amplitude of the cycle at both ends. Because the mechanism engages only outside a $\pm 20\%$ band, compressing amplitude reduces contributions faster than it reduces claims. Running the same model on an indicative real-Australian-dollar basis (python model_2001.py --aud):

	Real US dollar basis (figures used in this submission)	Indicative real Australian dollar basis
Fund at 2025-26	\$63.0bn	\$37.6bn

Cumulative contributions	\$60.5bn	\$38.2bn
Downside claims met	100%	71% — the 2014-18 collapse is <i>not</i> fully covered
Sustainable annual payment (3.5%)	\$2.20bn	\$1.32bn
Contribution shares	WA 53% / QLD 29%	WA 50% / QLD 33%

The Australian dollar basis is materially worse for our proposal, and it is the basis we recommend.

We report the United States dollar figures throughout because they are the ones we can source entirely from published data, and we flag every conclusion that changes. The exchange-rate and price-index series behind the right-hand column are approximations pending substitution of RBA Table F11 and ABS 6401.0; the direction of the effect does not depend on them.

4.4 Complementary recommendation: the assessment lag

Independently of the threshold, we recommend the Commission consider **shortening or forward-smoothing the assessment period for volatile revenue bases**, so that adjustment is more nearly contemporaneous with the revenue it responds to.

4.5 Comparison with an across-the-board mining discount

The Commission has modelled mining discounts of 10, 25 and 50 per cent (Figure 4.4, p.80). All three are **more** equalising than the current system without no-worse-off payments (73%), and the Commission is right to record that; measured against the pre-2018 system, however, the equalisation rate falls as the discount rises — 95%, 88% and 75% respectively. It also notes, at p.79, that "a key challenge for mining discounts is their conceptual basis", since discounts are presently used by the CGC to reflect data or methodological uncertainty rather than to address policy-neutrality concerns.

We suggest the difference between the two instruments is structural.

A discount is a scaling transformation. It multiplies every year's assessed mining revenue by $(1 - d)$. The *shape* of the series is unchanged; only its scale falls.

A threshold is a clipping transformation. It removes only the portion of revenue attributable to prices above the band. Because year-on-year variation is driven disproportionately by the largest movements, removing the peaks reduces variation by more than it reduces the assessed base.

We had intended to express that difference as a single ratio of volatility reduction to equalisation forgone. **On reviewing Figure 4.4 we withdraw that formulation, and we set out why, because the reason bears on how any submission's modelling should be read.**

On the Commission's own certainty metric — average absolute year-on-year change expressed as a *percentage* (Table 4.3; the "certainty" panel of Figure 4.4) — a proportional discount changes measured volatility by **exactly zero**, because scaling a series does not alter its year-on-year percentage changes. Yet Figure 4.4 reports that discounts *do* reduce volatility: 4.6% under the pre-2018 system, falling to 4.1%, 3.6% and 3.3% for discounts of 10, 25 and 50 per cent. Both statements are correct. They are reconciled by the fact that **a mining discount does not damp the commodity cycle at all** — it reduces measured volatility by permanently moving Western Australia closer to the other states in the distribution, in every year, whatever the price is doing.

That distinction is the substance of our point, and it survives without a multiplier. Taking the Commission's own two panels of Figure 4.4 together:

Instrument	Equalisation rate	Equalisation forgone vs pre-2018	Volatility (PC certainty metric)	Volatility reduction
Pre-2018 system	100%	—	4.6%	—
Mining discount, 10%	95%	5pp	4.1%	10.9%
Mining discount, 25%	88%	12pp	3.6%	21.7%
Mining discount, 50%	75%	25pp	3.3%	28.3%

(All figures from Figure 4.4, p.80, as given in the figure's own certainty panel: 4.6%, 4.1%, 3.6%, 3.3% and 2.9% for the current system without NoWO. We note that the summary table on the same page records the 50 per cent discount as 2.3% rather than 3.3%; we have used the 3.3% shown in the panel, because it is the value consistent with the monotone ordering and with the summary's own statement that the 10 per cent discount is more volatile than the current system. If the 2.3% is correct, the volatility reduction for that row is 50.0% rather than 28.3%, which strengthens the discount on this axis without affecting the structural point below.)

We are not able to place a threshold in this table, and we say so plainly. Doing so requires the CGC assessment data and the distributional model that generated Figure 4.4, which we do not have. Our own modelling operates one step upstream, on a synthetic national resource-rent series built from World Bank commodity prices and estimated baseline royalties — **not on assessed GST revenue per capita**. On that series, over the Commission's window:

Instrument	Share of assessed revenue excluded (annual average)	Reduction in year-on-year variation (percentage metric)
Mining discount, any rate	= the discount rate	0.0%
Threshold, $\pm 15\%$ band, $\sigma = 100\%$	20.0%	60.1%
Threshold, $\pm 20\%$ band, $\sigma = 100\%$	18.3%	57.1%
Threshold, $\pm 25\%$ band, $\sigma = 100\%$	16.6%	54.1%
Threshold, $\pm 15\%$ band, $\sigma = 70\%$	14.0%	41.3%
Threshold, $\pm 20\%$ band, $\sigma = 70\%$	12.8%	39.1%
Threshold, $\pm 25\%$ band, $\sigma = 70\%$	11.6%	37.0%

(Source: `model_2001.py`; run `python model_2001.py` to reproduce. The $\sigma = 100\%$ rows are the threshold standing alone, as proposed at §4.1; the $\sigma = 70\%$ rows carry the illustrative fund's contribution share and are shown so that §5 can be read against the same table. On a real-Australian-dollar basis — see §4.3 — the $\pm 20\%$ specification excludes 12.6% and reduces variation by 54.3% at $\sigma = 100\%$, and 8.8% / 35.4% at $\sigma = 70\%$.)

These are volatility reductions in *royalty revenue*, not in GST revenue. They are separated from the Commission's metric by the CGC's three-year averaging and by the redistribution formula itself. **We therefore ask the Commission to compute the threshold's position in Figure 4.4 using its own model rather than to accept ours**, and we set out the mechanism in §4.1 in enough detail for that to be done.

Two further points of difference, which do not depend on any modelling of ours:

4. **A discount reduces equalisation in depressed years as well as boom years.** In 2015-16, when iron ore prices were near a multi-year low, a 25 per cent discount would still have removed a quarter of

Western Australia's assessed mining revenue — increasing its GST share at a time when it was experiencing no windfall at all. A threshold would have excluded nothing in that year.

5. **A threshold has an available conceptual basis that a discount lacks.** It does not claim that mining revenue is categorically different from other revenue. It claims something narrower and more readily defended: that revenue attributable to prices far outside their own long-run distribution behaves differently from revenue within it, and that Terms of Reference item 2 asks the Commission to address exactly that behaviour. The threshold is calibrated to the commodity's own history, published, and reproducible by any party.

We do not suggest the threshold is free of difficulty. It is more complex than a flat discount, requires an institutional home for setting the reference price, and its band width and share are policy choices rather than technical ones. We set out the full trade-off curve in our published model.

5. Treatment of above-threshold revenue — an option for separate examination

This section is not part of the proposal at §4, and the threshold does not depend on it. The threshold is complete as specified at §4.1 and can be adopted, assessed and modelled without anything below. We raise the destination of excluded revenue because a proposal silent on it would be incomplete, not because the answer is a precondition for the proposal.

We further acknowledge that the treatment of state royalty revenue falls outside this inquiry's terms of reference, and that onshore mineral resources are the property of the states, so that no such arrangement could be imposed (§6.5). This section is therefore offered for the record. We recommend at §5.5 and R8 that it be referred for separate examination rather than determined in this inquiry, and a reader who sets the whole of §5 aside should find §4 and recommendations R1 to R7 unaffected.

5.1 The difficulty

If above-threshold revenue is excluded from assessment and simply retained by the resource state, the windfall accrues entirely to that state — recreating the grievance from the opposite direction.

5.2 An option, offered for the record

Above-threshold revenue could be directed to a **national resource stabilisation fund** operating symmetrically:

- **Above the upper band:** a defined share of windfall revenue is contributed.
- **Within the band:** revenue is retained entirely by the state. Normal conditions untouched.
- **Below the lower band:** the fund pays the contributing state a top-up, subject to an annual cap.

The rule during the accumulation phase

Because a fund starting from zero cannot honour a full guarantee, the arrangement's behaviour in its early years should be stated as a rule rather than left to be inferred:

- **Contributions phase in over six years,** at one sixth of the calculated amount in the first year rising to the full amount in the sixth.
- **No ordinary equalisation distribution is made until the phase-in is complete.** In our modelling the spending rule first operates in the sixth year, once contributions reach their full rate.
- **Downside payments may begin immediately, but are limited to 5 per cent of the fund's opening assets in the year they are claimed.** Where opening assets are zero the payment is zero. The fund can

therefore never be called on for more than it holds, and **the arrangement creates no Commonwealth liability of its own.**

The price of that property is that the guarantee is weakest exactly when a young fund is least able to meet a claim. We set that out at §6.4 rather than leave it implicit.

The structure is a **collar** — a state exchanges the upper tail for protection against the lower tail and retains everything between. It does **not** alter royalty rates and imposes no additional burden on mining companies; only the destination of revenue already levied changes. Contributing states would hold a permanent, non-extinguishable record of contributions and a defined claim on distributions.

5.3 What such a fund could and could not do

It could not fully replace equalisation payments, and we do not claim it could. We take as the benchmark the Commission's own estimate that making the no-worse-off guarantee permanent requires **\$5.7 billion ongoing at current commodity prices** (p.86). Generating that income stream under a 3.5% spending rule would require assets of the order of **\$163 billion**.

(We use the Commission's \$5.7bn permanent-guarantee figure throughout §5. It should not be confused with the \$6.4bn total cost of the 2018 reforms in 2024-25, or with the \$5.4bn no-worse-off component of that total — see §2.1. The three measure different things.)

But the more useful way to put the same arithmetic is prospective rather than aspirational. On our 25-year run, a fund begun in 2001-02 and fed only by above-threshold revenue would, by 2025-26, hold approximately **\$63 billion** and be capable of meeting **about 39 per cent of that permanent obligation on a continuing basis** — a 3.5 per cent spending rule sits below the 4.35 per cent effective real return the model applies (§7), so the capital is maintained — having received **no Commonwealth contribution at any point**, and having in the meantime met every downside claim in full through the 2014-18 price collapse.

Had the mechanism been established in 2001, it would today be carrying more than a third of the obligation on its own, and the Commonwealth would have contributed nothing to it.

Two qualifications, both of which cut against us. First, on the real-Australian-dollar basis we recommend at §4.3, the same run produces a fund of \$37.6 billion, meets 71 rather than 100 per cent of downside claims, and covers 23 rather than 39 per cent of the obligation. Second, the contributions are not the Commonwealth's to redirect: over the 25 years Western Australia contributes approximately **\$32 billion** in real terms and receives **\$5.2 billion** back in downside payments, plus its population share of the fund's equalisation distributions. §6.1 explains why we think that exchange is nevertheless one a resource state might accept, and §6.2 gives the full distribution.

Reaching full coverage would take a further three to four decades on the historical average rate of contribution (indicative modelling — see §7). We state that plainly. We also observe that the relevant comparison is not with a fund that is already complete, but with the present arrangement, which after seven years and \$22.7 billion has accumulated no asset at all.

What it could do is reduce volatility, which our modelling estimates at approximately **45 per cent** measured on the coefficient of variation of the national resource-rent series (42 per cent on the Australian dollar basis). **This is not the criterion the Commission applies in Figure 2.7.** Figure 2.7 measures the year-on-year change in each state's assessed relativity, and Table 4.3 measures the year-on-year change in real GST revenue per capita; both are outputs of the distribution system. Ours is a measure of the volatility of the royalty revenue *entering* the assessment, upstream of the CGC's three-year averaging and of the redistribution formula. The two are related but not interchangeable, and we do not ask the Commission to treat them as such.

The Commonwealth already has direct evidence that patient accumulation works: the Future Fund received **\$60.5 billion** in contributions from 2006, has received **none since** — the coincidence that our modelled fund's cumulative contributions at §4.3 are also \$60.5bn is just that, and the two figures are unrelated —, and was valued at **\$252.3 billion at 30 June 2025** against a mandate of CPI + 4.0–5.0% (Future Fund, *Annual Report 2024-25*, p.14).

5.4 The guarantee must be bounded, and can be bounded by construction

A recurring and legitimate objection to any downside guarantee is that it may be called upon without limit. We address it directly, because it is the same defect the Commission has identified in the present arrangements.

The payment is capped as a proportion of the fund's assets, not as a fixed sum. In our modelling the annual cap is 5 per cent of assets. This has three consequences:

6. **The fund cannot default, but it can decline — and we set out the decline rather than describe it as an asymptote.** Under a scenario in which every commodity falls permanently to half its long-run average from 2014-15 onward — a structural collapse, not a cycle — the fund holds approximately **\$30.3 billion** at the end of our window and would then be paying about **\$1.5 billion a year**. If the collapse persists beyond the window, total drawings of 8.5 per cent (a 5 per cent payment plus the 3.5 per cent spending rule) exceed the 4.35 per cent effective real return the model actually applies (§7), and the balance declines geometrically at roughly 4 per cent a year:

Years after the window	Fund	Annual payment	Coverage of claims
1	\$29.0bn	\$1.51bn	35%
10	\$19.8bn	\$1.03bn	24%
20	\$13.0bn	\$0.68bn	16%
30	\$8.5bn	\$0.44bn	10%
50	\$3.6bn	\$0.19bn	4%

(This table holds the annual claim fixed at its value at the end of the window and does not re-roll the baseline forward; §6.3 explains why, and why that is conservative rather than pessimistic-for-effect.)

The balance never reaches zero, but that is a mathematical property and not a fiscal one: on a permanent structural collapse the payment halves within two decades. **What the proportional cap guarantees is not permanence of the payment; it is that the fund can never be called on for more than it holds, and therefore can never fail abruptly.** A design intended to survive a permanent collapse at a constant payment would need a lower spending rule, a lower cap, or both — a trade-off we set out in the model rather than resolve here.

7. **Coverage degrades gradually rather than failing at a point.** In that same scenario, claims total \$51.8 billion against \$24.2 billion paid — **coverage of about 47 per cent** over the window, and declining thereafter as set out above. The contributing state receives materially less than it claims, and would need to adjust. But it does not face the discontinuity of a guarantee that is honoured in full until the moment it cannot be honoured at all.
8. **The maximum exposure is knowable in advance.** At any point, the largest possible payment in the following year is 5 per cent of a published balance. This is the property we ask the Commission to compare against Figure 3.7, and it is the only one of the three that holds unconditionally.

This is the structural difference from the present no-worse-off guarantee. That guarantee promises a fixed outcome and therefore has, in the Commission's words at Figure 3.7, **no ceiling**: the payer's exposure is determined by the commodity price. A proportional guarantee promises a share of a known pool, and its exposure is determined by the pool.

We would rather propose a guarantee that is honest about being partial than one that is unlimited until it fails. We note that in the historical run — where the decline was cyclical rather than structural — every claim was met in full, because the fund had accumulated during the preceding boom.

5.5 Recommendation

We recommend the Commission **note** this option and, if it considers the matter has merit, **recommend it be referred for separate examination** rather than determined within this inquiry.

6. What this proposal does not solve

6.1 States have not historically surrendered windfalls voluntarily.

In July 2022 Queensland introduced three new progressive coal royalty tiers — 20% above \$175/t, 30% above \$225/t, 40% above \$300/t — so that a greater share of high coal prices accrued to the State (Queensland Government, 2022-23 Budget). We do not attribute any motive beyond that. We draw from it only the narrower point that a resource state facing a price spike acted to capture more of it, which bears on how readily any state would agree in advance to give part of it up. The conclusion we take is this: **such an arrangement can realistically be agreed during a period of normal or low prices, not during a boom.** That argues for considering it now.

6.2 Contributions would be concentrated — and not where one might assume.

On our indicative modelling over 2001-02 to 2025-26:

Western Australia	Queensland	New South Wales	Multi-state (LNG)	South Australia	VIC / TAS / ACT
~53%	~29%	~11%	~5%	~2%	nil

Western Australia and Queensland together would account for over four fifths of contributions. Victoria, Tasmania and the ACT would contribute nothing and be beneficiaries only. This is **not** a symmetrical mutual-insurance pool and we do not present it as one.

We note that the shares are highly sensitive to the period examined. On a 2018-19 to 2025-26 window, Queensland rather than Western Australia is the largest contributor (~45% against ~35%). Two things differ between the windows and we distinguish them: the shorter window is dominated by the 2022 energy-price episode rather than the 2004-2013 iron ore cycle, **and** the two runs use different commodity baskets — the short-window model includes Western Australian lithium and assesses copper and gold together, while the 25-year model omits lithium (no comparable long price series) and assesses gold separately. The period is the larger effect, but it is not the only one. **We report the longer window because it is the Commission's own, and because it spans a complete commodity cycle.**

On the real-Australian-dollar basis of §4.3 the same 25-year run gives Western Australia 50%, Queensland 33% and New South Wales 12%.

The net position matters more than the share, and we state it. Over the 25 years Western Australia contributes approximately **\$32 billion** in real terms and draws **\$5.2 billion** in downside payments. The difference is not a transfer to other states in the ordinary sense — it is the accumulated fund, which continues to pay all states in perpetuity and which, absent the mechanism, would in most of those years have been equalised away under the pre-2018 assessment in any event. But a resource state will evaluate the proposal on that net figure, and any assessment that does not present it is incomplete.

6.3 The mechanism assumes mean reversion — and we set out below what happens when that assumption fails.

The threshold is calibrated to a commodity's own recent history. If prices decline structurally rather than cyclically, contributions cease. During such a decline claims may arise while the rolling baseline adjusts; they then taper as the lower price level is incorporated into that baseline, and cease altogether once it is fully absorbed — a ten-year rolling average takes about a decade to do so. The exposure is therefore transitional rather than permanent, but it is real, and it falls in exactly the years when the fund is no longer being replenished. A rolling threshold mitigates this; it does not eliminate it.

We flag a simplification in our own post-window arithmetic, in the conservative direction. Within the 25-year window, the baseline is genuinely rolling: each year's threshold is recalculated from the preceding ten years of prices, so a sustained structural decline gradually pulls the floor down with it, and claims should taper as the baseline catches up. The post-window extrapolations in §5.4 and in the stress table below do **not** model that catch-up — they hold the annual claim fixed at its value on the last day of the window and project it forward at a constant rate, as if the rolling baseline had stopped rolling. This is not the mechanism we are proposing; it is a simpler and more pessimistic stand-in for it, adopted because modelling a rolling baseline indefinitely into a hypothetical future requires assuming a future price path, which we are not prepared to do. The direction of the error is conservative: a fully rolling-baseline projection would show claims declining toward zero as the new price level is absorbed, not persisting indefinitely as shown below.

We have stress-tested the mechanism against progressively worse assumptions, including the case in which its investment returns fail at the same moment its claims arrive:

Scenario	Claims	Paid	Coverage of claims	Fund at end of period
Historical (cyclical)	\$5.2bn	\$5.2bn	100%	\$63.0bn
Structural decline — all commodities permanently at half their long-run average from 2014-15	\$51.8bn	\$24.2bn	47%	\$30.3bn
Lost two decades — zero real investment return, prices as history	\$5.2bn	\$5.2bn	100%	\$32.7bn
Correlated failure — structural decline and zero real return	\$51.8bn	\$15.1bn	29%	\$13.3bn
Severe collapse — prices permanently at 30% of average, zero real return	\$86.4bn	\$15.1bn	18%	\$13.3bn

(All five scenarios are generated by python model_2001.py --scenarios, from a single shock start of 2014-15. On the real-Australian-dollar basis of \$4.3 every figure is worse: the historical run itself covers only 71% of claims.)

Two properties of this table should be read carefully, because they are easy to over-read. The last two rows share a fund path — \$13.3bn and \$15.1bn paid in both — because the 5 per cent cap binds throughout, so raising the severity of the shock changes only the denominator. They are one path with two claim totals, not two degrees of resilience. And the coverage percentages describe the 25-year window only; §5.4 sets out what happens after it.

Three honest conclusions follow.

First, the fund is a smoothing device, not a wealth-creation device. In the correlated-failure scenario, state resource revenue over 2014-15 to 2025-26 falls from \$185bn to \$86bn — a loss of \$99bn — and the fund pays \$15.1bn against it, replacing approximately **15 per cent** of the loss. That is a meaningful cushion during an adjustment. It is not a substitute for the adjustment. If Australia's resource base contracts permanently, the response must be a real economic one; a financial mechanism can only buy time in which to make it.

Second, correlated failure is the mechanism's genuine weakness, and it is the ordinary weakness of self-insurance. The counterparty is the contributing state's own future, not a third party. When commodity prices and asset markets fall together, the fund's capacity to pay falls exactly when the claims arrive. Diversified international investment reduces this correlation but cannot remove it.

Third, in the bad scenarios everyone receives less, including the states that never contributed. Cumulative equalisation payments from the fund fall from \$31bn in the historical run to \$19bn under correlated failure. The mechanism does not shift risk from resource states to others; it reduces the total available to all of them. We think this is the correct property for a stabilisation fund to have, but it should not be misrepresented as protection against everything.

What the mechanism does guarantee is narrower and, we think, defensible: it can never be called on for more than it holds, its maximum annual exposure is always a known percentage of a published balance, and in the one full commodity cycle for which data exists it met every claim in full on the price basis we have modelled — 71 per cent of claims on the Australian dollar basis of \$4.3. What it does not guarantee is a constant payment through a permanent structural decline (§5.4).

6.4 Early-period claims may exceed capacity.

A fund accumulating from zero cannot meet a large downside claim in its first years. Under the rule at §5.2 this does not create a Commonwealth exposure — the payment is capped at 5 per cent of opening assets, so a fund holding nothing pays nothing — but it does mean the protection is close to worthless in the early years, and a state would be contributing before receiving any meaningful cover. If that is judged unacceptable, the remedy is a Commonwealth standby facility during transition; we note that such a facility **would** reintroduce a Commonwealth liability, and that the choice between the two is a genuine trade-off rather than a detail. Our modelling assumes no standby facility.

6.5 Constitutional limits, and a consequence for our own modelling.

Onshore mineral resources are the property of the states; the Commonwealth cannot compel transfer of state royalty revenue. **We have not obtained legal advice on this point and flag it as requiring one.** Any arrangement under §5 would require the agreement of contributing states.

The same principle constrains our modelling in one respect we should name. Most Australian LNG is produced offshore and is taxed by the Commonwealth under the Petroleum Resource Rent Tax, not by a

state royalty; only Queensland's coal-seam-gas LNG clearly falls within a mechanism operating on state royalty revenue. The 5 per cent "multi-state" contribution share at §6.2 should therefore be read as an upper bound, and the Commission may prefer to disregard it entirely.

6.6 Consumption cannot be measured by state.

We note the Commission's own finding that **"it is not possible to calculate with any level of confidence the amount of GST 'paid' by residents of each state"** (p.11, citing CGC 2025g, p.3), and its further observation that even if such data were collected it would likely be inaccurate, because every purchase involving GST would need to be consistently classified (p.14). We therefore **do not** propose distributing GST on the basis of measured state consumption, and would caution against any proposal that does. **Our proposal does not require consumption data** — only commodity prices and published state royalty revenue.

7. Basis of modelling and status of figures

Drawn from official sources and able to be relied upon: all Commission figures cited (Figures 1, 2.5, 2.7, 3.7, 3.8, 4.4, Tables 3.4 and 4.3); World Bank Pink Sheet annual commodity prices; Western Australian commodity prices, volumes and sales values (DMPE, *Major Commodities Resource Data File 2025*); Future Fund contributions, mandate and valuation; Queensland's 2022 royalty tiers.

Indicative placeholders. Outputs derived from the following are **directional only and should not be cited as findings**: fund balances, the volatility-reduction percentages, contribution shares, and time-to-target figures.

Input	Status
Baseline royalty levels for each commodity	Estimated. Western Australian iron ore is calibrated to official sales values; Queensland and New South Wales coal are inferred from known peak years.
Investment return	The Future Fund's mandate expressed in real terms (4.5%, with a 3.0% sensitivity), not an actual return series. The model then assumes 10% of the fund is held in domestic assets returning 1.5 percentage points below that mandate, giving an effective real return of 4.35% (2.85% on the sensitivity). Every modelled figure in this submission uses the effective rate, not the headline rate. The domestic allocation and its spread are assumptions of ours, not Future Fund policy.
Prices for 2025-26	Partly data. The World Bank annual series now runs to calendar 2025 (vintage 3 March 2026), so 2024-25 is fully sourced. Calendar 2026 is not complete: we use the actual monthly series for January to July 2026, deflated to real 2010 dollars. Copper and gold have moved sharply during 2026, so the full-year average may differ from the seven-month average we use.
Queensland coal price series	The World Bank <i>Coal, Australian</i> series is thermal coal fob Newcastle. Queensland's royalties are predominantly metallurgical coal, which the Commission assesses separately (Table 3.4). Queensland's contribution share is correspondingly sensitive to the 2021-23 energy episode rather than to the metallurgical cycle.
LNG	The series is the Japanese cif import price. More importantly, most Australian LNG is offshore and taxed by the Commonwealth under the PRRT, not by a state royalty. Only Queensland's coal-seam-gas LNG clearly sits within the

	mechanism. The 5% "multi-state" share should be read as an upper bound.
Iron ore	The World Bank series is CFR spot including freight, whereas the Commission's Figure 3.7 is fob; and the series transitions from annual contract pricing to spot in 2009-10, which contributes part of the apparent 2010-11 increase.
Denomination	Real United States dollars. §4.3 sets out why we recommend Australian dollars instead, and what changes if that basis is used.

Two design asymmetries in the collar, disclosed rather than buried. Contributions are taken at 70% of the excess above the band and are phased in over the six-year transition; claims are calculated on 100% of the shortfall below the band and are **not** phased in. Both choices are conservative in the sense that they understate the fund's balance, but they mean the mechanism can face a claim in its first years that it cannot meet — see §6.4.

Our model is available and we invite correction. Any party may substitute official inputs and re-run it; we would welcome the Commission substituting its own data. We make this offer because the alternative — presenting modelled outputs on unstated assumptions — is among the practices this inquiry exists to correct.

Preparation of this submission. Generative AI tools were used in preparing this submission: in drafting and editing the text, in writing the Python model at Appendix C, and in cross-checking arithmetic and citations. The proposal itself, the choice of sources, every modelling assumption, and the decision as to what is claimed and with what qualification are the author's. All figures attributed to the Commission have been verified by the author against the Interim Report, and all modelled figures are reproducible from the code and data supplied. The author is responsible for the whole of this submission, including any error in it.

8. Recommendations

We do not propose an alternative to the Commission's interim recommendations. We propose a method of giving effect to interim recommendation 4.1.

Interim recommendation 4.1 directs that Australia return towards the pre-2018 system and that the Treasurer direct the CGC **to address dominant-state effects where they arise**. It does not specify by what method. Box 4.1 (p.78) sets out five candidate methods; the Commission has modelled two of them (across-the-board discounts and, in outline, bundling). This submission addresses that gap.

#	Recommendation	Relationship to the Interim Report
R1	Endorse interim recommendation 4.1 as the preferred direction: return towards the pre-2018 system with a targeted adjustment to the mining assessment, rather than a broader reduction in equalisation.	Supports IR 4.1
R2	Adopt a price threshold as the method of giving effect to IR 4.1. Mining revenue is assessed in full up to a threshold — a rolling ten-year average commodity price in Australian dollars plus a defined band — and a defined share σ of the revenue attributable to	Fills the method gap in IR 4.1; adds a sixth option to Box 4.1

	prices above it is excluded ($\sigma = 100\%$ being complete exclusion; the 70% we also report is the illustrative fund's parameter, not a default). The threshold is set by an independent body publishing its full method.	
R3	Prefer a threshold to an across-the-board mining discount, and test the two on the same axes. A discount is a proportional scaling: it reduces assessed revenue in every year, including years of depressed prices, and — on Figure 4.4's own numbers — it lowers volatility by moving one state permanently closer to the others rather than by damping the cycle. A threshold is a clipping: equalisation is unchanged in normal conditions and only the volatile tail is excluded. We ask that the threshold be placed in Figure 4.4 alongside the three discounts, using the Commission's model (§4.5).	Responds to Figure 4.4 and to the conceptual-basis concern the Commission raises at p.79
R4	Denominate the threshold in the Australian-dollar price of the commodity, expressed in that commodity's appropriate unit of quantity — dollars per tonne for iron ore and coal, per MMBtu for LNG, per troy ounce for gold — and not in royalty revenue. A revenue-based threshold would capture production growth and penalise a state for developing its revenue base, contrary to Terms of Reference item 3.	Responds to ToR item 3
R5	Require that any replacement arrangement have a maximum cost knowable in advance. The Commission notes the current arrangements create "significant ongoing exposure to commodity prices" and that a permanent guarantee would cost \$5.7bn ongoing (p.86); Figure 3.7 shows the exposure has no ceiling. A threshold caps it by construction.	Applies to IR 4.3 as well as IR 4.1
R6	If the Commission proceeds to IR 4.3 instead (retaining the current system with a permanent guarantee), apply the threshold to the mining assessment underlying that guarantee. This bounds the Commonwealth's liability without altering the floor.	Makes the proposal compatible with all three interim recommendations
R7	Shorten or forward-smooth the assessment lag for volatile revenue bases, so adjustment is more nearly contemporaneous with the revenue it responds to.	Independent of the above
R8	Distinguish a notional sovereign wealth fund from an actual one. The "sustainable income" approach in Box 4.1 assumes royalties are <i>notionally</i> paid into a fund; the state retains the cash and receives a higher GST share, with the cost borne by other states. An actual fund, with an actual transfer, is	Clarifies Box 4.1

	the only version in which the resource state gives something up in exchange for protection. We recommend the two be assessed separately.	
R9	Phase any transition over six years , given effect by legislation and by an intergovernmental agreement between the Commonwealth and the states, and commence during a period of normal commodity prices. We do not suggest that any Parliament can bind its successors; the transition period and the agreement are intended to raise the cost of unilateral departure, not to prevent it.	Supports §4.5 implementation considerations

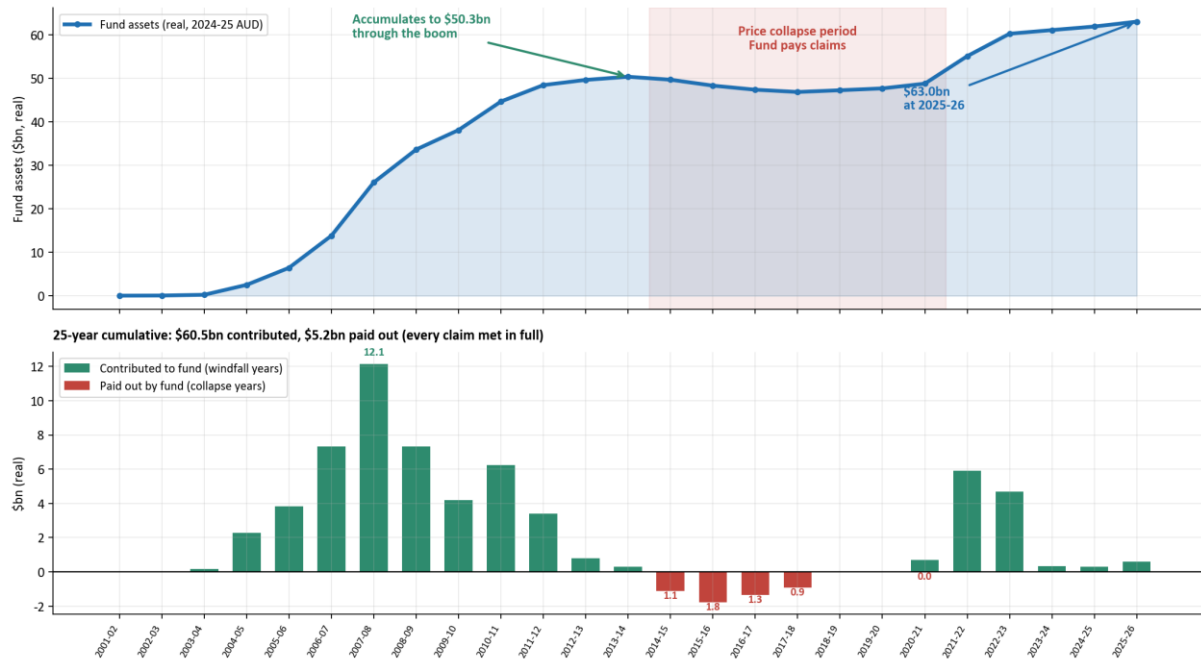
Appendix A — Sources

- Productivity Commission, *GST Distribution Reforms: Interim Report* (interim report to Government due 28 August 2026; final report due 31 December 2026) and accompanying chart data workbook
- Terms of Reference, received from the Treasurer 24 September 2025 (Interim Report, p.v)
- *Treasury Laws Amendment (Making Sure Every State and Territory Gets Their Fair Share of GST) Act 2018*
- Australian Government, *Interim response to PC inquiry into horizontal fiscal equalisation* (5 July 2018)
- Australian Government, *2023-24 MYEFO* (13 December 2023)
- Commonwealth Grants Commission, *2024 Update; History of General Revenue Assistance to the States* (2016)
- Government of Western Australia (DMPE), *Major Commodities Resource Data File 2025*
- Government of Western Australia, *Annual Report on State Finances*
- Queensland Government, progressive coal royalty tiers announcement (June 2022)
- Future Fund, *Annual Report 2024-25*
- S. Eslake (Corinna Economic Advisory), address to the National Press Club, 8 May 2024

Appendix B — Figures

Figure B.1 — Counter-cyclical operation, 2001-02 to 2025-26

Figure B.1 | Counter-cyclical operation: saves through booms, pays through busts
2001-02 to 2025-26 -- the Commission's own window, World Bank real annual prices



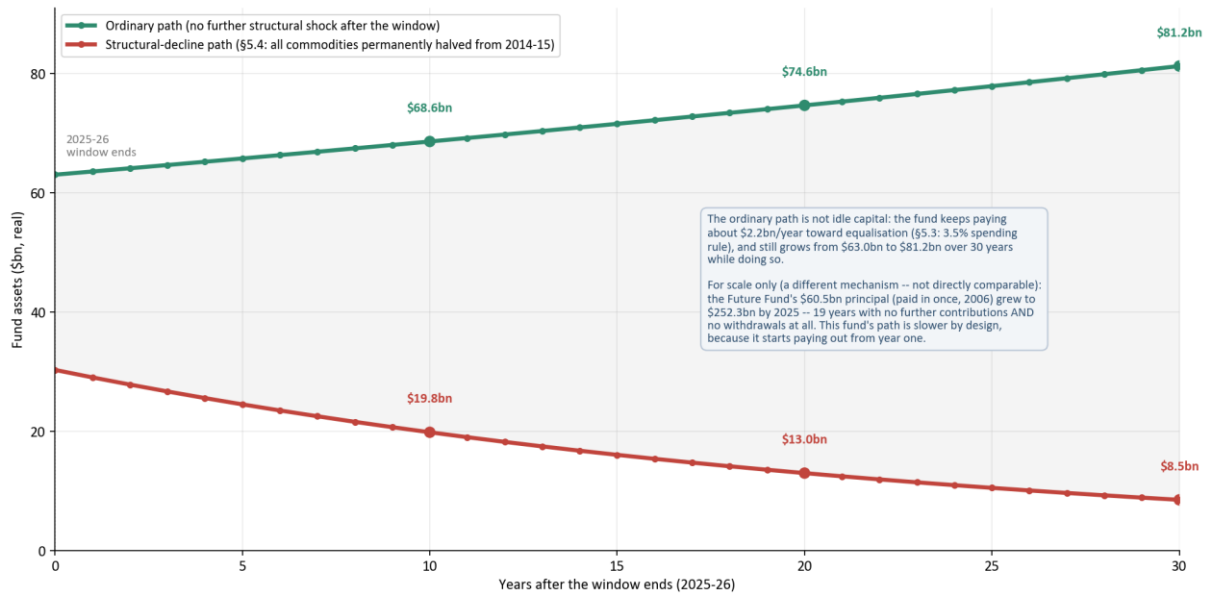
The 2014-18 collapse is the same period in which Western Australia's GST relativity fell to its record low of approximately 0.30 – the years in which the pre-2018 assessment was still penalising it for a boom that had ended.
Source: model_2001.py, run on World Bank Pink Sheet real annual commodity prices and PC interim report chart data. See Submission Appendix C.

The chart shows the fund accumulating through the 2004-2013 commodity cycle to approximately \$50 billion, then meeting claims in full through the 2014-15 to 2017-18 price collapse, and accumulating again through the 2021-23 energy episode. **The 2014-18 payout period coincides with the years in which Western Australia's GST relativity reached its record low of approximately 0.30** — that is, the years in which the pre-2018 assessment was reducing its GST share on the basis of a boom that had already ended.

Prices are World Bank real annual series in **United States** dollars (see §4.3 for why we recommend an Australian dollar basis and what changes under it); actual data to calendar 2025, with calendar 2026 taken from the monthly series to July. The window is the Commission's own.

Figure B.2 — Beyond the window: ordinary path vs structural-decline path, +1 to +30 years

Figure B.2 | Beyond the window: ordinary path vs structural-decline path
Same verified figures as §5.3/§5.4/§6.3, shown side by side



Both paths use model_2001.py's existing run()/shocked()/project() functions and match the figures cited at §5.3, §5.4 and §6.3 exactly; no new modelling assumption is introduced.

This chart renders the §5.4 decline table and the §5.3 fund trajectory as a single picture rather than two tables, so the trade-off can be read at a glance. Both lines start at the fund's 2025-26 value and use the model's existing project() function with no new assumption: the green line assumes no further structural shock and shows the fund still growing — from \$63.0bn to \$81.2bn over 30 years — while continuing to pay approximately \$2.2bn a year toward equalisation under the 3.5% spending rule (§5.3). The red line is the §5.4 structural-collapse scenario extrapolated on the same basis, declining from \$30.3bn toward \$8.5bn as the 5% payout cap binds; as §6.3 discloses, this line holds the annual claim fixed rather than letting the rolling baseline catch up to a new price level, so it understates how far the mechanism's own design would let claims taper. The chart also places the Future Fund's actual trajectory alongside as a scale reference only, and is explicit that the comparison is not like-for-like: the Future Fund received its \$60.5bn principal once and made no payments at all for nineteen years, whereas this fund is designed to distribute every year from the outset.

Appendix C — Model

The code and its sources are attached to this submission as **Appendix C — Model code and sources** (PDF), together with **inputs.csv**, the data the model reads. Both are attached separately from this document.

model_2001.py is the 25-year real-terms model, 2001-02 to 2025-26, and is the basis for every modelled figure in §4.3, §4.5, §5.3, §5.4, §6.2, §6.3 and Appendix B. All parameters are declared in a single block at the head of the file and may be substituted.

Three commands reproduce everything cited in this submission:

Command	Produces
python model_2001.py	Main run, contribution shares, and the threshold/discount comparison of §4.5
python model_2001.py --scenarios	The five stress scenarios of §5.4 and §6.3, and the post-window projection in §5.4
python model_2001.py --aud	The same on the real-Australian-dollar basis of §4.3

The model requires Python 3.9 or later and **no third-party package**. All five scenarios take a single shock start date (SHOCK_FROM_FY), so §5.4 and §6.3 cannot diverge. The --aud run uses approximate exchange-rate and price-index series held in two clearly marked constants (AUD_USD, AU_CPI_INFLATION); substituting RBA Statistical Table F11 and ABS 6401.0 requires editing only those two.

How the data reaches the model. The pipeline is in two stages, so that the model can be run without redistributing a third-party workbook:

Stage	Reads	Writes
extract_inputs.py	CMO-Historical-Data-Annual.xlsx	inputs.csv
model_2001.py	inputs.csv	every modelled figure

inputs.csv holds the 360 values the model actually consumes — calendar years 1990 to 2025, five price series, on both the real and the nominal sheet — in about 11 KB of plain text, with its own provenance header recording the source file and its checksum. Everything else the model needs (calendar 2026 prices, exchange rates, Australian CPI, and the baseline royalty level for each commodity) is declared as a constant in model_2001.py. Both stages refuse to run on an incomplete input rather than returning quietly smaller numbers.

Sources. SOURCES.md, reproduced in the attached PDF, records for every input its publisher, title, download URL, vintage and SHA-256 checksum. The model itself consumes only the first of these: World Bank Commodity Price Data (the Pink Sheet), CMO-Historical-Data-Annual.xlsx, updated 3 March 2026, actual data to calendar 2025. CMO-Historical-Data-Monthly.xlsx (updated August 2026) was used only to extend calendar 2026 from the actual monthly series to July, and those figures are held as constants. The Government of Western Australia (DMPE) *Major Commodities Resource Data File 2025* and the Commission's own chart data workbook are used in §4.3 and for the figures cited from the Interim Report respectively. Investment returns are the Future Fund's mandate expressed in real terms (CPI + 4.0–5.0%), applied as an effective 4.35% after an assumed 10% domestic allocation at 1.5 percentage points below mandate, with a 3.0% real sensitivity. §7 lists every input that is estimated rather than sourced.

Verification of sources. fetch_sources.py downloads each source file from its publisher and reports whether the bytes match those used here. On the most recent run, the Commission's Interim Report, the Commission's chart data workbook and the Western Australian data file each verified byte-identical to the published files. The World Bank overwrites its workbook in place and has since issued a later vintage; re-running extract_inputs.py against that later vintage produces **the same 360 values**, so no figure in this submission depends on which vintage is downloaded.

Other scripts. plots_en.py generates the two charts at Appendix B from the same model, introducing no further assumption. parallel_world_model.py and shock_test.py are an earlier 2018-19 to 2025-26 model, retained only for the window comparison reported at §6.2. These are available from the author on request; they are not required to reproduce any figure in this submission.
