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Russell Smyth

Monash University, Australia

Joaquin Vespignani

University of Tasmania, Australia

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The Missing Link in Australia's Critical Minerals Strategy: The Case for Establishing A Sovereign Resources Fund

Russell Smyth[a], Joaquin Vespignani[bc]
[a] Monash University, Department of Economics, Clayton, Australia
[b]University of Tasmania, Australia Tasmanian School of Business and Economics, Australia
[c] Centre for Applied Macroeconomic Analysis, Australian National University, Australia

Abstract

Australia possesses the highest per-capita endowment of critical minerals and other natural resources in the world. These minerals are essential for decarbonising the global economy. Australia stands out for having among the most sustainable and responsible mining practices globally. Paradoxically, though, while countries with comparatively limited potential for sustainable critical mineral production are investing heavily in the sector, Australia risks falling behind. This underperformance is partly due to the weak connection between resource rents and the tangible benefits experienced by the population. To address this challenge, we propose taxation reform coupled with the establishment of a sovereign resources fund that allocates a substantial share of mining sector revenues directly to individual pension accounts and future education funds. This approach would ensure that the economic gains from resource extraction are more transparently and equitably shared with all Australians, while enabling the country to expand sustainable mineral production and play a leading role in the clean energy transition.

JEL Classification Q32, O13, Q48

Key words: Critical Mineral; Resources; Sovereign Resources Fund

#Corresponding Author: Joaquin Vespignani, Tasmanian school of Business and Economics and Finance, University of Tasmania, Australia, Email: joaquin.vespignani@utas.edu.au

1.Introduction

Australia has long benefited from its rich endowment of natural resources. However, multiple studies have highlighted the macroeconomic risks associated with prolonged commodity booms and busts, notably the so-called Dutch disease (Downes, Hanslow & Tulip, 2014; Kent & Bishop, 2013; Knop & Vespignani, 2014; Plumb, Kent & Bishop, 2013). The Dutch disease refers to the process whereby a boom in the resources sector—often driven by commodity price surges—leads to an appreciation of the real exchange rate, which in turn undermines the competitiveness of tradable industries outside the resource sector, such as manufacturing and agriculture (Corden & Neary, 1982). In Australia, periods of high commodity prices and mining investment inflows have been associated with a significant appreciation of the Australian dollar (Connolly & Orsmond, 2011). Currency strength raises the relative cost of Australian non-resource exports in global markets, crowding out investment and capacity growth in those sectors (Gregory, 2011; Plumb, Kent & Bishop, 2013). Consequently, while the resource sector benefits in the short term from favourable terms of trade, the long-term structural balance of the economy can be distorted, leaving non-resources tradables permanently smaller and less competitive once the boom subsides

The clean energy transition—and resulting surge in demand for critical minerals—presents an unprecedented economic opportunity for Australia, given Australia has a high proportion of proven reserves (Smyth and Vespignani, 2022). However, it also heightens macroeconomic risks, including the threat of Dutch disease, as prolonged commodity booms can lead to currency appreciation, loss of competitiveness in non-resource sectors, and structural imbalances.

To address this challenge, we propose the establishment of a sovereign resources fund that allocates a substantial share of mining sector revenues directly to individual pension accounts and future education funds. This approach would not only address the macroeconomic distortions created by the Dutch Disease, but ensure that the economic gains from resource extraction are more transparently and equitably shared with all Australians, while enabling the country to expand sustainable mineral production and play a leading role in the clean energy transition.

This paper proceeds as follows: Section 2 reviews the relevant literature on the Dutch disease and the two-speed economy; Section 3 provides an overview of Australia's unprecedented resource potential and mining practices and outlines our argument for replacing royalties with profit-based taxation to attract investment in critical minerals; Section 4 proposes the establishment of a Sovereign Resources Fund; and Section 5 concludes.

2. Dutch Disease and the Two-Speed Economy in Australia

The interrelated phenomena of the Dutch Disease and the two-speed economy have been particularly visible in Australia, where natural resource booms have generated both growth and structural tensions. Dutch Disease typically refers to the adverse macroeconomic effects that arise from a resource-driven export surge; namely, currency appreciation and the crowding out of non-resource tradable sectors. In the Australian context, this process has been associated with the emergence of a "two-speed" or even "three-speed" economy, wherein mining regions experience robust growth while other sectors or geographic areas stagnate.

One of the foundational contributors to the Australian debate is Corden (2012), who describes Australia's resource boom as generating a three-speed economy, consisting of booming resource sectors, stable non-traded sectors, and lagging tradable sectors. He highlights the role of policy—particularly exchange rate management and fiscal interventions—in mitigating the distortive effects of booming resource exports. Mitchell and Bill (2006) expand on this idea by focusing on market disparities, illustrating how mining-led growth has left service-based states such as New South Wales, and especially Sydney, in relative economic decline, thereby illustrating the regional inequalities at the heart of the two-speed narrative.

The empirical literature has also probed the spatial and sectoral impacts of Dutch Disease in Australia. Tyers and Walker (2016) attempt to quantify the "three-speed boom", analyzing productivity, force trends, and macroeconomic indicators across Australian states. They confirm that while aggregate national performance improved, it masked deep divergences in regional performance, particularly between mining-intensive and service-based states. The academic framing has often aligned with public discourse. Terms like "two-speed" and "three-speed" became common in Australian media and policy circles during the mining boom years (Walker and Tyers, 2013). Perlich (2013) critiques this discursive framing, arguing that such labels oversimplify complex economic dynamics and sometimes obscure the distributional consequences of growth. Using the tourism sector to illustrate their argument, researchers like Pham et al. (2015) and Forsyth et al. (2014) explore how a booming resource sector exacerbates Dutch Disease effects in non-mining industries. Their work shows how sectors like tourism and hospitality suffer due to currency appreciation, wage inflation, and shifting government priorities—each of which are

classic symptoms of Dutch Disease - but within a service economy context. Their findings reinforce the broader conclusion that the resource boom has left many tradable, labour-intensive sectors exposed to the adverse effects of Dutch Disease and underperforming.

Bjørnland and Thorsrud (2016) take a more optimistic stance. Using Australia and Norway as case studies, they argue that there is limited evidence for classic Dutch Disease in modern resource economies. They posit that positive productivity spillovers from the mining sector can offset some of the traditionally negative effects, resulting in a two-speed but not necessarily diseased economy. This view adds complexity to the conversation, suggesting that institutional context, mobility, and sectoral integration significantly shape outcomes.

3. Australian Resources, Mining Practices and Taxation

Australia's mineral endowment, mining governance standards, and fiscal regime play a pivotal role in shaping its capacity to contribute to global decarbonisation and to manage the economic impacts of resource dependence. This section examines three interconnected dimensions: Australia's exceptional per capita resource wealth and its strategic significance for the clean energy transition; the sustainability and competitiveness of its mining practices in a global context; and the structure of its resource taxation system, with a focus on the implications of relying on royalties rather than switching to profit-based taxation to attract investment.

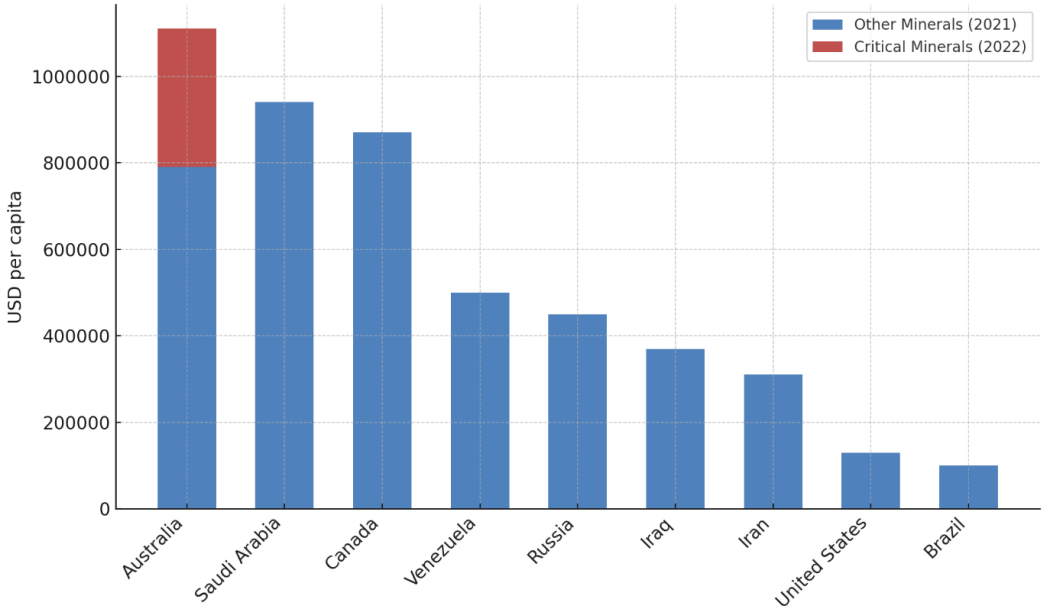
3.1 Per capita resources

As outlined in Vespignani and Smyth (2024), Australia ranks among the top three countries globally in proven reserves and production in nearly every critical mineral necessary for clean energy technologies. Australia is already the world's largest producer of lithium and bauxite and a major producer of other important critical minerals, such as cobalt, nickel, manganese, and rare earths. The scale of this resource endowment—combined with growing geopolitical urgency to secure supply chains independent of China— means that Australia is well positioned to capitalize on the need for critical minerals to ensure the success of the global clean energy transition.

Global decarbonization will only be possible if Australia produces between USD 15–20 trillion in critical and non-critical minerals by 2040 (Smyth and Vespignani, 2022). Figure 1 presents the value of subsoil mineral wealth per capita (in USD) for selected countries, combining

data on “Other Minerals” from 2021 (blue bars) and “Critical Minerals” from 2022 (red bars). Australia has the highest total mineral wealth per capita, exceeding USD 1.2 million when critical minerals are included. Saudi Arabia and Canada follow, each with USD 835,000-USD940,00 per capita in other minerals. Venezuela, Russia, Iraq, and Iran show progressively lower values, ranging from around USD 300,000 to USD 500,000 per capita. The United States and Brazil have comparatively low subsoil mineral wealth per capita, below USD 150,000. Notably, of each of the countries with major subsoil mineral wealth, Australia is the only country that has substantial critical minerals, highlighting its large scale per-capita wealth from these resources.

Figure 1: Value of Subsoil Mineral Wealth by Country (2021/2022, per capita)



Source: World Atlas, and Geoscience Australia.

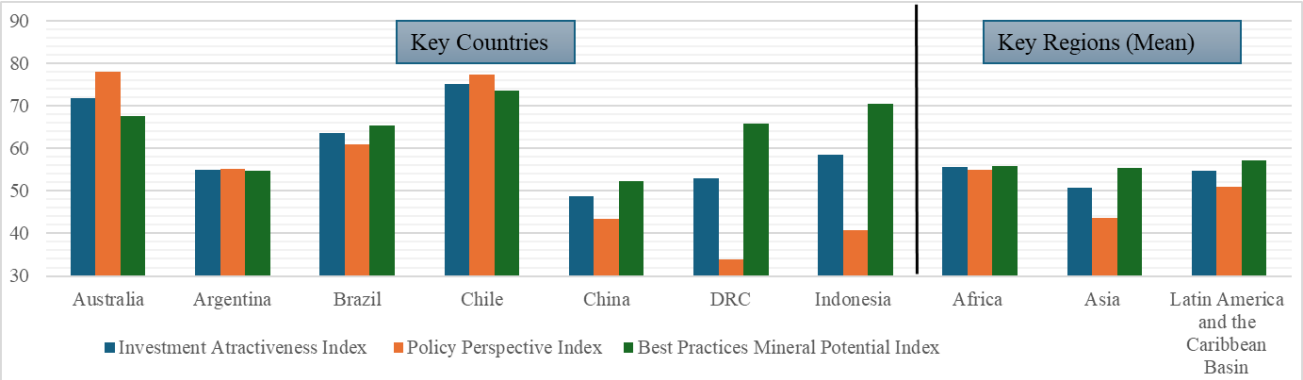
3.2. Sustainable Mining Practices

Mining practices vary greatly across jurisdictions, with substantial differences in environmental safeguards, labour standards, governance quality, and the carbon intensity of extraction (Ali et al., 2017; Mancini & Sala, 2018). Australia is widely recognised as having among the most sustainable and transparent mining frameworks globally, underpinned by stringent regulatory oversight and best-practice environmental management (Pearce & Stilwell, 2020). If Australia does not fully utilise its substantial critical mineral reserves, global decarbonisation efforts risk being

undermined, as production will shift to jurisdictions with weaker governance structures. In such contexts, mining often involves higher greenhouse gas emissions, greater ecological damage, and inadequate social protection, offseting the climate benefits of deploying low-carbon technologies that depend on these minerals (Sonter et al., 2020). Thus, a failure to expand sustainable critical mineral extraction in Australia not only constrains supply but also increases reliance on producers whose practices may make the decarbonisation process environmentally counterproductive.

Beginning in 2011, the Fraser Institute, a Canadian think tank, has produced annual indices of each country's global mining competitiveness, based on surveys of mining companies. Figure 2 presents the Fraser Institute annual averages between 2011 and 2024. Compared to other major and regional producers, Australia ranks highly across all three measures of mining investment competitiveness in the Fraser Institute indices, with an Investment Attractiveness Index score of 71.78, a Policy Perception Index score of 78.06, and a Best Practices Mineral Potential Index score of 67.59. These values place Australia above most competitors in both regulatory quality and perceived geological potential under best practices. In investment attractiveness, Australia's performance is substantially stronger than the regional averages for Africa (55.57), Asia (50.66), and Latin America and the Caribbean Basin (54.87), and only slightly lower than Chile, the top performer at 75.14. In policy perception, Australia leads with 78.06, ahead of Chile (77.32) and far exceeding Brazil (60.96), Argentina (55.29), and Indonesia (40.76), reflecting strong governance, regulatory stability, and low political risk for mining investment. In best practices mineral potential, Australia's score of 67.59 is strong, though slightly lower than Chile (73.65) and Indonesia (70.59), suggesting some scope to enhance the translation of mineral endowments into sustainable investment opportunities. Overall, Australia remains one of the most attractive jurisdictions globally for critical mineral investment, combining world-class policy settings with substantial geological potential, although its relative position in mineral potential indicates the need to maintain and strengthen exploration and development competitiveness.

Figure 2: Fraser Institute, Average Indexes of Mining Companies Survey (2011-2024)



Source: Fraser Institute, Annual survey of mining companies (2011 to 2024)

3.3. The Competitiveness of the Australian Taxation System for Resources

Australia's state-based taxation framework for resources remains heavily reliant on ad valorem royalties, which are levied as a fixed percentage of the value of production regardless of profitability. While such royalties provide predictable revenue streams for governments, they fail to adjust for fluctuations in commodity prices, production costs, and project life cycles. This creates distortions that can disincentivise investment, particularly for marginal or high-cost projects, as the tax burden remains constant even when profitability is low or negative.

The economic literature consistently identifies royalties as less efficient than profit-based taxation in capturing resource rents without deterring investment. Garnaut and Clunies Ross (1983) argue that royalties distort production decisions by increasing marginal cost, thereby discouraging full resource extraction. Hogan and McCallum (2010) highlight that royalties can render otherwise viable projects uneconomic during periods of low prices, while profit-based systems better accommodate commodity price volatility. The Henry Tax Review (Australia's Future Tax System, 2010) similarly recommended a shift toward rent-based taxation to improve efficiency, equity, and responsiveness to changing market conditions. International evidence from Norway's petroleum sector (van den Bremer and van der Ploeg, 2013) supports the case for profit-linked regimes, showing they maintain investment incentives while delivering stable, counter-cyclical revenues.

In contrast, profit-based taxation systems—such as Norway's petroleum tax regime—align government revenue collection with actual project profitability. By taxing economic rents rather than gross output, profit-based systems are more efficient and internationally competitive, encouraging sustained investment throughout commodity price cycles. They also enhance fiscal resilience, as tax revenues increase during booms and naturally decline during downturns without pushing marginal operations into closure.

Maintaining an over-reliance on royalties undermines Australia's competitiveness in attracting capital for resource development, especially in critical minerals. Global investors increasingly compare fiscal regimes across jurisdictions, and countries with flexible, profit-linked taxation are more likely to secure long-term project commitments.

To ensure equitable development, and strategically support Australia's critical minerals and resources sector, Australia should transition from a royalties-based taxation model at the state level to a profit-based taxation regime. Royalties, which are typically volume- or price-based, often extract value inefficiently. In contrast, a profit-based model is more responsive to market cycles, captures greater value during boom periods, and reduces disincentives for high-risk investment in sectors like critical minerals. This change would also harmonize with federal-level taxation and allow for a more coherent national strategy on attracting investment in critical minerals.

4. A Sovereign Wealth Fund to Capitalize on Australia's Critical Mineral Advantage

We propose that Revenue from a reformed taxation system, that employs profit-based taxation, should flow into a nationally administered sovereign fund—the Community Dividend and Sovereign Inclusion Fund (CDSIF). This fund would serve both as a macroeconomic stabilizer to manage Dutch Disease pressures and as a direct social investment tool to share resource wealth with the broader population. A unique and critical function of the CDSIF would be its direct linkage between resource wealth and social wellbeing through annual per capita transfers and targeted investments in education, healthcare, pensions, and housing. A feature of the CDSIF is that special allocations could be reserved for First Australians and other disadvantaged communities, recognizing their historical marginalization and disproportionate exposure to the harms of extractive development. These allocations should be designed not as welfare, but as restitution and structural support for long-term community resilience and economic inclusion.

To further align public and private interests, the government should participate directly in strategic mining and processing ventures through minority equity stakes, supported by targeted tax incentives. Instead of solely relying on regulatory frameworks, the state would offer reduced corporate tax liabilities or accelerated depreciation in exchange for voluntary state co-ownership—between 10 per cent and 30 per cent—in critical minerals projects. This shared-ownership model allows the government to share in both the risks and the upside, making it easier for early-stage or

frontier critical mineral projects to secure financing, while ensuring that public investment translates into public returns. Such arrangements grant the government a voice in corporate governance, which can be used to promote high environmental, labour, and Indigenous engagement standards. This strategy mirrors successful international models, representing a pragmatic third way between privatization and full nationalization (Bunting, 2015).

Importantly, resource revenue must also be geographically redistributed in a way that acknowledges the environmental and social costs borne by communities located near extraction sites. A fixed proportion of the CDSIF—between 25 per cent and 30 per cent—should be allocated according to a geographic exposure formula that accounts for proximity to resource projects, environmental risk profiles, and socioeconomic vulnerability. Communities that are most exposed to pollution, displacement, infrastructure strain and cultural disruption from. Mining deserve a greater share of the benefits. These funds should be directed into community trusts managed jointly by local leaders, Indigenous representatives, and independent experts, and must be earmarked for tangible improvements in public health, education, cultural restoration, and environmental rehabilitation. This geographic redistribution not only addresses historical injustices, but also strengthens social license and improves community-industry relations.

Together, these reforms represent a cohesive and progressive resource policy for Australia—which are designed to not only fix the macroeconomic distortions associated with the Dutch Disease, but to transform the nation's resource wealth into a driver of inclusive prosperity, regional revitalization, and industrial sovereignty. More generally, by connecting fiscal innovation, direct equity participation, and place-based social justice, Australia can position itself as a leader in the global transition to a clean and equitable resource economy.

Establishing a sovereign wealth fund would ensure that this once-in-a-generation surge in mineral rents contributes to long-term national capacity, while, importantly, dampening the exchange rate pressures associated with resource booms. Norway’s experience provides strong support for this approach. The creation of the Norwegian sovereign wealth fund in the 1990s effectively neutralised the appreciation of the Norwegian krone during oil price booms, preserving manufacturing competitiveness and mitigating Dutch disease effects (Bjørnland and Thorsrud, 2016; van den Bremer and van der Ploeg, 2013). Taxation reform, coupled with the creation of an Australian Sovereign Resources Future Fund, would maximise the opportunity mineral wealth provides to increase industrial diversification without increasing intergenerational inequality.

Figure 3: The Buffering Effect of a Sovereign Resources Fund on Australia's Real Exchange Rate.

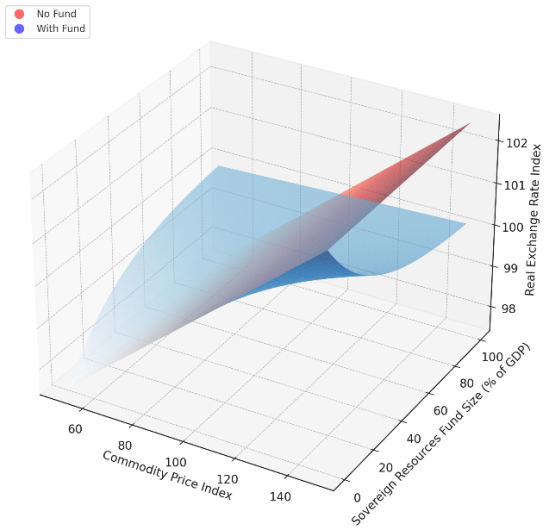


Figure 3 shows how commodity booms translate into Australia's real exchange rate, with and without a sovereign resources fund. The horizontal x-axis is the commodity-price (terms-of-trade) index—where moving right means higher resource prices. The y-axis is the size of the sovereign resources fund as a share of GDP—where moving up the plane means a larger fund that saves and invests more of the boom offshore. The vertical z-axis is the real exchange rate index—where higher values indicate a stronger Australian dollar. The red surface ("No Fund") slopes upward with the x-axis, showing that higher commodity prices appreciate the real exchange rate (classic Dutch-disease pressure). The blue surface ("With Fund") sits below and flattens as the fund size increases along the y-axis, indicating that a larger fund dampens pass-through from commodity prices to the exchange rate, buffering appreciation and protecting the competitiveness if the tradables sector.

Figure 4: The Impact of a Sovereign Resources Fund on Australian Real GDP

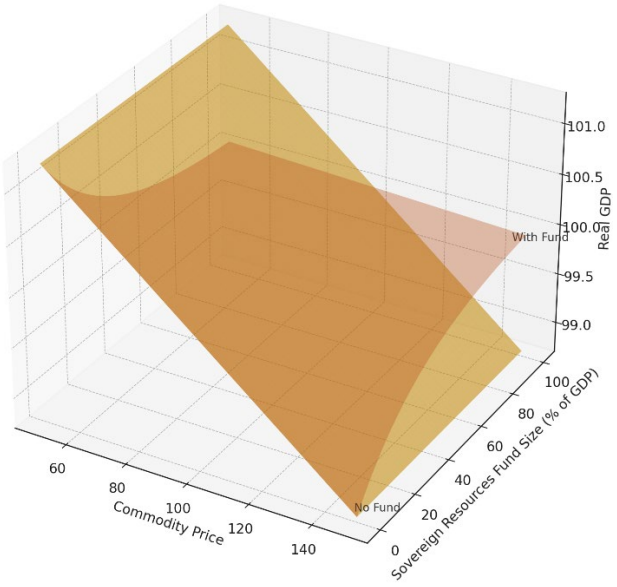


Figure 4 shows Real GDP against two drivers. Along the x-axis is Commodity Prices**,** a proxy for Australia's terms of trade—moving right means higher resource prices. The y-axis shows the Sovereign Resources Fund size (as a percentage of GDP)—where moving up indicates a larger share of windfall revenues being saved/invested offshore (greater sterilisation). The z-axis measures Real GDP, such that higher vertical values mean stronger output. The two semi-transparent surfaces are labelled "No Fund" and "With Fund." At low fund sizes, rising commodity prices (moving right) lowers Real GDP (competitiveness loss via appreciation). As the fund gets larger (moving up the y-axis), the surface flattens and sits higher showing that the fund buffers the negative output effect of commodity booms.

In Appendix A, we provide a formal model illustrating these points and highlighting the role that a Sovereign Wealth Fund can play in mitigating real exchange rate appreciation, stabilizing tradable output, and enhancing long-run real GDP.

In Table 1 we propose a series of principles underpinning the establishment of an Australian sovereign wealth fund to maximise welfare and equality.

Table 1 summarises how the fund would function to achieve national objectives:

1. **Tax Reform**: Shifting from ad valorem royalties to profit-based taxation would promote capital investment and ensure tax neutrality across resource cycles.
2. **Superannuation Contributions**: Dedicating a portion of resource revenue to personal pensions would enhance retirement security and reduce public pension liabilities.

3. **Education Investment**: Allocating investment returns to future education initiatives would build national capabilities and foster innovation.
4. **Macroeconomic Stabilisation**: The fund would act as a buffer, smoothing fiscal policy and limiting the volatility of boom-bust cycles.
5. **Strategic Infrastructure**: Dedicated capital would co-finance critical infrastructure linked to sovereign resilience and long-term diversification.

Table 1: General Principles of an Australian Sovereign Resources Future Fund

Core Functions of the Australian Sovereign Resources Future Fund	Implementation Priorities	Mechanism
Reform state and federal taxation from ad valorem to profit-based models	Encourage long-term investment and fiscal neutrality	Replace volume-based royalties with profit-based tax aligned to project lifecycle profitability
Contribute directly to individual superannuation (pensions)	Build retirement security and reduce future pension liabilities	Deposit a fixed share of mineral rents into individuals' superannuation accounts through sovereign redistribution mechanisms
Finance a Future Generations Education Fund	Support post-secondary education and innovation capacity in future decades	Earmark a portion of the fund's investment returns to scholarships, STEM programs, and university-industry partnerships
Stabilise macroeconomic volatility through counter-cyclical fiscal buffers	Reduce reliance on boom-bust cycles and currency shocks	Insulate the political cycle which increase inefficient government expenditure
Reinforce strategic investments in critical infrastructure and sovereign capabilities	Enable national resilience and industrial diversification	Use a dedicated tranche of fund assets to co-finance infrastructure linked to strategic industries and export corridors

5. **Conclusion**

Critical minerals are essential to realizing the success of the clean energy transition. Australia has one of the largest proven reserves of critical minerals in the world. This presents a once in a generation opportunity for Australia to invest in its future. In this article, we argue that if Australia is to fully capitalize on the opportunity that global demand for critical minerals in coming decades presents it should couple taxation reform with the establishment of a sovereign wealth fund. A sovereign wealth fund would not only help to overcome the macroeconomic distortions associated with the Dutch Disease but ensure that the economic gains from resource extraction are more transparently and equitably shared with all Australians across generations.

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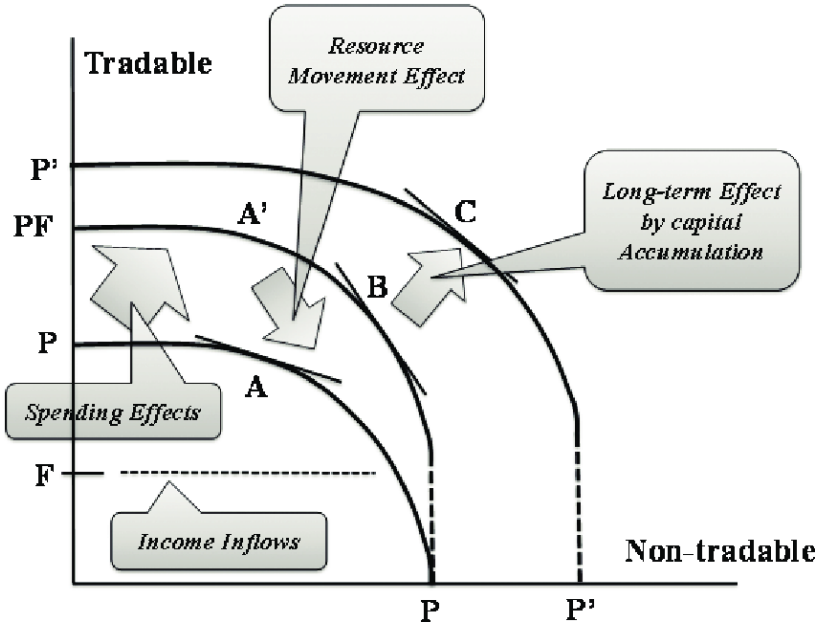
Appendix A: The Dutch Diseases and the Moderate Impact of a Sovereign Resources Wealth Fund

This appendix provides a formal mathematical representation of the Dutch Disease framework, capturing the spending effect, resource movement effect, and long-run capital accumulation. The model is then extended to incorporate the role of a Sovereign Wealth Fund (SWF) in mitigating real exchange rate appreciation, stabilizing tradable output, and enhancing long-run real GDP.

Figure A1: The Dutch Disease and Capital Accumulation



Source: The figure is taken from Taguchi (2017).

Following, Corden and Neary (1982) and Taguchi (2017), we define the economy's Production Possibility Frontier (PPF) between tradables (T) and non-tradables (N) as:

$$T = f(N), \quad f'(N) < 0, \quad f''(N) < 0 \qquad \text{(A1)}$$

where T is output of tradables and N is output of non-tradables. Initially, the economy operates at point A on the PPF, denoted by P–P. A positive resource boom increases national income Y, shifting demand toward non-tradables. This generates real exchange rate appreciation and moves the economy along the PPF from A to A′ (spending effect), where $\Delta N > 0$ and $\Delta T < 0$. The resource movement effect occurs when labour and capital shift toward the booming resource and non-

tradable sectors. Let $L_T + L_N + L_R = \bar{L}$ denote the labour market clearing conditions. Where L_T denotes labour employed in the tradable sector, L_R in the resource sector, and L_N in the non-tradable sector. The increase in L_R and L_N reduces L_T, leading to a further fall in T, moving the economy from A′ to B. In the long run, capital accumulation may be biased toward non-tradables:

$$K_{\{t+1\}} = K_t + I_t - \delta K_t \qquad \text{(A2)}$$

If investment favours N, the economy moves from B to C, with a permanent loss in T.

The total change in tradable output can be expressed as:

$$\Delta T = \left(\frac{\partial T}{\partial Y}\right)\Delta Y + \left(\frac{\partial T}{\partial L_T}\right)\Delta L_T + \left(\frac{\partial T}{\partial K_T}\right)\Delta K_T \qquad \text{(A3)}$$

In a resource boom, $\Delta L_T < 0$ and $\Delta K_T < 0$, making ΔT negative in the absence of mitigating measures.

Incorporating a Sovereign Wealth Fund (SWF)

We define the internal real exchange rate as $Q = \frac{P_N}{P_T} = P_N$, where P_N is the price of non-tradables and P_T is the price of tradables (normalized to 1). A higher Q represents a real appreciation.

Let s ∈ [0,1] be the share of resource revenue saved in the SWF and (1–s) the share spent domestically. With marginal propensity to spend θ on non-tradables, the shock to absorption is:

$$\Delta A = (1 - s)\theta\, \Delta Y_R \qquad \text{(A4)}$$

The impact on Q is given by:

$$\Delta Q = \alpha(1 - s)\theta\, \Delta Y_R, \quad \alpha > 0 \qquad \text{(A5)}$$

Thus, a higher s reduces ΔQ, dampening the spending effect.

Labour reallocation responds to Q as:

$$\Delta L_T = -\beta\, \Delta Q,\ \ \beta > 0 \qquad \text{(A6)}$$

Substituting the SWF-adjusted ΔQ:

$$\Delta L_T^{\{SWF\}} = -\beta\alpha(1-s)\theta\, \Delta Y_R \qquad \text{(A7)}$$

Hence, higher s mitigates the resource movement effect.
Real GDP is given by:

$$Y = P_T T + P_N N = T + Q\, N \qquad \text{(A8)}$$

Differentiating:

$$\Delta Y = \Delta T + N_0 \Delta Q + Q_0 \Delta N \qquad \text{(A9)}$$

Because the SWF reduces ΔQ and ΔN while preserving T, $\Delta Y\text{^}\{SWF\} > \Delta Y\text{^}\{no\ SWF\}$ for the same resource shock. The SWF accumulates foreign assets F_t at world return r*:

$$F_{\{t+1\}} = (1-\delta_F)F_t + s\, Y_{\{R,t\}} \qquad \text{(A10)}$$

Annual returns Z_t ≤ r*F_t can be used to finance tradables-oriented investment:

$$K_{\{T,t+1\}} = (1-\delta)K_{\{T,t\}} + I_{\{T,t\}}, \qquad \text{(A11)}$$

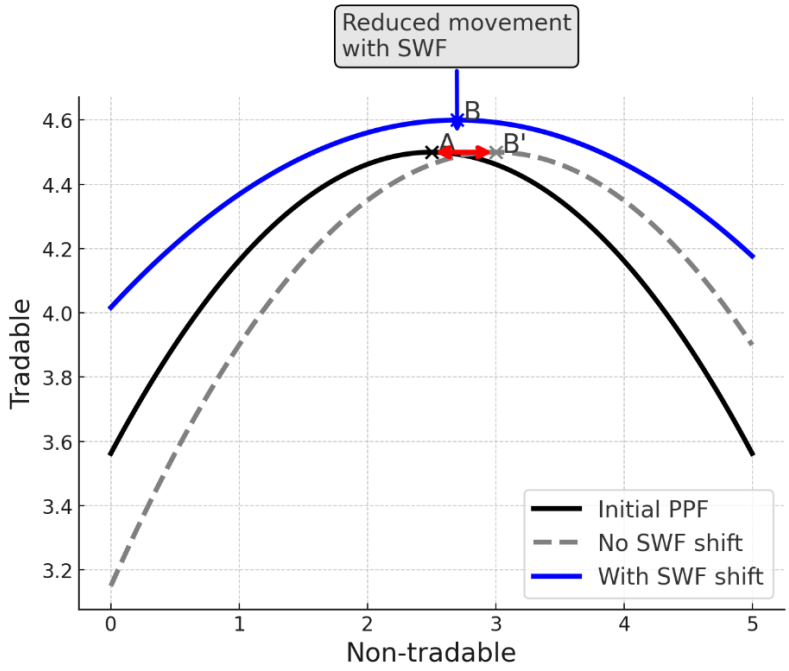
$$I_{\{T,t\}} = I_{\{T,t\}}^{\{baseline\}} + \varphi\, Z_t \qquad \text{(A12)}$$

This raises long-run tradables output:

$$\Delta T_{\{LR\}} = \left(\frac{\partial T}{\partial K_T}\right) \Delta K_T^{\{SWF\}} > 0 \qquad \text{(A13)}$$

In summary, SWF mitigates Dutch Disease through three channels: (i) reducing real exchange rate appreciation, (ii) limiting factor reallocation away from tradables, and (iii) supporting long-run capital accumulation in the tradable sector. Together, these effects stabilize and enhance real GDP in both the short and long run.

Figure A2: The Impact of a Sovereign Wealth Fund on the Production Possibility Frontier



This figure illustrates how a SWF moderates the labour and output shifts typically associated with Dutch disease. The black curve represents the initial production possibilities frontier (PPF) between tradable and non-tradable goods before a resource boom. Without a SWF, higher resource revenues cause a large outward shift towards non-tradables — shown by the grey dashed curve — as labour and capital flow out of the tradable sector (point A to B′), reducing tradable output. In contrast, with a SWF, a portion of resource revenues is saved or invested offshore rather than fully spent domestically. This dampens the appreciation of the real exchange rate and reduces the pull of resources towards the non-tradable sector, producing the blue curve**,** where the shift is smaller (point A to B). The red double-headed arrow compares the larger movement without a SWF to the reduced movement with a SWF, while the blue annotation highlights that the SWF buffers spending effects and preserves a larger share of tradable sector capacity.