TRP23-26 The Structural Budget Balance of New South Wales

TRP23-26 I Tyson Goddard

December 2023

NSW
GOVERNMENT

Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.
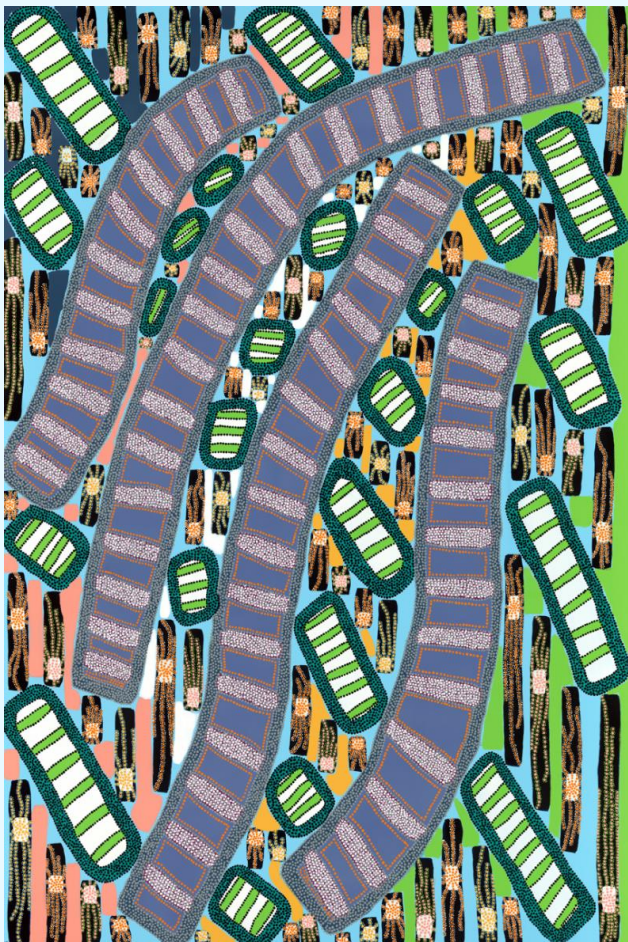
We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families and communities, towards improved economic, social and cultural outcomes.

Artwork: *Regeneration* by Josie Rose

Acknowledgements

Contents

1   Introduction

Achieving and maintaining a sustainable fiscal position is a major policy objective for governments at both sovereign and sub-sovereign levels in Australia, underscored after fiscal responses to the pandemic and climate-related disasters in recent years. In New South Wales, the legislative framework has since 2012 been provided by the Fiscal Responsibility Act 2012 (the Act), which has as its object the maintenance of the State's triple-A credit rating. The Act also mandates the reporting of the State's long-term fiscal gap – updated on a five-yearly basis in the NSW Intergenerational Report, with the impact of Budget measures on the fiscal gap reported annually. This paper explores using the NSW Treasury Intergenerational Report (TIGR) model to estimate the NSW structural budget balance.

Estimating the structural budget balance (SBB) is the process of adjusting the government budget balance to account for business cycle impacts and other transitory factors, such as asset and commodity price cycles and one-off fiscal operations. These adjustments reflect the role of "automatic stabilisers" in the economy and the cyclical behaviours of government revenue and spending. The SBB estimates government finances in the absence of cyclical imbalances. It is a measure of the underlying fiscal position and can be utilised to assess fiscal sustainability, as well as a measure of the fiscal headroom available to policy makers. This is a measure that is reported at the national level, in the Commonwealth Budget.

We provide estimates of the SBB for New South Wales from financial year 2011-12 to 2026-27, inclusive. Estimates herein are based on the projections and assumptions of the 2023-24 NSW Budget. Our analysis focuses on the net operating balance, which is recognised within the NSW Budget as the general government sector's budget result.[1]

The estimation methodology draws on guides published by the IMF (Hagemann, 1999; Bornhorst et al., 2011) and OECD (Price & Dang, 2011) and favours simplicity where possible. Estimates of the SBB at the national government level produced by the Commonwealth Treasury (2010; 2013) and the Parliamentary Budget Office (2013) also follow the same framework and conventions. To the best of the author's knowledge, all existing estimates of the SBB are at a national government level, and this paper is the first publication of subnational estimates in Australia.

We identify three key distinctions of estimating the NSW structural position in contrast to national estimates, reflecting the different composition and underlying drivers of state and national finances. Firstly, we assume there are no regular cyclical components of government spending. At a national level of government, this is typically limited to unemployment payments, which automatically correlate with the level of unemployment in the economy. In the absence of expenses like this at the state level, our attention is heavily focussed on adjusting revenue items.

Secondly, two separate (but generally related) business cycles are identified and adjusted for. The output gap in Australian Gross Domestic Product (GDP) is used to adjust GST revenue, which is based on a national pool and shared between states and territories, while the output gap in NSW Gross State Product (GSP) is used for adjusting revenue from a range of state-based taxes.

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[1] The net operating balance represents the difference between expenses and revenues from operating transactions in the general government sector.

Finally, asset market cycles are shown to be more significant than the business cycle in driving state government revenue. Property transfer duties account for a large share of year-to-year movements in state revenue, and these are in turn driven by property market cycles and volatility. By comparison, national government revenues tend to be more dependent on income taxes, which are generally driven by the business cycle.

The remainder of this paper begins by providing a formalisation of the baseline methodology. Then we discuss some alternative approaches to measuring property market cycles and analyse the sensitivity of the SBB with respect to these alternatives. The final section outlines some key insights taken from the resulting estimates and the implications for fiscal sustainability in New South Wales.

2 Methodology

In our estimation of the SBB, we make every effort to adhere to the IMF's 'Guide to Structural Fiscal Balances' (Bornhorst et al., 2011). The framework is consistent with prior conventions in the international community and provides a general benchmark for estimating structural balances. In line with this, we distinguish "relevant one-off factors" from cyclical factors and remove these from the net operating balance separately. Next, we adjust government revenue with respect to the business cycle.[2] Finally, we make separate adjustments for asset and coal price cycles. The breakdown of cyclical adjustments made to government revenue sources are summarised in Figure 1.

Figure 1: Summary of cyclical revenue adjustments for New South Wales

Revenue source	Category	Tax	Business Cycle	Asset Cycle	Coal Price Cycle
State	Taxation	Transfer duty		✓	
		Land tax		✓	
		Payroll tax	✓		
		Motor vehicles	✓		
		Gambling & betting	✓		
		Other taxes			
	Sale of goods & services				
	Royalties				✓
	Dividends & income tax equivalents^				
	Other				
Commonwealth	GST		✓*		
	Other grants				

* GST pool adjusted with respect to the national business cycle

^ Dividends & income tax equivalents in New South Wales do not follow a cyclical pattern because the majority of payments are sourced from regulated businesses – whose returns are primarily determined by the size of their regulatory asset base rather than macroeconomic factors.

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[2] Conventionally, the fiscal balance adjusted for the business cycle only is referred to as the "cyclically-adjusted balance" (CAB).

We acknowledge that some economic movements have persisted for extended periods of time, blurring the lines between trend and cycle. For example, the steady decline in real interest rates over the past 40 years (Blundell-Wignall, 2021) could be considered an extremely protracted economic cycle. We do not attempt to adjust fiscal balances for such sustained cycles here, and instead focus on short-run cycles. This is consistent with the existing frameworks and international conventions.

2.1   Relevant one-off factors

The adjustment for temporary or one-off factors became an important feature of SBB methodologies following the Global Financial Crisis (GFC), when large, emergency stimulus measures were employed in response to the economic shock – these went far beyond the "automatic stabilisers" that cyclical adjustments otherwise capture. In this context, the main purpose of removing these discrete factors is to isolate trends in underlying budget balances (Joumard et al., 2008).

Extraordinary fiscal measures were a prominent feature of the global economic landscape throughout the COVID-19 pandemic. In estimating the SBB for New South Wales, we assume that direct spending and revenue measures in response to COVID-19 are a reliable benchmark for one-off factors. We include COVID-19 pandemic-related health, economic and social response, and recovery measures from 2019-20 to 2024-25. Net of co-payments from the Commonwealth Government, this amounts to an estimated total of $27.8 billion over a 6-year period, with a peak of $13.4 billion in 2021-22.

The unprecedented impact of the COVID-19 pandemic on broader service delivery requirements goes beyond the type of adjustments generally considered in internationally accepted SBB frameworks. In this regard, we do not seek to decompose service delivery costs into structural and temporary components. This points to some of the limitations of existing best practice in SBB estimation methodologies for sub-national governments in the face of unprecedented economic and fiscal volatility, particularly given the stronger focus of sub-national government expenditure on service delivery.

Additionally, disaster response spending has also been a source of expenditure in recent years and are projected to grow into the future, representing an important structural risk to the economy and budget. Warming temperatures are making catastrophic events more likely, and the growing value of the capital stock is also increasing exposure. Although we view climate-related disasters as structural risks, their actual incidence is extremely volatile. As such, we find it useful to classify natural disaster relief as one-off factors to more clearly identify underlying trends in the budget. Other climate-related disaster spending, such as disaster mitigation and adaptation measures, is treated as structural. Accordingly, we use costs under Disaster Recovery Funding Arrangements (DRFA) as our definition of climate-related disaster spending.[3]

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[3] The Disaster Recovery Funding Arrangements (DRFA) is the principal mechanism for Commonwealth financial assistance to state and territory governments. The Commonwealth may provide financial assistance, usually in the form of partial reimbursement, to the States and Territories for eligible direct expenditure incurred in relation to a defined disaster.

Our metric of one-off measures for estimation of the SBB of New South Wales is therefore comprised of COVID-19 pandemic measures and natural disaster relief (Figure 2). We adjust for revenue received in the form of grants from the Commonwealth Government in instances where the Commonwealth has provided co-payment or funding to the State for eligible direct expenditure associated with COVID-19 pandemic measures and natural disaster relief.

Figure 2: One-off measures relating to COVID-19 and natural disasters
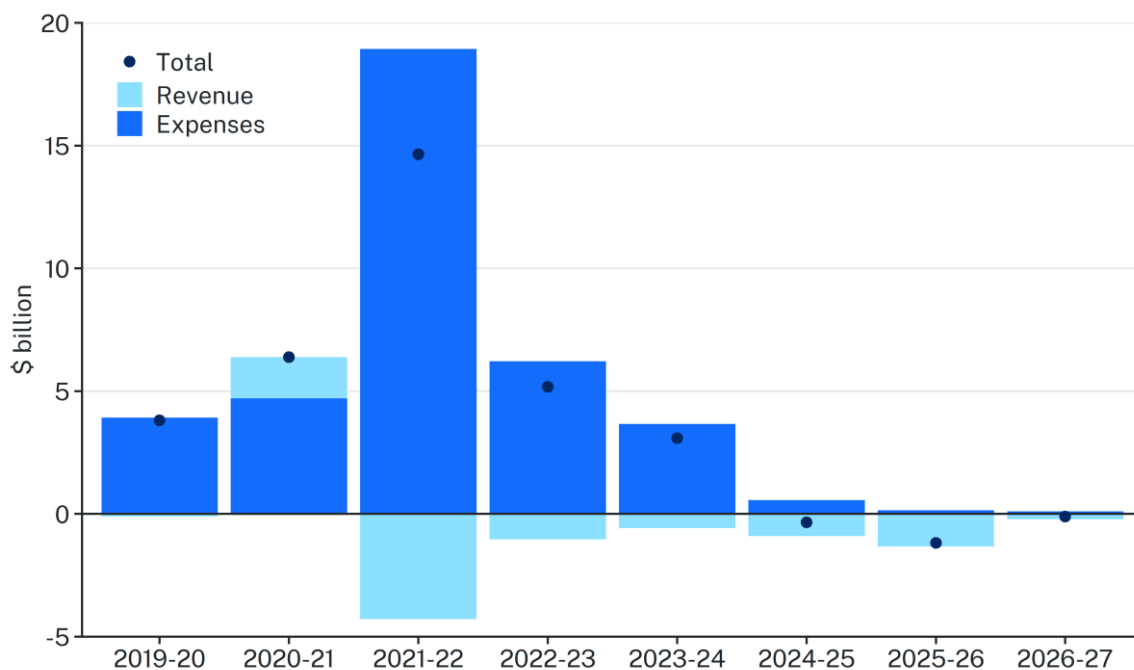
Note: Negative revenue measures reflect grants received as co-payment under relevant Commonwealth-state agreements.
Source: NSW Treasury

2.2   Business cycle effects

There are two components of economic output (Y) – a trend or structural component, known as potential output (Y^*), and a cyclical component known as the output gap ($\tilde{Y}$) (Equation 1). The business cycle, or economic cycles more broadly, is measured by this output gap and typically expressed as a share of potential (Equation 2).

$$\tilde{Y}_t = Y_t - Y_t^* \tag{1}$$

$$\tilde{y}_t = \frac{\tilde{Y}_t}{Y_t^*} \tag{2}$$

Potential output is an unobserved estimate of output if the economy was running at its maximum sustainable level of capacity utilisation. It represents a long-term trend and is not directly measured in the same way that actual output is. Instead, there are many available approaches to estimating potential output. Consistent with the *2021-22 NSW Intergenerational Report* (IGR 2021), we assume potential output is determined by the equilibrium states of hours worked and output per hour (Equation 3).

$$Y_t^* = TotalHours_t^* \times Productivity_t^*$$
$$= (Population_t \times PartRate_t^* \times EmploymentRate_t^* \times AvgHours_t^*) \times Productivity_t^* \qquad (3)$$

This measure of potential output follows a "three-Ps" framework – population, participation and productivity. Equilibrium hours worked is driven by the size of the working age population, labour force participation, the unemployment rate (i.e., the non-accelerating inflation rate of unemployment – NAIRU) and the average number of hours worked by employees (Equation 3). Meanwhile, output per hour of labour input measures productivity. The potential values (indicated by *) in Equation 3 are estimated using the NSW Treasury Intergenerational Report (TIGR) Model,[4] with specific assumptions and details on each component outlined in Treasury Research Papers and technical note accompanying the IGR (NSW Treasury, 2021).[5]

Figure 3: Output gap estimates

Source: NSW Treasury
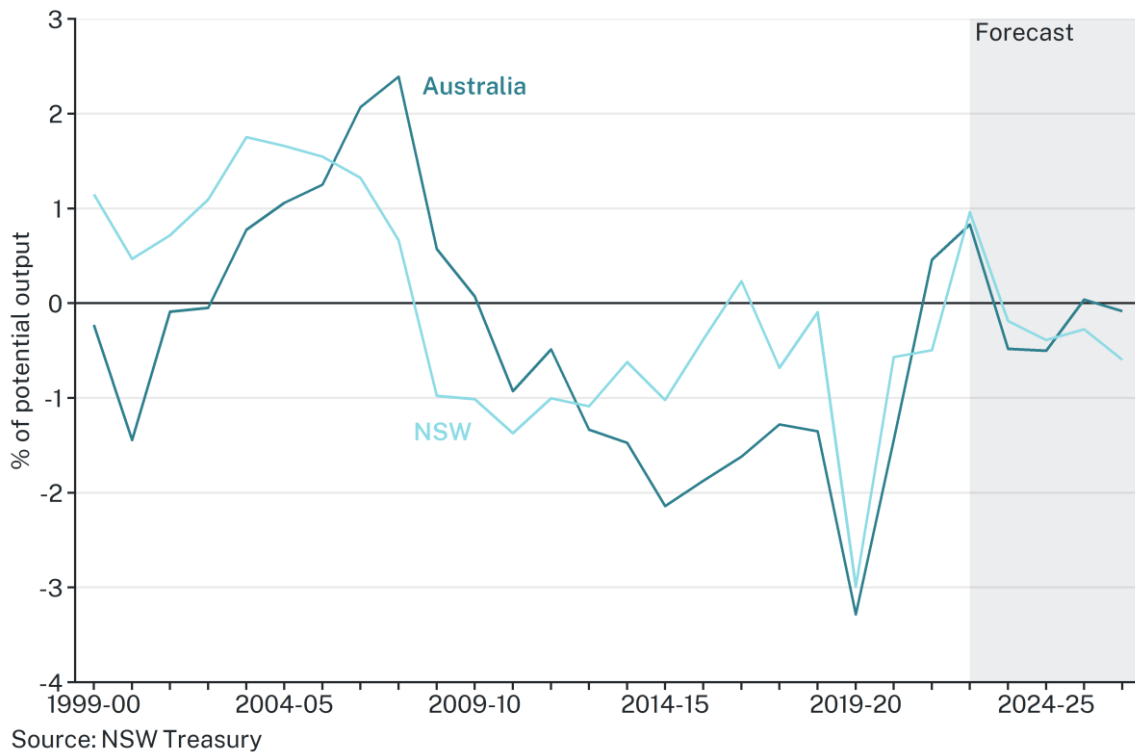
Output gaps are calculated for both Australian GDP (national output gap) and NSW GSP (state output gap). The national output gap is used to adjust the national GST pool – we do not adjust the NSW *share* of total GST for cyclical factors, noting the endogeneity of state revenue sources in the formulation of GST relativities.[6] Meanwhile, the state output gap is used to adjust revenue from payroll tax, vehicle registration duties and gaming taxes. Other own-source NSW

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[4] Formerly the Long Term Fiscal Pressures Model (LTFPM).

[5] The *2021-22 NSW Intergenerational Report* is available at: https://www.treasury.nsw.gov.au/nsw-economy/2021-22-nsw-intergenerational-report

[6] GST relativities are informed by the Commonwealth Grants Commission's assessment methodology which is based on the principle of horizontal fiscal equalisation. The methodology includes a series of models determining the fiscal capacity of states.

government revenue sources[7] are assumed to be either acyclical (not correlated with cycles) or driven by other cyclical factors; for example, transfer duties with respect to housing market cycles.

This provides an estimate of the cyclical component of each revenue item, $\tilde{r}_i$ (Equation 4). In our notation, we use a lowercase r for revenue components as a share of GSP.[8] Elasticities with respect to the output gaps ($\varepsilon_{i,y}$) are assumed to be 1, consistent with existing literature on the impacts of business cycles on total government revenue and indirect taxes (Girouard & André, 2005; Fedelino et al., 2009; Parliamentary Budget Office 2013).[9]

$$\begin{aligned} \tilde{r}_{it} &= r_{it} - r_{it}^* \\ &= r_{it}\,\varepsilon_{i,y}\,\tilde{y}_t \end{aligned} \tag{4}$$

2.3 Effects beyond the business cycle

Looking beyond the business cycle, we identify property market dynamics and coal prices as significant drivers of government revenue in New South Wales. Over the past decade, transfer duties and mineral royalties have each had disproportionate impacts on total revenue growth (Figure 4). Despite transfer duty accounting for less than half as much revenue as GST receipts, it is the most volatile component in terms of its contribution to revenue growth. Likewise, royalties are only a relatively small component of revenue on average but are a source of large windfalls during coal price booms. On average, around 90 per cent of NSW royalties are derived from coal.

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[7] Such as other taxes including but not limited to health insurance levy, parking space levy, emergency services levy contributions, emergency services council contributions, waste and environment levy, government guarantee fee, private transport operators levy and pollution control licences.

[8] When adjusting a percentage, we can apply the elasticity as a linear scaling factor. Otherwise, elasticities should be applied as an exponent.

[9] While we identify no obvious cause for the NSW revenue elasticity to depart from unity, a key limitation of previous studies is the focus on national government revenue.

Figure 4: Average proportion and volatility of revenue components, 2009-10 to 2021-22
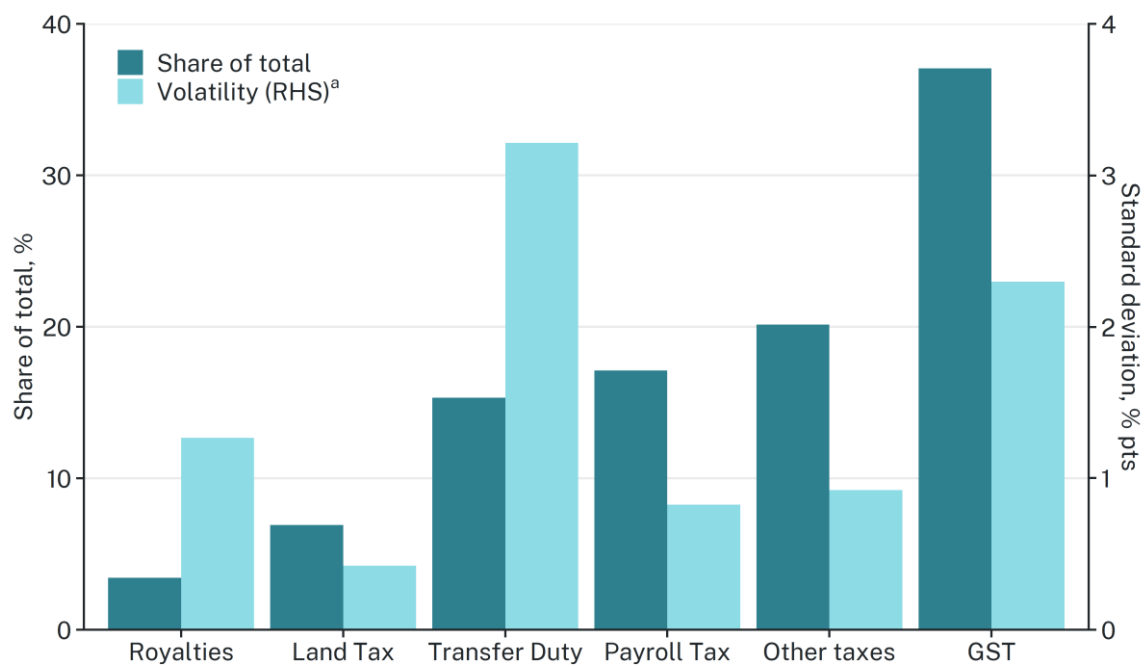
a Volatility measured as the standard deviation of annual contributions to total growth
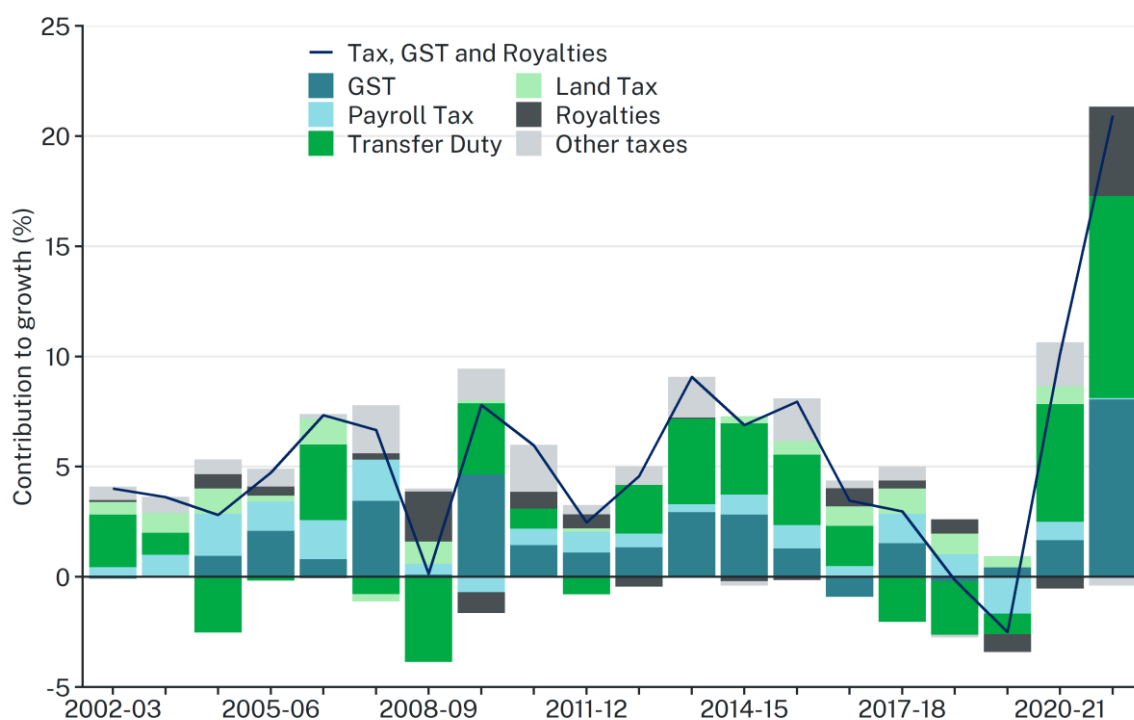
Source: NSW Treasury

Although they may be connected to the business cycle, asset and commodity price cycles are distinct, with different underlying drivers, timing and magnitudes (Catte et al., 2004). For example, commodity price cycles are chiefly driven by global demand, while property market cycles are highly exposed to interest rates. More importantly, the transmission of these three cycles into revenue growth differs significantly.

We can further understand the transmission of these cycles by looking at the contributions of different revenue sources to total revenue growth year-to-year (Figure 5). Transfer duty is the main driver of overall revenue growth in most years, declining quite strongly in years of housing market cooling. Land taxes are calculated based on the trailing three-year average of land values; this acts as a smoothing mechanic, reducing the volatility of land tax revenue. As expected, land tax tends to follow the path of transfer duty, but with a lag. GST and payroll tax tend to grow more steadily in line with the business cycle, with slow or slightly negative growth seen during years of economic slowdown. Finally, growth in royalties is more sporadic, with strong increases in periods of upward coal price shocks.

Due to the unique characteristics of asset and commodity cycles, and the contributions they have towards cyclical volatility in government revenue, our estimation of the SBB includes additional adjustments for these cycles.

**Figure 5: Annual contributions to tax, GST and royalties growth**

Source: NSW Treasury

2.3.1 Commodity price cycles

Royalties from mineral and petroleum resources are a key revenue source for the NSW Government. In 2019-20, the NSW Government raised $1.7 billion from royalties, with coal providing $1.5 billion, minerals $162 million and petroleum $1 million. Coal royalty rates are based on the value of production, and so revenue is determined by both production volumes and prices.

Year-to-year volatility in NSW royalties is primarily driven by coal prices. Although weather-related supply disruptions can lead to some variation, production has historically been more stable than prices, changing relatively gradually over time with respect to capacity (Figure 6). Meanwhile, prices experience large and rapid swings, which have increased in magnitude since the GFC. The latest rise in coal prices has been especially sharp, driving a strong increase in royalty revenue.

Figure 6: NSW coal production and thermal coal prices

Source: Department of Industry, Science and Resources
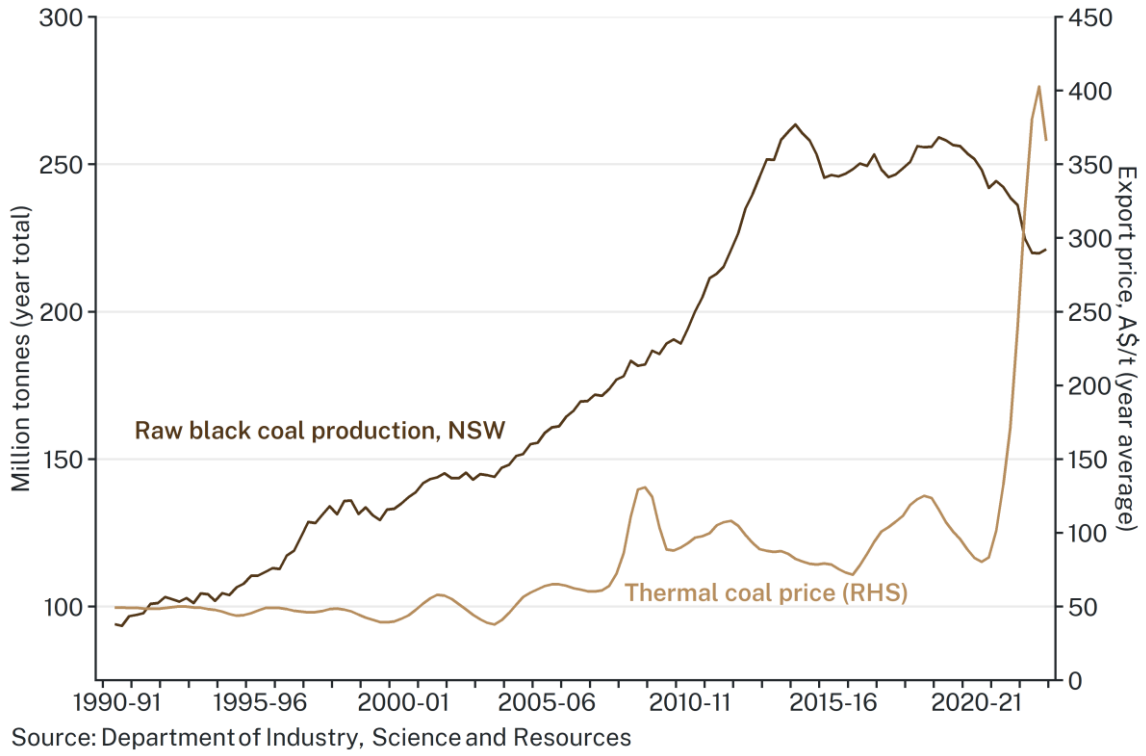
To adjust for coal price cycles, we assume there is a structural coal price and use this to estimate the counterfactual level of royalties (Equation 5), taking production volumes and average royalty rates (τ) as given in each year (i.e. they are assumed to be structural).[10] Cyclical royalties are then calculated as the difference between structural and actual royalty revenue.[11] For simplicity and by order of importance, we only consider the price of thermal coal, noting this accounts for over 75 per cent of royalties revenue on average and that prices for metallurgical coal are correlated with thermal coal.

$$Royalties_t^* = \tau_t \times Value_t^*$$
$$= \tau_t \times Volume_t \times Price_t^* \qquad (5)$$

We note that our approach differs from the commodity price adjustment used by the Commonwealth Treasury (McDonald et al., 2010; Win et al., 2013) which utilises a structural terms of trade assumption. This reflects the diverse set of relevant commodities at the national level.

Recent coal price movements have highlighted some practical challenges relating to trend-cycle decomposition. Firstly, we note the existence of asymmetric cycles in coal prices. In a business cycle context, researchers traditionally assume that 'boom' cycles are matched by equal 'bust' cycles. Evidently, this does not always hold true in commodity markets – for example, prices may spike and subsequently return to trend without significantly overshooting on the way down. Most trend-cycle decomposition techniques (e.g., Hodrick-Prescott filter) are not equipped to handle

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[10] τ captures all factors other than price and volume, such as royalty rates, exchange rates, export propensity, the composition of commodity production, etc. These factors are all assumed to be structural.

[11] Using a coal price elasticity adjustment to estimate the structural and cyclical decomposition of royalties gives unstable results at extreme values of the coal price gap. This occurs when cycle estimates approach and exceed 100 per cent of the structural value.

these asymmetries. Secondly, we note the existence of discrete structural breaks. There have been several historical instances of structural shocks to commodity prices and these are difficult for decomposition methods to identify without external judgement being applied.

To overcome the above challenges while maintaining simplicity, we apply a judgement-based approach to coal prices. This is similar to the Commonwealth Treasury's formulation of the structural terms of trade. We assume the structural thermal coal price, *Price**, is constant over time, subject to structural breaks.[12] Accordingly, we have identified two structural breaks which divide our research period of interest into three subperiods; US$50 per tonne prior to 2008-09; US$75 per tonne[13] from 2008-09 to 2020-21 and; US$110 per tonne from 2021-22 onwards[14] (Figure 7). The latter is approximately equal to consensus long-term forecasts.[15]

Figure 7: Average thermal coal price, NSW exports (FOB)

Source: Coal Services, NSW Treasury
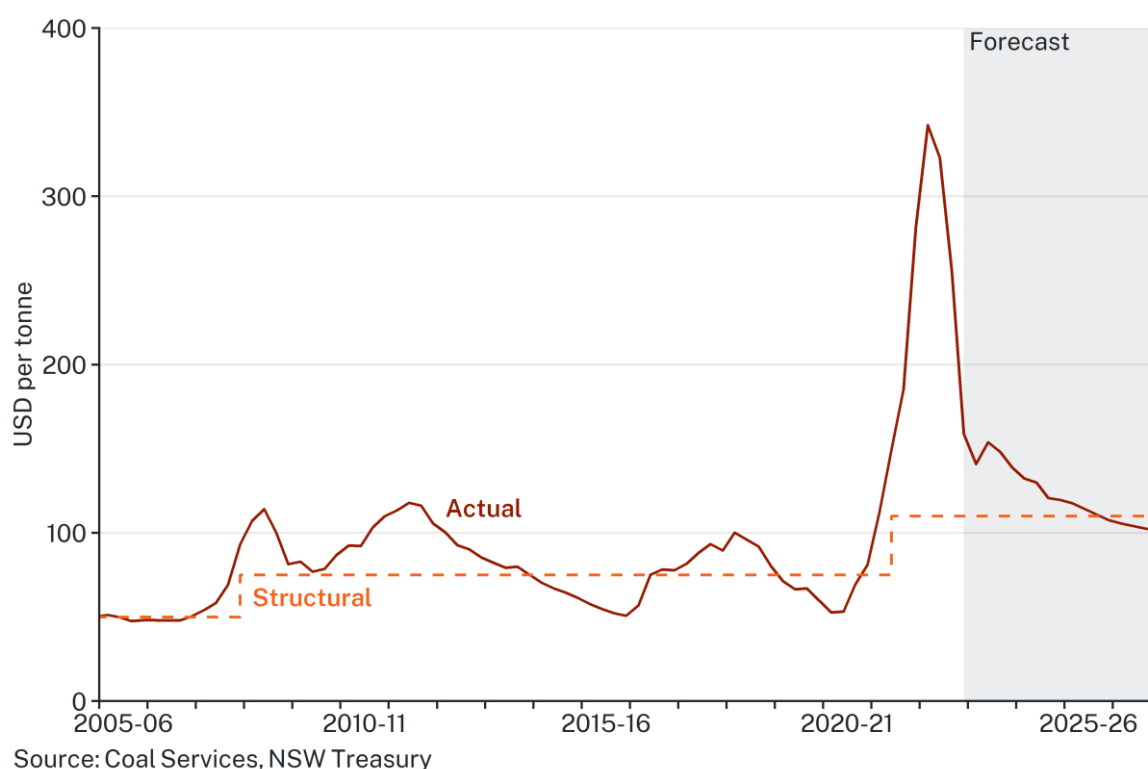
Our estimates of cyclical royalties account for over half of total royalties in both 2021-22 and 2022-23 (Figure 8). The unprecedented rise in coal prices drove a strong increase in royalty revenue which was temporary and cyclical in nature. The structural component of mining royalties is expected to rise to 0.4 per cent of GSP in 2024-25, reflecting increased coal royalty rates from 1 July 2024.

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[12] Structural price in nominal terms. There is no evidence of persistent historical inflation in coal prices.

[13] Structural break driven by increased industrial production in China and India. US$75 is slightly below the average during this period, reflecting the presence of asymmetric cycles.

[14] This period coincides with increased demand in the Northern Hemisphere and the Russian invasion of Ukraine.

[15] Consensus Economics Inc., *Energy & Metals Consensus Forecasts*, August 2023.

Figure 8: Cyclical and structural components of royalties

Source: NSW Treasury
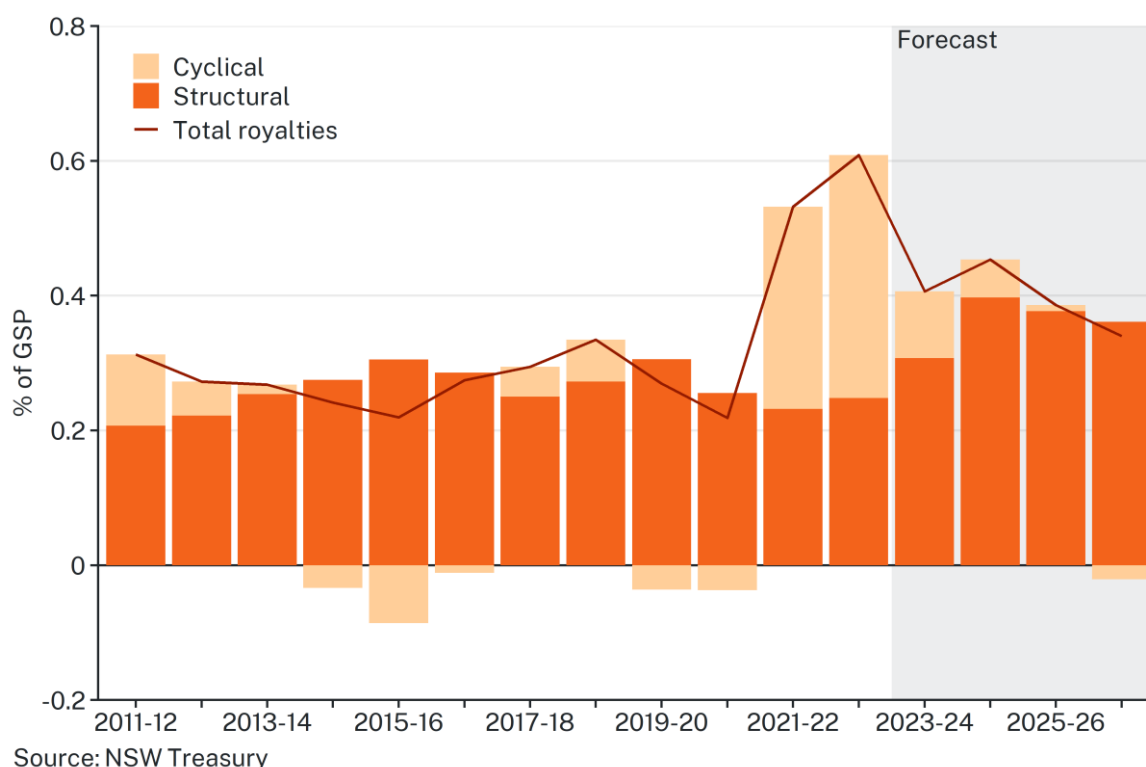
Finally, we also considered an alternative, highly conservative assumption that no structural break in thermal coal prices occurred in 2021-22. This would imply that the structural thermal coal price is substantially lower than consensus long-term forecasts and would result in lower estimates of structural royalties over the forward estimates, peaking at 0.3 per cent of GSP in 2024-25.

2.3.2   Asset market cycles

For New South Wales, property is the asset class of most significance for government revenue – with duties collected on property transfers as well as annual taxes on land holdings. Within the property market, there are two main cyclical factors that drive state revenue: prices and transaction volumes. They are clearly interrelated, and this presents some challenges in disentangling the two cycles from one another.

At the national government level, the Commonwealth Treasury adjusts Capital Gains Tax revenue compared to its 10-year average as a share of GDP (McDonald et al., 2010). This is a straightforward approach which implicitly adjusts for both trading volumes and prices. However, this average will be influenced by cycles, and takes several years to fully reflect any structural changes like policy decisions (see section 4.2). In our baseline analysis, we use the same approach – the deviation from the decade average (as a share of GSP) – to calculate the cyclical component of land tax revenue.

For transfer duty, policy changes are more frequent (see Box 2 in section 4) and so the decade average is a less reliable benchmark. Fortunately, however, volume cycles in the residential property sector can be measured with relative ease, by comparing the actual number of residential property transactions per capita with the historical average of 23.4 transactions per

1,000 residents each year in NSW (Figure 9).[16][17] Due to the correlation between residential and non-residential property markets, we assume the residential volume gap is reflective of the total property market (Box 1). Accordingly, we adjust transfer duties with respect to the residential transaction volume gap. We do not account for price cycles, noting more significant complexity and subjectivity in estimating a structural price (see section 4.1).

Figure 9: Actual and structural levels of residential transaction volumes in NSW
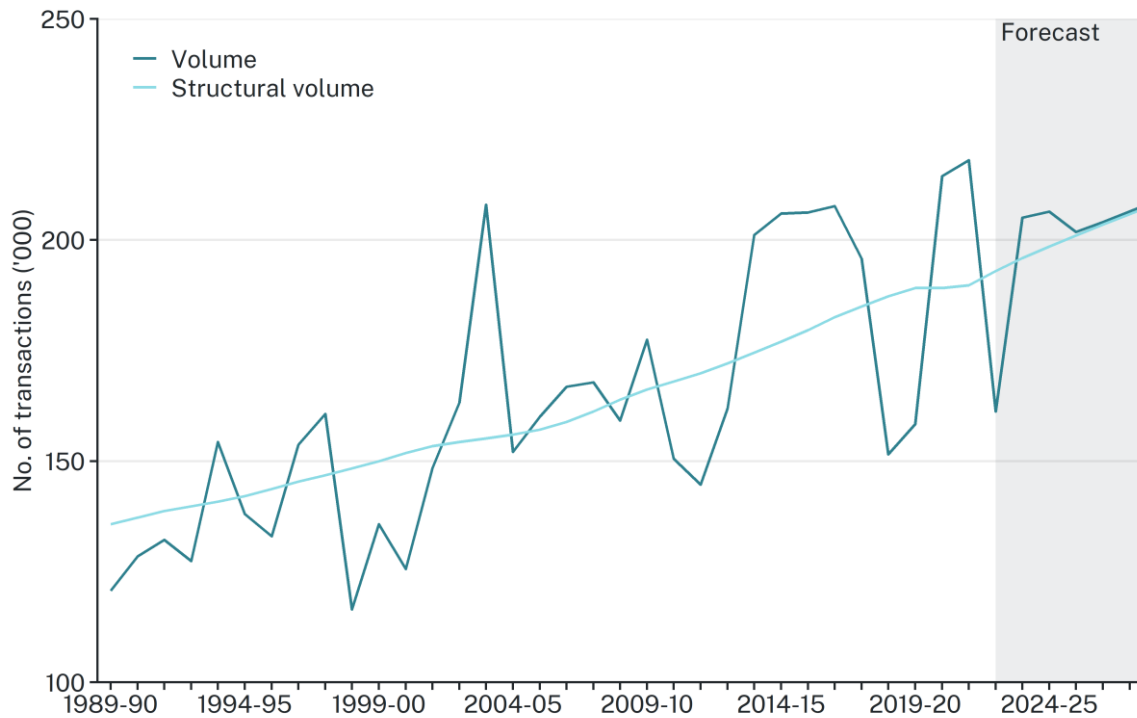
Source: NSW Treasury

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[16] Average from 1989-90 to 2018-19; NSW Treasury data.

[17] The structural level of transactions per capita may in fact drift over time. For example, the ageing of the population is expected to reduce the underlying number of transactions per capita as older homeowners have a significantly lower probability of moving homes in any given year. Secondly, rising prices increase the effective rate of duty and therefore the relative disincentive to transact. Over the last decade, this has resulted in lower transaction volumes by an estimated 3 per cent (Bandeira et al., 2022). While potentially significant over long timeframes, these factors are found not to be material over the forward estimates period and so are ignored for the purposes of this exercise, while noting scope to review and adjust our estimate for the structural level of transactions over time as appropriate.

Box 1. The non-residential property market

To decompose transfer duty revenue into cyclical and structural components, our baseline method applies the residential transaction volume gap as a measure of the property market cycle. This assumes that the transaction volume gap in the residential market is reflective of the total property market, including non-residential. Historically, non-residential transfer duties have typically accounted for around a quarter of overall transfer duty revenue.

Figure 10 shows that market conditions and transfer duty are generally correlated between property market sectors as they share many of the same drivers including interest rates. Although the non-residential sector is exposed to volatility from large transactions, including government asset sales, transfer duty has tracked closely across sectors.

As a result of the shared market dynamics and trends, we conclude that the residential transaction volume gap services as a practical proxy for the total property market cycle in New South Wales.

Figure 10: Market turnover and transfer duty by property sector

Source: NSW Treasury
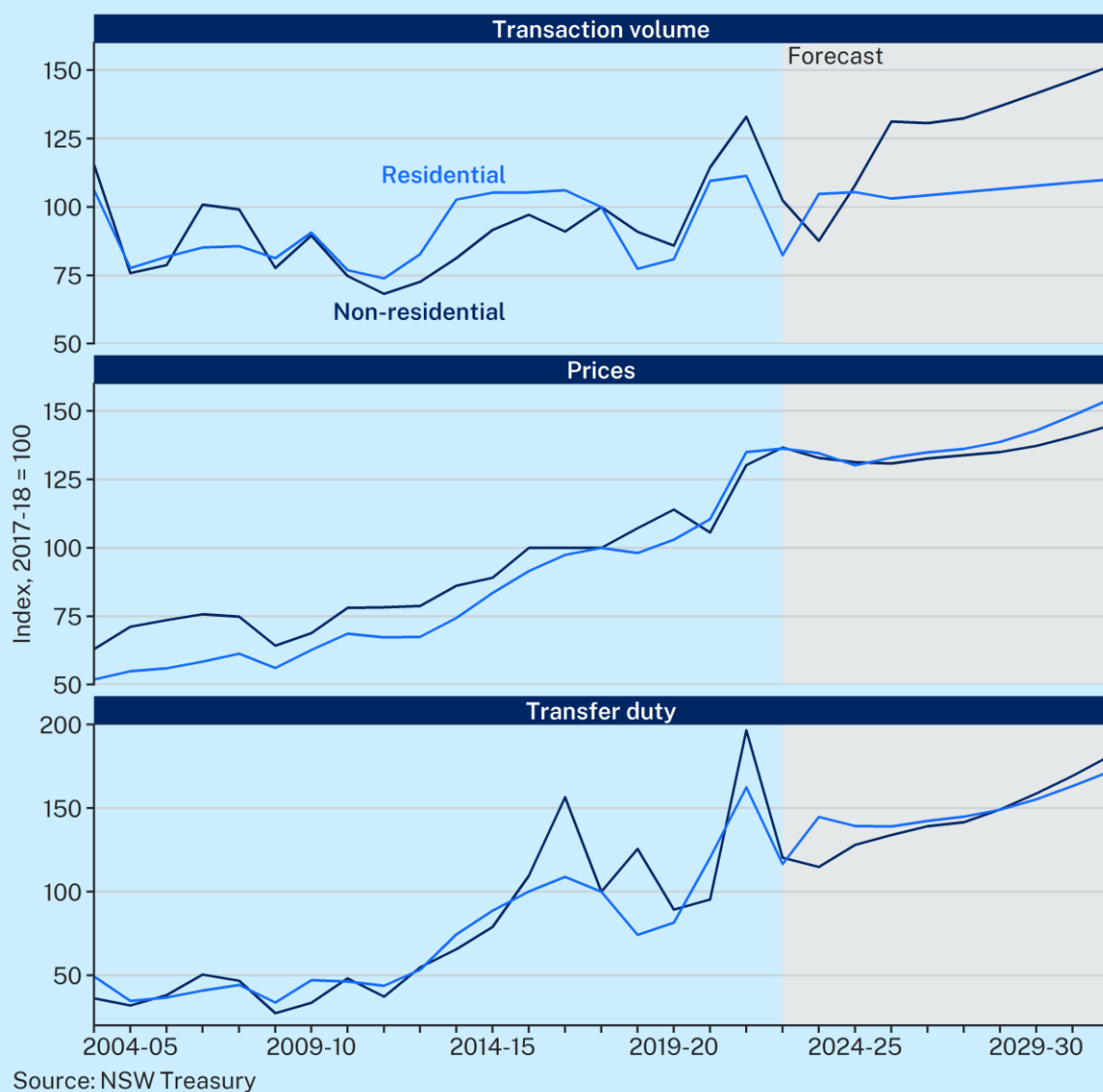
We compute the residential transaction volume gap ($\tilde{v}$) as the percentage difference between actual/forecast volumes and the structural level of transactions (Equation 6). This gap is then used to estimate the cyclical level of transfer duty revenue (Equation 7). The elasticity of transfer duty with respect to the volume gap, ε_v, is assumed to be equal to 1.

$$\tilde{v}_t = \frac{V_t - V_t^*}{V_t^*} \tag{6}$$

$$\tilde{r}_t = r_t\, \varepsilon_v\, \tilde{v}_t \tag{7}$$

In section 4, we test some alternative measures of property market cycles. This analysis will illustrate the element of uncertainty around SBB estimates. However, we conclude that our estimates are broadly robust to alternative methods for estimating the property market cycle and its impact on revenues.

3   Baseline results

The SBB is formally defined in Equation 8 as being the Net Operating Balance (NOB) *less* temporary measures (α) and the sum of all cyclical revenues ($\tilde{r}$), including asset cycle and commodity price adjustments:

$$SBB_t = NOB_t - \alpha_t - \sum_{i=1}^{N} \tilde{r}_{it} \tag{8}$$

Figure 11: Baseline estimates of the structural budget balance for NSW, 2023-24 Budget

Source: NSW Treasury
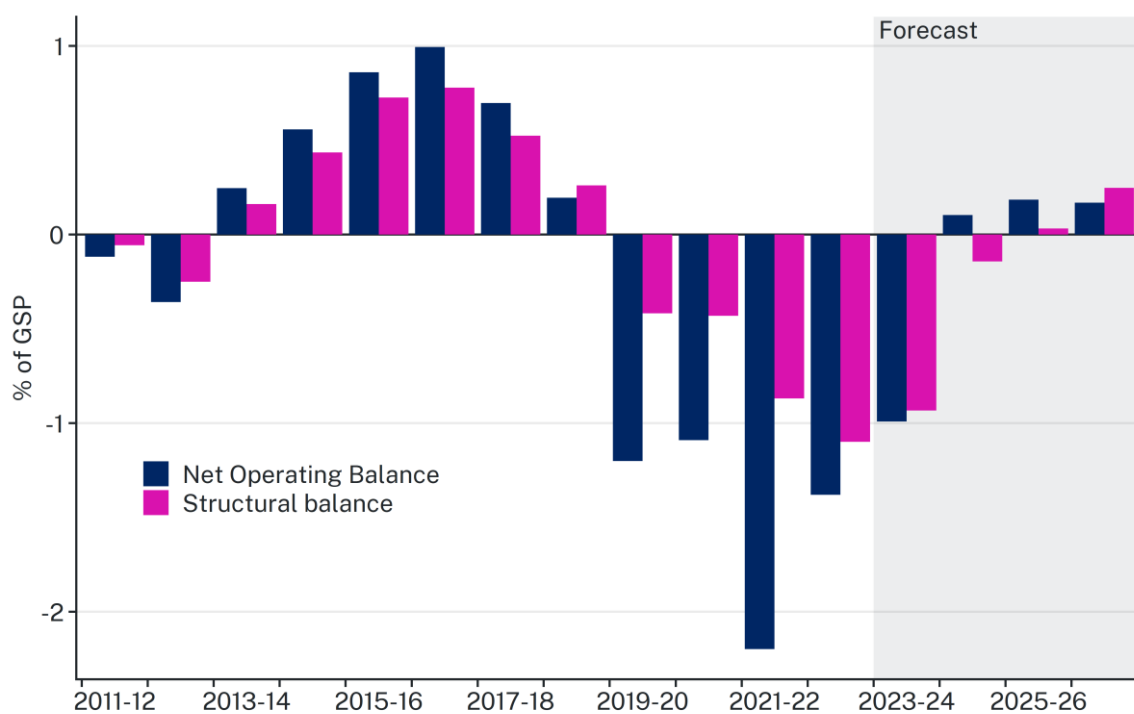
Figure 12: Baseline components of the Net Operating Balance for NSW, 2023-24 Budget estimates
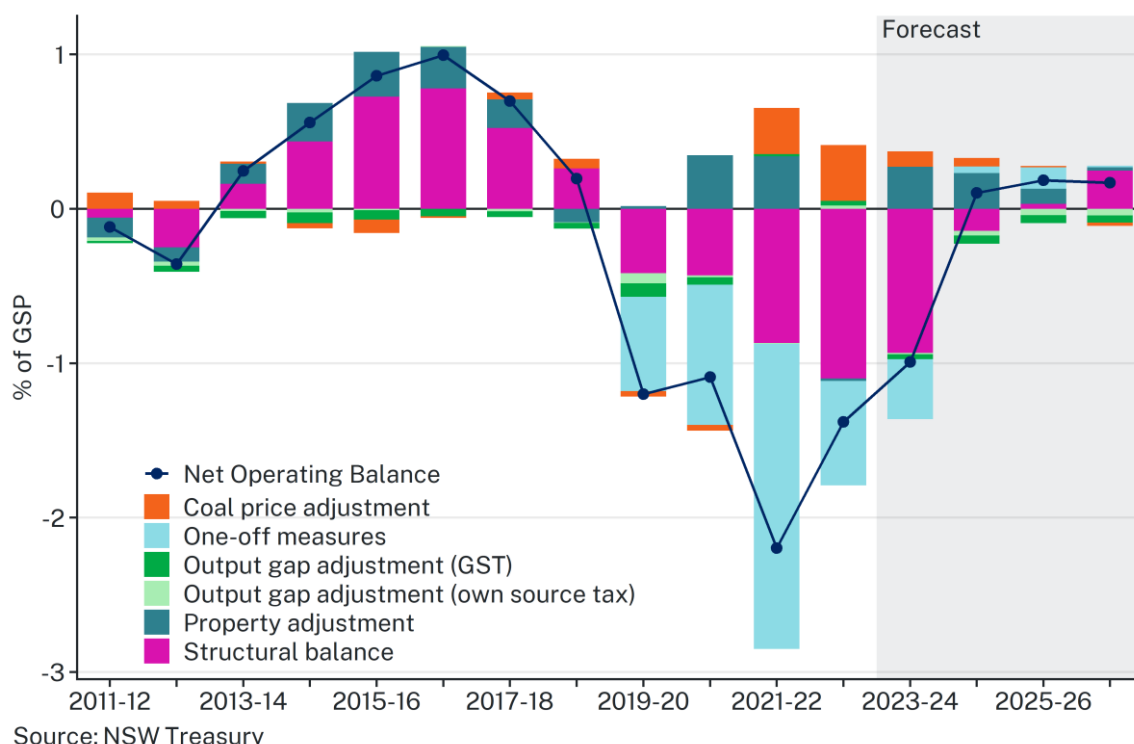

Source: NSW Treasury

Figure 11 compares the NOB and SBB. Figure 12 shows the decomposition of the NOB into each of the components in Equation 8. Over the past decade, cyclical property-related taxes have been a large component of the headline budget balance. The cyclical component of the property market contributed an estimated 0.7 per cent of GSP to revenue over 2020-21 and 2021-22.

4 Alternative measures of property market cycles

Due to the significant impact of property cycles on own-source revenue, several options have been considered for estimating cyclical and structural levels of property-related taxes. Three alternative approaches to measuring property market cycles are outlined in this section. These include a price adjustment, deviation from the decade average, and deviation from the long-term average (Figure 13). We then test the sensitivity of SBB estimates with respect to these alternative measurements.

Figure 13: Estimates of cyclical transfer duty and land tax

Source: NSW Treasury
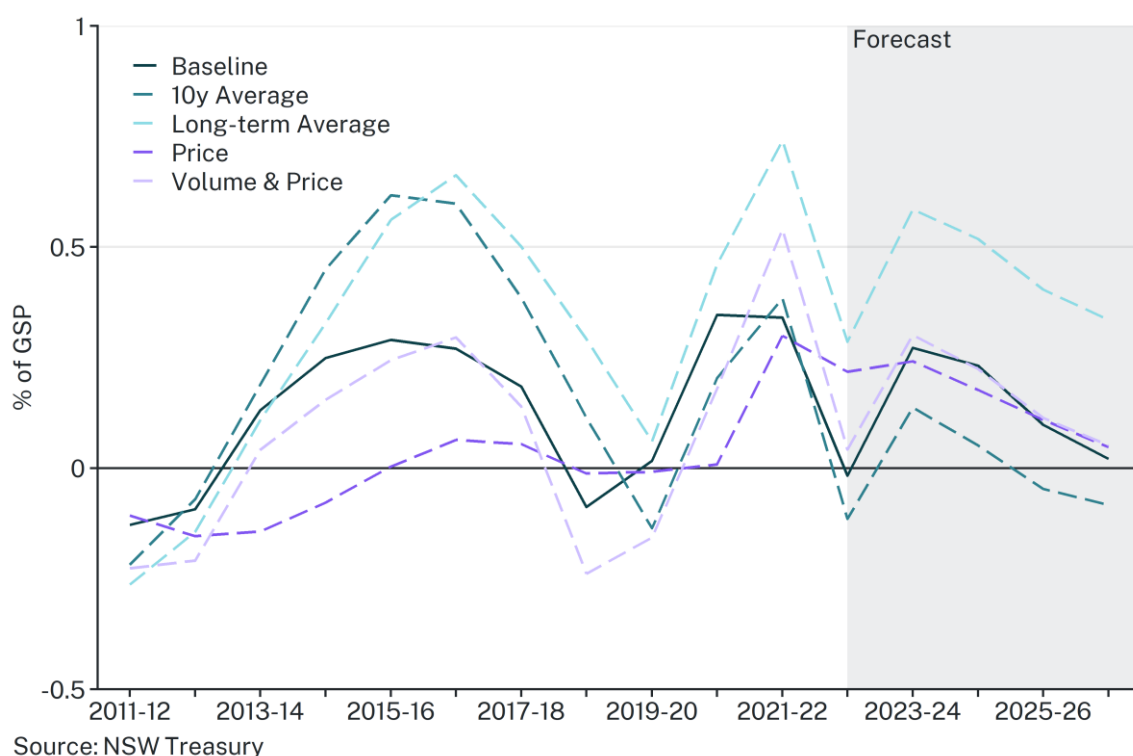
4.1 Including a price adjustment

Building on the baseline transaction volumes adjustment, we can add in a house price adjustment. The estimation of structural house prices is inherently subjective and there are several known approaches available (Farrington et al., 2008; Parkyn, 2010; Price & Dang, 2011). As such, these estimates tend to be subject to a high degree of uncertainty. Furthermore, there are significant challenges in interpreting what a "structural house price" should mean; is it a fundamental asset value, or simply a long-term trend which may depart from fundamentals for a period of time? What would be considered a fundamental or "fair" valuation of housing assets would likely reflect some short-term factors like interest rate cycles. Given our main objective here is to remove cyclical factors like this, we apply a Hodrick-Prescott (HP) filter, which is an established benchmark for trend-cycle decomposition. This also provides a reasonably good approximation of "fundamental" house prices (Price & Dang, 2011).

This approach to estimating structural house prices relies on the chosen sample period. Due to end-point biases in HP filtering, we estimate trend prices from 1995-96 onwards,[18] when NSW property prices had largely stabilised following the recession of the early 1990s. We then use the resulting estimates of the house price gap ($\tilde{p}$) from Equation 9 to adjust transfer duty – which is also adjusted for the transaction volume gap – and land tax revenue (i.e., $\varepsilon_{Land\ Tax,v} = 0$ in

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[18] The HP filter is applied across both historical and projected periods, so that the estimated trend follows that implied by house price projections. In doing so, this accounts for the expected path of interest rates.

Equation 10). For land taxes under this framework, we use the average of the house price gap over the prior three years, to reflect the transmission of prices to land tax.[19]

$$\tilde{p}_t = \frac{P_t - P_t^*}{P_t^*} \tag{9}$$

$$\tilde{r}_{it} = r_{it} \left(\varepsilon_{i,v}\, \tilde{v}_t + \varepsilon_{i,p}\, \tilde{p}_t \right) \tag{10}$$

Figure 14: Residential property price and volume gaps

a Price trend estimated from 1995-96
Source: NSW Treasury
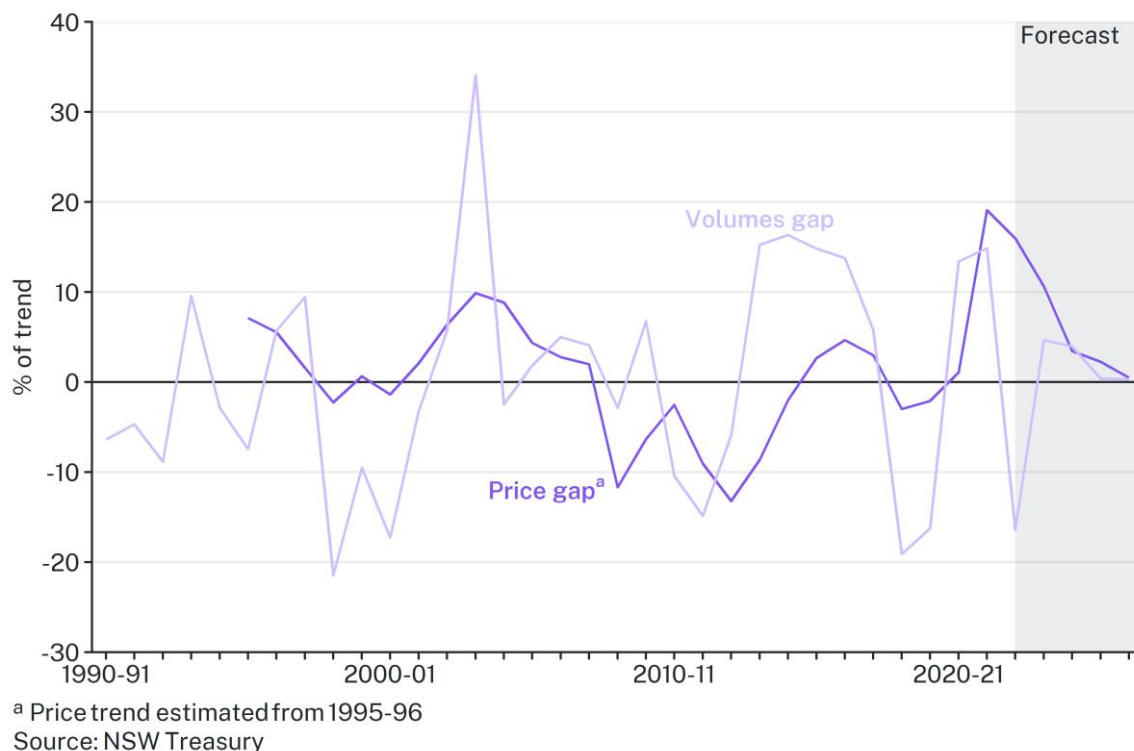
4.2 Decade average

Our baseline estimates use the 10-year moving average of land tax (as a percentage of GSP) to estimate its structural levels. This is consistent with the Commonwealth Treasury's (McDonald et al., 2010) treatment of Capital Gains Tax. This approach refrains from making any strong assumptions on underlying housing market conditions. Although the structural estimates will drift over time in response to observed outcomes, this can be driven by persistent cycles of say five years or more, dampening the estimated late-cycle impacts. In other cases, the average may be too slow to respond to structural changes (Box 2).

Despite its limitations, we find that the decade average performs reasonably well as an approximation of structural property-related taxes. As a result, we consider the extension of this approach to transfer duty.

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[19] House prices are used to proxy land values.

4.3   Constant long-term average

A defining feature of the "decade average" approach is that the structural measure of a tax can drift up or down over time in response to observed outcomes. However, the caveat to this approach is that a protracted cycle, of say five years or more, will influence the structural measure, dampening the estimated late-cycle impacts. We see potential evidence of this from 2013-14 and into the following decade, where transaction volumes were often above trend and prices grew strongly over this period (Figure 14). Our analysis suggests that there are reasonable grounds to believe that property-related taxes are a relatively stable proportion of GSP over the long run, and that housing cycles can last longer than 10 years, driven by a relationship with interest rate and credit cycles.

To test the performance of a longer-term average, we use a measure of transfer duty and land tax as a constant percentage of GSP to estimate the structural levels of these taxes. In doing so, we assume that each of these revenue components are stable around this point in the long run.

To estimate the appropriate measure for each tax, we use projections from the NSW Treasury Intergenerational Report (TIGR) Model. TIGR projects property-related tax revenues with respect to the size and age composition of the population, household income growth, interest rates and construction activity. Over the long run, where interest rates are consistent with the neutral rate and construction activity is consistent with demographic-driven demand, the model indicates that transfer duty stabilises at 1.0 per cent of GSP while land tax stabilises at 0.6 per cent of GSP.

While using a longer-term average of property revenues will make our structural estimates less responsive to cyclical movements, it will also be less responsive to any structural changes. Although we can overcome this drawback by manually classifying structural breaks, this requires a high degree of judgement. Moreover, our focus is on relatively short-run cycles, consistent with existing frameworks and conventions.

Box 2. Averages in the context of policy changes

There have been several adjustments to transfer duty policy settings over the past decade (Figure 15). Using a historical or moving average as a measure of structural revenue components tends to underestimate the responsiveness of the structural level with respect to policy changes and other structural breaks. In general, the longer period over which the average is taken, the less responsive structural revenue is assumed to be to these structural changes.

Accordingly, an average would be an appropriate baseline measure of structural revenue components where policy changes are limited in frequency and magnitude. Given the prevalence of policy changes in transfer duty, our baseline approach is more robust and is reflective of the structural environment in any given year since the cyclical component (and structural by deduction) is estimated based on contemporaneous market conditions.

Figure 15: Transfer duty measures over the last decade

Publication	Measure Description	4-year budget impact ($m)
2023-24 Budget	Expansion of the First Home Buyers Assistance Scheme	(998)
	Tax integrity and fairness measures (in part)^	959
	Closing off access to First Home Buyer Choices	660
2022-23 Budget	Option for first home buyers to choose between transfer duty or property tax (net impact on duty and property tax)	(664)
2020-21 Budget	Reducing transfer duty for first home buyers purchasing new homes (temporary two years)	(78)
2019-20 Budget	Foreign Investor Surcharge exemption for retirement visa holders	(16)
2018-19 HYR	Indexing transfer duty thresholds to CPI	(185)
2017-18 Budget	First Home Buyers Transfer Duty Exemption	(1,123)
	Increase rate of Foreign Investor Surcharge on Transfer Duty	582
	Target off-the-plan deferral of Transfer Duty to owner occupiers	530
	Foreign developer surcharge rebates	(34)
2016-17 Budget	Foreign investor transfer duty surcharge	589
	Removal of off-the-plan deferral for foreign investors	246
	Abolition of intergovernmental agreement taxes*	(1,800)
2012-13 Budget	Raise the property value cap on first home buyer stamp duty concessions for new homes from $600,000 to $650,000 from 1 July 2012	(15)
2011-12 Budget	Target first home buyers' stamp duty concession to newly built homes	1,049

includes abolition of non-real business asset duty, mortgage duty and marketable securities duty

^ The relevant duty measure is the change to corporate reconstruction duty relief. The transfer of assets between the members of a single corporate group for the purpose of restructuring is exempt from transfer duty under certain circumstances. This exemption for corporate reconstructions will be replaced with concessional duty charged at 10 per cent of the duty otherwise payable, applying to transactions occurring on or after 1 February 2024.

4.4 Sensitivity of results

Comparing our four measures of property market cycles, we find they are broadly consistent with each other (Figure 13). There is a low dispersion of estimates prior to 2014-15 and we can place relative confidence on the estimated levels of SBBs during this period (Figure 16). Thereafter, we see a wider range of estimates.

Although our baseline approach does not explicitly adjust for house price cycles, these are correlated with transaction volume cycles (Figure 14). As a result, we conclude that the transaction volume cycle is a reasonably sufficient benchmark for calculating cyclical property market revenue.

This sensitivity analysis highlights a key element of uncertainty around estimates of the SBB for New South Wales. The property market is an important driver of revenue for the state, and the chosen method of calculating its cycles has some impact on the results. However, we see that the underlying trends in the SBB results are broadly independent of the decisions on how to calculate property market cycles (Figure 16).

Figure 16: Sensitivity of the Structural Budget Balance to alternative measures of property cycles
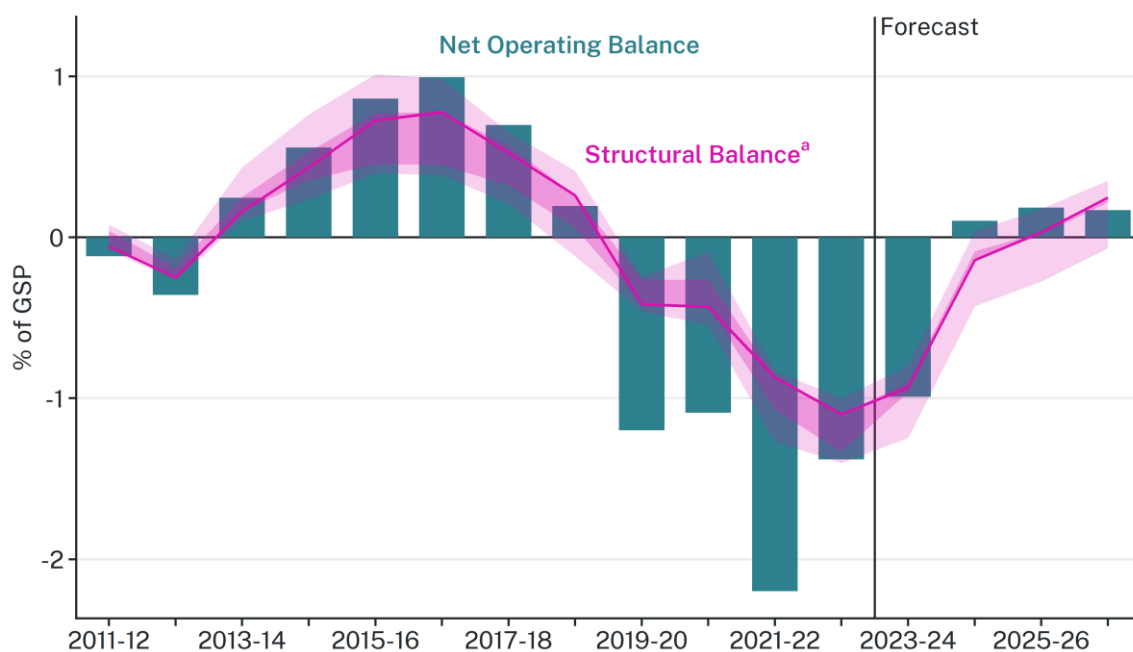
[a] Shaded area indicates the range of estimates; darker shading represents the range excluding the highest and lowest values; solid line represents the baseline estimates.
Source: NSW Treasury

5 Conclusion

Our analysis of the SBB for New South Wales highlights the importance of property market dynamics in explaining cyclical variation in state government balances. Adjustments to transfer duty and land tax accounts for a large component of headline net operating balances – far above national and state business cycle adjustments (Figure 12).

We find that net operating surpluses from 2013-14 to 2018-19 were driven by a combination of the property market cycle and structural budget surpluses. At the onset of the COVID-19 pandemic, one-off fiscal stimulus measures became a prominent feature of budget balances. Additionally, the SBB position moved from surplus to a deficit position – suggesting that fiscal stimulus in response to the pandemic included more than just one-off factors. This was mirrored by some continued uplift from the property market, underpinned by low interest rates. However, monetary support has been reduced in response to higher inflation. Property turnover volumes were below trend in 2022-23, but the housing cycle is expected to provide some further uplift to government revenue over the forward estimates.

Coal price shocks have also been found to be an important short-term driver of NSW Government revenue. Taken in isolation, the impact in most years is minimal. However, there have been periods of sharp price increases which have temporarily boosted royalty revenue. A prominent example of this is seen in 2021-22 and the forward estimates, marked by an unprecedented rise in coal prices.

Sensitivity analysis has highlighted a degree of uncertainty around point-estimates of the SBB. Accordingly, the "true" structural position may be different from our baseline estimates, and we have presented a range of estimates to reflect this. However, the underlying trends in the SBB results are broadly consistent across alternative estimation methods.

Estimates of the SBB can make an important contribution to the assessment of the sustainability of the budget position. This paper has detailed several insights into key factors influencing state finances both historically and into the forward projections. Contemporary estimates of the SBB are more comparable with long-term projections such as those contained in the Intergenerational Report, than headline measures. Accordingly, there is also scope for the SBB to complement existing benchmarks used in the assessment of fiscal sustainability, for example, the fiscal gap.[20]

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[20] The fiscal gap is the projected change in revenues less recurrent and capital expenditures (excluding interest) as a percentage of Gross State Product (GSP) over a period of years. It does not account for cyclical factors. Thus, a cyclical boost to the budget in the base year would lead to a worsened headline fiscal gap.

Appendix A: Revenue and Expenditure disaggregation

In determining the main drivers of New South Wales' structural deficit position, it is useful to disaggregate the operating balance into revenue and recurrent expenditure. Expenses have been the main driver of New South Wales' structural deficit position over recent years.

Figure 17 shows that structural expenses have increased to over 14 per cent of GSP and are expected to remain elevated over the forward estimates in comparison to pre-COVID levels. On the other hand, structural revenue has been relatively steady, remaining between 13 and 14 per cent of GSP.

While growth in structural expenses partly reflects some spending initiatives and policy changes, it also includes parameter changes and other indirect effects of COVID-19 and recent climate-related disaster events that cannot be isolated.

Figure 17: Structural revenue and expenses
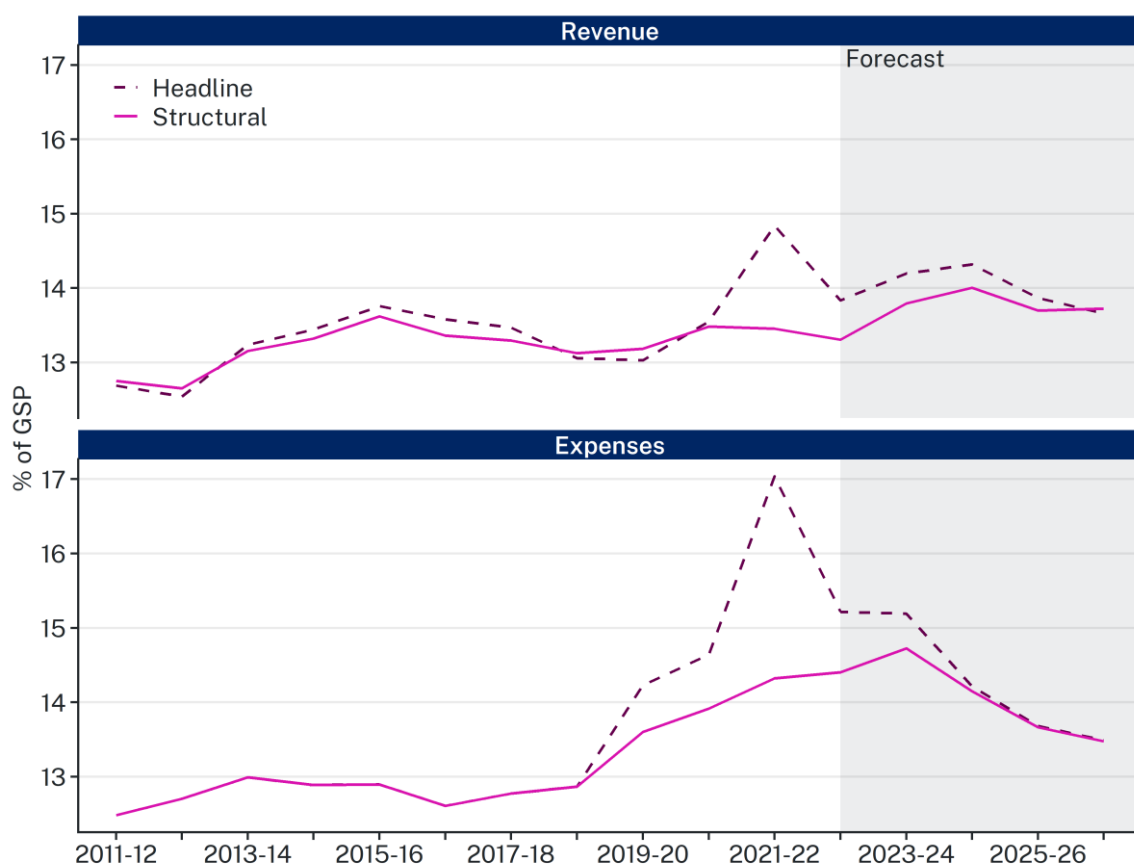
Source: NSW Treasury

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