

Annexes: Selected Issues

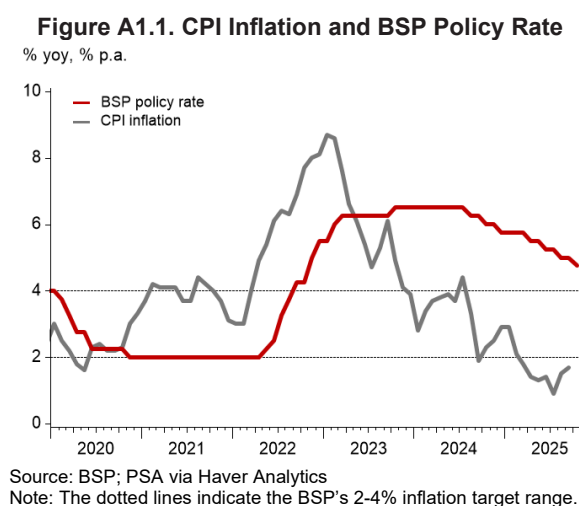
1. Assessing the BSP's Policy Rate Decisions: An Empirical Perspective¹

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This Selected Issue empirically assesses the BSP's policy rate decisions using an modified Taylor-rule framework, highlighting inflation as the dominant driver over output gaps or other external variables, such as interest rate differentials, commodity prices and the peso exchange rate. The empirical results support a data-driven, gradualist approach that balances inflation stabilization with growth support amid global uncertainties, while acknowledging estimation challenges related to output gaps and potential growth after the pandemic. The results also suggest that the current pace of the BSP monetary policy normalization is appropriate.

Introduction

1. The BSP has shifted its monetary policy stance amid easing inflation pressures. Under its inflation-targeting framework, the primary objective of the BSP's monetary policy is to safeguard price stability conducive to a balanced and sustainable economic growth while also maintaining financial stability. The policy rate serves as its main instrument to influence domestic demand and anchor inflation expectations. Between 2022 and 2023, the BSP raised its policy rate decisively by a cumulative 450 basis points to curb heightened inflationary pressures. With inflationary pressures easing thereafter, the BSP shifted its focus toward balancing inflation stabilization with growth support amid elevated global uncertainties, and embarked on an easing cycle starting in August 2024 (Figure A1.1). Against this backdrop, this Selected Issue conducts an empirical analysis of the key factors related to the BSP's policy rate decisions using a modified Taylor-rule model to assess the current policy stance, available policy space and possible future directions.



2. The Taylor-rule model provides an ex post, parsimonious description of central bank decisions. As noted by Bernanke (2015), the Taylor rule is a useful descriptive device for policy rate decisions, but should not be viewed as an automatic prescription for setting rates. The original Taylor rule illustrated whether the Fed's monetary policy was broadly consistent with fundamentals by assessing the responsiveness of policy rates to deviations of inflation

and output from their targets. In practice, however, the model has clear limitations. Coefficient estimates are sensitive to specification choices and data revisions, while actual policy decisions are informed by a much broader set of considerations—including external conditions, financial stability, expectations, and sometimes nonpublic information. Moreover, the rule is intended only as a reference framework for interpreting policy behavior, not as a mechanical prescription. Thus, this analysis is not a prescriptive rule, but rather provides an analytical tool to illustrate how macroeconomic fundamentals relate to the BSP's broader decision-making framework.²

Modified Taylor Rule Estimation

3. In this study, an error correction model (ECM) version of the Taylor-rule framework is used to describe how the BSP adjusts its policy rate. Specifically, besides responding to inflation and real economic activities, the ECM allows external and financial conditions to influence short-run dynamics. In this framework, the policy rate follows a long-run “target rule,” while short-run deviations from the equilibrium are corrected gradually through policy inertia and responses to near-term shocks.³

In the long run, the policy rate co-moves with fundamentals consistent with a Taylor-type rule:

$$\text{Policy rate}_t = \theta_0 + \theta_1 \text{Inflation gap}_t + \theta_2 \text{Output gap}_t + u_t \quad (\text{A1.1})$$

The short-run adjustment is modeled as:

$$\begin{aligned} \Delta(\text{Policy rate}_t) = & \alpha - \rho(\text{Policy rate}_{t-1} - \theta_1 \text{Inflation gap}_{t-1} - \theta_2 \text{Output gap}_{t-1}) \\ & + \sum_k \gamma_k \text{Other variables}_{kt} + \sum_{j=1}^4 \phi_j \Delta(\text{Policy rate}_{t-j}) + \varepsilon_t \end{aligned} \quad (\text{A1.2})$$

where $\rho < 0$ implies the speed of adjustment toward the long-run rule; θ_1 is expected to be positive as a higher (lower) inflation gap prompts tightening (easing); θ_2 is expected to be positive, reflecting countercyclical stabilization; $\{\phi_j\}$ captures policy inertia up to four quarters; and $\text{Other variables}_{kt}$ comprises a set of additional short-run drivers and dummies.

Thus, the model can be rewritten in a reduced form:

$$\begin{aligned} \Delta(\text{Policy rate}_t) = & \alpha + \beta_0 \text{Policy rate}_{t-1} + \beta_1 \text{Inflation gap}_{t-1} + \beta_2 \text{Output gap}_{t-1} \\ & + \sum_k \gamma_k \text{Other variables}_{kt} + \sum_{j=1}^4 \phi_j \Delta(\text{Policy rate}_{t-j}) + \varepsilon_t \end{aligned} \quad (\text{A1.3})$$

where $\beta_0 = -\rho$, $\beta_1 / \beta_0 = -\theta_1$, $\beta_2 / \beta_0 = -\theta_2$

4. The estimation results show that inflation has been the dominant driver of the BSP's policy rate decisions. Table A1.1 presents the estimates for the modified Taylor-rule models, using quarterly data from Q1 2005-Q2 2025.

- **Conventional Taylor rule.** The coefficient of the lagged inflation gap (β_1) is positive and highly significant, while the coefficient of the lagged output gap (β_2) is insignificant. Thus, the implied long-run coefficients are about 1.3 for the inflation gap⁴—consistent with the Taylor principle (Taylor 1993), implying that policy rate changes have responded by more than one-for-one to inflation changes to anchor inflation expectations—but have responded by only 0.1

for the output gap.⁵ These results underscore that the BSP's policy adjustments have primarily responded to deviations of inflation from its target, consistent with its inflation-targeting mandate. Meanwhile, a negative coefficient of the lagged policy rate level (β_0) indicates gradual correction toward the long-run rule.

• **External dynamics.** In Model 1, the coefficient of the interest rate differential is insignificant, suggesting that the BSP does not set policy rates to maintain a fixed spread against U.S. rates due to less concerned on massive capital outflows, but rather adjusts independently in response to domestic inflation conditions.⁶ In Model 2, peso depreciation and commodity price increases tend to tighten the monetary policy stance via near-term inflation pressures, though the coefficients are insignificant at the 5 percent level, as rate changes driven by a supply shock may be captured by highly sizable estimates of the coefficient of lagged inflation gap (β_1).

• **Policy inertia.** The estimation results also point to gradualism in the BSP's decision-making. The sum of coefficients for the distributed lags of past policy changes is close to zero, reflecting that adjustments are smoothed over time,⁷ which ensures that inflationary pressures are addressed through consistent policy action.

• **Crisis and regime effects.** The dummy variable for the global financial crisis (GFC) is negative and highly significant, consistent with sharp rate cuts during 2008-09. The interest rate corridor (IRC) dummy is negative but insignificant, suggesting that the transition to the corridor framework altered the mechanics of policy transmission but did not fundamentally change the inflation-focused monetary policy.

Table A1.1. Estimation Results under Modified Taylor Rule Models

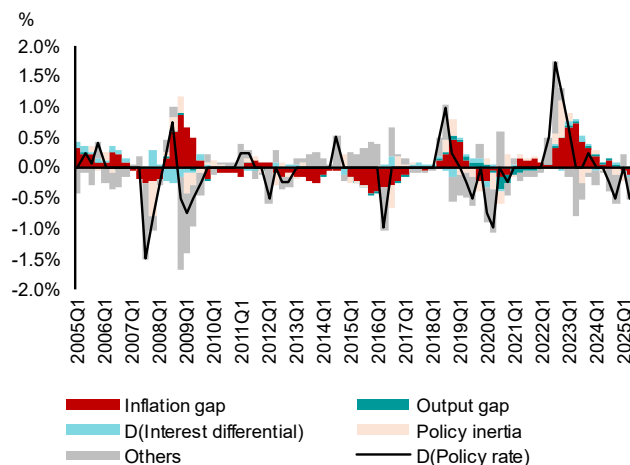
Dependent variable: $\Delta(\text{Policy rate}_t)$			Model 1	Model 2
Constant			0.005 ** (0.002)	0.005 ** (0.002)
Policy rate $t-1$			-0.105 ** (0.043)	-0.091 ** (0.041)
Inflation gap $t-1$			0.138 *** (0.047)	0.125 *** (0.046)
Output gap $t-1$			0.017 (0.022)	0.009 (0.020)
$\Delta(\text{Interest rate differential } t-1)$			-0.191 (0.156)	
$\Delta \ln(\text{Commodity prices } t-1)$				0.007 (0.006)
$\Delta \ln(\text{Peso exchange rate } t-1)$				0.033 * (0.017)
Dummy for GFC			-0.010 *** (0.003)	-0.011 *** (0.004)
Dummy for IRC			-0.001 (0.001)	-0.002 * (0.001)
$\Delta(\text{Policy rate } t-1)$			0.387 ** (0.155)	0.231 * (0.124)
$\Delta(\text{Policy rate } t-2)$			-0.190 (0.118)	-0.105 (0.117)
$\Delta(\text{Policy rate } t-3)$			-0.030 (0.111)	0.061 (0.103)
$\Delta(\text{Policy rate } t-4)$			-0.043 (0.085)	0.009 (0.083)
Implied θ_1			1.314	1.374
Implied θ_2			0.162	0.099
Adjusted R-squared			0.392	0.402

Source: BSP; PSA; Haver Analytics; AMRO staff estimates

Note: The robust standard errors are in parentheses. ***, ** and * respectively indicate significance at the 1%, 5% and 10% levels.

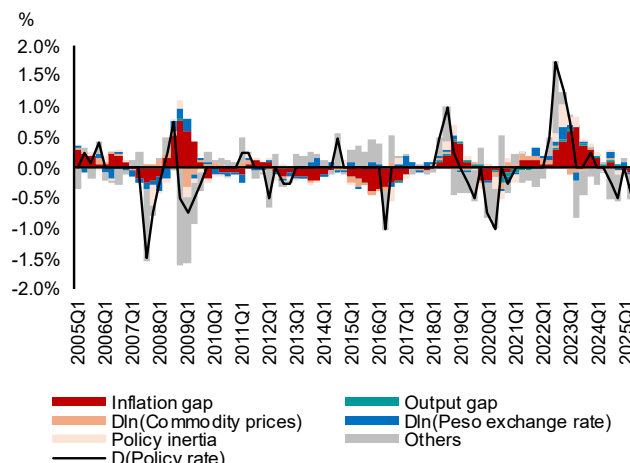
5. A historical decomposition of the Taylor-rule model estimates shows that policy rate changes have broadly aligned with the BSP's inflation-targeting mandate. As the historical decomposition for Model 1 shown in Figure A1.2, inflation developments were the dominant driver of policy changes in major tightening episodes, for example, during 2008, 2018-19 and 2022-23. Policy inertia accounted for smaller but non-negligible adjustments, while the output gap contributed little, consistent with the BSP's priority on price stability over short-term growth fluctuations. The BSP lowered its policy rate sharply during the global financial crisis and the COVID-19 pandemic to cushion growth, while tightening aggressively during 2022-23 to counter inflationary pressures. Since the IRC was introduced in 2016, policy rate changes have been smaller, reflecting an increased emphasis on signaling and gradualism. The historical decomposition for Model 2 in Figure A1.3 shows a similar pattern, while part of the residual "Others" in Model 1 could be partly explained by the movements of international commodity prices. The finding underscores the BSP's independent but globally informed stance.

Figure A1.2. Historical Decomposition of Factors Explaining Rate Changes (Model 1)



Source: BSP; PSA; Haver Analytics; AMRO staff estimates
Note: D represents difference.

Figure A1.3. Historical Decomposition of Factors Explaining Rate Changes (Model 2)



Source: BSP; PSA; Haver Analytics; AMRO staff estimates
Note: D represents difference, and Dln means log-difference.

Policy Discussion

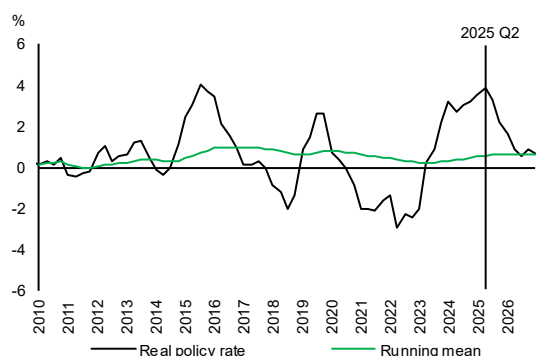
6. Taken together, the empirical results suggest that inflation stabilization has been the cornerstone of BSP monetary policy. Output gap estimates and other external variables,

including external funding and imported prices, have not been decisive factors, reinforcing the view that policy credibility rests on firmly anchoring inflation expectations. At the same time, the Taylor-rule framework has limitations: it cannot capture the forward-looking judgments or broader trade-offs that policymakers face, such as financial stability concerns or the impact of supply shocks. Additionally, as supporting economic growth is one main concern of policymakers, the estimation uncertainties of the output gap, particularly the assumptions or views on post-pandemic potential growth, could affect policy decisions (see Allon-Pineda 2025). The Taylor-rule model should therefore be viewed as a benchmark that highlights the historical description of inflation in the BSP's policy decisions, but not as a mechanical prescription for future decisions.

7. Nevertheless, by applying the above Taylor-rule estimation and AMRO's projections on growth and inflation, rates implied by the Taylor rule (Figure A1.5) could provide a reference for policy discussions.

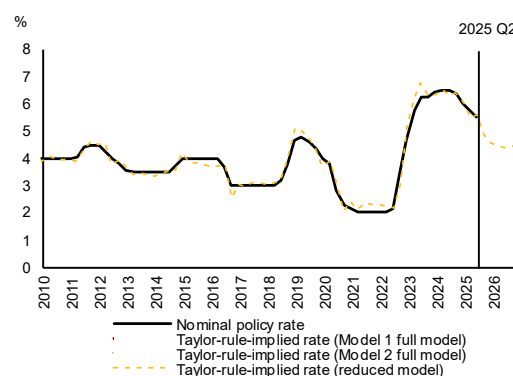
- **Policy stance.** Monetary policy has normalized and become less tight after aggressive rate hikes that were implemented to combat high inflation, as inflation has stabilized and inflation expectations remain well anchored. However, the current real policy rate, at around 3.3 percent in September 2025, remains above its historical average of 0.61 percent, which acts as a proxy of the neutral level. The elevated real policy rate indicates that monetary conditions are still tight (Figure A1.4).
- **Policy space.** The decline in inflation since late 2023 and the BSP's subsequent policy rate cuts have provided room for a more accommodative policy stance.
- **Policy direction.** Based on AMRO staff's GDP growth and inflation projections, a combination of the present modified Taylor-rule model estimates and the neutral interest rate assessments supports a gradual easing of the policy rate, which is expected to continue at the current pace until the end of 2026 (Figure A1.5). However, given the expected closing of the output gap and potential inflationary pressures from supply shocks, the BSP should maintain a flexible and cautious approach to the pace and depth of policy adjustments.

Figure A1.4. Real Policy Rate and its Long-term Average



Source: BSP; PSA; Haver Analytics; AMRO staff estimates
Note: The real policy rate is calculated as the nominal policy rate minus the year-on-year CPI inflation rate for the same month. The running mean of historical average of the real policy rate refers to the average of monthly real policy rates from January 2010 up to the corresponding period. Forecasts for Q3 2025-Q4 2026 are based on projected Taylor-rule-implied rates using the full model of Model 1, as well as AMRO's GDP and CPI inflation projections and assumptions about economic development.

Figure A1.5. Taylor-rule-implied Rates



Source: BSP; PSA; Haver Analytics; AMRO staff estimates
Note: Taylor-rule-implied rates from Q3 2025-Q4 2026 are projected by using AMRO's GDP and CPI inflation projections and assumptions about economic development. The reduced model is the same for both Model 1 and Model 2, as the output gap, interest rate differential (or commodity prices and exchange rate) and IRC dummy are dropped given they are insignificant at 5 percent significance level.

References

- Allon-Pineda, J. C. S. 2025. "Inflation Unpacked: Breaking Down the Key Components Using a Neural Phillips Curve." BSP Discussion Paper No. 2025-05, Bangko Sentral ng Pilipinas. <https://www.bsp.gov.ph/Sites/researchsite/Publications/BSP-Discussion-Papers/DP202505.pdf>
- Anderl, C. 2022. Exchange Rate Parities and Taylor Rule Deviations. *Journal of Economic Studies*, 49(3): 568-585. <https://link.springer.com/article/10.1007/s00181-021-02192-3>
- Austria, C. P. and Lapid, D. D. 2018. "Neutral Real Interest Rate for the Philippines: Estimates." *Bangko Sentral Review*, 2018(1), Bangko Sentral ng Pilipinas. https://www.bsp.gov.ph/Media And Research/Publications/BS2018_01.pdf
- Belke, A. and Cui, Y. 2010. "US-Euro Area Monetary Policy Interdependence: New Evidence from Taylor Rule-based VECMs." *The World Economy*, Vol. 33(5): 778-797. <https://onlinelibrary.wiley.com/doi/10.1111/j.1467-9701.2010.01227.x>
- Bernanke, B. S. 2015. "The Taylor Rule: A Benchmark for Monetary Policy?" Commentary, Brookings Institution. <https://www.brookings.edu/articles/the-taylor-rule-a-benchmark-for-monetary-policy>
- Christensen, A. M., and Nielsen, H. B. 2003. A Cointegration Analysis of Monetary Policy Rules in the United States, 1988-2002. Paper presented at the Federal Reserve Conference on Interest Rate Modeling and the Policy Process, Washington, DC. <https://www.federalreserve.gov/events/conferences/irfmp2003/pdf/Moller.pdf>
- Filardo, A., Hubert, P., and Rungcharoenkitkul, P. 2019. "The Reaction Function Channel of Monetary Policy and the Financial Cycle." BIS Working Paper No. 816. Bank for International Settlements. <https://www.bis.org/publ/work816.pdf>
- Hofmann, B., Manea, C., and Mojon, B. 2025. "Targeted Taylor Rules: Some Evidence and Theory." BIS Working Paper No. 1234 (revised). Bank for International Settlements. <https://www.bis.org/publ/work1234.pdf>
- Kwizera, P. A. 2024. "Monetary Policy Reaction Function in Emerging Economies: an Empirical Analysis." *Cogent Economics and Finance*, 12(1). <https://doi.org/10.1080/23322039.2024.2411768>
- Ricci, L. A., and Shi, W. 2016. "Trilemma or Dilemma: Inspecting the Heterogeneous Response of Local Currency Interest Rates to Foreign Rates. IMF Working Paper WP/16/75. International Monetary Fund. <https://www.imf.org/external/pubs/ft/wp/2016/wp1675.pdf>
- Taylor, J. B. 1993. "Discretion versus Policy Rules in Practice." *Carnegie-Rochester Conference Series on Public Policy*, 39: 195-214. [https://doi.org/10.1016/0167-2231\(93\)90009-L](https://doi.org/10.1016/0167-2231(93)90009-L)

End Notes

¹ This Selected Issue was prepared by Andrew Tsang, Senior Economist.

² The central bank's decisions are data-dependent and complementary to various forward-looking models, survey-based expectations and the Monetary Board's policy judgments.

³ The ECM extends the basic Taylor rule (Taylor 1993) by embedding a co-integrating "target rule" for the policy rate and modeling short-run adjustments of the policy rate. Some studies used co-integration and the ECM to estimate the Taylor rule, for example, Christensen and Nielsen (2003), Belke and Cui (2010) and Anderl (2022). Some other literature, while not explicitly being framed as co-integration or error correction in all parts, engages with long-run versus short-run behaviors in Taylor rule estimation, for example, Ricci and Shi (2016), Filardo et. al. (2019), Kwizera (2024) and Hofmann et. al. (2025).

⁴ The coefficient is larger than 1, and close to 1.5 in the conventional Taylor rule as mentioned in Austria and Lapid (2018).

⁵ The coefficient is close to zero, and below 0.5 in the conventional Taylor rule.

⁶ The BSP may have less concerns about the possibility of massive capital outflows triggered by widening rate differentials, due to a relatively low participation of foreign investors. Nevertheless, the negative sign is consistent with expectations.

⁷ The significant positive first-lag coefficient suggests short-term persistence in policy rate changes, while the negative coefficients of subsequent lags indicate partial reversals over the next few quarters.