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A Quarterly Projection Model for Tonga

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ABSTRACT: This paper customizes to the Tongan economy a macroeconomic model for medium-term quarterly projections of key macro variables (QPM): output, inflation, interest rate, and exchange rate. The model is calibrated to embody the specific attributes of the Tongan economy such as the persistence of domestic output, core inflation and interest rates, as well as Tonga's monetary policy transmission. It is then used to study three scenarios and assess their impact on the baseline. The first scenario involves shocks proxying for a bank failure. The second scenario introduces shocks that simulate the consequences of a natural disaster. Finally, the third scenario introduces shocks that represent a significant negative external shock on Tonga. These shocks were chosen to reflect the sensitivity of Tonga to adverse financial shocks, to their trading partners' macroeconomic policies, and to extreme weather events.

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WORKING PAPERS

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Prepared by Sam Ouliaris, Celine Rochon and Daniel Taumoepeau[1]

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Contents

Introduction

In this paper, we customize to the Tongan economy a macroeconomic model for medium-term quarterly projections (QPM) of key macro variables: output, inflation, interest rate, and exchange rate. Tonga, a small open economy, relies heavily on its trading partners for development and production. Tonga is an import dependent country with its trade deficit averaging about 50 percent of GDP in the past decade. This large deficit is funded through remittances (which are around 40 percent of GDP) and budget support. As such, Tonga is highly vulnerable to developments in the global economy and especially its main trading partners. Tonga, like most Pacific Island states, has a weak monetary policy transmission mechanism. Due to an underdeveloped financial market and excess liquidity of more than 30 percent of GDP in the banking system, the interest rate channel of monetary policy is ineffective. For this reason, the National Reserve Bank of Tonga (NRBT) – Tonga's central bank – has relied more heavily on the exchange rate channel to achieve its monetary policy objectives. The primary objectives of the NRBT are (a) to maintain internal price stability by keeping inflation below a reference rate (currently of 5 percent), and (b) maintain an adequate level of foreign reserves of a minimum of 3 months (and optimally around 7.5 months) of imports. The exchange rate regime serves as the nominal anchor. Though the Tongan Pa'anga is pegged to a basket of currencies, the NRBT has the flexibility to adjust the exchange rates by 5 percent each month if necessary to achieve its objectives and address any misalignment with fundamentals. As the interest rate channel for monetary policy is ineffective, the NRBT also employs capital controls to protect its peg and maintain the level of foreign reserves above the minimum cover.

The model is calibrated to embody the specific attributes of the Tongan economy such as the persistence of domestic output, core inflation and interest rates, as well as Tonga's monetary policy transmission. It is then used to study three scenarios and assess their impact on the baseline. Tonga has gone through a natural disaster every 2 years since 2014 (various tropical cyclones and the volcanic eruption and tsunami in 2022) in addition to the COVID-19 pandemic. Businesses were already struggling to pay back loans after being affected by these natural disasters and were bracing themselves for another natural disaster in 2024. This led to an accumulation of non-performing loans and a deterioration in banks' financial positions and performance. Among them, one bank was deteriorating more than the others. In this paper, the first scenario involves shocks proxying for a bank failure. The second scenario introduces shocks that model the consequences of a natural disaster. Finally, the third scenario introduces shocks that represent a significant negative external shock on Tonga. These shocks were chosen to reflect the sensitivity of Tonga to adverse financial shocks, to their trading partners' macroeconomic policies, and to extreme weather events.

Prior to the development of a QPM for Tonga, NRBT forecasting capabilities and policy analysis were not centered around a model-based framework. The Economics Department at NRBT used Excel-based tools to produce sectoral forecasts (Real, External, Monetary), while the Ministry of Finance (MOF) is responsible for the Fiscal forecast. These forecasts were made in separate spreadsheets, with limited sectoral links. NRBT and MOF forecasting exercises were based mostly on moving averages with qualitative adjustments that did not account for the impact of policy actions on the economy. The macroeconomic forecasts were reconciled by staff through discussions with management. Scenario analysis and risk assessments were done by staff before being discussed with policymakers for finalization. For the GDP forecast, NRBT and MOF each produced their own forecast, and these were shared and discussed in the Macroeconomic Technical committee (involving NRBT, MOF and TSD). Medium term forecasts were not produced systematically and were mostly based on staff's expert judgments.

The QPM and its Calibration to Tonga

The canonical quarterly projection model (QPM) is a gap model that comprises four main equations, representing the aggregate demand, the aggregate supply, uncovered interest parity and a Taylor rule[1].

The aggregate demand equation links monetary conditions and real economic activity:

$$\hat{y}_t = b_1\hat{y}_{t-1} - b_2 mci_t + b_3\hat{y}_t^* + \varepsilon_t^y, \qquad mci_t = b_4\hat{r}_t + (1-b_4)(-\hat{z}_t)$$

The output gap, $\hat{y}_t$, is a function of its own lag, a real monetary condition index, mci_t, the foreign output gap, $\hat{y}_t^*$, and an aggregate demand shock (including fiscal shocks), ε_t^y. The real monetary condition index is itself a function of the interest rate gap, $\hat{r}_t$, and the exchange rate gap, $\hat{z}_t$, hence involving the two main channels of monetary policy transmission.

The aggregate supply equation links inflation, π_t, to its lagged value, π_{t-1}, expected inflation, $E\{\pi_{t+1}\}$, a real marginal cost index, rmc_t , and a supply shock, ε_t^π. The real marginal cost index is a function of the output gap and the real exchange rate gap.

$$\pi_t = a_1\pi_{t-1} + (1-a_1)E\{\pi_{t+1}\} + a_2 rmc_t + \varepsilon_t^\pi \qquad rmc_t = a_3\hat{y}_t + (1-a_3)\hat{z}_t$$

The uncovered interest parity equation provides a relationship for the nominal exchange rate, s_t, and domestic and foreign (nominal) interest rates, i_t and i_t^*, including the expected change in the nominal exchange rate, $E_t\{s_{t+1}\}$, a country risk premium, $prem_t$, and an exchange rate shock, ε_t^s:

$$s_t = E_t\{s_{t+1}\} + \frac{i_t^* - i_t + prem_t}{4} + \varepsilon_t^s$$

Finally, the Taylor rule is the central bank reaction function[2]:

[1] See Berg *et al* (2006) and other cited references for a more complete description of the canonical QPM.
[2] Note that the Taylor rule involves the exchange rate implicitly via the output gap.

$$i_t = g_1 i_{t-1} + (1 - g_1)\left(i_t^n + g_2\left(E_t\{\pi_{t+j}\} - \pi_{t+j}^T\right) + g_3 \hat{y}_t\right) + \varepsilon_t^i$$

The interest rate, i_t, is a function of its lagged value, the neutral interest rate, i_t^n, the j-period ahead deviation of expected inflation from its target, $E_t\{\pi_{t+j}\} - \pi_{t+j}^T$, the output gap and a monetary policy shock, ε_t^i.

The calibration of the model is typically based on economic theory and the strength of transmission channels.

The canonical QPM model requires adaptation to suit the specificities of the Tongan economy as Tonga is not an inflation targeting country and it conducts monetary policy using exchange rate interventions. The monetary policy transmission in Tonga (as for other Pacific Island countries) is rather limited due to the small size of the economy, an abundance of excess liquidity in the banking system, its openness to international trade, a low level of financial market development, and the heavy reliance on remittances.

To approximate Tonga's characteristics, the model and its chosen calibration involves the following features:

• The aggregate demand equation assumes moderate persistence in the output gap and a monetary condition index with more weight assigned to the exchange rate gap compared to the interest rate gap (to account for the role of remittances and the high import-to-GDP ratio). It also assumes relatively low policy passthrough (to capture the weak monetary policy transmission mechanism), and a low impact of external demand on domestic output (to reflect a very low export-to-GDP ratio).

• The aggregate supply equation reflects two different price considerations: high persistence of core inflation and low persistence of domestic food and energy prices. The Tongan Government is a major player in the economy and civil servants comprise most of the labor force. Due to budget constraints, nominal wages have been rather sticky and have not changed much over the years. As such, prices of goods and services also tend to be sticky, contributing to a rather persistent core inflation. On the other hand, energy prices are subject to volatile world price movements, with large passthrough effects. Domestic food prices are extremely sensitive to weather conditions.

• External price stability in Tonga is defined in terms of the stability of its currency. The exchange rate arrangement serves as a nominal anchor, and it responds slowly to external shocks and/or exchange rate misalignments. Though the Tongan Pa'anga is pegged to a basket of currencies, the Reserve Bank has the flexibility to adjust the exchange rates to address misalignments. The equation and calibration of the uncovered interest parity equation is chosen to reflect this:

$$s_t = h_2\left(s_{t-1} + \frac{\Delta s_t^T}{4}\right) + (1 - h_2)[(1 - e_1)E_t\{s_{t+1}\} + e_1\left(s_{t-1} + 0.5\left(\pi_t^T - \pi_{t+N}^{RW} + \Delta\, \bar{z}_t\right)\right)] + \frac{i_t^* - i_t + prem_t}{4} + \varepsilon_t^s$$

where $\Delta s_t^T = f_1 s_{t-1}^T + (1 - f_1)(\pi_t^T - \pi_{t+N}^{RW} + \Delta\, \bar{z}_t - f_2(\pi_t - \pi_{t+N}^T) - f_3 \hat{y}_t) + \varepsilon_t^{s^T}$

Table 1. Definitions of variables

Variable	Definition
Δs_t^T	Nominal exchange rate target depreciation (quarter on quarter, in percentage annual terms)
π_t^T	Inflation target (in percentage annual terms)
π_{t+N}^{RW}	Steady state value of foreign inflation (quarter on quarter, in percentage annual terms)
$\Delta\, \bar{z}_t$	Trend real exchange rate depreciation (quarter on quarter, in percentage annual terms)

In the above equation, foreign exchange interventions can be introduced through a change in the shock $\varepsilon_t^{s^T}$. Note that with $e_1 = 0$ and $h_2 = 0$, the above equation reduces to the canonical UIP. Deviations from UIP involve nonzero values of the parameters e_1 and h_2. As h_2 tends to one, the exchange rate regime moves toward a full peg. In the calibration for Tonga, $e_1 = 0.2$ and $h_2 = 0.5$, to model Tonga's non-canonical UIP and its managed float.

- In Tonga, the exchange rate is the nominal anchor. The Taylor rule displays strong persistence with respect to domestic interest rates, but low persistence to the output gap or the inflation gap relative to its reference rate of 5 percent (which the model assumes is the target).

- Interest rates in Tonga are not sensitive to movements in world interest rates mostly because of capital control measures that the Reserve Bank imposes on foreign exchange outflows. Before 2012, Tonga struggled to maintain foreign reserves above the minimum of 3 months of imports cover (e.g., during the global financial crisis and into 2010). However, with substantial remittances and official grants flowing into the country, foreign reserves increased to over 10 months of imports in 2020 and have remained above this level since then. To prevent a rapid deterioration in foreign reserves, the NRBT introduced capital controls and passed the Foreign Exchange Control Act of 2018. As a result of the large inflow of foreign reserves, excess liquidity in the banking system grew to over 30 percent of GDP. Moreover, the NRBT did not sterilize foreign inflows and has not issued any notes (or conducted open-market operations) since 2009. Also, because of the excess liquidity in the banking sector, the interbank market has been inactive since 2010. Given the underdeveloped money market in Tonga and its small capital market, there is a disconnect between the NRBT's monetary policy rate (which has been constant at zero percent since 2012) and market interest rates.

Table 2. QPM Calibration for Tonga

QPM Equations	Parameter	Range	Description	Calibrated value
Aggregate demand equation	b_1	$(0,1)$	Degree of output persistence (0=low; 0.95=high)	0.4
	b_2	$(0,0.5)$	Monetary policy passthrough (0.1=low; 0.5=high)	0.3
	b_3	$(0.1,0.7)$	Impact of external demand on domestic output	0.3
	b_4	$(0.3,0.8)$	Weight of the real interest rate and the real exchange rate in MCI	0.2
	b_5	$(0,1)$	Persistence of the credit premium (0=low; 0.95=high)	0.7
Aggregate supply equation	a_1	$(0.4,1)$	Inflation persistence (0=low; 0.95=high)	0.97
	a_2	$(0.1,0.5)$	Policy passthrough (impact of real marginal cost on inflation)	0.05
	a_3	$(0.1,0.4)$	Weight in real marginal cost equation (output gap, a_3, vs exchange rate gap, (1-a_3))	0.15
Uncovered Interest Parity (UIP)	e_1	$[0,1)$	Deviation from canonical UIP (0=canonical UIP)	0.2
	h_2	$(0,1)$	Dirty float/managed float/peg indicator (1=towards full peg)	0.5
Exchange rate intervention rule	f_1	$(0,1)$	Contribution of past exchange rate target (degree of persistence)	0.5
	f_2	$(0,1)$	Contribution of the deviation from the inflation target	0.25
	f_3	$(0,1)$	Contribution of the output gap	0.1
Taylor rule	g_1	$(0,1)$	Interest rate persistence	0.98
	g_2	$(0,1)$	Contribution of the deviation from the inflation target	0.1

The steady state values used in the model are shown in Table 3.

Table 3. Steady States for Tonga and Rest of the World

Domestic variables	
Inflation target	5
Real interest rate	3
Trend real exchange rate	-1
Potential output	2
Relative price of food inflation to CPI	0
Relative price excluding food and energy to CPI	0
Foreign variables	
US inflation target	2
US real interest rate	0.75
Rest of the world food price	0
Rest of the world oil price	5

Scenario analysis

Following the calibration exercise, the QPM can be used to implement various shocks and study their impact. Three notional experiments are presented below: a bank failure, a natural disaster shock and a negative external shock, to understand how the baseline of the calibrated model behaves once subjected to shocks.[3]

1. A Bank Failure

Given the fragile position of one domestic bank (i.e., high increase in non-performing loans and declining liquidity), the impact of a bank failure was modeled as a persistent credit risk premium shock using the QPM. As this bank comprises a large share of the market, it was estimated that such a shock would lead to a 1.5 percent decrease in output relative to the baseline, over the period 2025Q1 – 2026Q4.

For this exercise, we have a baseline scenario and an alternative scenario that assumes the following shocks:

- A shock to the Credit Premium, ε_t^{CRPrem}, of 1.5 percent (150 basis pts) in 2025Q1, 0.5 percent in 2025Q2, 0.25 percent in 2025Q3 followed by a permanent increase of 0.75 percent to the Credit

[3] The paper does not aim to mimic the magnitude of known historical shocks (e.g., specific climate events) but rather proxy these shocks qualitatively and assess the shape of the impulse responses.

Premium ($Add_{Cr_{Prem_t}}$) until the end of the simulation period (2026Q4). The equations below capture these shocks and an increase in country risk ($prem_t$) due to a potential bank failure of a government backed bank.

Under the above assumption, the bank failure alternative scenario leads to a permanent increase in the monetary condition index mci_t, which is a function of the real interest rate gap and the real exchange rate gap, augmented by a credit premium variable (compared to the canonical QPM version). An increase in the mci_t is restrictive whilst a decrease is accommodative.

$$mci_t = b_4\left(\hat{r}_t + Cr_{Prem_t}\right) + (1 - b_4)(-\hat{z}_t)$$

$$Cr_{Prem_t} = b_5\ Cr_{Prem_{t-1}} + (1 - b_5)\ (prem_t - prem_{t-1}) + \varepsilon_t^{CR_{Prem}} + Add_{Cr_{Prem_t}},$$

with $b_5 = 0.7$. The impulse response shows an initial change in the baseline relative to the alternative scenario of 0.3 percent in 2025Q1. The difference between the alternative mci_t and the baseline mci_t increases in 2025Q2, then declines in 2025Q3 reflecting the nature of the credit premium shock from 2025Q1 – 2025Q3. Furthermore, it is assumed that there will be a permanent increase in the credit risk premium of 0.75 percent from 2025Q4 onwards. This explains the increase in the mci_t gap (alternate minus baseline) from that date onwards.

In the model, the output gap is negatively related to the monetary condition index. Following the bank failure, the difference in the output gaps (alternative vs baseline) becomes more negative. The shape of the impulse response curve reflects the three shocks followed by the permanent increase of the Credit Premium. For the period 2025Q1 – 2026Q4, the assumed bank failure amounts to a permanent loss of 1.25 percent of real GDP.

For Tonga, the model assumes that monetary policy is conducted more in terms of exchange rates rather than interest rates. The interest rate channel has been rendered ineffective by excess liquidity, which leaves the NRBT with the exchange rate channel to achieve its objectives. The model predicts a mild reduction in the interest rates relative to the baseline due to our prior assumptions (low impact), which can be attributed to the negative impact of the shock on the output gap.

The exchange rate in the alternative scenario compared to the baseline depreciates due to the negative impact of the output gap on domestic interest rates, with imports becoming more expensive. Depreciation of the Pa’anga results in imported energy prices in local currency being initially more expensive.

Finally, inflation under the alternative scenario relative to the baseline is decreasing (though slightly), consistent with the chosen settings of the parameters in the core inflation and real marginal cost index in the model (low impact by assumption). The calibrated model for Tonga also assumed that core inflation is highly persistent, in line with stylized facts.

Figure 1 Alternative versus Baseline: Domestic Bank Failure, 2025:1

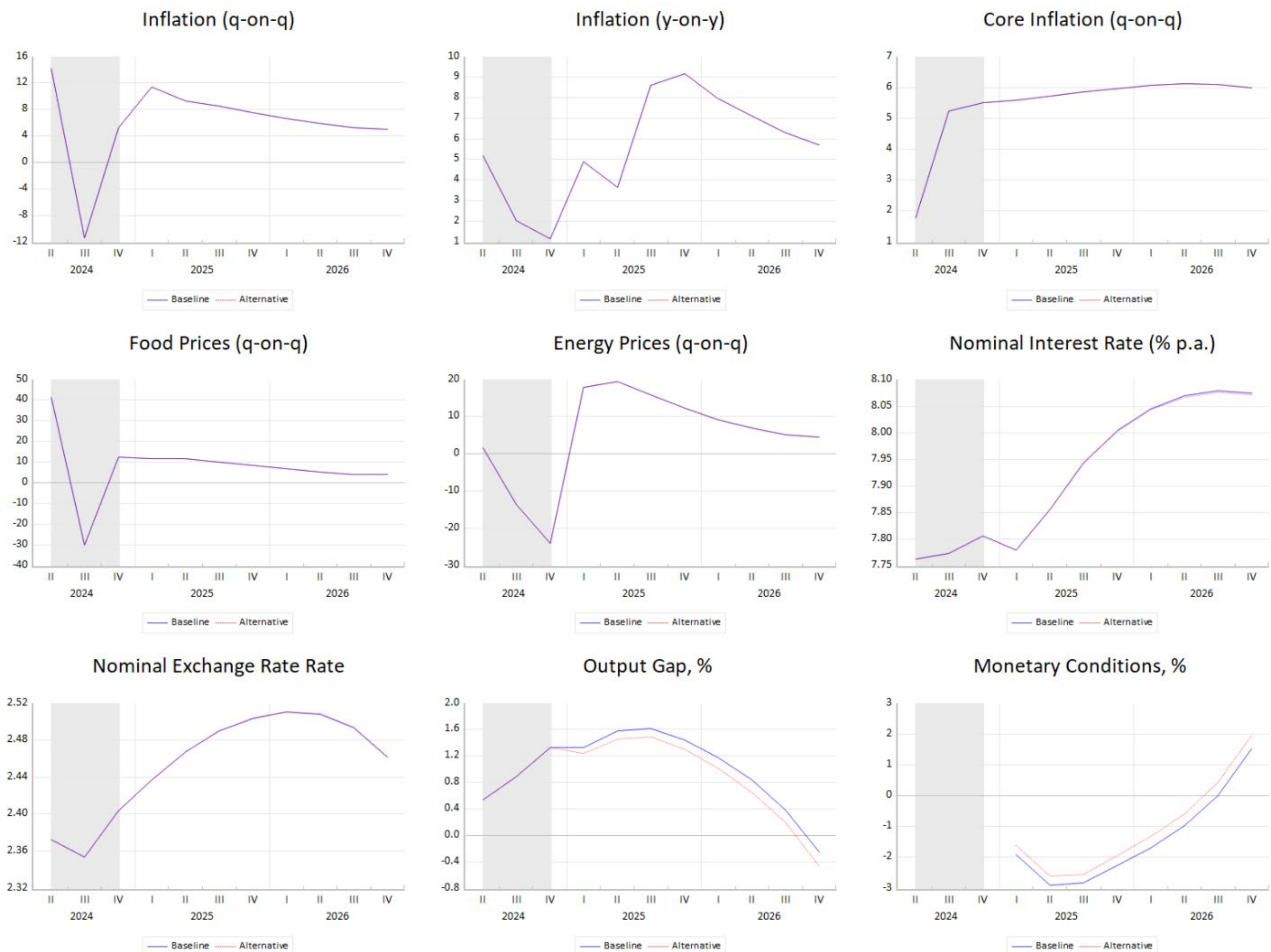
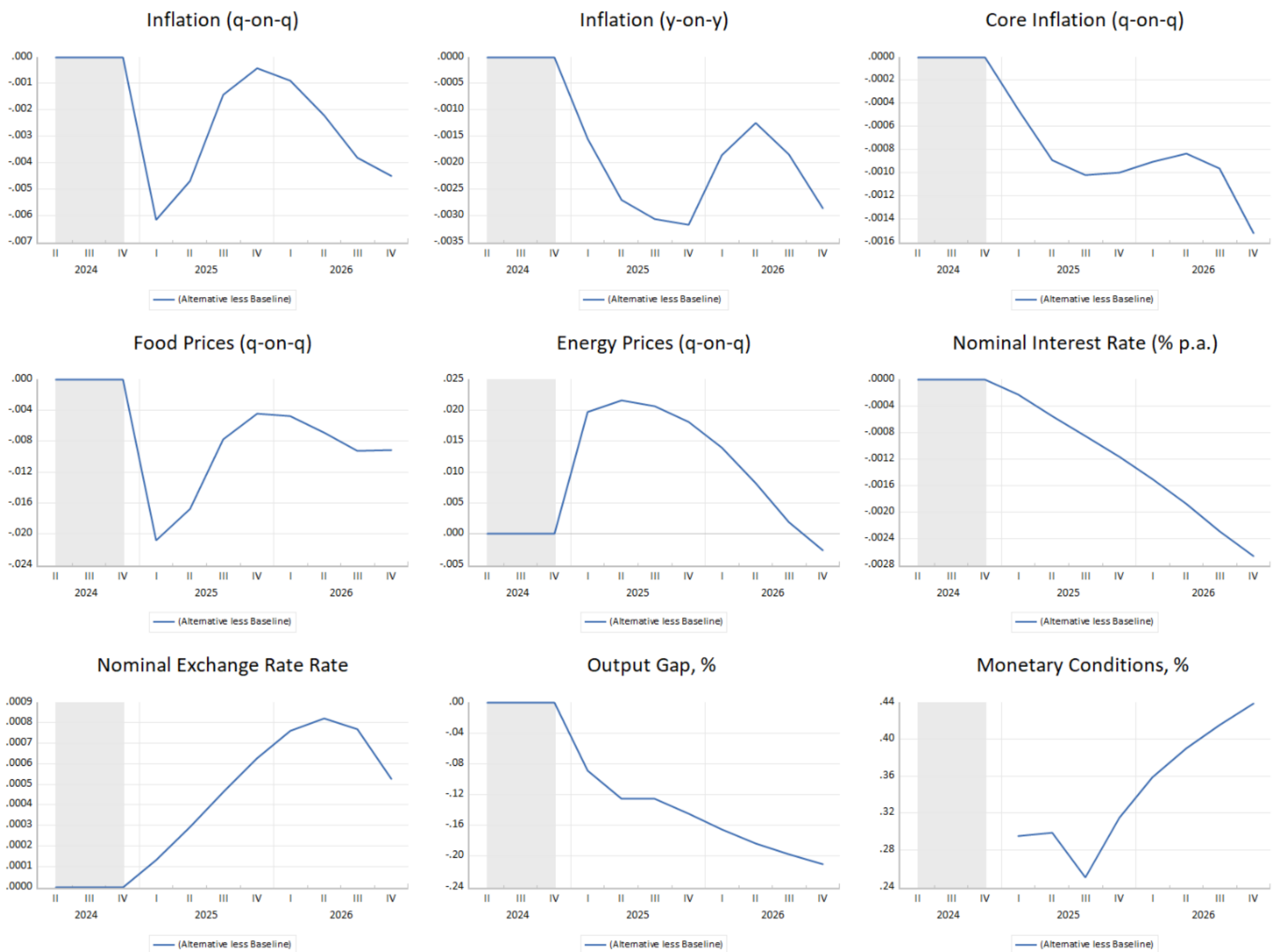


Figure 2 Alternative versus Baseline (Difference): Bank Failure, 2025:1



2. A Natural Disaster

Tonga is prone to natural disasters, as was unfortunately observed more frequently over the last decade, notably with the tropical cyclone Gita in 2018, tropical cyclone Harold in 2020 and HT-HH volcanic eruption in 2022. The natural disasters that hit Tonga seem to always damage capital formation (infrastructure and buildings). However, due to large inflows of aid that generally follow the disasters, the impact on actual output is often mitigated by recovery efforts.

The impact of a natural disaster shock was modeled as a transitory downward shift in potential output using the QPM. It was estimated that such a shock would lead to a 4.6 percent decrease in output relative to the baseline, over the period 2025Q1 – 2026Q4.

For this exercise, we have a baseline scenario and an alternative scenario that assume the following shocks:

- A positive shock to the output gap, ε_t^{y}, of 5 percent in 2025Q1 due to a decline in potential output $\varepsilon_t^{\bar{y}}$ of 5 percent.
- A staggered increase in annual inflation: 3 percent in 2025Q1, 1.5 percent in 2025Q2, 0.75 percent in 2025Q2 and 0.375 percent in 2025Q4[1]. Under the above assumption, the impact of the natural disaster alternative scenario can be traced using the following equations:

$$\hat{y}_t = b_1\hat{y}_{t-1} - b_2 mci_t + b_3\hat{y}_t^* + \varepsilon_t^{y} - \varepsilon_t^{\bar{y}}$$

$$mci_t = b_4\left(\hat{r}_t + Cr_{Prem_t}\right) + (1 - b_4)(-\hat{z}_t)$$

$$i_t = g_1 i_{t-1} + (1 - g_1)(i_t^n + g_2(E_t\{\pi_{t+N}\} - \pi_{t+N}^T) + g_3\hat{y}_t) + \varepsilon_t^i$$

The shock leads to an increase in the output gap. In the model, the output gap is negatively related to the monetary condition index, which is a function of the interest rate gap, which is itself a function of the output gap via the Taylor rule.

For Tonga, the model assumes that monetary policy is conducted more in terms of exchange rates rather than interest rates. The model predicts a mild reduction in the interest rates relative to the baseline due to our prior assumptions (low impact). Following the natural disaster shock, interest rates decline by less than the baseline would otherwise show. This can be attributed to the positive impact of the shock on the output gap. In effect, interest rates go up with respect to the baseline. Following the shock, the path of

[1] This considers the impact of natural disasters on the local food supply. Domestic food comprises about 15 percent of the CPI basket. History suggests that local food prices tend to go up by more than 10 percent in the first quarter after a natural disaster followed by other price hikes from affected supply cycle.

the alternative scenario is analogous to the baseline, but with a higher interest rate. This could be due to an increased risk of default as businesses tend to struggle after a natural disaster.

The exchange rate in the alternative scenario compared to the baseline appreciates slightly due to the positive impact of the output gap on domestic interest rates, with imports becoming less expensive, supporting the recovery (in line with NRBT monetary policy practice). Appreciation of the Pa’anga results in imported energy prices in local currency being initially less expensive. As in the bank failure scenario, inflation under the alternative relative to the baseline is increasing (though slightly; see scenario 1).

Figure 3 Natural Disaster Shock: Decline in Potential Output and a Staggered Increase in Inflation

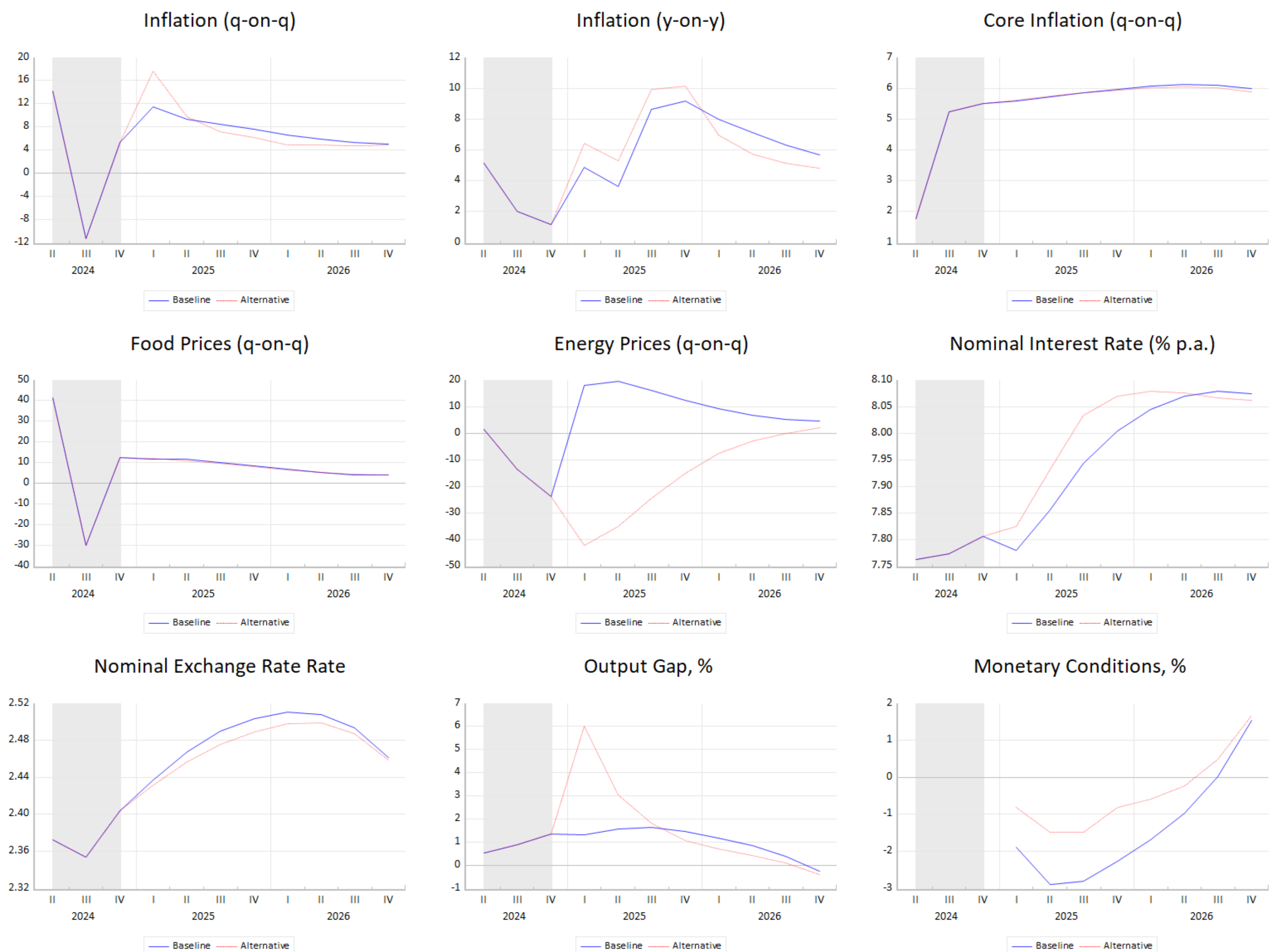
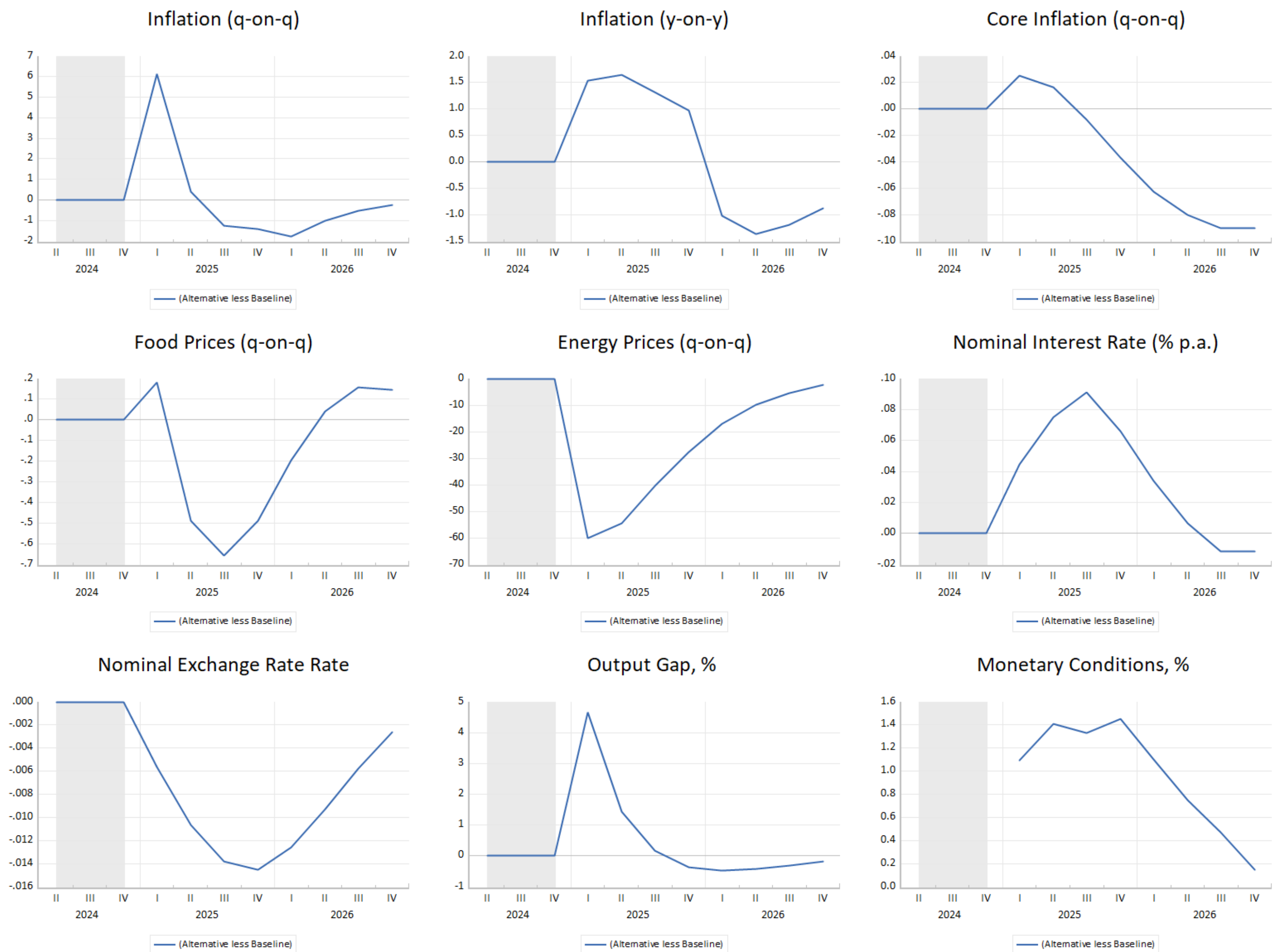


Figure 4 Natural Disaster Shock: Decline in Potential Output and a Staggered Increase in Inflation (Alternate less Baseline)



3. A Negative External Shock

The negative external shock is represented by three distinct exogenous shocks: (1) a one-time shock to the world consumer price index of 1.5 percent in 2025Q1; (2) a prolonged shock to the world output gap of -0.25 percentage points per quarter for four quarters commencing in 2025Q2; (3) a shock to the exchange rate of Tonga (TOP/USD) represented first by an appreciation over three periods from 2025Q1 to 2025Q3 due to high foreign inflation and lower foreign growth (comparatively), followed by a depreciation over two periods commencing 2025Q4, reflecting a contractionary monetary policy to combat high inflation adopted by Tonga's major trading partners (see Table 2).

Table 4. Negative External Shock (Assumptions)

Date	Global Inflation Shock	Global Output Gap Shock	Exchange Rate Shock (TOP/USD)
2025Q1	1.5	0	-0.5
2025Q2	0	-0.25	-0.2
2025Q3	0	-0.25	-0.1
2025Q4	0	-0.25	0.3
2026Q1	0	-0.25	0.5

The general path of domestic inflation under the alternative scenario does not change, but as expected it does become slightly higher than the baseline at the time of the shock. Higher global inflation increases the real marginal cost, which leads to higher food and energy inflation in Tonga. Tonga's non-core components of inflation (food and energy) make up 56.5 percent of the CPI basket, and movements in global inflation tend to have a high pass-through to domestic inflation. The appreciation shock reduces inflation relative to the baseline for the first three periods after the shock. However, the subsequent depreciation shock increases inflation relative to the baseline. The one-time shock to inflation in 2025Q1 produces a moderate increase in inflation relative to the baseline for the first three periods following the shock, reflecting the lower output gap relative to the baseline. The output gap relative to the baseline then begins to increase in 2025Q4, explaining in part the higher inflationary pressures.

According to the model, the global output gap is a key determinant of Tonga's output gap. As expected, the negative 0.25 percent shock to the global output gap (repeated over four quarters from 2025Q2) decreases Tonga's output gap relative to the baseline. This is consistent with Tonga's high reliance on remittances and government donor funds for consumption but also investment (public). However, owing to the depreciation of the Tongan Pa'anga during 2025Q4-2026Q1, the output gap increases relative to the baseline.

The appreciation in the Tongan Pa'anga for three periods from 2025Q1 causes the monetary condition index to be less negative under the alternative scenario. As there is an inverse relationship between the monetary condition index and the output gap, this causes a decrease in the domestic output gap relative to the baseline. From 2025Q4 onwards, the depreciation of the Pa'anga causes the monetary condition index to be more negative relative to the baseline and therefore causes the output gap to increase relative to the baseline.

The overall effect of all shocks on the real GDP growth rate relative to the baseline is an initial decrease from the beginning of the projection period until 2025Q3. There is then an increase in the growth rate relative to the baseline in 2025Q4, driven mainly by the exchange rate shock. Moreover, there is a weaker depreciation of the Tongan Pa’anga relative to the baseline projection for the periods up to the end of 2026. The appreciation of the Pa’anga is larger under the alternative compared to the baseline after the peak in 2026Q1.

Overall, the Tongan Pa’anga is anticipating lesser depreciation for the first four quarters, followed by stronger appreciation in 2026. High global inflation increases the real marginal cost, which results in higher domestic food and energy inflation.

Figure 5   Negative External Shock: Alternative versus Baseline

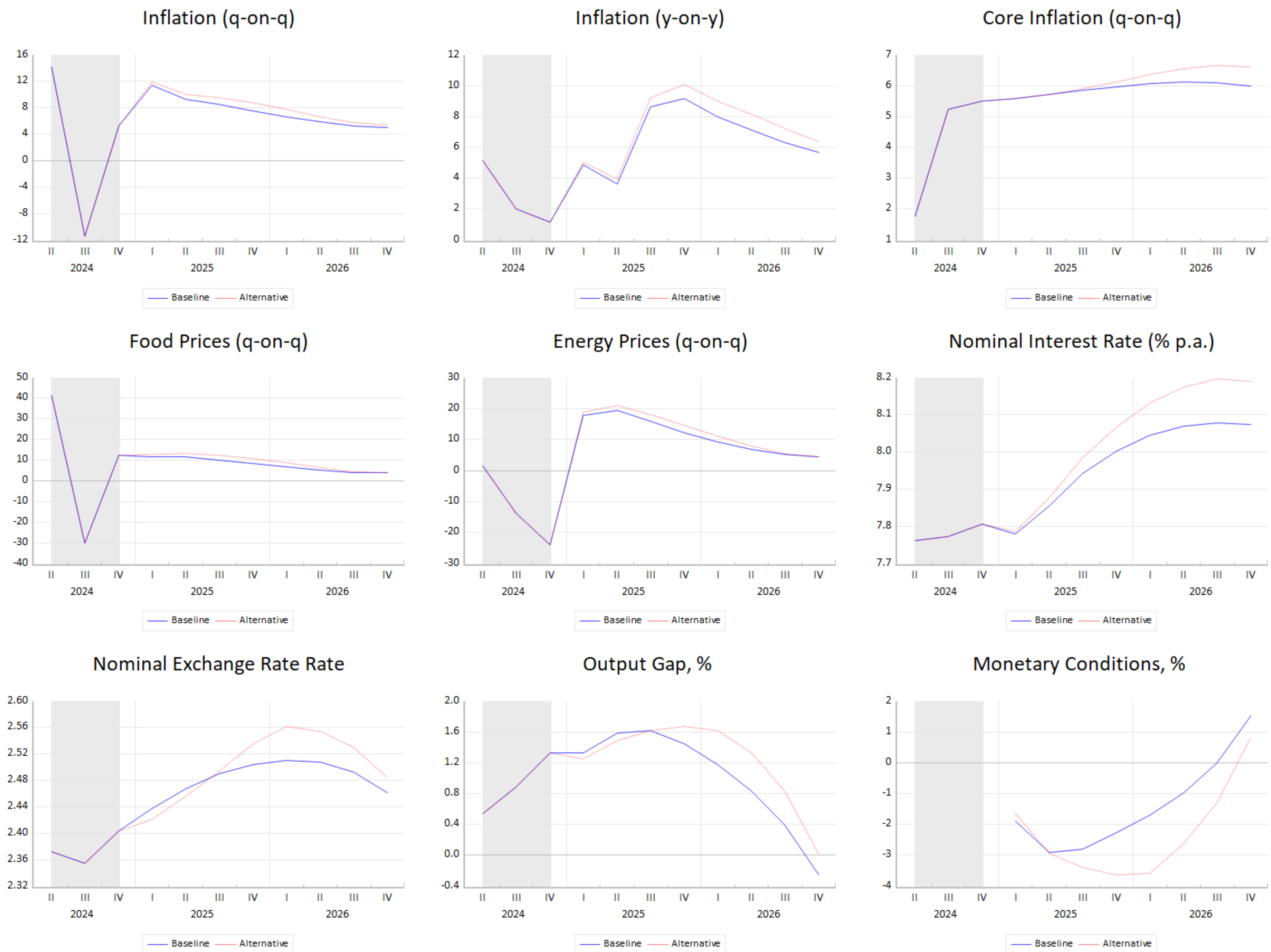
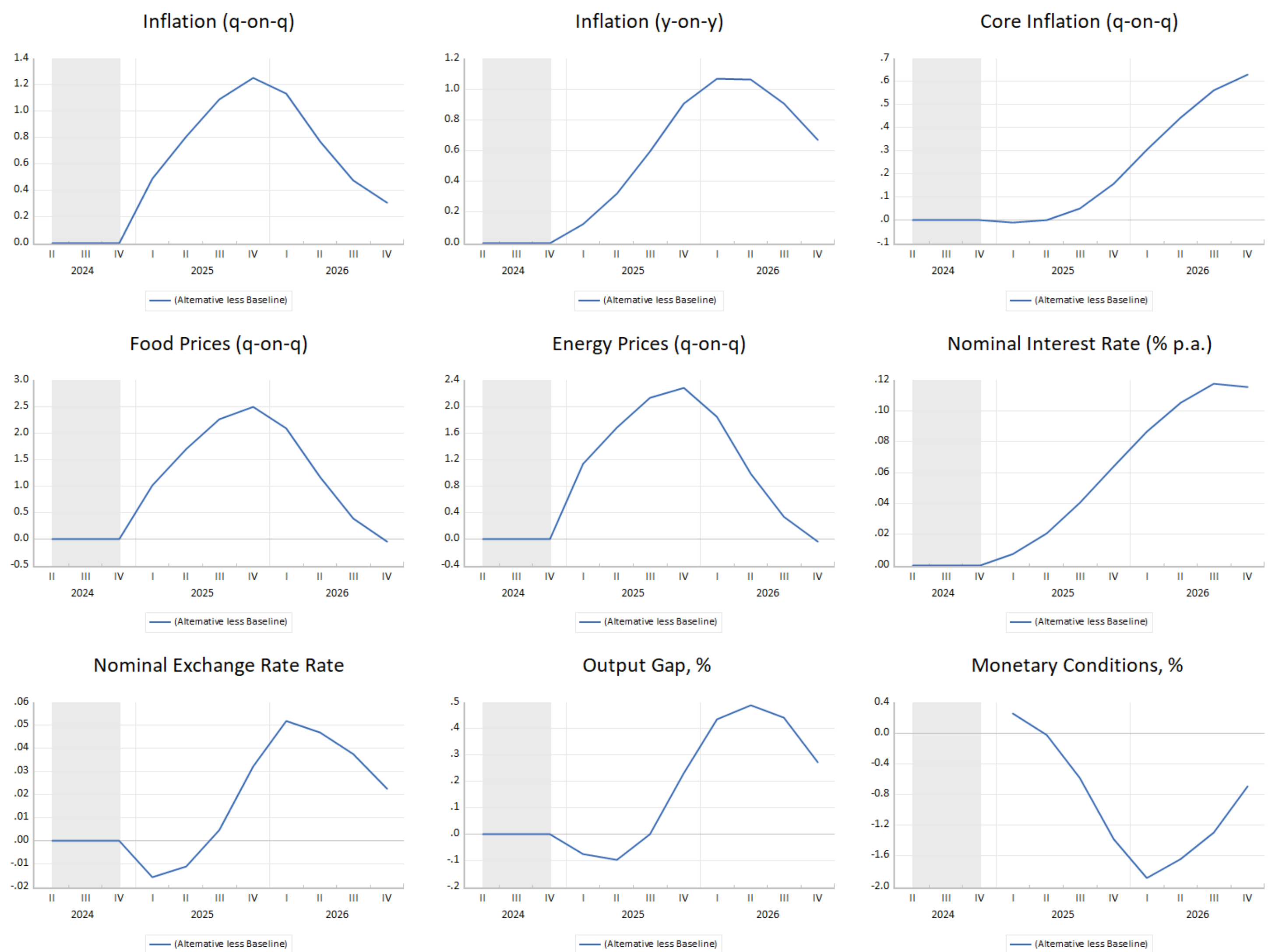


Figure 6 Negative External Shock: Differences (Alternative less Baseline)



Conclusion

This paper presents a quarterly projection model calibrated to the Tongan macroeconomy. We used this model to examine three scenarios that could adversely affect the Tongan economy and understand their overall implications and the strength of key transmission mechanisms. We found that the main impact of a bank failure was to reduce the output gap and raise the monetary condition index, primarily through the shock to the credit risk premium.

In the natural disaster scenario, the shocks led to an increase in domestic interest rates, increasing the monetary condition index relative to the baseline, and helping to reduce the impact of the initial output gap shock in subsequent periods. The speed of adjustment to the baseline was around four periods.

In the negative external shock scenario (third scenario), the impacts compared to the first two scenarios are wide-ranging. The shocks to the rest of the world inflation and output gap have a direct impact on the equivalent domestic variables. The nature of the exchange rate shock results in the alternative crossing the baseline for the domestic output gap, the monetary condition index, and core inflation. This reflects the strength of the relationship between the domestic output gap and the real exchange rate through the monetary condition index.

The results of this paper are conditional on the calibration of the model. Nevertheless, the exercise confirms the usefulness of the QPM for understanding the impact of various shocks and guiding monetary policy discussions at the NRBT.

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