# A Model-based View on the Stance of Monetary Policy

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**16 February 2025**

## 1. Introduction

This note provides a model-based view, as of 16 February 2025, on the appropriate path for the RBA policy interest rate. Interest rate paths are provided under alternative approaches to monetary policy and the preferred path is subjected to sensitivity analysis. Under the preferred path, the policy interest is unchanged at 4.35 per cent in the first half of 2025, before there are a small number of staggered rate reductions towards a neutral cash rate of 3.7 per cent.

Compared to the two macro models at the RBA, the style of the model used here (Murphy, 2023, 2024) falls between that of the more data-oriented MARTIN model and the more theory-oriented MSM model. Compared to both of the RBA models, the model used here has more detail in modelling industries, fiscal policy and COVID effects. Using the model, in 2021 Murphy (2021), unlike other forecasters, was able to largely forecast the inflation outbreak that occurred in 2022 followed the lifting of COVID restrictions and the over-prolonged expansion of fiscal and monetary policy.

This note begins by presenting the model view of the economic outlook, including the forecast for the cash rate. It then uses alternative approaches to monetary policy to develop alternative paths for the policy interest rate. These approaches differ in the way they adjust the policy interest rate in working to control the inflation gap and the unemployment gap. Under a backward-looking approach, the policy interest rate responds to observed inflation and unemployment gaps in so-called Taylor rules. Under a more sophisticated forward-looking approach, the model and its forecasts for the inflation and unemployment gaps are used to optimally control the policy interest rate.

The note then shows to what extent its preferred path for the policy interest rate is sensitive to alternative assumptions for the sustainable unemployment rate or NAIRU, consumer indirect taxes/subsidies, the future stance of fiscal policy and monetary policy at the US Federal Reserve.

## 2. Economic Outlook

The model forecasts are summarised in Table 1. The forecasts are presented in a similar format to the customary format in the Statement on Monetary Policy for ease of comparison. These baseline forecasts use the model's backward-looking Taylor rule for monetary policy.

To measure the inflation gap, the model compares inflation, as measured by the national accounts implicit price deflator for household consumption (PHC), with the RBA inflation target of 2.5 per cent. PHC inflation is similar in concept to PCE inflation, which is targeted by the US Federal Reserve. PHC/PCE inflation uses a broader measure of consumer prices than the CPI-based target used by the RBA.

The PHC measure of inflation is largely unaffected by the government's "cost of living" measures. This is because the national accounts mostly treats these measures as increases in government consumption expenditure rather than as reductions in the price of household consumption. Later, this note examines how these "cost of living" measures should be treated by monetary policy.

To measure the unemployment gap, the model compares the unemployment rate with the NAIRU. In a wage equation estimated using piecewise linear regression, the NAIRU is estimated to have been 4.6 per cent since 2015.

Under this approach, the current unemployment rate of 4.0 implies a negative unemployment gap of -0.6 percentage points. PHC inflation is estimated at 3.0 per cent in the four quarter to the December quarter 2024, implying a positive inflation gap of 0.5 percentage points. On both counts, the cash rate should be significantly above neutral under a backward-looking Taylor rule. In fact, the existing cash rate of 4.35 per cent turns out to be in line with the model's Taylor rule.

The model forecasts show the cash rate remaining steady at 4.35 per cent in the first half of 2025, before gradually falling to reach the estimated neutral nominal interest rate of 3.7 per cent by mid-2027. By mid-2027, a neutral cash rate is appropriate under the model's Taylor rule because of two offsetting effects. On the one hand, there is a small negative inflation gap of -0.3 percentage points, as the model measure of inflation has fallen to 2.2 per cent. On the other hand, there is also a small negative unemployment gap of -0.2 percentage points. While the unemployment rate has risen to 4.4 per cent, it is still below the estimated NAIRU of 4.6 per cent.

The estimated neutral nominal policy interest rate for Australia of 3.7 per cent is a little above the estimated corresponding rate for the United States of 3.45 per cent. This reflects the higher effective target for inflation in Australia.

This forecast for the Australian cash rate is consistent with cuts of 25 basis points in mid-2025 and late-2026. These two cuts take the cash rate from 4.35 per cent today to 3.85 per cent. Interestingly, this planning path is similar to futures market expectations for the US effective policy interest rate (CME Group, 16 February 2025). Similarly, the Australian and US rates are virtually the same today, at 4.35 per cent and 4.33 per cent respectively.

## 3. Alternative Backward-looking Approaches

Here we show what difference it makes to the key forecasts if we replace the model's Taylor rule with a Taylor rule that is closer to the one appearing in the RBA MARTIN model. First, we explain how the two Taylor rules differ.

The starting point for the model's Taylor rule is a fully estimated equation based on historical data extending from 1992. However, in estimating such a rule, there are several issues in how to measure inflation and unemployment gaps. For example, actual or forecast inflation may be used and views may differ on the value of the NAIRU. Hence, the gaps used in any estimated equation are likely to differ from the gaps actually used by the RBA in adjusting the cash rate from time to time. The resulting measurement errors on the model rule are likely to bias downwards the estimated gap coefficients. Recognising this, in the model the gaps coefficients are scaled up modestly from their estimated values.

In the Taylor Rule in the RBA MARTIN model, the gap coefficients are chosen rather than estimated from historical data (Ballantyne et al., 2020). The chosen coefficient values are substantially higher than the scaled up coefficients used in my model. Hence, under a MARTIN-style rule, the cash rate is more sensitive to inflation and unemployment gaps than is the case in my model.

We now replace the model Taylor rule with a MARTIN-style rule and re-simulate my model. The MARTIN-style rule used here is not identical to the actual MARTIN rule, the main difference being that the two rules measure the neutral interest rate in different ways. The key forecasts under the two alternative Taylor rules are compared in Charts 1-3.

Under the MARTIN-style rule, the cash rate is more variable, reflecting its greater sensitivity to fluctuations in inflation and unemployment (Chart 1, green vs orange lines). However, the trend in the cash rate is similar under both rules. As a result, the forecast paths for inflation and unemployment are virtually indistinguishable between the two rules (Chart 2 and 3, green vs orange lines). Since nothing seems to be gained from the greater variability of the cash rate under the MARTIN-style rule, my model rule is preferred in this context, with its smoother path for the cash rate.

This does not establish that my model rule will always outperform the MARTIN-style rule. The rule that works better can vary from model to model and from shock to shock.

## Alternative Taylor Rules for Monetary Policy

**Chart 1: Cash rate**

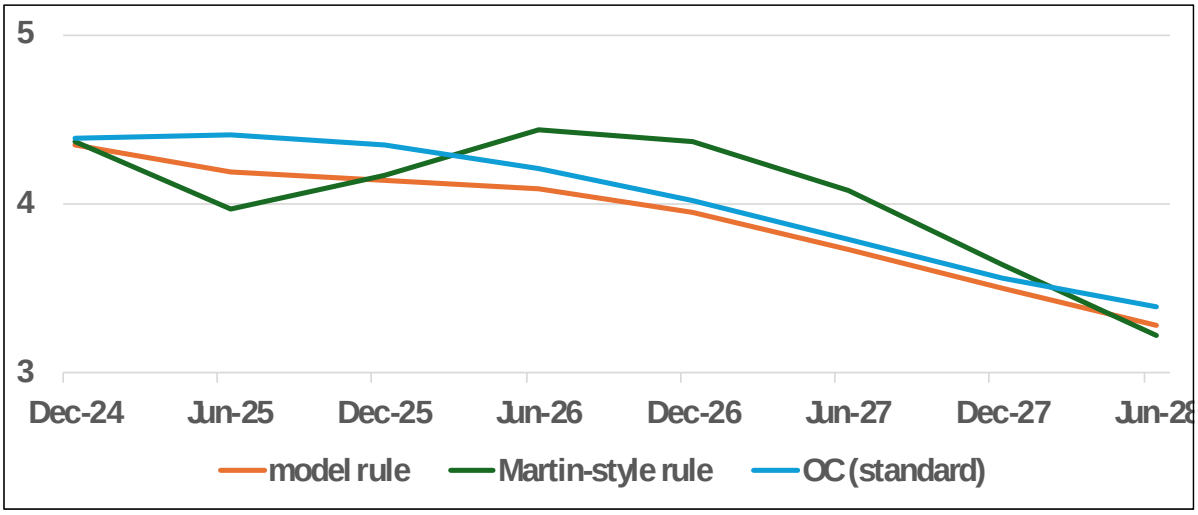



**Chart 2: PHC inflation rate**

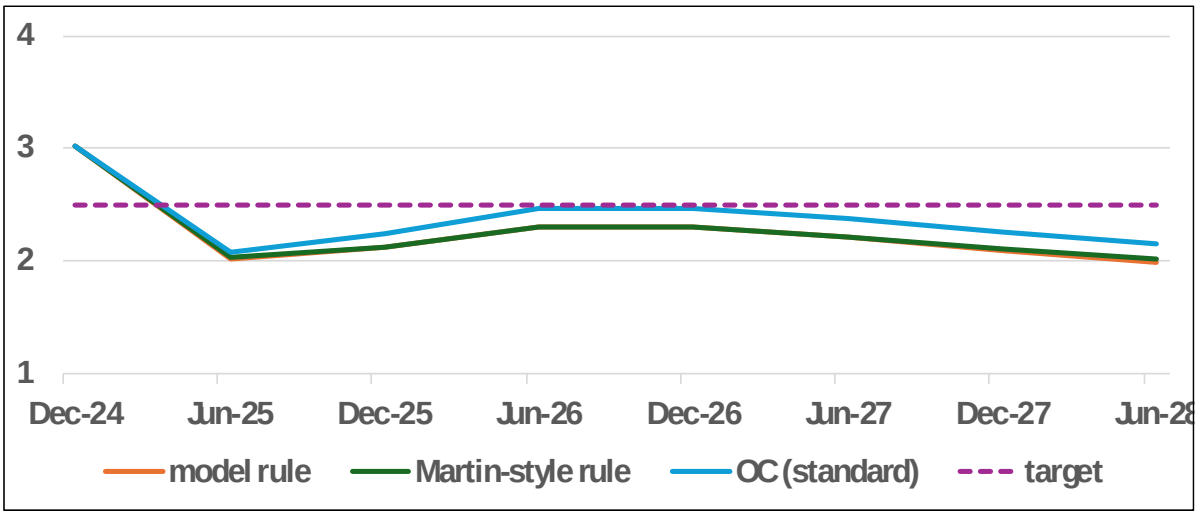
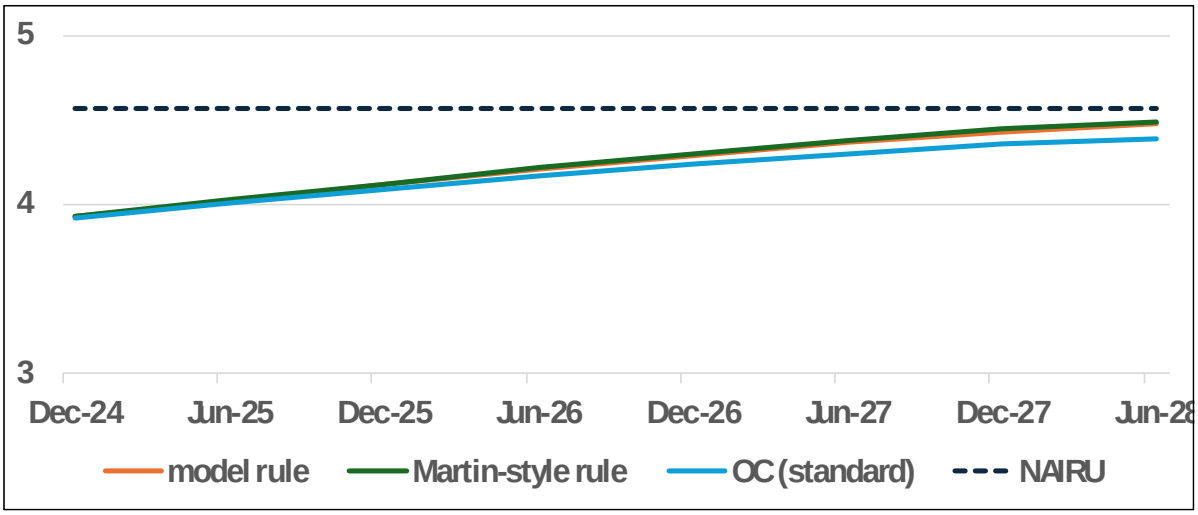



**Chart 3: Unemployment rate**



## 4. Alternative Forward-looking Approaches

We now consider how using a more sophisticated forward-looking approach to monetary policy affects the cash rate forecast. Under optimal control, the model and its forecasts for the inflation and unemployment gaps are used to optimally control the policy interest rate. For full details on how optimal control is implemented in the model, see Murphy (2023, 2024).

The key forecasts under optimal control are also shown in Charts 1-3, where they appear as the blue lines labelled OC(standard). Under optimal control, the cash rate follows a broadly similar path to under the model's backward-looking Taylor rule (Chart 1, blue vs orange lines). The main difference under the forward-looking approach is that the first cut in the cash rate is deferred from mid-2025 to mid-2026 and the second cut from late-2026 to early-2027. However, the cash rate reaches the neutral rate in mid-2027 under both approaches to monetary policy and the adjustment paths are smooth.

By design, optimal control will always do better in an overall sense in controlling inflation and unemployment gaps. In this case, this is reflected in inflation tracking closer to its target of 2.5 per cent (Chart 2, blue and orange lines vs the dashed line).

We use the open-loop version of optimal control, which can be subject to the problem of time inconsistency. Time inconsistency occurs when a central bank, in effect, misleads financial and other markets about the future path of monetary policy to induce asset price movements in foreign exchange and bond markets that help close inflation and unemployment gaps. Of course, a central bank following that misleading approach will ultimately lose credibility with markets, making it harder to close inflation and unemployment gaps in the future. Here, misleading behaviour is excluded, with monetary policy holding to its announced path, so there is no problem of time inconsistency. Brayton, Laubach and Reifschneider (2014) of the US Federal Reserve use optimal control in the same way.

Overall, both the model Taylor rule and optimal control lead to similar guidance for monetary policy at present. They both suggest that the RBA should be comfortable maintaining the cash rate at 4.35 per cent until at least mid-2025.

The alternative model forecasts obtained under optimal control are summarised in Table 2. They are similar to the forecasts in Table 1 because of the similarity in monetary policy under both the model Taylor rule and optimal control. Either scenario provides a reasonable basis for setting monetary policy today.

In using optimal control, we had to make an assumption about the weight to place on closing the unemployment gap relative to the weight to place on closing the inflation gap. We now investigate the sensitivity of the optimal control monetary policy to alternative relative weights.

Under standard optimal control, we assume equal weights. Under the hawk version of optimal control, we disregard the unemployment gap, leaving it to be resolved in the labour market without assistance from monetary policy. Under the dove version of optimal control, we place four times as much weight on the unemployment gap as on the inflation gap. The hawk and dove scenarios are polar choices, used to draw out the full range of possibilities. Our standard optimal control with equal weights on inflation and unemployment matches what is used at the US Federal Reserve (Brayton, Laubach and Reifschneider, 2014). See Murphy (2024) for more explanation and discussion.

The key forecasts under the three versions of optimal control are compared in Charts 4-6. Perhaps paradoxically, it is only the dove who initially tightens monetary policy (Chart 4, green line). This is because the dove places a high relative weight on eliminating the unemployment gap, which currently stands at -0.6 percentage points. Conversely, the hawk reduces the cash rate more quickly than under standard optimal control (Chart 4, orange vs blue lines), because the hawk disregards the negative unemployment gap. Despite these initial differences, under all three versions of optimal control the cash rate does not reach 3.5 per cent until late-2027.

## Hawks and Doves vs Standard Optimal Control

**Chart 4: Cash rate**

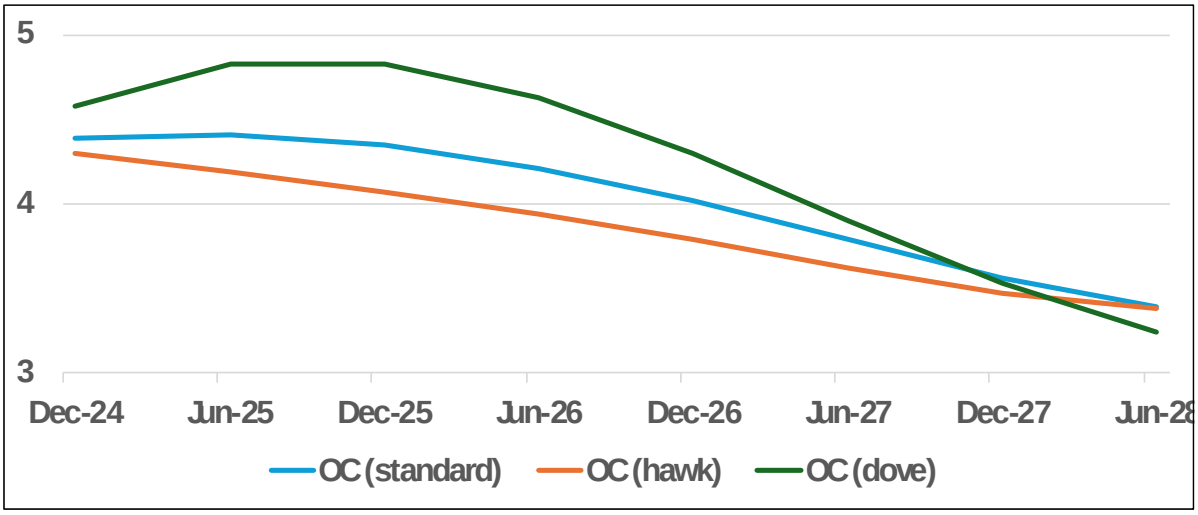



**Chart 5: PHC inflation rate**

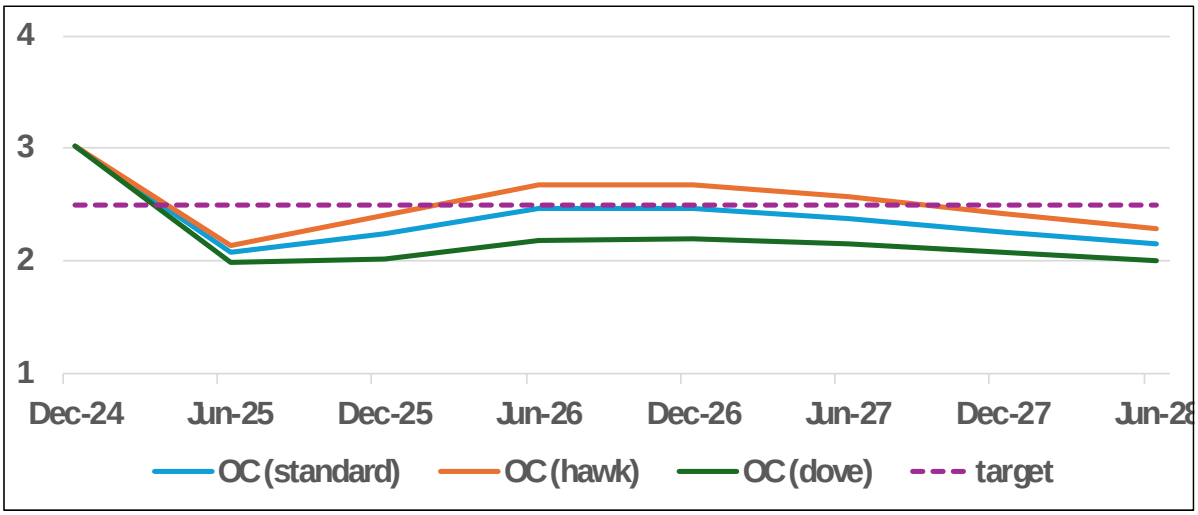
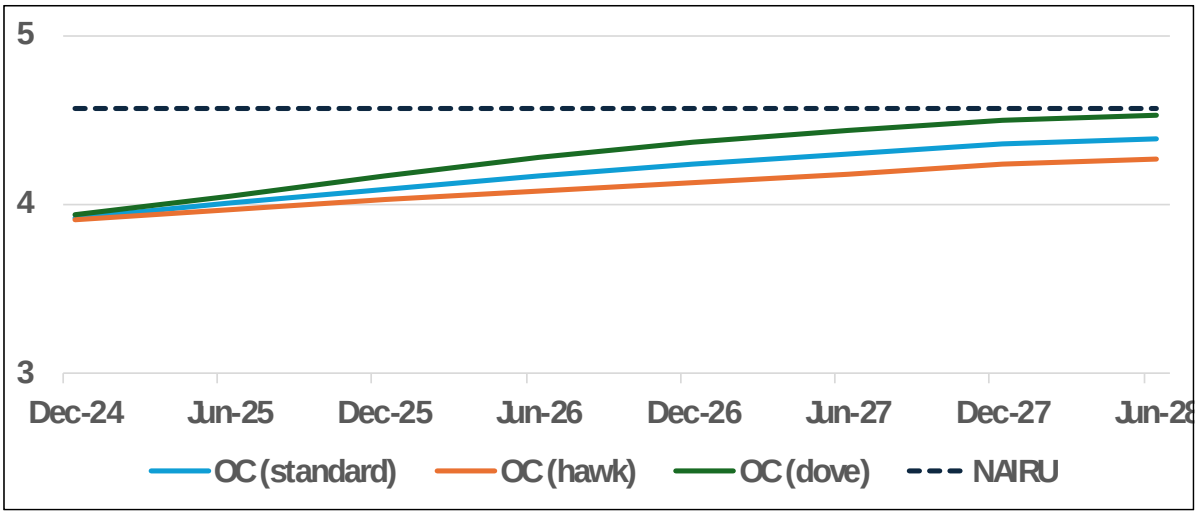



**Chart 6: Unemployment rate**



As would be expected given their different preferences, the dove succeeds in keeping unemployment closer to the NAIRU (Chart 6, green vs dashed lines), while the Hawk keeps inflation closer to its target (Chart 5, orange vs dashed lines). In the author's view, the standard optimal control strikes a reasonable balance been those two objectives. In any case, none of the three versions of optimal control indicate that the cash rate should be reduced from its current level of 4.35 per cent yet (Chart 4, all three lines).

## 5. Sensitivity Analysis

This note now examines to what extent its preferred planning path for the policy interest rate is sensitive to alternative assumptions for the NAIRU, consumer indirect taxes/subsidies, the future stance of fiscal policy and foreign monetary policy.

For this purpose, we use the standard optimal control scenario, shown in Table 2, as the preferred scenario that we subject to sensitivity analysis, rather than the scenario based on the model Taylor rule, shown in Table 1. Optimal control is better suited to sensitivity analysis because it better tailors the monetary policy response to each shock.

*NAIRU*

The NAIRU plays a significant role in setting monetary policy, but its value is only an estimate. For example, in the model, the estimated value for the NAIRU for the period since 2015 is 4.6 per cent, but this estimate has a standard error of 0.4 percentage points.

Before moving to the sensitivity analysis, we test the proposition that the COVID era may have changed the value of the NAIRU. We do that by truncating the estimation period of the wage equation to end in the December quarter 2019, instead of the September quarter 2024. However, the estimated value for the NAIRU for the period since 2015 is the same under both estimation periods at 4.6 per cent.

Thus, while this evidence does not support the proposition that the COVID era changed the value of the NAIRU, there is nevertheless uncertainty about the value of the NAIRU so we check the sensitivity of our results to an alternative value of the NAIRU. We reduce the NAIRU by one standard error, from 4.6 to 4.2 per cent.

Charts 7 to 9 show how the key forecasts change under a lower NAIRU. The lower NAIRU substantially reduces the existing unemployment gap, leading to a lower path for the cash rate (Chart 7, orange vs blue lines). However, this effect on the cash rate develops slowly. The first cut in the cash rate still does not occur until mid-2025, the same timing as under the model Taylor rule. As would be expected, under a NAIRU of 4.2 per cent the actual unemployment rate follows a lower path (Chart 9, orange vs blue lines).

It would have been an equally valid sensitivity analysis to simulate a higher rather than lower NAIRU. Either way, the conclusion would be that a significant change in the NAIRU estimate (in either direction) has only a slowly developing effect on the optimal path for the cash rate.

*GOVERNMENT SUBSIDIES*

The next sensitivity analysis investigates to what extent the optimal path for the cash rate is sensitive to consumer indirect taxes/subsidies. This is topical because of the government subsidies that have been introduced to reduce the cost of living. As noted earlier, the particular subsidies that have been introduced generally don't directly affect the PHC measure of inflation used to guide monetary policy in the model, so we can't validly use the model to *directly* test whether monetary policy should respond to those subsidies. However, we can still use the model to address the issue by using a similar type of policy shock that does affect the PHC measure of inflation.

## NAIRU 4.2 vs 4.6 per cent

**Chart 7: Cash rate**

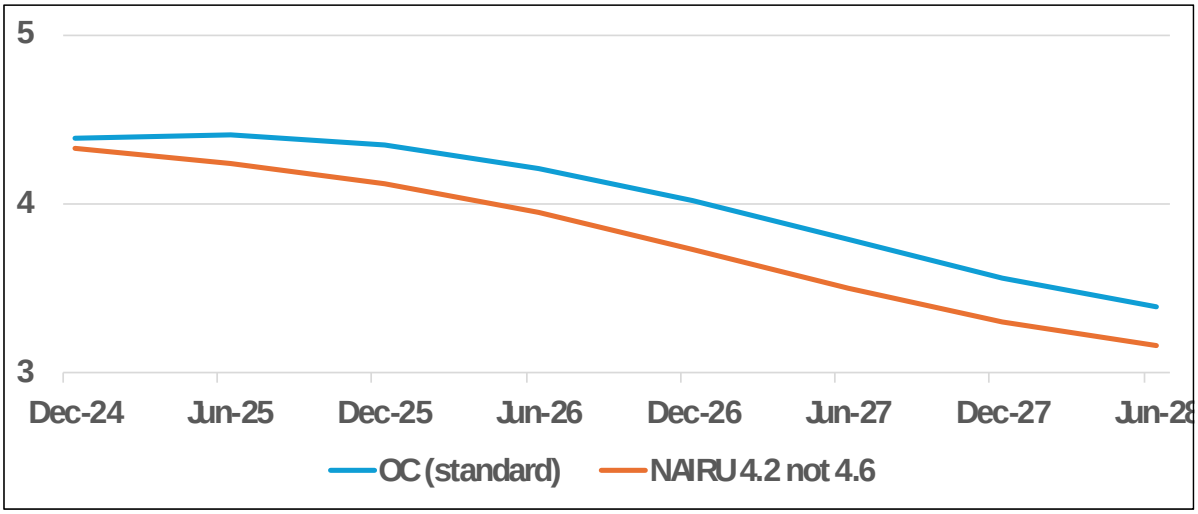



**Chart 8: PHC inflation rate**

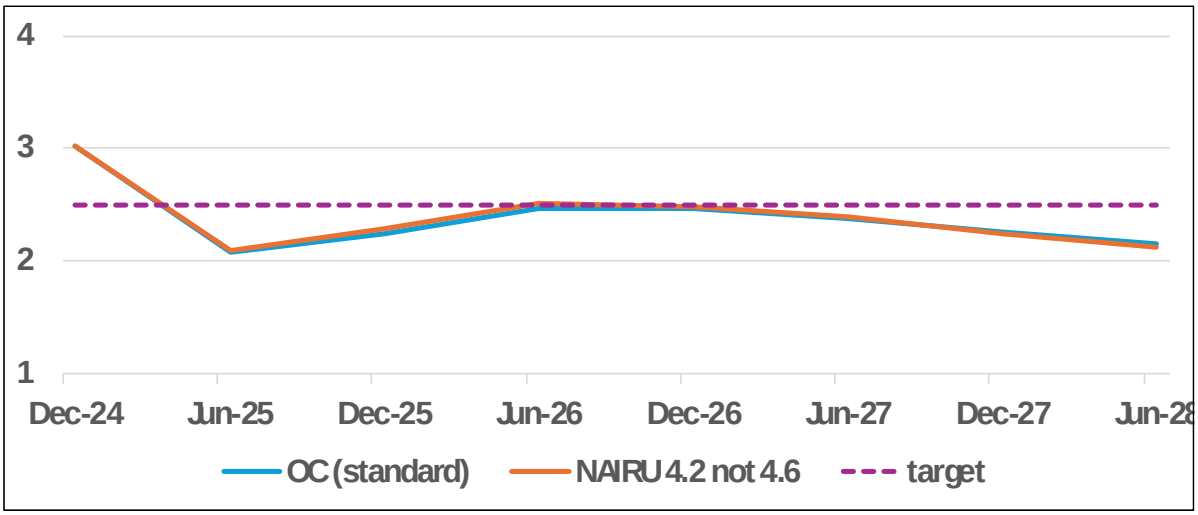
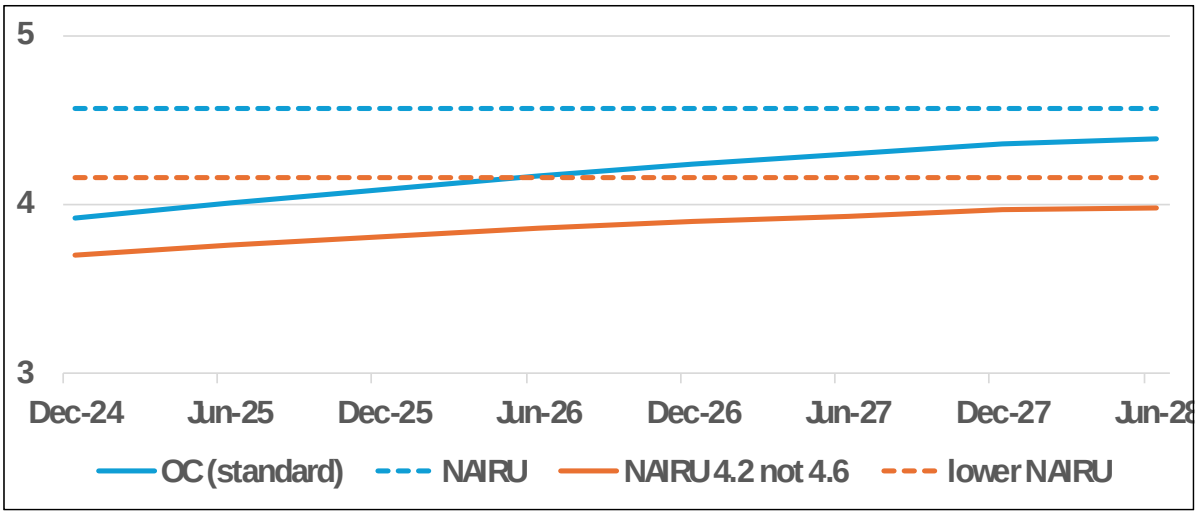



**Chart 9: Unemployment rate**



Specifically, we permanently reduce the rate of GST from 10 to 8 per cent. This substantially reduces PHC inflation (Chart 11, orange vs blue lines). Despite this, the cash rate is only marginally lower (Chart 10, orange vs blue lines). This is because a lower GST has only a one-off effect on inflation, rather than a more persistent effect, so it is broadly optimal for the RBA to "look through it". In the medium term, lower GST leads to a notably *higher* cash rate (Chart 10) because it loosens fiscal policy.

Analogous conclusions can be drawn about the effects of the "cost of living" measures. The RBA should look through the one-off, lowering effect on inflation of the "cost of living" measures. In the medium term, if the measures were to become permanent rather than remain temporary, the loosening in fiscal policy from the measures would lead to a *higher* cash rate.

*GOVERNMENT SPENDING*

The next sensitivity analysis considers an increase in government consumption expenditure lasting for two years that is equivalent in size to 1 per cent of GDP. The key effects are shown in Charts 13 to 15.

Unemployment is significantly lower for between two and three years (Chart 15, orange vs blue lines). The resulting more negative unemployment gap leads to a substantially higher cash rate (Chart 13, orange vs blue lines), peaking at 1 percentage point higher. Inflation is only slightly elevated (Chart 14, orange vs blue lines).

If instead the higher cash rate is resisted under an accommodating monetary policy, inflation would be much more elevated. That higher inflation would ultimately force a substantially higher cash rate. Thus, initially accommodating the fiscal expansion with monetary policy would only serve to delay the emergence of a substantially higher cash rate.

*US MONETARY POLICY*

The final sensitivity analysis examines the sensitivity of Australian monetary policy to foreign monetary policy. Specifically, we apply a so-called impulse shock to the US Effective Federal Funds Rate (EFFR). Initially, this adds 0.46 percentage points to the EFFR in the current quarter, after which this effect gradually fades (Chart 16, orange vs blue lines).

It is optimal for only part of this impulse to flow through to the Australian cash rate. Thus, the increase in the Australian cash rate seen in Chart 17 (orange vs blue lines) is less than the increase in the EFFR seen in Chart 16 (orange vs blue lines). The reason for this can be seen by considering the polar cases.

On the one hand, if the Australian policy interest rate failed to respond to the higher US policy interest rate, the Australian dollar would depreciate, which would add to inflation. On the other hand, if the Australian policy interest rate fully matched the rise in the US policy interest rate to prevent this depreciation, the higher Australian policy interest rate would subtract from inflation. So, achieving a broadly neutral effect on inflation requires an Australian policy response that partly, but not fully, matches the increase in the EFFR. This succeeds in having a broadly neutral effect on domestic inflation (Chart 18, orange vs blue lines).

We reached the conclusion that it is best to only partly match the rise in the US policy rate by considering the effects on inflation. However, the same conclusion is reached if we consider the effects on unemployment. Indeed, the potential effect on unemployment is almost perfectly neutralised, so the two lines cannot be easily distinguished on a chart.

*CONCLUSION*

In conclusion, the recommendation for an unchanged policy interest today is robust in several ways. It is robust to alternative views about the NAIRU, the application or otherwise of government subsidies of consumer prices and alternative views about the relative importance of controlling inflation and unemployment. What matters more for the current stance of monetary policy is the stance of Australian fiscal policy and of foreign monetary policy.

## GST to 8%

**Chart 10: Cash rate**

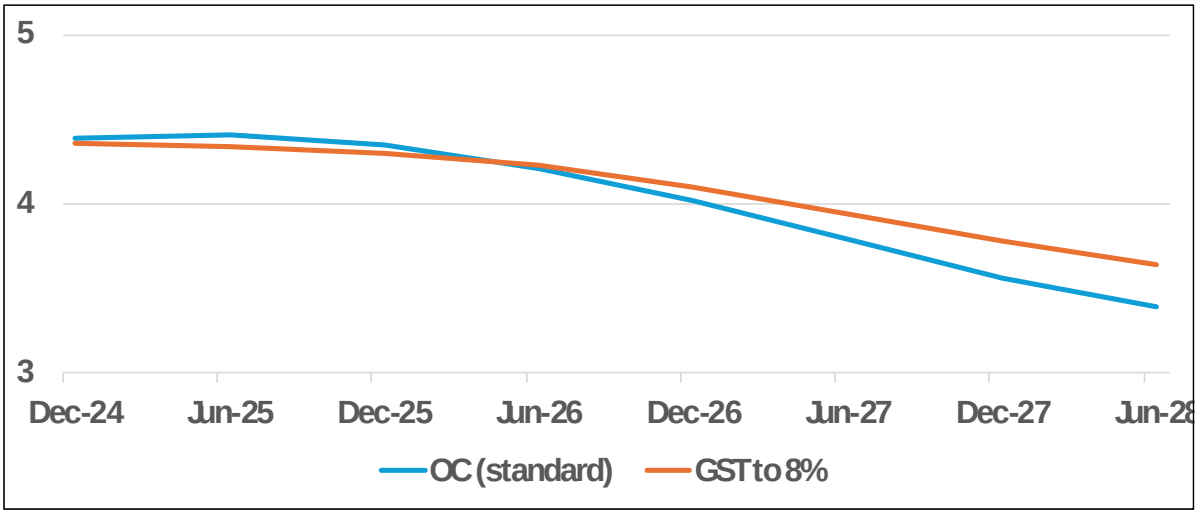



**Chart 11: PHC inflation rate**

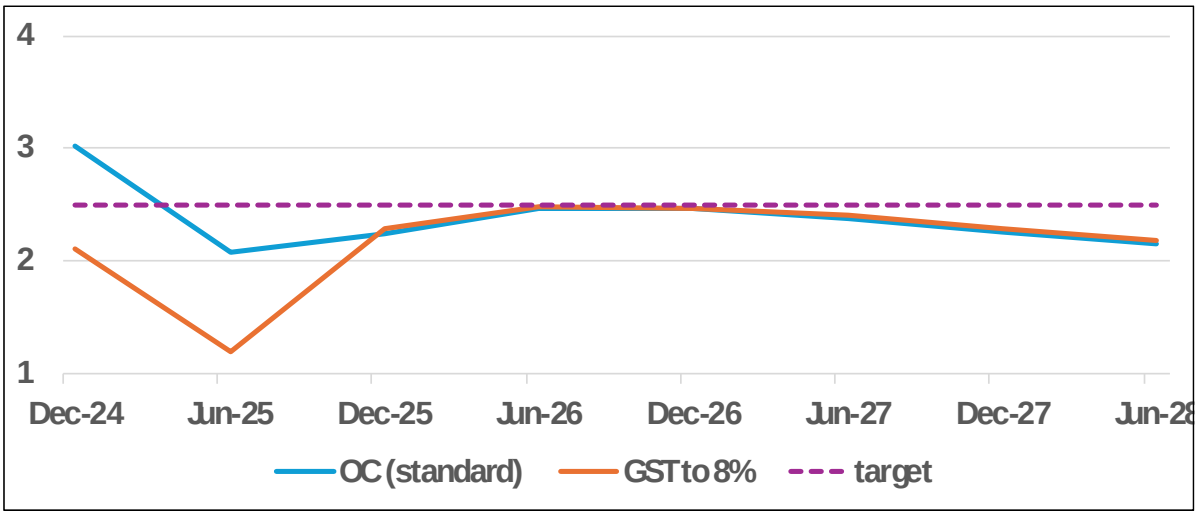
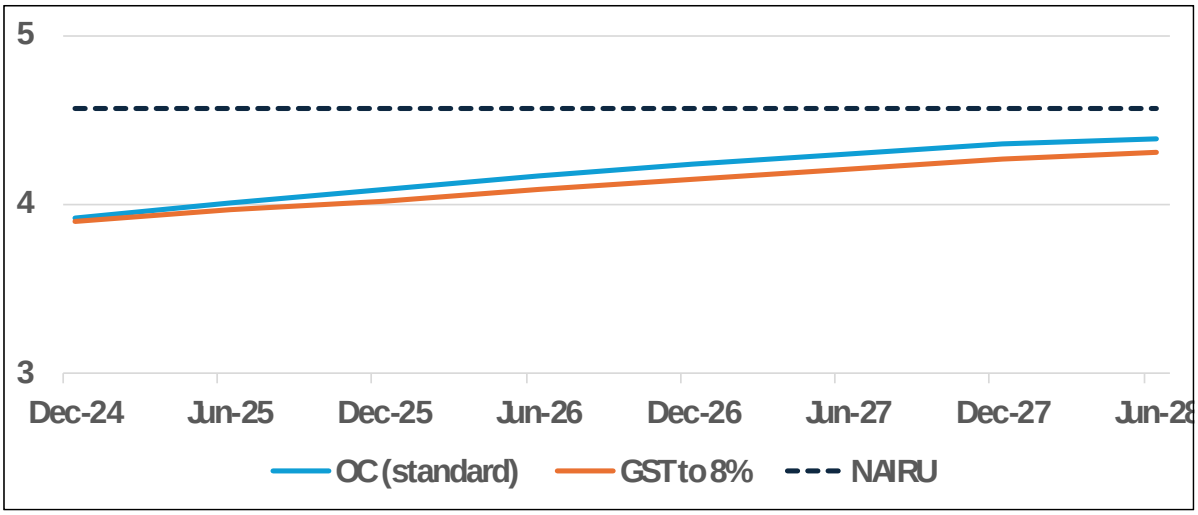



**Chart 12: Unemployment rate**



## Government Consumption Expenditure up by 1% of GDP

**Chart 13: Cash rate**

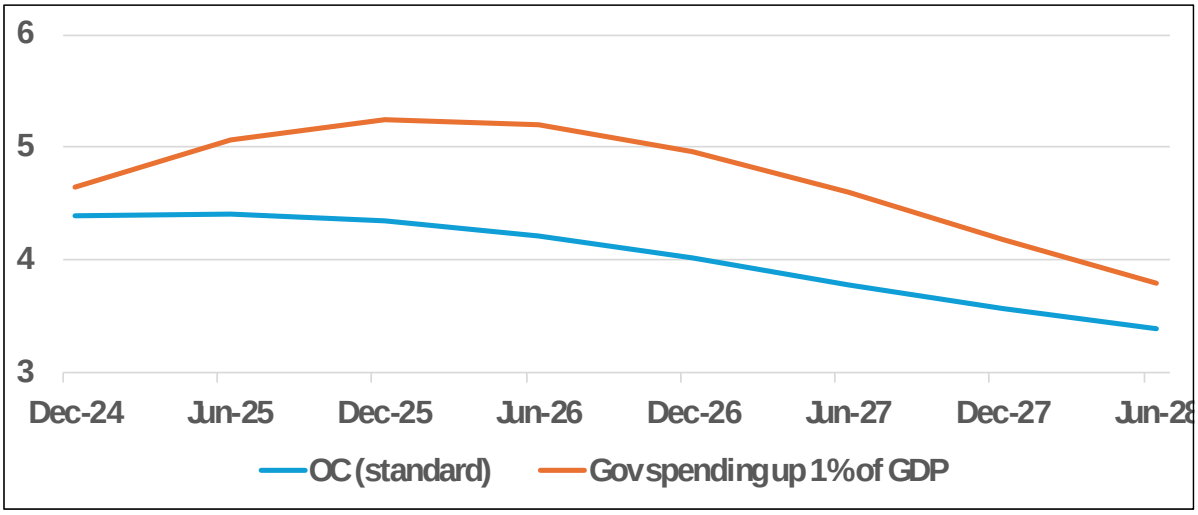



**Chart 14: PHC inflation rate**

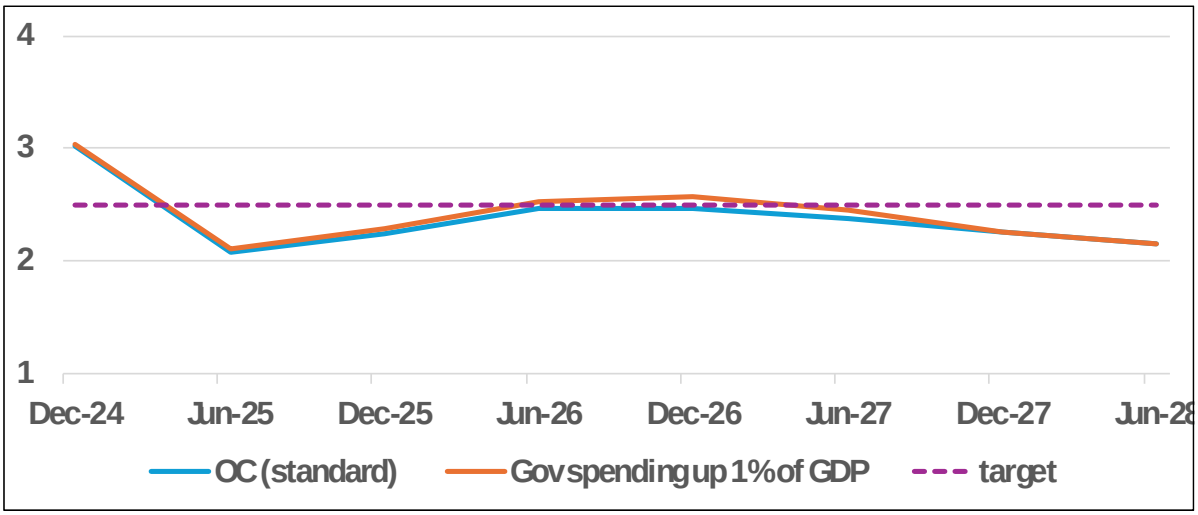
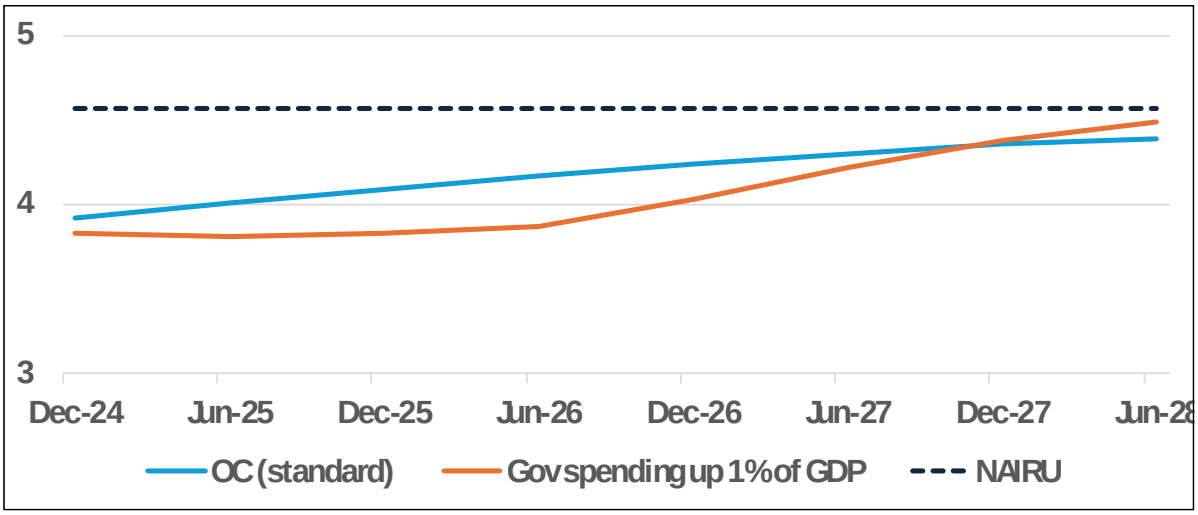



**Chart 15: Unemployment rate**



## US Monetary Policy Shock

**Chart 16: US Effective Federal Funds Rate (EFFR)**

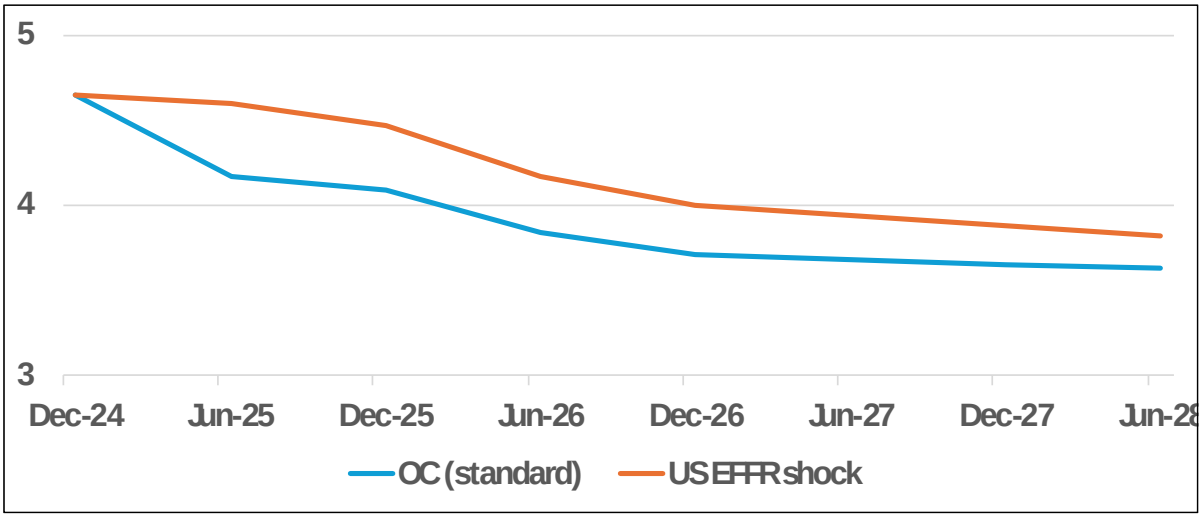



**Chart 17: Australian Cash rate**

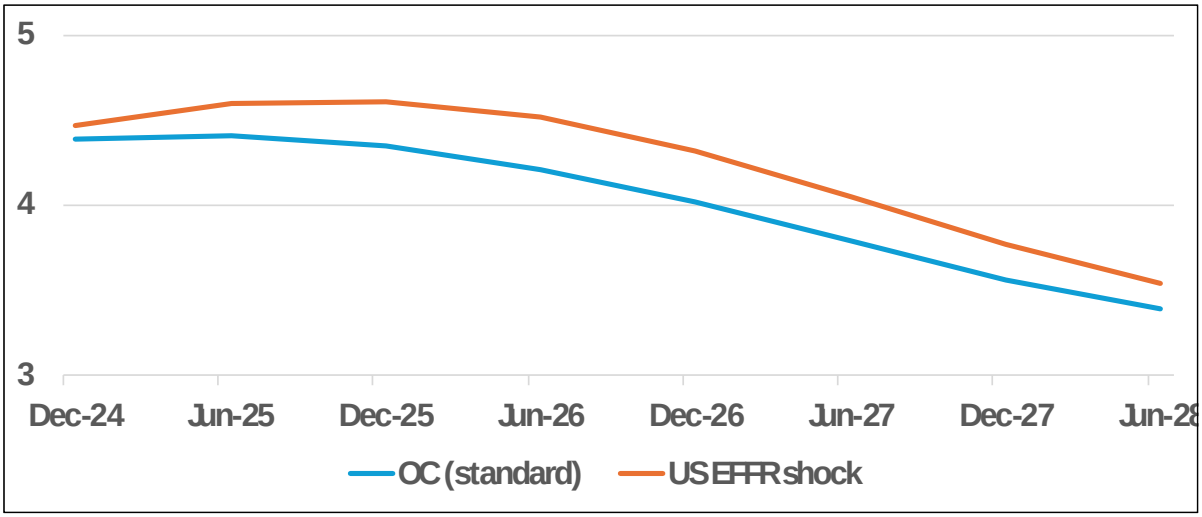



**Chart 18: PHC inflation rate**

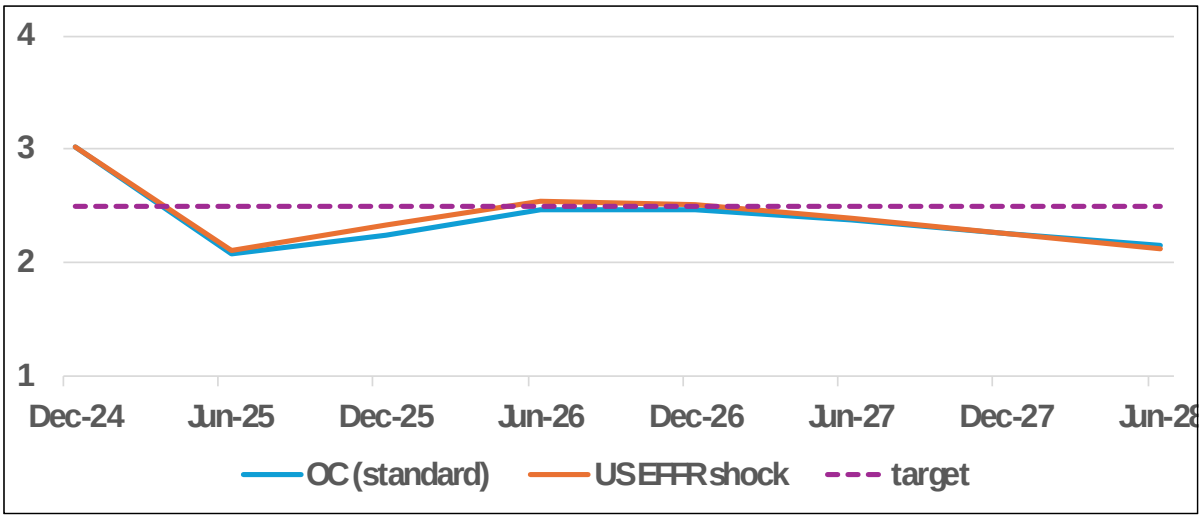


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**Table 1: Forecasts under model Taylor Rule**

| | Dec-24 | Jun-25 | Dec-25 | Jun-26 | Dec-26 | Jun-27 |
|---|---|---|---|---|---|---|
| **Activity** | | | | | | |
| Gross domestic product | 0.9 | 0.9 | 1.1 | 1.9 | 2.2 | 2.3 |
| Household consumption | 0.5 | 0.6 | 0.9 | 1.2 | 1.4 | 1.5 |
| Dwelling investment | 2.3 | -1.1 | -3.0 | -2.6 | -2.4 | -2.2 |
| Business investment | -1.2 | -2.7 | -1.8 | -0.1 | 1.0 | 1.8 |
| Public demand | 4.1 | 7.3 | 1.9 | 1.9 | 2.0 | 2.1 |
| Gross national expenditure | 1.9 | 0.9 | 0.8 | 1.2 | 1.5 | 1.6 |
| World GDP | 3.2 | 3.2 | 3.3 | 3.3 | 3.2 | 3.2 |
| **Trade** | | | | | | |
| Imports | 6.1 | 2.2 | 3.4 | 2.5 | 2.3 | 2.3 |
| Exports | 1.3 | 2.1 | 3.9 | 4.7 | 4.6 | 4.3 |
| Terms of trade | -8.9 | -4.1 | 1.0 | 0.5 | 0.4 | 0.4 |
| **Labour Market** | | | | | | |
| Employment | 2.3 | 2.4 | 1.3 | 1.1 | 1.0 | 1.0 |
| Unemployment rate | 3.9 | 4.0 | 4.1 | 4.2 | 4.3 | 4.4 |
| Population | 1.9 | 1.6 | 1.5 | 1.3 | 1.3 | 1.2 |
| **Income** | | | | | | |
| Average compensation of employees | 2.2 | 3.0 | 4.1 | 4.0 | 4.0 | 3.9 |
| Real private disposable income | -1.2 | 2.1 | 2.1 | 1.1 | 1.3 | 1.2 |
| **Inflation** | | | | | | |
| Household consumption, ipd | 3.0 | 2.0 | 2.1 | 2.3 | 2.3 | 2.2 |
| **Financial Markets** | | | | | | |
| Australian cash rate | 4.35 | 4.18 | 4.13 | 4.09 | 3.94 | 3.73 |
| US effective federal funds rate | 4.6 | 4.2 | 4.1 | 3.8 | 3.7 | 3.7 |
| Trade-weighted index | 59.7 | 57.5 | 55.8 | 54.4 | 53.3 | 52.4 |
| **Real gross value added** | | | | | | |
| Agriculture, forestry and fishing | 10.9 | 3.5 | -1.4 | 0.9 | 2.3 | 2.8 |
| Mining | -1.2 | -1.8 | -1.6 | -0.5 | -0.1 | 0.2 |
| Manufacturing | 1.6 | -1.3 | -0.7 | 2.2 | 3.2 | 3.6 |
| Government-type services | 3.4 | 4.1 | 3.7 | 3.5 | 3.3 | 3.1 |
| Other private services | 0.2 | 0.4 | 1.3 | 2.1 | 2.4 | 2.6 |
| Ownership of dwellings | 1.5 | 1.9 | 2.1 | 2.1 | 2.0 | 1.9 |

**Table 2: Forecasts under Optimal Control**

| | Dec-24 | Jun-25 | Dec-25 | Jun-26 | Dec-26 | Jun-27 |
|---|---|---|---|---|---|---|
| **Activity** | | | | | | |
| Gross domestic product | 0.9 | 0.9 | 1.2 | 1.9 | 2.2 | 2.3 |
| Household consumption | 0.5 | 0.6 | 0.9 | 1.1 | 1.4 | 1.5 |
| Dwelling investment | 2.3 | -1.0 | -3.2 | -2.9 | -2.6 | -2.1 |
| Business investment | -1.1 | -2.6 | -1.7 | -0.1 | 1.0 | 1.8 |
| Public demand | 4.1 | 7.3 | 1.8 | 1.9 | 2.0 | 2.1 |
| Gross national expenditure | 1.9 | 0.9 | 0.7 | 1.1 | 1.4 | 1.6 |
| World GDP | 3.2 | 3.2 | 3.3 | 3.3 | 3.2 | 3.2 |
| **Trade** | | | | | | |
| Imports | 6.1 | 2.2 | 3.3 | 2.4 | 2.2 | 2.3 |
| Exports | 1.3 | 2.3 | 4.1 | 4.9 | 4.7 | 4.4 |
| Terms of trade | -8.9 | -4.2 | 0.9 | 0.5 | 0.4 | 0.4 |
| **Labour Market** | | | | | | |
| Employment | 2.4 | 2.4 | 1.3 | 1.1 | 1.1 | 1.1 |
| Unemployment rate | 3.9 | 4.0 | 4.1 | 4.2 | 4.2 | 4.3 |
| Population | 1.9 | 1.6 | 1.5 | 1.3 | 1.3 | 1.2 |
| **Income** | | | | | | |
| Average compensation of employees | 2.2 | 3.0 | 4.1 | 4.1 | 4.1 | 4.0 |
| Real private disposable income | -1.2 | 2.0 | 2.1 | 1.2 | 1.3 | 1.2 |
| **Inflation** | | | | | | |
| Household consumption, ipd | 3.0 | 2.1 | 2.2 | 2.5 | 2.5 | 2.4 |
| **Financial Markets** | | | | | | |
| Australian cash rate | 4.39 | 4.40 | 4.34 | 4.21 | 4.01 | 3.78 |
| US effective federal funds rate | 4.6 | 4.2 | 4.1 | 3.8 | 3.7 | 3.7 |
| Trade-weighted index | 59.3 | 57.1 | 55.3 | 53.9 | 52.8 | 51.9 |
| **Real gross value added** | | | | | | |
| Agriculture, forestry and fishing | 10.9 | 3.6 | -1.2 | 1.1 | 2.4 | 2.9 |
| Mining | -1.2 | -1.7 | -1.5 | -0.4 | -0.1 | 0.2 |
| Manufacturing | 1.5 | -1.2 | -0.4 | 2.5 | 3.4 | 3.7 |
| Government-type services | 3.4 | 4.1 | 3.7 | 3.6 | 3.3 | 3.1 |
| Other private services | 0.2 | 0.4 | 1.3 | 2.1 | 2.5 | 2.6 |
| Ownership of dwellings | 1.5 | 1.9 | 2.1 | 2.1 | 2.0 | 1.9 |