Taylor Rule Sensitivity Analysis: United States and Australia

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Purpose

This note sets out sensitivity matrices for the Taylor rule-implied policy rate in the United States and Australia, varying the two most contestable inputs — the neutral real rate (r*) and the trend inflation gauge — while holding all other parameters fixed. The intent is to give the a quick reference for how much of the current "rule vs. actual policy rate" gap is attributable to the specific measurement and parameter choices being debated in the market (r* estimates, choice of inflation gauge, output gap sign and magnitude), rather than to genuine policy error.

This complements the ongoing Arculus IC discussion on Fed Chair Warsh's inflation-framework taskforce and the RBA's terminal-rate positioning, and should be read alongside the JGB/JPY transmission memo and the oil/UST correlation update.

Background: Origins and Development of the Rule

John B. Taylor, an economist at Stanford, introduced the rule in a 1993 paper examining how the Federal Reserve might set the funds rate more systematically. The proposal emerged from a longer-running academic and policy debate — dating back to the 1920s congressional hearings on Fed practice, and revived through the 1970s and 1980s — over whether central banks should follow transparent, rules-based frameworks or rely on the discretion and judgement of policymakers. Taylor's own reading of the 1970s was that discretionary, ad hoc policy had contributed to the era's poor inflation outcomes when rates were often held too low for too long relative to what a simple, systematic response to inflation and output would have prescribed. *This is an important observation because at this time it could be argued that rates are being kept to low for political and fiscal budget reasons.*

The rule's original form used a 2% assumed neutral real rate, a 2% inflation target, and equal 0.5 weights on the inflation gap and the output gap. Taylor showed that this simple formula tracked the actual federal funds rate reasonably well through the mid-1980s to early 1990s, a period now often referred to as the Great Moderation, which helped establish the rule as a credible benchmark rather than a purely theoretical construct. It has since become one of the most widely cited tools in monetary economics, referenced by the FOMC, the RBA, and other central banks as one input among several simple policy rules used to cross-check discretionary decisions — not as a mechanical mandate.

Subsequent variants have adjusted the original specification for different purposes:

- a version associated with former Fed Vice Chair Janet Yellen doubles the weight on the unemployment gap as an output-gap proxy;
- other adaptations (including those maintained by the Cleveland and Atlanta Federal Reserve Banks, drawn on for the market context in the United States section below) substitute a time-varying, model-based estimate of the neutral rate for Taylor's original fixed 2% assumption.

The rule has also drawn sustained criticism:

- it does not account for the zero lower bound or balance-sheet policy, real-time estimates of the output gap and neutral rate are subject to significant revision;
- its performance has been mixed during periods of financial instability — most notably after the 2008 crisis, when actual policy rates diverged sharply from what the rule prescribed.

These limitations are the reason this note treats the rule as a sensitivity framework for stress-testing assumptions rather than as a standalone forecast of the appropriate policy rate.

Methodology

The generalised Taylor (1993) rule used throughout is:

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Policy Rate = r* + π + 0.5 × (π − π*) + 0.5 × (output gap)
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Where:

- r* = estimated neutral real policy rate
- π = trend/core inflation measure (core PCE for the US; trimmed-mean CPI for Australia)
- π* = central bank inflation target (2.00% for the US; 2.50%, the mid-point of the RBA's 2–3% band, for Australia)
- Output gap = (actual − potential output) proxy, approximated here via the unemployment gap

Both coefficients on the inflation gap and output gap are held at the standard Taylor weight of 0.5. No interest-rate smoothing term (ρ) is applied — these are static, one-period prescriptions, not the Atlanta Fed's smoothed quarterly series, and should be read as such.

United States

The Fed's operative gauge for this exercise is the quarterly core PCE reading, which is the measure the FOMC itself references in setting policy. Interpolating the current core PCE reading (3.40%) against the matrix places the rule-implied rate at roughly 4.6–5.6% across the full r* range — 100 to 200bp above the actual effective funds rate of 3.63%, even at the low end of plausible neutral-rate assumptions (r* = 0.50%). Only in the bottom-left region of the grid (r* ≈ 0.50%, core PCE cooling toward 2.75–3.00%) does the rule converge on current policy settings. This is the quantitative basis for the read that the FOMC is running policy looser than the standard rule prescribes, consistent with Chair Warsh's stated preference for looking through tariff- and commodity-driven price pressure.

In the table below we have created a matrix to show what the FOMC rate would be under various core PCE inflation readings and a range of R* estimates. Estimating future inflation still involves using other indicators such as M2 growth and M2 velocity.

Assumptions

- π* = 2.00% FOMC Target rate
- Output gap = 0.00% (assumed economy operating at full employment)
- r* varies 0.50% – 1.50% in 0.25% increments (columns)
- Core PCE varies 2.00% – 4.50% in 0.25% increments (rows)

Reference points: current effective federal funds rate ≈ 3.63% (target range 3.50–3.75%); latest core PCE (May 2026) = 3.40% y/y; headline PCE = 4.10% y/y; core CPI = 2.90% y/y.

Matrix — Implied Federal Funds Rate (%)

Core PCE ↓ / r* →	r* = 0.50%	r* = 0.75%	r* = 1.00%	r* = 1.25%	r* = 1.50%
2.00%	2.50%	2.75%	3.00%	3.25%	3.50%
2.25%	2.875%	3.125%	3.375%	3.625%	3.875%
2.50%	3.25%	3.50%	3.75%	4.00%	4.25%
2.75%	3.625%	3.875%	4.125%	4.375%	4.625%
3.00%	4.00%	4.25%	4.50%	4.75%	5.00%
3.25%	4.375%	4.625%	4.875%	5.125%	5.375%
3.50%	4.75%	5.00%	5.25%	5.50%	5.75%
3.75%	5.125%	5.375%	5.625%	5.875%	6.125%
4.00%	5.50%	5.75%	6.00%	6.25%	6.50%
4.25%	5.875%	6.125%	6.375%	6.625%	6.875%
4.50%	6.25%	6.50%	6.75%	7.00%	7.25%

The Taylor rule's prescription is far more sensitive to where core PCE actually prints over coming quarters than to any reasonable revision of the neutral-rate assumption, so incoming core PCE data should be weighted more heavily than r* debates when updating the rule's implied rate.

Even if core PCE readings drift back towards 3% we still arrive at an effective funds rate of 4.5% using an R* of 1.00%. This implies that the FOMC should have a tightening bias to lift the federal funds rate from the current 3.5-3.75% range to 4.25-4.50% range.

Australia

The RBA's operative gauge for this exercise is trimmed-mean CPI, which is the measure the Bank itself references in setting the cash rate — as with the US, there is no gauge ambiguity to resolve here. The output gap of +35bp reflects the economy running modestly above full employment (unemployment at 4.40% against an assumed NAIRU of 4.75%). With that positive gap in place, the rule validates the current 4.35% cash rate at a comparatively modest trimmed-mean assumption of roughly 2.75–3.00%, across most of the r* range.

Assumptions

- π* = 2.50% (mid-point of RBA 2–3% target band)
- Output gap = +0.35% (NAIRU proxy 4.75% vs. actual unemployment 4.40% → economy running above full employment)
- r* varies 0.50% – 1.50% in 0.25% increments (columns)
- Trimmed-mean CPI varies 2.00% – 4.50% in 0.25% increments (rows)

Reference point: RBA cash rate terminal (June 2026) = 4.35%.

Matrix — Implied Cash Rate (%), Output Gap = +0.35%

Trimmed-Mean CPI ↓ / r* →	r* = 0.50%	r* = 0.75%	r* = 1.00%	r* = 1.25%	r* = 1.50%
2.00%	2.425%	2.675%	2.925%	3.175%	3.425%
2.25%	2.80%	3.05%	3.30%	3.55%	3.80%
2.50%	3.175%	3.425%	3.675%	3.925%	4.175%
2.75%	3.55%	3.80%	4.05%	4.30%	4.55%

Trimmed-Mean CPI ↓ / r* →	r* = 0.50%	r* = 0.75%	r* = 1.00%	r* = 1.25%	r* = 1.50%
3.00%	3.925%	4.175%	4.425%	4.675%	4.925%
3.25%	4.30%	4.55%	4.80%	5.05%	5.30%
3.50%	4.675%	4.925%	5.175%	5.425%	5.675%
3.75%	5.05%	5.30%	5.55%	5.80%	6.05%
4.00%	5.425%	5.675%	5.925%	6.175%	6.425%
4.25%	5.80%	6.05%	6.30%	6.55%	6.80%
4.50%	6.175%	6.425%	6.675%	6.925%	7.175%

We use an R* of 1.00% but given the surge in growth caused by the AI data build outs, this could be higher. Offsetting this to, some extent, is the fact that Australia's measurement of unemployment is likely to be understated because the definition of an employed person is someone that works just one hour per week. This is not to say that there is surplus labour supply. The labour supply outcome in Australia is distorted by the generous personal and family welfare payments system.

Using an R* of 1% and a trimmed mean of 3.6% we arrive at an RBA official rate of 5.32%. This implies that the RBA will increase rates in the second half of 2026 by 100bps. **This is not a forecast but just an application of the Taylor Rule.** Forecasting the trimmed mean is still required when estimating changes to the RBA official overnight rate.

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