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Mauritius QPM: A Quarterly Projection Model for the Bank of Mauritius

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ABSTRACT: This paper presents the Mauritius Quarterly Projection Model (QPM), the semi-structural analytical tool that underpins the modernized Forecasting and Policy Analysis System of the Bank of Mauritius (BOM). The model is designed to capture the salient features of the domestic economy, including key monetary policy transmission channels and the recently introduced flexible inflation targeting framework. Relative to canonical QPM structures, it also incorporates a parsimonious fiscal block and a labor market block, providing key insights on broader macroeconomic dynamics and enriching the policy advice. The model optimally balances theoretical consistency—evident in coherent shock propagation and policy responses—and empirical reliability, as reflected in its strong in-sample forecasting performance. The practical use of the Mauritius QPM in the context of the BOM's regular forecasting cycles for the production of baseline projections, counterfactual simulations and alternative scenarios, together with the corresponding model-based economic narratives, make it a critical component of the BOM's forward-looking monetary policy formulation.

JEL Classification Numbers:	E32, E37, E47, E52
Keywords:	Mauritius; Forecasting and Policy Analysis; Quarterly Projection Model; Monetary Policy; Transmission Mechanism

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* The authors comprise Bank of Mauritius staff and the IMF team that has led the Macroframeworks Technical Assistance (TA) project on developing a Forecasting and Policy Analysis System (FPAS) at the Bank of Mauritius (BOM). The TA project has been conducted by ICD since 2022 and was partly funded from the Japan Administered Account for Selected IMF Activities (JSA). The authors greatly appreciate the BOM management for their support to the FPAS TA project. The authors are also grateful to Andrew Berg, Paul Cashin, Natan Epstein, Mikhail Pranovich, and Felipe Zanna for their continuous feedback and guidance; to Nicolas Aragon (ATI) for his participation in the later stages of the TA project; to the IMF African Department Mauritius team for their collaboration and support to the FPAS TA project; to participants at the IMF ICD seminar for their helpful comments; and to Mariana Colacelli, Wilson Phiri, Felix Simione and Concha Verdugo Yepes for detailed comments and suggestions. The views expressed in this paper are those of the authors and do not necessarily represent the views of the Bank of Mauritius, IMF, its Executive Board, or IMF management.

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Contents

1. Introduction

In January 2023 the Bank of Mauritius (BOM) announced the introduction of a new monetary and operational policy framework. Recognizing the need to strengthen the monetary policy transmission mechanism, the Bank adopted a flexible inflation targeting (IT) regime with several key elements: an explicit price stability commitment, defined as an inflation target ranging between 2 to 5 percent, with the aim of achieving the mid-point of 3.5 percent over the medium-term; model-based inflation forecasts as intermediate targets; using the key rate to signal the monetary policy stance; a floating exchange rate regime, subject to market forces but with the Bank aiming to smooth out excessive volatility; and forward-looking external communications putting emphasis on medium-term prospects. In terms of the operational framework revisions, the Bank: introduced the Key Rate, alongside the interest rate corridor defined by the Overnight Lending Facility (OLF) and the Overnight Deposit Facility (ODF); adopted the overnight interbank rate as its operational target, with open market operations aiming to steer it close to the Key Rate; designated 7-day BOM bills as the main policy instrument, issued at a fixed rate and on full allotment basis; and identified additional instruments, including fine-tuning operations, longer-term operations, reserve requirements (on rupee and foreign currency). See additional details in BOM (2023). The reforms outlined in the new BOM framework announcement also align with the principles of effective policy frameworks reviewed in IMF (2015).

The introduction of the new monetary policy framework (MPF) makes explicit reference to using the Bank's medium-term policy model to construct inflation forecasts and macroeconomic projections, which serve as a basis for the deliberations of the Monetary Policy Committee (MPC) when formulating the policy measures; see BOM (2023). In this context, the Bank has developed, with Technical Assistance (TA) support from the IMF, a well-structured Forecasting and Policy Analysis System (FPAS), which centralizes institutional capacity for model-based forecasting and policy analysis, being effectively integrated into monetary policy processes and communications.[2] The core analytical tool developed during the TA engagements, the Mauritius Quarterly Projection Model (QPM), is a semi-structural framework that incorporates the relevant characteristics of the economy, including the key policy transmission channels and a flexible IT regime. It is designed and specified such as to embed both theoretical coherency and an adequate empirical fit. The former is demonstrated by economically intuitive and sound propagation of shocks and monetary policy responses, while the latter by an efficient in-sample forecasting accuracy. These properties make Mauritius QPM a valuable practical tool for conducting real-time policy analysis and forecasts in support of the BOM's MPC process.

The BOM's FPAS, with the QPM at its core, represents a well-integrated analytical framework in line with the best central bank practices outlined in Mæhle et al. (2021). In particular, the BOM conducts quarterly forecasting rounds, each following a clearly defined sequence of events. The internal forecast calendar specifies the timing of various meetings, deadlines, responsibilities and deliverables, ensuring seamless coordination within the BOM's technical team, among departments involved in the forecasting process, and with the decision-makers. While the medium-term Mauritius QPM represents the main quantitative

[2] While earlier analytical work at the BOM entailed the utilization of various tools, including a semi-structural model, they were severely outdated, thus requiring significant revisions and the development of internal procedures to integrate model-based results into policy processes.

tool, the Bank's analytical infrastructure consists of a rich suite of methods, including the production of rigorous and timely data summaries, nowcasting and near-term forecasting (NTF) models, a spreadsheet tool for the analysis of climate risks, analytical formulation of medium-term steady states of key macroeconomic variables, and various other satellite and judgement-based analyses. Together, these complement the QPM and support the production of consistent and comprehensive narratives about the economic situation and outlook. See Mæhle et al. (2021) for additional details regarding the FPAS elements and processes.

Overall, the FPAS adopted by the Bank of Mauritius dovetails nicely within the new monetary policy framework adopted in 2023. The FPAS, at the heart of which lies the re-calibrated and re-worked QPM, provides a useful interface for conducting analytical exercises regarding the implications of monetary policy conduct in response to the materialization of macroeconomic shocks that affect the future trajectory of output and inflation. A suite of NTF models has been developed to provide judgement and serve as inputs into the QPM. The Bank of Mauritius has made important progress in beefing up its forecasting process and in re-arranging its internal organizational work in the Economic Analysis & Research and Statistics Department along the FPAS development. Ahead of each quarterly MPC meeting—with the dates publicly announced in advance at the beginning of the year—an internal forecast calendar is circulated horizontally, and interactions are conducted with various sector experts for added analytical insights.

Mauritius QPM represents a medium-size small open economy New Keynesian semi-structural model, extending on the canonical four-equation framework introduced in Berg et al. (2006). It follows the decomposition of real variables into the corresponding gap and trend components, with the monetary policy, conducted via changes in nominal interest rates, aiming to stabilize inflation at the target by impacting the business cycle, in the presence of real and nominal rigidities. The rich structure provided by this approach, topped up with clear economic reasoning—similar to other inflation targeting central banks—allows for rational (forward-looking) expectations and is calibrated to represent reality features of a small open economy such as Mauritius (see calibration details in Subsection 3.6). Accordingly, the QPM enables the BOM staff to consider a rich variety of macroeconomic scenarios, analyze trade-offs that all central banks typically face with the onset of shocks, and benchmarking the policy trajectory against the pathway that leads to the alignment of the inflation forecast with its target.

The aggregate demand block is represented by the evolution of the output gap, including as a result of changes in the monetary conditions—real interest rate and real effective exchange rate—reflecting the two key monetary transmission channels. Prices are decomposed into core, food, and fuel components, recognizing the sectoral heterogeneity in price dynamics and their driving forces, with domestic business cycles—and consequently monetary policy measures—having a relatively larger traction on core inflation, while global commodity prices impacting more directly food and fuel prices. The labor market block consists of a wage inflation Phillips curve and an Okun-type relation between the unemployment rate gap and cyclical demand, allowing for a consistent analysis of spillover and interaction effects between the labor market, real economy, prices, and monetary policy. Nominal exchange rate and nominal interest rate are determined in line with the flexible IT monetary policy framework: a modified uncovered interest parity (UIP) relation links the US dollar–rupee exchange rate to its expectations and risk-adjusted interest rate differential, while a policy reaction function specifies the dynamics of the interbank rate in response to expected deviations of inflation from the target and current-period output gap. A parsimonious fiscal block models the fiscal impulse derived based on the cyclically adjusted fiscal balance. In addition, the model includes a set of exogenous determinants—foreign economy prices, demand, and interest rates; world oil and food prices; and various structural shocks.

The endogenous determination of monetary policy within Mauritius QPM makes it an efficient framework for practical use in support of the MPC's deliberations. In particular, the QPM-based forecast is delivering the interbank rate trajectory consistent with CPI inflation converging to the 3.5 percent mid-point of the target range over the medium-term (2-to-3 years), given the current economic situation, expected trajectories of exogenous drivers, and the key sectoral linkages within the domestic economy. The parametrization of the model reflects the result of an iterative process and sequential calibrations, ensuring the model embeds theoretical and empirical coherency.[3]

The propagation of shocks and the ensuing monetary policy reaction to stabilize inflation incorporated in Mauritius QPM follow conventional economic theory and key transmission channels. Model-estimated gaps and structural shocks align well with the historical narratives regarding economic developments in Mauritius. Equation decompositions confirm an intuitive and sound account of economic driving forces behind the dynamics of main macroeconomic aggregates during specific episodes. The empirical fit of the model is reflected in its in-sample forecasting accuracy, being able to capture well the dynamics of important economic variables. All these proprieties render Mauritius QPM a useful tool for efficient policy analysis and forecasting, including for the construction of baseline projections, counterfactual simulations and alternative scenarios. Accordingly, model-based results are a key input into the BOM's MPC deliberations and feature in the Bank's forward-looking external communications; see for example the media release following the February 2025 MPC meeting in BOM (2025a) and the May 2025 Monetary Policy Report in BOM (2025b).

The general structure of Mauritius QPM resembles the QPM-type approaches adopted by many other central banks. This includes inflation targeting or interest rate-based frameworks in low-income developing countries (LIDCs) and emerging market (EM) economies: Colombia in Gonzalez et al. (2020), Ghana in Abradu-Otoo et al. (2022) and Abradu-Otoo et al. (2024), India in John et al. (2023), Philippines in Dakila et al. (2024), Rwanda in Vlcek et al. (2020). At the same time, the introduction of Mauritius-specific mechanisms and parametrization make it relevant for the practical use at the BOM, responding to the particular needs of the Bank's MPC.

In addition to documenting the Mauritius-specific adaptation of the QPM framework, the paper contributes to the limited economic literature on the Mauritian economy and on tourism-dependent small-island economies in general. An early contribution includes Heerah-Pampusa et al. (2016), who overview the Mauritian context of inflation determinants, costs of inflation, and monetary policy transmission. Using vector autoregressions, Tsangarides (2010) assesses a rather weak transmission of monetary policy impulses, with unexpected increases in the BOM policy interest rate leading to only modest declines in prices and output. Imam and Köhler (2010) analyze the balance sheet vulnerabilities across various

[3] Following the adopted practice in most central banks in developing economies, the model was calibrated rather than estimated. Among the reasons calibration is preferred to estimation are short data samples, structural breaks in economic trends and in statistical methodologies, changes in monetary policy framework (including the most recent one detailed above, starting early-2023).

sectors, concluding that currency and maturity mismatches generally declined and appear to be controllable. IMF (2019) estimate a multivariable financial conditions index for Mauritius and show its ability to improve predictive accuracy for GDP growth.

While quite rich in structure and policy applicability, Mauritius QPM has limitations. In terms of sectoral coverage, the fiscal policy is abridged to the direct aggregate demand impact via the fiscal impulse, without considering the multidimensional dynamics of the public debt or fiscal spending/revenue composition. The model does not explicitly consider the balance of payments flows, with external balance essentially reduced to the cyclical position of the real effective exchange rate. In terms of sectoral granularity, economic output and aggregate demand are proxied by real GDP, whereas a more relevant approach would model individual activities such as agriculture and tourism.[4] This would also allow to introduce and enrich the analysis of climate-related shocks and flows of foreign visitors.[5] The monetary policy framework is represented by the interest rate only, which is the BOM's main instrument, while in practice additional tools are also used, including reserve requirements, macroprudential measures, and foreign exchange interventions.[6] Additionally, the passthrough from policy rate to interbank rates and further to retail loan and deposit rates is not explicitly modeled. The analysis of all these aspects is considered for future research, potentially extending on Berg et al. (2023) large-scale semi-structural framework featuring external and internal balances, a rich fiscal policy block, and multiple monetary policy instruments. In gradually extending Mauritius QPM, however, it is essential to appropriately balance the trade-offs between a realistic but more complex framework and its ease for real-time operational use.

The rest of the paper is organized as follows. Section 2 documents the key stylized facts of the Mauritian economy that informed the specification of the model. The detailed structure of the Mauritius QPM is covered in Section 3. Next, Section 4 presents a set of model-based results, including impulse response functions, equation decompositions, and the forecast accuracy of in-sample simulations. Finaly, Section 5 concludes.

[4] Ongoing QPM extension work focuses on modeling output in a disaggregated manner by considering key heterogeneities in terms of driving forces and monetary policy traction across main economic sectors.

[5] Cantelmo et al. (2024) use IMF reports that cover natural disasters in several countries, including Mauritius (the storm occurring in 2002), finding no systematic monetary policy response. IMF (2025b) analyze the resilience of the housing sector in Mauritius to weather shocks. Nalban and Zanna (2018) showcase a range of QPM-based analytical exercises for the analysis of weather shocks and their implications for the monetary policy conduct. The BOM has developed a macro-climate framework to evaluate the diverse impacts of climate change on critical economic indicators. This tool also offers insights that are complementary to the QPM to analyze climate-induced supply shocks, alongside the resulting monetary policy trade-offs.

[6] Potential model extensions with respect to the use of multiple central bank instruments could follow the IMF's Integrated Policy Framework (IPF), introduced in IMF (2020) and conceptualized in Basu et al. (2020). Adrian et al. (2021) develop a quantitative microfounded model with foreign exchange interventions and capital flow management tools, while IMF (2023) analyze the use cases for foreign exchange interventions. IMF (2025a) present an analysis of IPF considerations for the BOM policy framework.

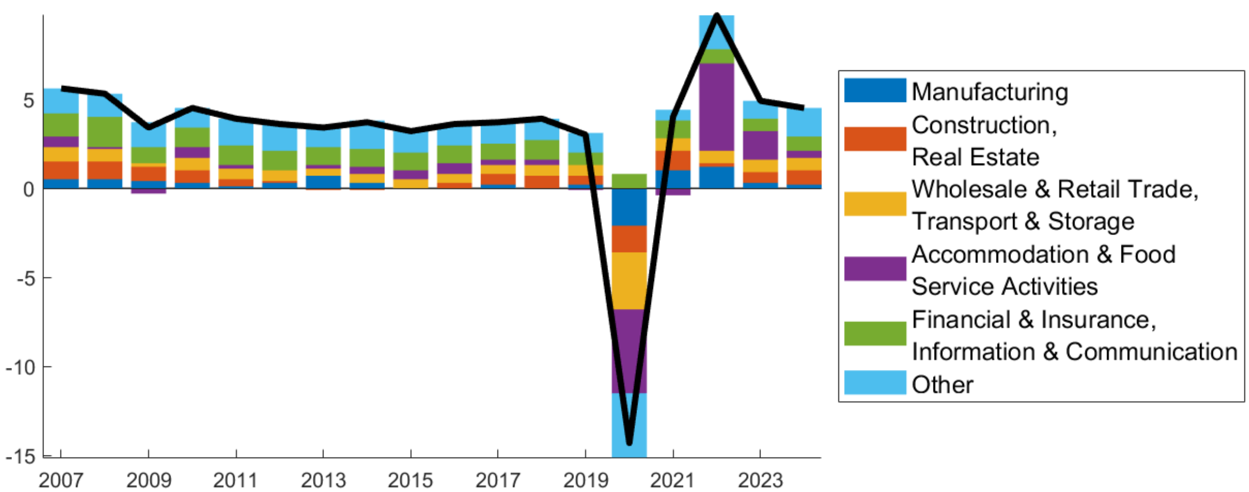
2. Stylized Facts

2.1. Output and prices

Mauritius, a small island economy, has consistently been recognized as the “Mauritian miracle” and the “success of Africa”, driven by its resilient democratic governance, robust social cohesion, and extraordinary economic progress since achieving independence in 1968. During the last three decades, the economy experienced remarkable growth, expanding at an annual average of 4.8 percent and achieving the upper middle-income economy status. This transformative journey reflects Mauritius' strategic pivot from a monoculture economy to a dynamic and well-diversified one, underpinned by an export-oriented manufacturing, a thriving tourism sector, and a developing financial services industry. Policy measures taken by the authorities to enhance diversification, boost productivity and spur investment have positioned Mauritius as a premier international financial center, fostering innovation and sustainable development.

The COVID-19 pandemic, erupting in early 2020, triggered a nationwide lockdown in Mauritius and halted the island’s longest period of sustained economic growth (Figure 1). This unprecedented crisis led to severe economic disruptions, with both supply- and demand-side impacts. Key economic sectors such as tourism, construction, and manufacturing were the most affected. On the expenditure side, domestic demand and exports of goods and services also recorded sharp declines. To mitigate the socioeconomic impact, the Mauritian government and the Bank of Mauritius swiftly implemented a plethora of fiscal, monetary and financial support measures. These interventions aimed to safeguard jobs, alleviate cash-flow constraints, and ensure business continuity, providing critical support to households and economic operators during this turbulent period.

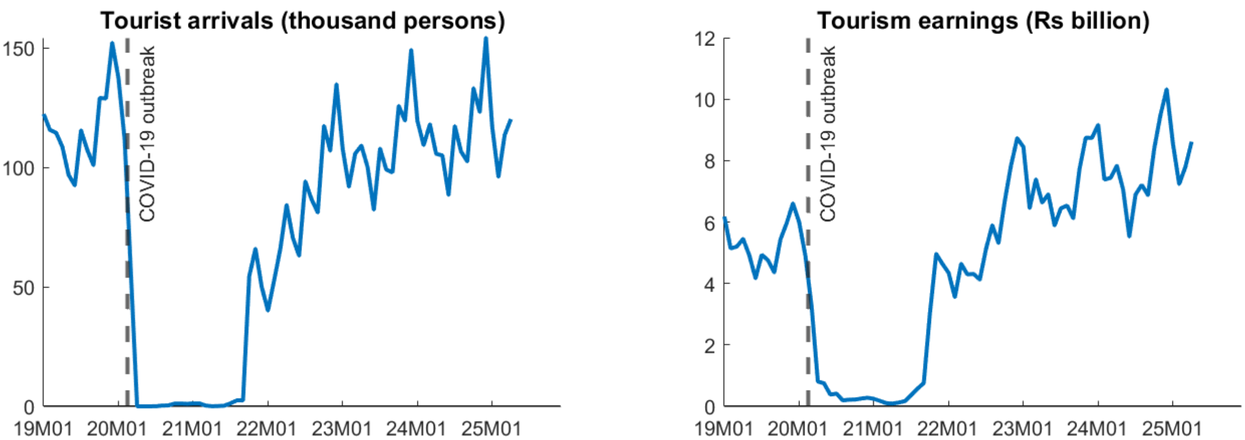
Figure 1: Sectoral contribution to annual GDP growth



Source: Statistics Mauritius.

In early 2021, Mauritius faced a second national lockdown due to a resurgence of COVID-19 cases. Nonetheless, the economic damage was rather limited. The economy staged a robust recovery in late-2021, propelled by the full reopening of borders in October (Figure 2), a successful nationwide vaccination campaign, and a pick-up in external demand. This rebound was underpinned by a broad-based recovery across key sectors alongside strengthened domestic consumption. The Mauritian economy has proved to remain resilient to other external economic shocks, including those stemming from the Russia-Ukraine war. Following a strong rebound in tourism, coupled with most economic sectors returning to their pre-pandemic levels, real GDP growth expanded by 5.0 percent and 4.9 percent in 2023 and 2024, respectively.

Figure 2: Tourism sector

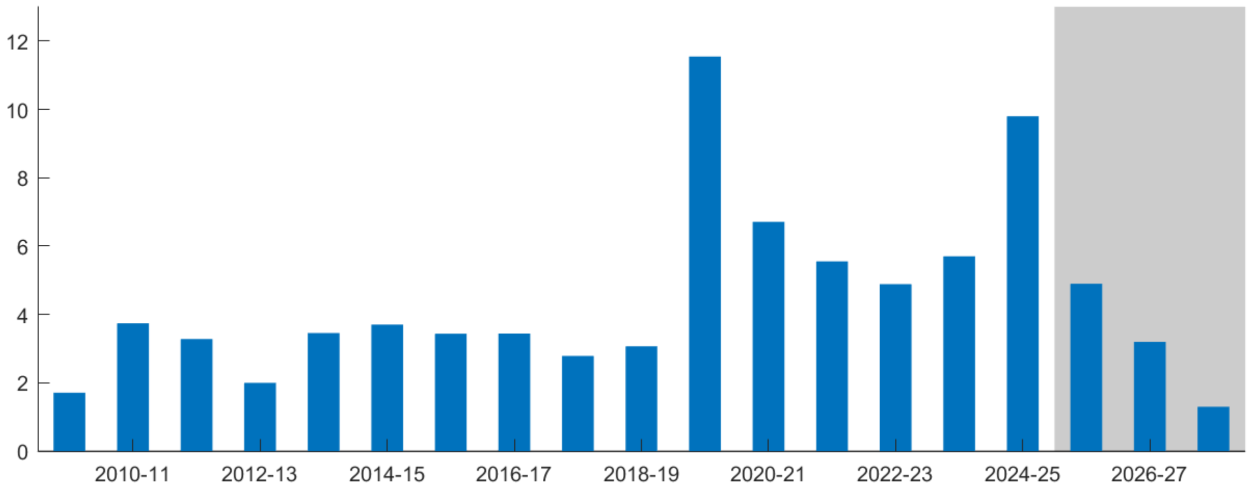


Source: Statistics Mauritius and Bank of Mauritius.

On the fiscal side, Mauritius has historically observed periods of strong fiscal discipline, where the government closely aligns its fiscal stance to economic fundamentals. On average, the fiscal deficit has remained relatively low pre-pandemic (Figure 3), coinciding with stable debt figures. However, the government would occasionally step up its spending in a counter-cyclical manner during times of economic distress to help weather the impact of subdued economic activity on employment and livelihood of people. For instance, during the Great Financial Crisis and the European debt crisis in 2010s, the government implemented sizeable stimulus packages to cushion the economy against external shocks.

The COVID-19 crisis marks another episode of fiscal pressures, where the government faced rapid declines in revenue and urgent social spending needs to preserve income and employment, on top of supporting the heavily challenged public health sector. The budget deficit surged to 13.6 percent in fiscal year 2019-20 and public sector debt expanded to around 95 percent of GDP in fiscal year 2020-21. The fiscal stance remained expansionary in the following years. Income support for vulnerable groups to alleviate the cost-of-living crisis, income allowances and pensions, as well as social housing and infrastructure development further underpinned government expenditure. This drove the fiscal deficit to nearly 10 percent in fiscal year 2024-25. As the economy settles back on a resilient growth path, the authorities are expected to turn towards fiscal consolidation, focused on rebuilding fiscal buffers.

Figure 3: Budget deficit (by fiscal years, percent of GDP)



Source: Ministry of Finance. Fiscal years start on July 1. Highlighted area indicates Ministry of Finance projections announced in June 2025.

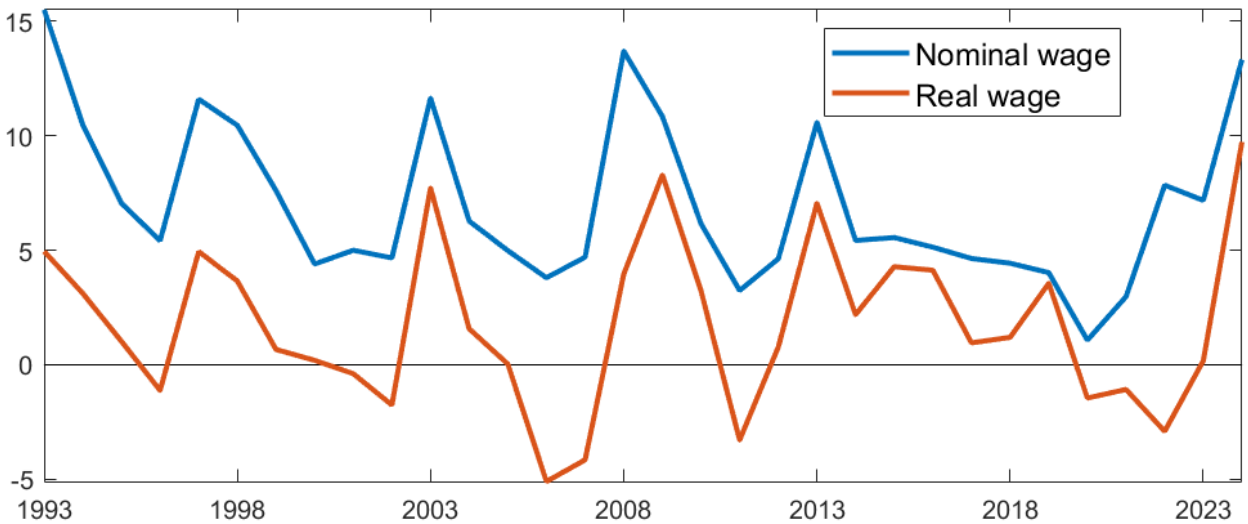
The ongoing economic diversification over the past years has engendered a structural shift in the Mauritian labor market, characterized by sustained expansion in labor force, gains in employment, and improved labor participation rates. The period of turbulence associated with the COVID-19 pandemic triggered disruptions by pushing some individuals out of employment and into inactivity. Policy support deployed by the authorities aimed to safeguard employment by keeping businesses afloat. Operators in the tourism sector and self-employed individuals could benefit from wage subsidies that helped them meet their labor input costs. Nevertheless, the rebound in economic activity, led by improving economic conditions as well as sizeable monetary and fiscal support enabled a prompt recovery in the labor market in the aftermath of the pandemic. Labor force has expanded to almost 600,000 by end-2024, with strong gains in both male and female employment and declining inactivity rates. The unemployment rate has slid to a two-decade low, standing at 6.0 percent in 2024.

As regards the wage determination process, a certain degree of flexibility in wages prevails. However, some non-market forces, particularly in the public sector, play an influential role on wage formation in the private sector through spillover effects. Across the public sector, wages are adjusted in line with the recommendations of the Pay Research Bureau (PRB), subject to a collective bargaining exercise that takes place every four to five years. While wages in the private sector are usually set in individual labor contracts, wages are often reviewed following public sector salary revisions, to preserve wage differentials and appeal for worker retainment. The introduction of a National Minimum Wage (NMW) in January 2018 formally established a wage floor for low-income earners.

In view of these institutional arrangements, growth in nominal wages has remained broadly stable over the period 1993 to 2024. Notwithstanding, periodic bouts of sharp increases in both private and public sector wages were noted, mostly attributed to the implementation of the PRB recommendations and revisions to national wage mechanisms. In 2020, nominal wage growth was modest at 1.0 percent, while real wages declined. However, the successive supply-side shocks that followed triggered a rapid escalation of inflation, and wage growth also accelerated, amidst strong demand for pay revisions, labor shortages and review of economy-wide wage policies via increases in NMW and relativity adjustments.

Real wages have recovered remarkably, aided by government support measures and the subsequent fall in inflation (Figure 4).

Figure 4: Growth in nominal and real wages (year-on-year)



Source: Statistics Mauritius.

The BOM QPM incorporates these idiosyncratic features of the Mauritian labor market by featuring a dedicated block that encapsulates the relationship between labor market indicators, such as unemployment rate and wages, and macroeconomic variables, including output gap and inflation. The interlinkages could potentially induce a central bank reaction in response to labor market shocks if inflation and growth trajectories derail from their equilibrium path.

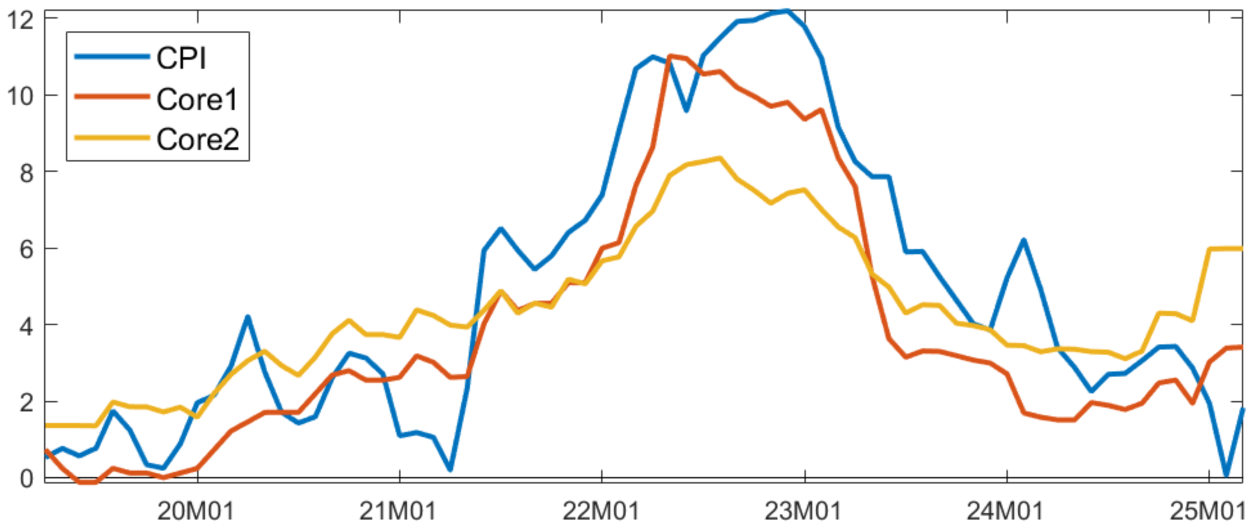
For analytical purposes, inflation is reported and analyzed in terms of three broad aggregates, namely headline CPI, core1 and core2 (Figure 5).[7] The core2 measure of inflation strips out from the total CPI basket the items with highly volatile prices such as food and energy, as well as administered-price items. Thus, core2 prices, which account for 47 percent of the CPI basket, are relatively more driven by market-based mechanisms and reflect to a larger extent the demand-side impulses in the economy. The core1 aggregate accounts for 61 percent of the CPI basket and includes fuel and administered items such as utility prices, which fall under the direct control of the authorities (these account for around 14 percent of the CPI basket). Food and beverages, which are subject to the vagaries of the weather and international demand and supply conditions—and are thus highly volatile and unpredictable—make up for the remaining 39 percent of CPI basket.

Inflation in Mauritius is influenced by manifold factors. A micro analysis of the underlying components of the CPI shows that food items account for the lion's share (35.6 percent) of the basket. Historically, Mauritius has relied relatively heavily on imported food and fuel. The country's relatively high propensity to consume out of imports means that developments in international food and oil prices have a noticeable

[7] Following Statistics Mauritius definitions, core1 excludes from headline inflation the following components: food, beverages and tobacco; and mortgage interest on housing loans. The core2 measure excludes from core1 electricity, gas, other fuels and items whose prices are administered.

impact on domestic inflation. This was witnessed during several episodes of global food and oil shocks, with noticeable peaks in inflation, e.g., in 2006-08 and in 2021-22. However, the fact that imported fuel and selected food items are heavily administered through price controls, subsidy schemes and price stabilization mechanisms help contain the pass-through of global prices into domestic prices. While the direct weight of imported items stands at 42 percent of the overall CPI basket, the leverage of imported inflation in overall price dynamics is much higher. The price-setting behavior of importers, who organize themselves as monopolistic competitors, together with the value-chains involved in sales of “domestically produced” items in Mauritius (with a big share of inputs being imported) contribute to asymmetric inflationary dynamics, with inflation showing more proclivity to rise following an unfavorable shock than to fall following a favorable one.

Figure 5: Inflation: CPI, core1, core2 (year-on-year)

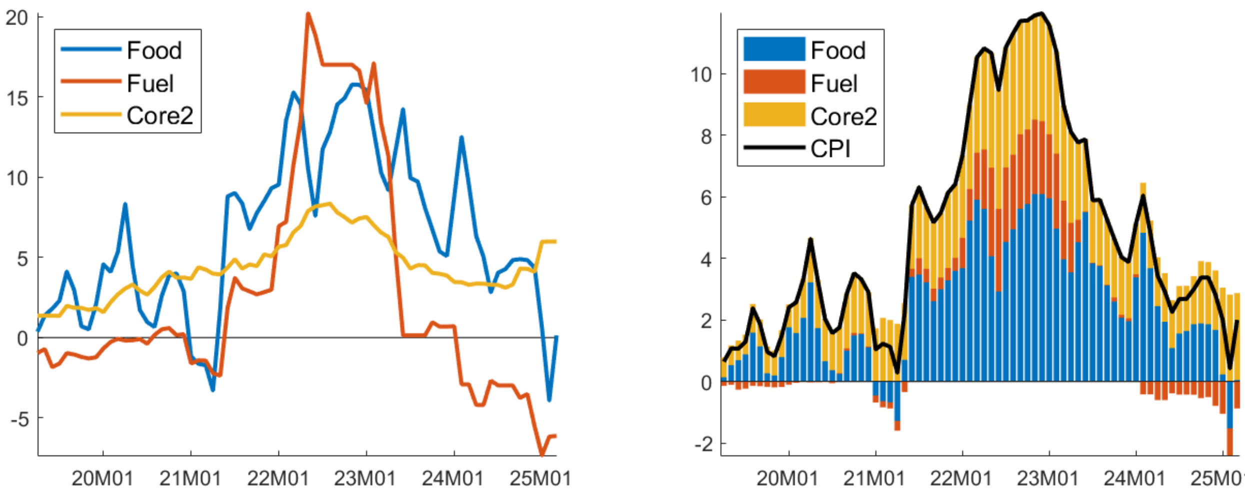


Source: Statistics Mauritius.

Over the last decade, CPI inflation has been relatively low and stable, barring episodes when pressures from externally sourced goods and services triggered an acceleration in price dynamics. In 2022, supply side disturbances and the war in Ukraine contributed to an acceleration in imported inflation, which, through second round effects, filtered into core prices and led to double digit inflation rates. Thereafter, BOM’s new inflation-targeting framework (in place since 2023), tightening of the monetary policy stance, and a global easing in commodity prices have helped to bring inflation down, which gradually declined to 2.5 percent in March 2025 (Figure 5). On average, over the period 2014 to early 2025, prices have increased by around 4 percent annually.

Short-term fluctuations in the overall CPI are largely driven by swings in food prices (Figure 6), especially domestically produced fresh vegetables. In 2024Q1, for instance, adverse weather conditions related to the passage of two major cyclones in the region have led to a spike in locally produced fresh vegetables, which by ricochet led to an increase in CPI inflation. Shocks to food prices are, however, transitory in nature as the shock dissipates quickly alongside the supply response—including imports—to contain prices pressures. By contrast, energy and administered prices in Mauritius are subject to government regulations and have therefore a more delayed pass-through from domestic and international demand-supply conditions. Finally, core2 prices are better aligned with the business cycle and more reflective of excess demand pressures in the economy. In addition, fluctuations in the exchange rate, together with shocks to international prices across a variety of intermediate and final goods, also affect producers' costing and pricing behavior. Given the peculiarities of the underlying drivers of these CPI broad components, Mauritius QPM decomposes headline inflation into three distinct subindices, with different specification of the underlying dynamic processes.

Figure 6: Inflation: core2, food, fuel, and CPI breakdown (year-on-year)



Source: Statistics Mauritius.

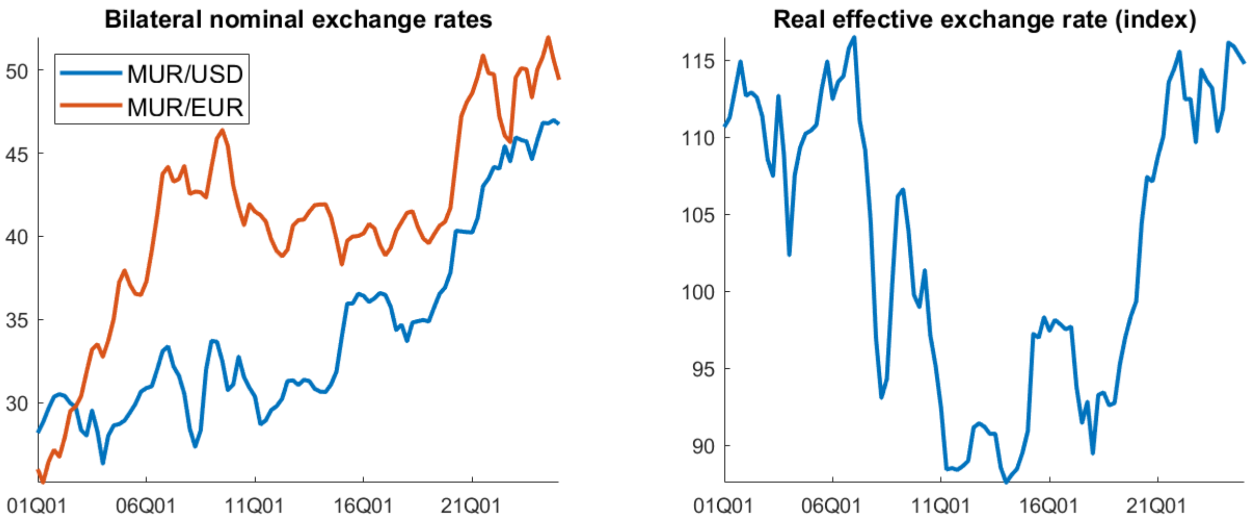
On top of the non-negligible importance of international factors in explaining inflationary dynamics in Mauritius as explained above, labor market policies may also play a critical role. The compulsory non-performance-based end-of-year bonus to public and private sector employees, together with recently announced measures such as the increase in minimum wages, could affect the production costs of domestic firms, including Small and Medium Enterprises (SMEs), and result in increases in retail prices. This wage-related transmission channel is likely to be relatively more relevant for core2 prices, which include most market services, where labor is the dominant production factor.

2.2. Exchange rate and interest rate

Over time, Mauritius has implemented various exchange rate regimes, transitioning from a currency board in the early 1990s to a floating exchange rate more recently, as classified by the IMF's *de facto* arrangement. The rupee exchange rate is influenced by movements on the international foreign exchange (FX) market as well as domestic demand and supply conditions. The BOM intervenes on the FX market primarily to mitigate excessive volatility and avoid disorderly market conditions.

The rupee has followed a general depreciating trend since 2018, driven by the strength of the US dollar on international financial markets and domestic demand-supply conditions (Figure 7). The Bank also maintained FX interventions during this period to smooth out excessive volatility. Depreciating pressures intensified following the outbreak of the COVID-19 pandemic and Russia-Ukraine war—similarly to other EMs. Domestic demand-supply imbalances driven by a negative yield differential with the US and weak FX inflows, as well as the continued strength of the US dollar globally amid safe-haven demand, weighed on the rupee. To counter the pressures from these exceptional shocks, the Bank intervened by selling FX to maintain an adequate supply of foreign currency on the market. In the context of the IMF's Integrated Policy Framework (IPF), which represents an analytical framework to support the management of external shocks and fluctuations in international capital flows by using a coordinated mix of policy tools, IMF (2025a) present a detailed analysis of IPF-related considerations for the BOM policy framework.

Figure 7: Exchange rate



Source: Bank of Mauritius. Increases denote rupee depreciation.

The conduct of monetary policy by the Bank of Mauritius has evolved over time—moving from priority lending within a fixed exchange rate regime, to the suspension of exchange controls in 1994 and reserve money targeting, and ultimately to the introduction of an interest rate-based policy framework in 2006. With the overhaul of the BOM Act in 2004, the Bank generally stood guided by its primary objectives of maintaining price stability and promoting orderly and balanced economic development. Monetary policy decisions were based on a careful assessment of current macroeconomic and financial conditions as well as forecasts of relevant economic variables. The Key Repo Rate was adjusted to signal changes in the monetary policy stance, which prompted financial institutions to review their savings and lending rates accordingly. Nonetheless, that framework proved to be somewhat ineffective due to several deficiencies, including the lack of a clearly defined nominal anchor, structural excess liquidity issues, persistent disconnect between policy rate and money market rates, and an incomplete design of the monetary policy instruments.

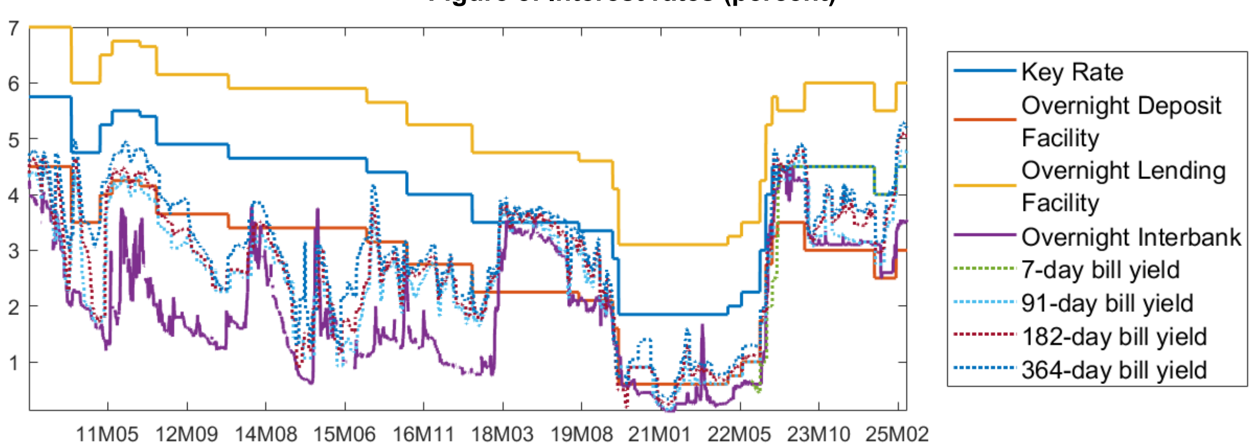
Consequentially, the Bank shifted towards a formal flexible IT regime, introducing its new monetary policy framework on 16 January 2023. The new framework was adopted with the aim of addressing existing deficiencies and dovetails nicely within a modern and fully-fledged interest rate-based regime that aligns the choice of an explicit nominal anchor, namely an inflation target, with institutional reforms encompassing transparency and accountability. The new framework, which is more forward-looking and data-driven in nature, aims at strengthening monetary policy operations and at supporting credibility and predictability of monetary policy by enhancing the effectiveness of the monetary transmission mechanism. Most elements of the new MPF, as outlined below, were already incorporated in Mauritius QPM as of late-2022, in anticipation of the upcoming formal shift towards the flexible IT framework.

A number of prominent features, including operational and strategic building blocks, define the contours of the new framework, namely: a flexible inflation target range of 2-5 percent with the aim of attaining 3.5 percent over the medium-term; continued reliance on interest rates to steer monetary policy stance; well-defined taxonomy regarding the operational target (i.e., the overnight rate) and the intermediate target (i.e., inflation forecasts); greater clarity on the role and nature of FX market interventions under a flexible exchange rate regime.

Under the newly adopted framework, the main instrument of monetary policy is the 7-day BOM bill, issued at a fixed rate equal to the Key Rate and on full allotment basis (this arrangement was in place from January to July 2023). A symmetric interest rate corridor of 200 basis points around the Key Rate, maintained through standing facilities, was introduced. The framework also allows fine-tuning operations to be conducted to either absorb liquidity from the market or inject liquidity into the market in-between auction days. Longer-term issues of BOM instruments are part of the monetary policy toolkit and are determined through competitive bidding to remove the more persistent elements of structural liquidity. With the introduction of the IT regime in January 2023, the maintenance period for holding Cash Reserve Ratio (CRR) on both rupee and foreign currency deposits was lengthened from 14 to 28 days; reserve requirement ratio was set at 9.0 percent of deposit liabilities on both rupee and foreign currency deposits; daily reserve requirements were scrapped; and foreign currency reserve requirements were no longer remunerated. These changes were introduced to help further anchor short-term money market rates around the policy rate.

In the run-up to the COVID-19 pandemic, global and domestic economy were characterized by a benign inflationary environment, which provided the Bank with sufficient room for an accommodative monetary policy stance. However, the ensuing economic setbacks caused by the health crisis prompted the Bank to slash the policy rate to a historical low of 1.85 percent in early-2020, alongside additional macroprudential incentives. Short-term money market rates closely tracked the changes in the policy rate and maintained a downward trajectory—occasionally dipping to the zero-bound amidst acute pressures from excess liquidity episodes over 2020-22. Interest rates were kept exceptionally low until mid-2022 to support economic activity (Figure 8).

Figure 8: Interest rates (percent)



Source: Bank of Mauritius.

The subsequent build-up in inflationary pressures that followed from the set of overlapping crises in the latter part of 2021 and 2022 eventually set into motion a tightening cycle. The Bank actively tightened its policy stance to curb inflationary pressures and anchor inflation expectations, bringing the Key Repo Rate to 4.50 percent by end-2022. As domestic inflation set out on a sustained downward trajectory, the Bank maintained the status quo on the policy rate until September 2024, when it was lowered to 4.00 percent. However, excess liquidity, negative interest rate differentials with major currencies and sustained depreciation of the rupee motivated the Bank to reverse its policy move, raising the Key Repo Rate back to 4.50 percent in February 2025.

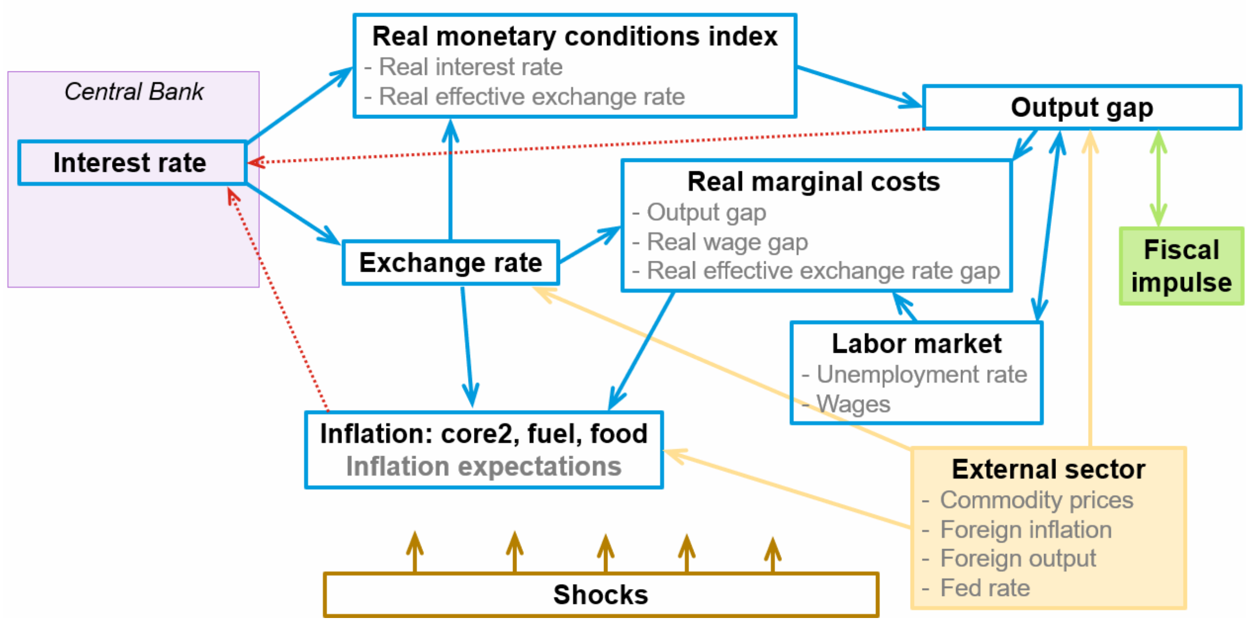
Short-term interest rates roughly moved in tandem with the policy rate, reflecting the effects of monetary policy actions, extensive liquidity management operations, as well as the adoption of the new MPF in 2023. In the first half of 2023, the overnight interbank rate and the 91-day bill yield moved up to the range of 4.25 to 4.75 percent, reflecting open market operations being conducted through the 7-day BOM bills at the policy rate of 4.50 percent. However, since the review in liquidity management operations in July 2023, when the 7-day BOM auctions at 4.50 percent were capped, banks started depositing excess funds in the Overnight Deposit Facility; subsequently the overnight interbank rate and the 91-day bill yield dropped down to the lower bound of the corridor. Reflecting renewed open market operations in the latter part of 2024, the overnight interbank rate has since increased to around 3.5 percent. The 91-day bill yield has also been tracking the policy rate, hovering around 4.50 percent.

See IMF (2025a) for an overview of the latest economic developments and policy-relevant discussions in Mauritius.

3. Model Structure

The core of the BOM's QPM outlined in this section, which focuses on the key behavioral equations, resembles the basic QPM structure of other central bank models mentioned in Introduction section. However, on top of this basic structure a number of Mauritius-specific extensions have been added, as shown below. Similar to the canonical QPM introduced in Berg et al. (2006), Mauritius QPM consists of four key blocks: aggregate demand, aggregate supply (Phillips curves), uncovered interest parity (UIP), and monetary policy reaction function. As for the extensions relative to the basic structure, Mauritius QPM has been adjusted to better incorporate some of the key features and stylized facts outlined in the previous section. These include decomposing headline inflation into core, food, and energy subcomponents, accounting for the different drivers of each price sector, adding a parsimonious fiscal block, as well as introducing a labor market block, consisting of a wage inflation Phillips curve and an Okun-type relation for the unemployment rate gap. BOM (2025b) provides an overview of the Mauritius QPM's main building blocks. See Figure 9 for a stylistic representation of Mauritius QPM.

Figure 9: Schematic representation of Mauritius QPM



Source: Authors' representation.

3.1. Aggregate demand

Aggregate demand is modeled using an extended investment-savings (IS) curve, which posits how the real monetary conditions index (RMCI) influences real economic activity over the business cycle. This relationship can be derived as the utility-maximizing household's Euler equation in a small open economy. Mauritius QPM aggregate demand curve also includes other factors that directly impact domestic output, notably the fiscal impulse and labor income. The latter is proportional to real average wages and employment (i.e., negative of unemployment rate) gaps. Having a direct impact from both wages and (un)employment generates intuitive income effects on aggregate demand. Given the characteristics of the Mauritian economy, we also consider the impact of foreign demand on domestic output. Finally, the behavior of output may also be attributed to habit formation, which helps match the GDP persistence observed in the data.[8]

Aggregate demand equation takes the following form:

$$\begin{aligned} \hat{y}_t &= a_1 \hat{y}_{t-1} - a_2 rmci_t + a_3 \hat{y}_t^* + a_4 fiscimp_t + a_5 (\widehat{rw}_t - \widehat{unemp}_t) + \varepsilon_t^y \\ rmci_t &= a_6 \hat{r}_t + (1 - a_6)(-\hat{z}_t) \end{aligned} \tag{1}$$

[8] In what follows, all variables are expressed in natural logarithms unless stated otherwise. Structural equations are usually specified for the gaps (denoted with a "hat"), i.e., deviations of actual levels from the medium-term trends (denoted with a "bar").

where output gap ($\hat{y}_t$) is a function of its persistency ($\hat{y}_{t-1}$), real monetary conditions index ($rmci_t$), foreign (euro area) output gap ($\hat{y}_t^*$)[9], fiscal impulse ($fiscimp_t$), real wage income effects ($\widehat{rw}_t - \widehat{unemp}_t$, or the difference between real wage gap and unemployment rate gap), and aggregate demand shocks (ε_t^y).[10] The latter accounts for the unmodeled factors impacting the business cycle, e.g., the adverse impact on tourism during the COVID-19 national lockdowns; see Subsection 4.2 for results.

RMCI is expressed as a weighted average of the real interest rate (RIR) gap, $\hat{r}_t$ (defined as the deviation of the real interest rate from its neutral level), and real effective exchange rate (REER) gap, $\hat{z}_t$ (defined as the deviation of the real effective exchange rate from its trend level, with an increase in z_t denoting depreciation), where higher values of RMCI imply tighter monetary conditions. The output gap is also impacted by real wage income effects, as gauged by the difference between real wage gap ($\widehat{rw}_t$) and unemployment rate gap ($\widehat{unemp}_t$). This allows to capture wage income effects through the overall real wage bill, which includes an intensive margin (real wage per worker) and an extensive margin (number of workers, proxied by the negative of unemployment rate).

A parsimonious fiscal sector is included as an additional building block, with fiscal impulse ($fiscimp_t$) proxying for the aggregate demand effects of fiscal policy developments. Its inclusion reflects the increasing importance of fiscal policy actions during challenging episodes, like business cycle downturns, when countercyclical support mitigates the adverse economic effects. The QPM mechanism to account for fiscal policy in a systematic manner enriches its ability to help explain how fiscal dynamics affect inflation, growth, and monetary policy.

The fiscal block is kept reasonably simple and tractable. In our model, fiscal deficit (expressed as ratio to nominal GDP) is decomposed into structural deficit, cyclical deficit, and discretionary elements, as follows:

$$def_t = def_t^{str} + def_t^{gap} + def_t^{disc} \tag{2}$$

where def_t is overall fiscal deficit, def_t^{str} is structural fiscal deficit that represents the smooth/policy-related pattern in the headline deficit, def_t^{gap} represents the cyclical component of the deficit (automatic stabilizers), and def_t^{disc} is one-off discretionary transfers/expenditures.

Structural deficit follows a univariate mean-reverting process, while the cyclical component is linearly linked to the output gap. The fiscal impulse ($fiscimp_t$) is identified in the model as the sum of def_t^{disc} (reflecting the discretionary component of the fiscal policy which is not related to the cyclical position of

[9] Current QPM specification assumes foreign demand is captured by the euro area economy, which represents the main trading partner of Mauritius, including in terms of tourism. While simple model refinements could consider the specification of foreign demand in effective terms, i.e., a trade-based weighted average of several main partners, the conditional forecasting approach typically applied to foreign sector variables would imply the necessity to compile the corresponding trade partners' output gaps at quarterly frequency, which are not readily available and would require additional estimation efforts. See BOM (2025b) for a discussion of external assumptions used in a recent forecasting exercise.

[10] Planned model extensions include disaggregating output into agriculture, tourism, and other sectors, which will allow for a richer and more accurate policy analysis and forecasts.

the economy or the medium-run fiscal developments), the change in def_t^{str} (capturing the impact from medium-term fiscal expansion/consolidation), and one-off effects of Special Funds vehicles, ε_t^{sf}. Formally,

$$\begin{aligned} def_t^{str} &= f_1 def_{t-1}^{str} + (1-f_1) def_{ss}^{str} + \varepsilon_t^{def_{str}} \\ def_t^{gap} &= -f_2 \hat{y}_t \\ fiscimp_t &= def_t^{disc} + f_3(def_t^{str} - def_{t-1}^{str}) + \varepsilon_t^{sf} \end{aligned} \tag{3}$$

where def_t^{gap}, cyclical fiscal deficit, captures the effect of automatic stabilizers and mirrors the position of the output gap via the parameter f_2, def_{ss}^{str} is the long-term structural fiscal deficit, and $\varepsilon_t^{def_{str}}$ is a structural deficit shock. Accordingly, after accounting for cyclical variations (automatic stabilizers) and the structural component, the rest of the changes in the fiscal deficit is interpreted as discretionary fiscal decisions that impact the current business cycle position. The Special Funds adjustment term (ε_t^{sf}) reflects specific government expenditures not included in the headline deficit accounts that can take place on rather ad-hoc basis, with the magnitude tuned in the model based on expert judgment and additional available data. Post-pandemic, Special Funds were given much importance as the government had budgeted resources for specific infrastructure projects like construction of roads, social housing and hospitals—with important aggregate demand effects.

3.2. Labor market

The model incorporates some idiosyncratic features of the Mauritian labor market mentioned in the stylized facts section, including a dedicated block that encapsulates the relationship between labor market indicators, such as unemployment rate and wages, and key macroeconomic variables like output and inflation. The interlinkages could potentially induce a monetary policy reaction if inflation and growth trajectories derail from their optimal path as a result of labor market developments, which are missing in the canonical QPM structure.

Our QPM features a nominal wage Phillips curve in line with the New Keynesian framework, with rational expectations and wage rigidities, thus closely following previous literature proposed by Blanchard and Gali (2007) and Gali (2015).[11] In particular, the wage dynamic is assumed to follow:

$$\Delta w_t = (1-w_1)E_t \Delta w_{t+1} + w_1 \Delta w_{t-1} - w_2 \hat{u}_t - w_3 \widehat{rw}_t + \varepsilon_t^w \tag{4}$$

Nominal wage growth (Δw_t), measured as the quarter-on-quarter (qoq) annualized change in log nominal wages (w_t), is explained by both backward- and forward-looking expectations (Δw_{t-1} and $E_t \Delta w_{t+1}$, respectively, where E_t denotes rational expectations). This embeds the mechanism whereby employers write up wage contracts at time *t* based on available information for lagged wage inflation and their expectations of wage growth for the next period. Current unemployment gap ($\hat{u}_t$) enters the equation as a measure of labor market slack, inducing a negative response of wage growth. Hence, it allows to pin down the direct impact of an increase in labor demand on wage inflation. The intuition is that in periods of

[11] The QPM framework developed in Musil et al. (2018) features a wage Phillips curve but does not include unemployment rate.

above-trend output and negative unemployment gap, strong demand for labor will drive wage growth upwards, given the supply of workers remains constrained in the short run. Since robust economic activity normally reflects lower unemployment and improves workers' bargaining power, it could eventually lead to workers expecting and demanding higher real wages. Catching-up effects are also included, proxied by the real wage gap ($\widehat{rw}_t$), to illustrate the response of agents to a loss in real purchasing power experienced in the recent past due to inflation. Finally, ε_t^w is a nominal wage shock that approximates unmodeled components, such as institutional arrangements and effects of public wage negotiations that are not fully reflecting the overall business cycle conditions.

As mentioned above, the inclusion of the real wage gap in the wage Phillips curve (4) helps to control for the effects of past price and wage developments, such that nominal wage growth needs to accelerate or decelerate to allow for the catching-up effects in household's real income as a result of past inflation. For instance, a period of low growth in real wages will be accompanied by subsequent acceleration in nominal wages, reflecting employees' demand for wage compensation to restore their purchasing power. Moreover, the real wage gap is also introduced in the IS curve (1) to account for relative income effects arising from strong growth in real wages that encourages consumption spending and creates demand-side pressures on inflation, and also in the price Phillips curves to reflect labor costs for producers (see next subsection).

Real wage definition and decomposition into trend and gap components follows:

$$\begin{aligned} rw_t &= w_t - p_t, \\ rw_t &= \overline{rw}_t + \widehat{rw}_t \end{aligned} \tag{5}$$

In particular, real wages (rw_t) are derived as nominal wages (w_t) adjusted for the general price level proxied by the CPI, p_t (all in natural logarithms). Real wages are further decomposed into its unobserved trend ($\overline{rw}_t$) and gap ($\widehat{rw}_t$) components.

The modeling of trend real wage growth reflects its link to the economy's long-run productivity dynamics:

$$\Delta\overline{rw}_t = r_1 \Delta\overline{rw}_{t-1} + (1 - r_1)(\Delta\bar{y}_t + ss_{wedge}) + \varepsilon_t^{rw} \tag{6}$$

Trend growth in real wages ($\Delta\overline{rw}_t$), computed as the qoq annualized change in real wage trend ($\overline{rw}_t$), is driven by a persistence term (lagged trend growth in real wages, $\Delta\overline{rw}_{t-1}$) and growth in trend output ($\Delta\bar{y}_t$). The latter component is included as a proxy for labor productivity, following the notion that in equilibrium growth in real wages need to match the growth in labor productivity, which can then counteract inflationary impulses. However, the productivity term is adjusted by a factor ss_{wedge} in order for the steady state trend growth in real wages to match the moments in the data. Therefore, ss_{wedge} is set equivalent to the observed discrepancy between average real wage growth and output growth (around 0.5 percentage point). ε_t^{rw} is a shock to trend growth in real wages.

A simple unemployment block of equations is also enclosed:

$$\begin{aligned} u_t &= \bar{u}_t + \hat{u}_t \\ \hat{u}_t &= u_1 \hat{u}_{t-1} - u_2 \hat{y}_t + u_3 \widehat{rw}_t + \varepsilon_t^u \\ \bar{u}_t &= d_1 \bar{u}_{t-1} + (1 - d_1)\bar{u}_{ss} - d_2(\Delta\bar{y}_t - \Delta\bar{y}_{ss}) + \varepsilon_t^{\bar{u}} \end{aligned} \tag{7}$$

The unemployment rate (u_t) is decomposed into its unobserved gap ($\hat{u}_t$) and trend ($\bar{u}_t$) components. The former encapsulates the reasoning of Okun's law—a negative short-run correlation between the cyclical components of unemployment rate and output. Hence, the direct relationship between the unemployment rate and the output gap postulates that in periods of high growth, strong demand for labor will push down the level of unemployment in the economy, and vice versa during recessions. Additional determinants include persistence and the real wage gap. The trend component, which may be referred to as the non-accelerating inflation rate of unemployment (NAIRU), exhibits properties of a mean-reverting autoregressive process. NAIRU is also linked to trend output growth (in deviations from its constant steady state equilibrium, $\Delta\bar{y}_t - \Delta\bar{y}_{ss}$), stressing that productivity enhancements drive potential growth and create strong demand for labor, allowing to bring down the long-term unemployment rate. Subsection 4.3 presents additional results with respect to the inclusion of the labor market block in Mauritius QPM.

3.3. Aggregate supply and inflation

Consumer price index is dissected into three distinct components: core2, energy, and food. Each is described by a New Keynesian Phillips curve, which allows the model to capture underlying inflation dynamics with sufficient detail and helps build policy-relevant narratives. This breakdown also allows the real marginal cost of each component to be more closely linked to the sector-specific underlying cost factors, given their distinctive behavior observed in the data—hence better capturing idiosyncratic stylized facts and transmission channels. In addition, separate modeling of food prices provides an efficient (although simplistic) toolkit to consider the effects of climate shocks within the QPM, given the challenges posed by weather-related disturbances to the dynamics of food prices in Mauritius; see Nalban and Zanna (2025).

Formally, overall CPI is a weighted sum of core (henceforth, references to "core" inflation are meant to reflect core2 component), energy and food consumer price subindices:

$$p_t = w_c p_t^c + w_e p_t^e + (1 - w_c - w_e) p_t^f + \varepsilon_t^p \tag{8}$$

where p_t is CPI, while p_t^c, p_t^e and p_t^f are its core, energy and food subcomponents, respectively. The error term, ε_t^p, captures non-additivity in the identity owing to the fact that the weights of the components, w_c and w_e, are assumed to be constant in the model, while they have been varying over time in the data to reflect changes in households' consumption patterns. Additionally, additivity may be lost when seasonally adjusting individual components and also due to log-approximations.

In terms of exchange rate transmission to inflation, the model includes two channels. The direct channel, captured via the presence of exchange rate in the three Phillips curves described below, reflects the high imported share of intermediate and final consumption goods, including energy and food. The indirect exchange rate channel considers the expenditure switching effects coming from exchange rate movements impacting international trade dynamics. It is proxied by the real effective exchange rate component in the RMCI and reflects the impact on domestic aggregate demand via net exports, with output gap further impacting firms' costs.

Core inflation

The Phillips curve for core2 inflation, which strips out volatile energy and food components, as well as administered prices, is modeled as a function of backward- and forward-looking expectations (i.e., its past and future expected values), the pass-through from real marginal costs (RMCs), and a cost-push shock to account for supply-side disturbances in the sector:

$$\begin{gathered}\pi_t^c = b_{11}\pi_{t-1}^c + (1-b_{11})E_t\pi_{t+1}^c + b_{12}rmc_t^c + \varepsilon_t^{\pi c} \\ rmc_t^c = b_{13}\hat{y}_t + b_{14}(\hat{z}_t - \widehat{rp}_t^c) + (1-b_{13}-b_{14})\widehat{rw}_t\end{gathered} \tag{9}$$

where π_t^c is qoq annualized core inflation at time t, π_{t-1}^c is the previous-quarter core inflation, $E_t\pi_{t+1}^c$ is core inflation rational (model-consistent) expectations, rmc_t^c is the real marginal cost for core producers, and $\varepsilon_t^{\pi c}$ is the cost-push shock to core prices. The rmc_t^c represents a weighted average of (i) output gap, $\hat{y}_t$, proxying for domestic input cost and firm markup pressures; (ii) real effective exchange rate gap, $\hat{z}_t$, adjusted with the gap in relative prices of core goods and services (against overall CPI), $\widehat{rp}_t^c$, proxying for imported input costs (thus $\hat{z}_t - \widehat{rp}_t^c$ defines the real exchange rate gap in terms of core prices); and (iii) real wage gap, $\widehat{rw}_t$, to gauge labor cost pressures.

Relative core prices are defined as the log-difference of core and overall CPI prices:

$$rp_t^c = p_t^c - p_t \tag{10}$$

Then, the relative core prices gap, $\widehat{rp}_t^c$, is defined as the difference between observed relative prices and their corresponding trend, $\overline{rp}_t^c$:

$$\widehat{rp}_t^c = rp_t^c - \overline{rp}_t^c \tag{11}$$

The relative price trend growth of the core component ($\Delta\overline{rp}_t^c$) follows an autoregressive process, allowing to account for the observed long-run differences between CPI inflation and core inflation.

Energy (fuel) inflation

The energy component, which includes fuel and administrative prices falling under the direct control of the authorities, is modeled as follows:

$$\begin{gathered}\pi_t^e = b_{21}\pi_{t-1}^e + (1-b_{21})E_t\pi_{t+1}^e + b_{22}rmc_t^e + \varepsilon_t^{\pi e} \\ rmc_t^e = b_{23}\hat{y}_t + b_{24}(\widehat{rp}_t^{woil} + \hat{z}_t - \widehat{rp}_t^e) + (1-b_{23}-b_{24})\widehat{rw}_t\end{gathered} \tag{12}$$

where π_t^e is qoq annualized energy inflation at time t; π_{t-1}^e is one-quarter lagged energy inflation; $E_t\pi_{t+1}^e$ is energy inflation expectations; rmc_t^e is the real marginal cost in the energy sector; and $\varepsilon_t^{\pi e}$ is the exogenous supply shock to energy prices. As in the case of core inflation, the real marginal cost for the energy sector is computed as a weighted average of (i) domestic costs, as gauged by the output gap, $\hat{y}_t$; (ii) real wage gap, $\widehat{rw}_t$; and (iii) imported prices, proxied by the real world oil price gap, $\widehat{rp}_t^{woil}$, adjusted by the real effective exchange rate gap, $\hat{z}_t$, and the gap in relative price of energy to overall CPI, $\widehat{rp}_t^e$. The

RMC component ($\widehat{rp}_t^{woil} + \hat{z}_t - \widehat{rp}_t^{e}$) defines the price of energy imports in domestic currency and ensures that energy prices in Mauritius reflect the evolution of global energy prices.

The relative price of energy, rp_t^e, is defined similarly to that for core inflation in equations (10) and (11). The relative world energy price (rp_t^{oil}) is defined as the dollar price of Brent crude oil (p_t^{woil}) relative to the US CPI (cpi_t^{us}):

$$rp_t^{oil} = p_t^{woil} - cpi_t^{us} \tag{13}$$

The corresponding gap, $\widehat{rp}_t^{woil}$, is defined as the difference between rp_t^{woil} and its trend:

$$\widehat{rp}_t^{woil} = rp_t^{woil} - \overline{rp}_t^{woil} \tag{14}$$

The relative price trend growth of the energy component ($\Delta\overline{rp}_t^{e}$) and of the world real oil prices ($\Delta\overline{rp}_t^{woil}$) both follow autoregressive processes converging to the respective steady states.

Food inflation

Inflation in the food price component, which includes food, beverages and mortgage interest on housing loans[12], is modeled analogous to the other subcomponents in Phillips curves (9) and (12):

$$\begin{aligned} \pi_t^f &= b_{31}\pi_{t-1}^f + (1 - b_{31})E_t\pi_{t+1}^f + b_{32}rmc_t^f + \varepsilon_t^{\pi_f} \\ rmc_t^f &= b_{33}\hat{y}_t + b_{34}(\widehat{rp}_t^{wfood} + \hat{z}_t - \widehat{rp}_t^f) + (1 - b_{33} - b_{34})\widehat{rw}_t \end{aligned} \tag{15}$$

where, π_t^f is qoq annualized food inflation at time t; π_{t-1}^f and $E_t\pi_{t+1}^f$ capture the backward- and forward-looking components for food inflation expectations, respectively; rmc_t^f is the real marginal cost in the food sector; and $\varepsilon_t^{\pi_f}$ is the food supply shock which, amongst others, can accommodate, in a reduced-form way, the impact of weather-related disturbances on food prices.[13] The real marginal cost for the food sector is a weighted average of domestic costs, $\hat{y}_t$ and $\widehat{rw}_t$, and imported costs, with the expression ($\widehat{rp}_t^{wfood} + \hat{z}_t - \widehat{rp}_t^f$) defining costs of food imports in terms of domestic currency. The relative price of food, rp_t^f, follows the standard definitions as in (10) and (11).

Similarly to the energy sector, the relative world food price (rp_t^{food}) is defined as the ratio of global food price index expressed in dollars (p_t^{wfood}) to the US CPI:

[12] The definitions of core components exclude mortgage interest on housing loans, given that monetary policy effects on this item, through interest rate measures, are opposite compared to other CPI items, e.g., an increase in key rate will exercise downward pressures on prices of most CPI items, but will have an upward (and rather direct) impact on costs associated to mortgage interest on housing loans, thus increasing overall CPI inflation. In order to avoid a granular modeling approach, it was decided to include mortgage interest on housing loans within the food component, given its small share in the consumption basket of only 3.1 percent as of 2025.

[13] Ongoing work that separates agricultural sector from total output allows to introduce a measure of agricultural production in food inflation Phillips curve, thus facilitating the analysis of climate shocks propagating through adverse impacts on food supply, similarly to Nalban and Zanna (2025).

$$rp_t^{food} = p_t^{wfood} - cpi_t^{us}, \tag{16}$$

with the respective world food price gap defined as:

$$\widehat{rp}_t^{wfood} = rp_t^{wfood} - \overline{rp}_t^{wfood} \tag{17}$$

The relative price trend growth of the food component ($\Delta\overline{rp}_t^f$) and of the world real food prices ($\Delta\overline{rp}_t^{wfood}$) follow mean-reverting autoregressive processes.

It is important to note that the calibration of the (semi)structural parameters is different across the core and non-core (energy and food) subcomponents (see Table 1 in Subsection 3.6), in line with both the observed data and coincident evidence across other countries. In effect, the persistence of both energy and food inflation are lower compared to the core component, as the former prices are subject to supply side disturbances to a larger extent and hence display much higher volatility. The relative weights in the three real marginal cost definitions are also different across subcomponents, with the output gap playing a more prominent role for core inflation, while world energy and food price gaps and the real exchange rate gap having a higher weight for the energy and food sectors.

3.4. Exchange rate

Exchange rate is modeled using a modified uncovered interest parity (UIP) condition. The nominal exchange rate is thus determined by:

$$\begin{aligned} s_t &= s_{t+1}^{exp} - (i_t - i_t^* - prem_t)/4 + \varepsilon_t^s \\ s_{t+1}^{exp} &= e_1 E_t s_{t+1} + (1 - e_1)[s_{t-1} + 2/4(\bar{\pi}_t - \pi^* + \Delta\bar{z}_t)] \end{aligned} \tag{18}$$

As in standard QPM-based specifications (see Abradu-Otoo et al., 2022), the exchange rate equation brings out the UIP framework, where interest rate differentials, adjusted for a proxy for the country (sovereign) risk premium, interact with the expected exchange rate movements. Thus, current-quarter (log) nominal exchange rate, s_t, defined as units of domestic currency per one unit of foreign currency (US dollar), so that an increase denotes depreciation, is a function of expected exchange rate, s_{t+1}^{exp}, domestic nominal money market interest rate, i_t, foreign nominal interest rate (Fed funds rate), i_t^*, a time-varying sovereign risk premium, $prem_t$, and an exchange rate (UIP) shock, ε_t^s. The expected exchange rate is modeled as a linear combination of model-consistent (forward-looking) expectations, $E_t s_{t+1}$, and lagged exchange rate (backward-looking expectations), s_{t-1}, with the latter adjusted by the trend nominal depreciation consistent with the purchasing power parity condition (which, in turn, is based on the inflation target differential, $\bar{\pi}_t - \pi^*$, and the trend real exchange rate depreciation, $\Delta\bar{z}_t$). The parameter e_1 captures the degree of forward-looking behavior in financial markets and helps match observed exchange rate persistency that canonical UIP ($e_1 = 1$) cannot replicate because of its implied strong forward-looking dynamics.

As for the real effective exchange rate (z_t) featuring in the IS curve and in the Phillips curves, it is calculated as a function of nominal effective exchange rate (weighted average of Mauritius rupee exchange rates with respect to the US dollar and the euro, with the weights reflecting the importance of the two currencies in Mauritius' exports, imports, and financial trade), domestic (CPI) price level, and effective foreign price level (weighted average of the US and euro area prices):

$$z_t = [w^{us} s_t + (1 - w^{us}) s_t^{eur}] + [w^{us} p_t^{us} + (1 - w^{us}) p_t^{ea}] - p_t \tag{19}$$

where s_t^{eur} is the rupee exchange rate against the euro (computed using the rupee-dollar exchange rate and the dollar-euro exchange rate), w^{us} is the weight of the US dollar in the effective exchange rate calculation, while p_t^{us}, p_t^{ea}, and p_t are the price levels for the US, euro area, and Mauritius, respectively.

3.5. Interest rate and monetary policy

The monetary policy block features a Taylor-type reaction function, which is a forward-looking relation specifying the central bank's actions in terms of interest rate dynamics to its policy mandates of maintaining price stability and promoting orderly and balanced economic growth, under a flexible inflation targeting regime.

Given that the weighted average overnight interbank rate (OIR) is the operational target for monetary policy under the 2023 MPF, it is regarded as the interest rate that transmits monetary policy changes to the real economy by influencing the cost of borrowing and returns on savings for market participants. The short-term nominal interest rate (i_t) is thus proxied by the OIR and is modeled as follows:

$$\begin{aligned} i_t &= c_1 i_{t-1} + (1 - c_1)\left[i_t^{neutral} + c_2 \pi_t^{exp,dev} + c_3 \hat{y}_t\right] + \varepsilon_t^i \\ i_t^{neutral} &= \bar{r}_t + \bar{\pi}_t, \\ \pi_t^{exp,dev} &= E_t \pi 4_{t+3} - \bar{\pi}_{t+3} \end{aligned} \tag{20}$$

Current-quarter interest rate is set as a function of several determinants. Lagged interest rate, i_{t-1}, captures the interest rate persistency. With a relatively elevated coefficient c_1, the interest rate is expected to be smoother, with a presumably low contemporaneous reactiveness to inflation and output deviations from expected/trend paths. This could reflect the fact that Mauritius, similarly to other small open economies with an IT regime, is heavily susceptible to external shocks that do not necessarily entail a de-anchoring of inflation expectations or warrant a strong immediate reaction by the central bank.

The expected inflation deviation from target ($\pi_t^{exp,dev}$) is derived as the difference between the three-quarters ahead expected annual (year-over-year) inflation ($E_t \pi 4_{t+3}$) from the corresponding inflation target ($\bar{\pi}_{t+3}$). The central bank thus reacts to the expected inflation deviation and to output gap ($\hat{y}_t$) with reaction parameters c_2 and c_3, respectively.

The nominal neutral rate ($i_t^{neutral}$) is the level of interest rate that prevails in the long-run equilibrium—where inflation is at the central bank's (mid) target and output is at its potential level. It is computed as the sum of the trend real interest rate ($\bar{r}_t$) and inflation target ($\bar{\pi}_t$), with the former being linked to the trend foreign real interest rate to capture the Mauritius' status of international financial center and the ensuing impact of global financial conditions on domestic monetary policy conduct. Finally, ε_t^i is the monetary policy shock term capturing non-systematic interest rate dynamics.

3.6. Calibration

The calibration of Mauritius QPM encompasses steady states based primarily on data sample averages (using 2001Q1:2025Q1 period), parameters in behavioral equations (described in the previous subsections), and standard deviations of the shocks. The calibration is based on (i) other country experiences, e.g., QPMs developed for other small open economies with an IT or interest rate-based frameworks in Abradu-Otoo et al. (2024), Dakila et al. (2024), Gonzales et al. (2020), Vlcek et al. (2020); (ii) impulse response analysis (Subsection 4.1); (iii) data filtration results that ensure QPM's theoretical consistency and historical narrative (Subsection 4.2); and (iv) in-sample simulations to ensure empirical fit to Mauritian data (Subsection 4.3).

Table 1 displays the calibrated parameter values in key structural equations.

Table 1: Calibrated parameters

Core inflation		**Energy inflation**		**Food inflation**	
b_{11}	0.5	b_{21}	0.2	b_{31}	0.2
b_{12}	0.6	b_{22}	0.5	b_{32}	0.5
b_{13}	0.5	b_{23}	0.1	b_{33}	0.1
b_{14}	0.3	b_{24}	0.8	b_{34}	0.8
Output gap		**Exchange rate**		**Labor market**	
a_1	0.6	e_1	0.6	w_1	0.4
a_2	0.25			w_2	1
a_3	0.4	**Interest rate**		w_3	1.5
a_4	0.5	c_1	0.8	r_1	0.8
a_5	0.1	c_2	2	ss_{wedge}	–0.5
a_6	0.33	c_3	0.3	u_1	0.6
				u_2	0.15
		Fiscal block		u_3	0.1
		f_1	0.85	d_1	0.95
		f_2	0.75	d_2	0.025
		f_3	1		

Source: Authors' representation based on an iterative process.

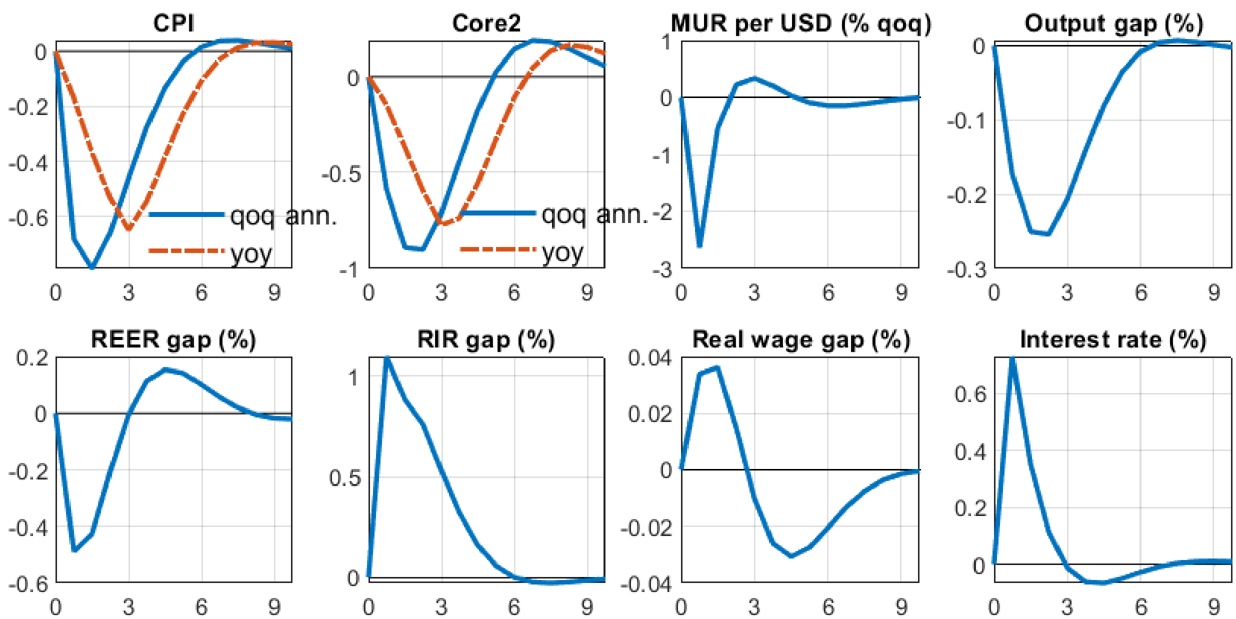
4. Model Properties and Results

This section presents the properties of Mauritius QPM by way of several analytical applications, which include impulse response functions (IRFs), historical narratives based on equation decompositions, and in-sample forecasting accuracy.

4.1. Impulse response functions

Figure 10 showcases the conventional monetary policy transmission channels and mechanisms embedded in Mauritius QPM in the context of IRFs of key macroeconomic variables to a one-unit monetary policy shock. The IRFs illustrate that higher nominal interest rate implies higher real rates, and thus a positive real interest rate (RIR) gap. The real effective exchange rate (REER) gap turns negative (overvaluation) owing to a stronger domestic currency in both nominal and real terms. The monetary conditions thus exert contractionary influences on economic activity through both the interest rate and exchange rate channels, resulting in a negative output gap. The combined effects of weak activity and overvalued exchange rate drive down inflation, which partly help to stimulate real wages. As the central bank starts the easing cycle, output gradually recovers while exchange rate depreciates, thus feeding price impulses in the economy and pushing inflation back to its target.

Figure 10: Interest rate shock

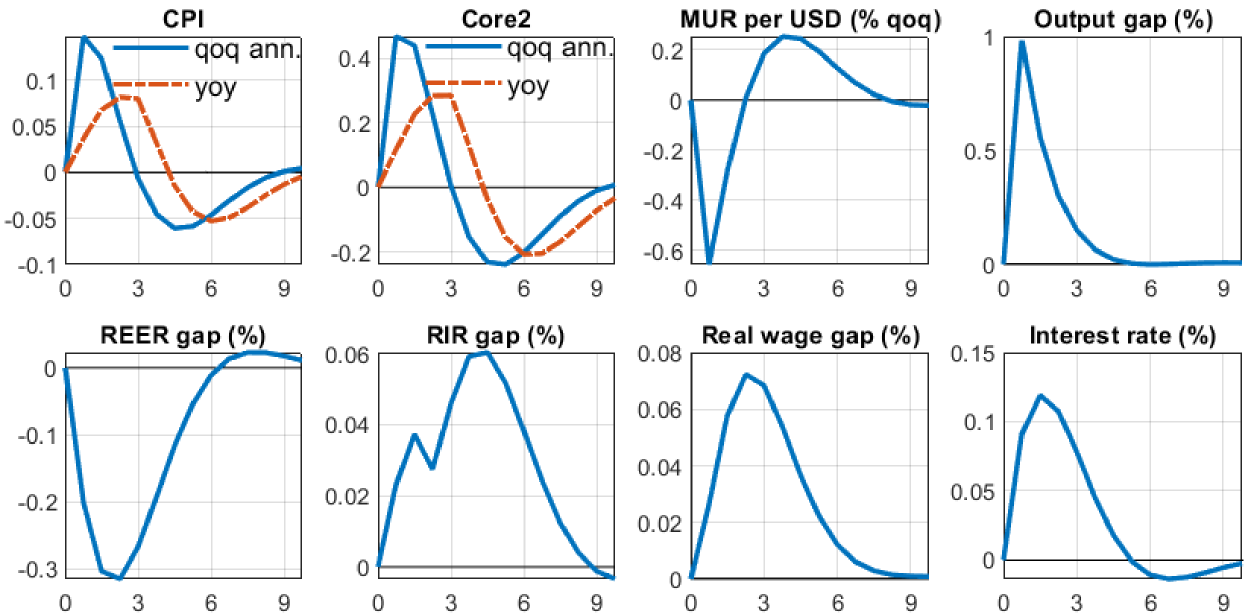


Source: Authors' simulations.
Note: The figure depicts the responses of selected macroeconomic variables, expressed in percentage deviations from their steady states. Horizontal axes denote quarters, with the shock occurring in the first quarter.

Figure 11 shows the impulse responses to a positive aggregate demand shock. The innovation results in an increase in the output gap by nearly 1 percentage point on impact, with the effects dissipating thereafter, partly due to monetary policy response. Higher domestic demand contributes to the build-up of inflationary pressures through higher real marginal costs, particularly for core inflation, and eventually causing an upsurge in overall CPI inflation. Stronger economic activity also triggers wage pressures (as shown by the positive real wage gap), with workers now having more bargaining power and firms having the capacity to pay more. In line with the central bank's objective of maintaining price stability, the monetary authority reacts to above-target inflation and positive output gap by gradually increasing the nominal interest rate, i.e., the demand shock does not impose a trade-off on the central bank's behavior.

Through the UIP condition, the rise in interest rate differential (Mauritius vis-à-vis the US) results in an appreciation of the domestic currency in nominal terms and, due to price rigidities, also in real terms. The combination of a negative REER gap and positive RIR gap leads to tighter monetary conditions, which intrinsically allow for a gradual closing-up of the output gap. Overall, the effects of policy tightening lead to the gradual return of the monetary conditions to steady state and of the economy back to its equilibrium.

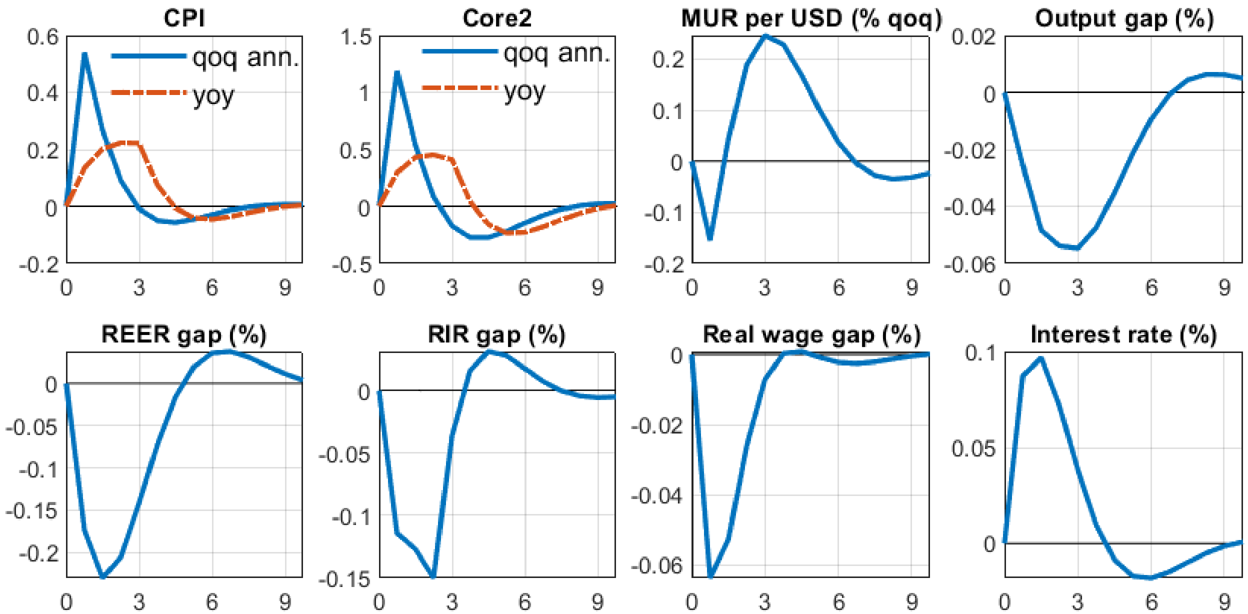
Figure 11: Aggregate demand shock



Source: Authors' simulations.
Note: The figure depicts the responses of selected macroeconomic variables, expressed in percentage deviations from their steady states. Horizontal axes denote quarters, with the shock occurring in the first quarter.

Figure 12 shows the dynamic responses of the economy to an unexpected increase in core2 prices. The supply shock results in an increase in core2 inflation and, consequently, CPI inflation overshoots the central bank's target. In response to inflationary pressures, the central bank raises the nominal interest rate. As the UIP sets into motion, the nominal exchange rate appreciates, which—coupled with a higher inflation differential—induces a negative REER gap (i.e., overvalued currency), thus creating disinflationary pressures. The RIR gap moves into negative territory in the initial periods, impelled by an increase in inflation expectations, but it rises subsequently, underpinned by waning inflation and inflation expectations as tighter monetary policy and the overvalued exchange rate percolate through the economy. Above-target inflation also dampens real wages, creating a negative income effect and constrains aggregate demand while also damping cost pressures. As such, aggregate demand declines in the short-term, triggering a negative output gap, weighed down by tighter monetary conditions and the loss in purchasing power through lower real wage incomes. The decline in demand pressures, ultimately, contributes to a gradual reduction in domestic cost pressures, allowing inflation to subside and return to the target. Note that supply shocks move prices and economic activity in opposite directions, thus imposing a trade-off situation on the central bank. In Mauritius QPM, tailored for an IT framework and with significant nominal rigidities in the economy, the central bank puts emphasis on the price stability mandate, thus raising interest rates in response to inflationary supply shocks.

Figure 12: Core2 inflation (supply) shock

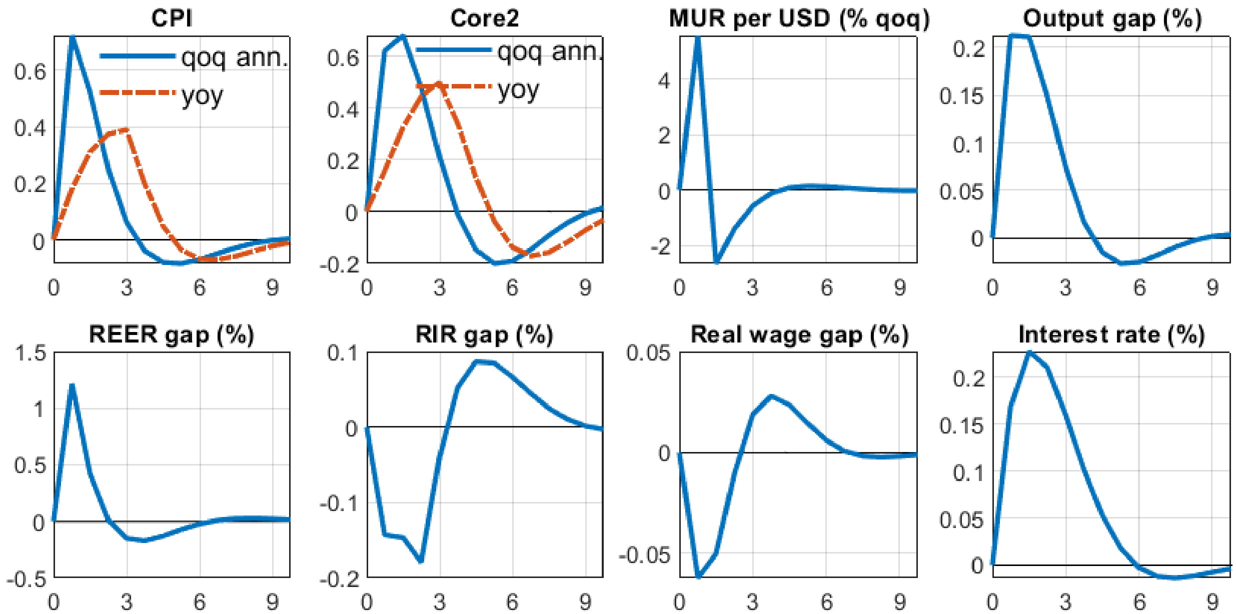


Source: Authors' simulations.
Note: The figure depicts the responses of selected macroeconomic variables, expressed in percentage deviations from their steady states. Horizontal axes denote quarters, with the shock occurring in the first quarter.

Figure 13 illustrates the transmission and subsequent policy responses to a positive UIP shock (i.e., a depreciation shock), which is a very relevant consideration for a highly open economy with a flexible exchange rate arrangement like Mauritius. The UIP shock triggers a nominal and real exchange rate depreciation which, by ricochet, contributes to inflationary pressures both through higher import prices (increased real marginal costs) and positive output gap, as the exchange rate channel stimulates net exports and aggregate demand.[14] With inflation overshooting the target and the economy operating in excess demand, the central bank reacts by raising interest rates. However, the RIR gap remains stimulative (negative) in the initial periods, given relatively high inflation expectations. The gradual increases in interest rates, which through the UIP also strengthen the domestic currency, tighten real monetary conditions. Subsequently, tighter monetary conditions counteract demand pressures and gradually restore output towards its neutral level. The appreciated exchange rate (overvaluation), coupled with receding domestic cost pressures, also contributes towards bringing inflation back to target.

[14] The exchange rate depreciation shock presented in Figure 13 is expansionary (reflecting an aggregate demand-type shock), similarly to standard semi-structural models. The positive output gap reflects the undervalued real exchange rate, which enhances price competitiveness and stimulates net exports. However, in practice, a depreciation shock may be contractionary (reflecting an aggregate supply-type shock) if it is triggered by capital outflows or risk-off pressures while the favorable expenditure switching effects are limited. To capture these considerations, Mauritius QPM would need to be adjusted to reflect an adverse impact of exchange rate depreciation on domestic demand, e.g., via incorporating features such as a term structure of interest rates, a credit risk premium, or broadening the monetary conditions index into a more comprehensive financial conditions index. These are left for future research.

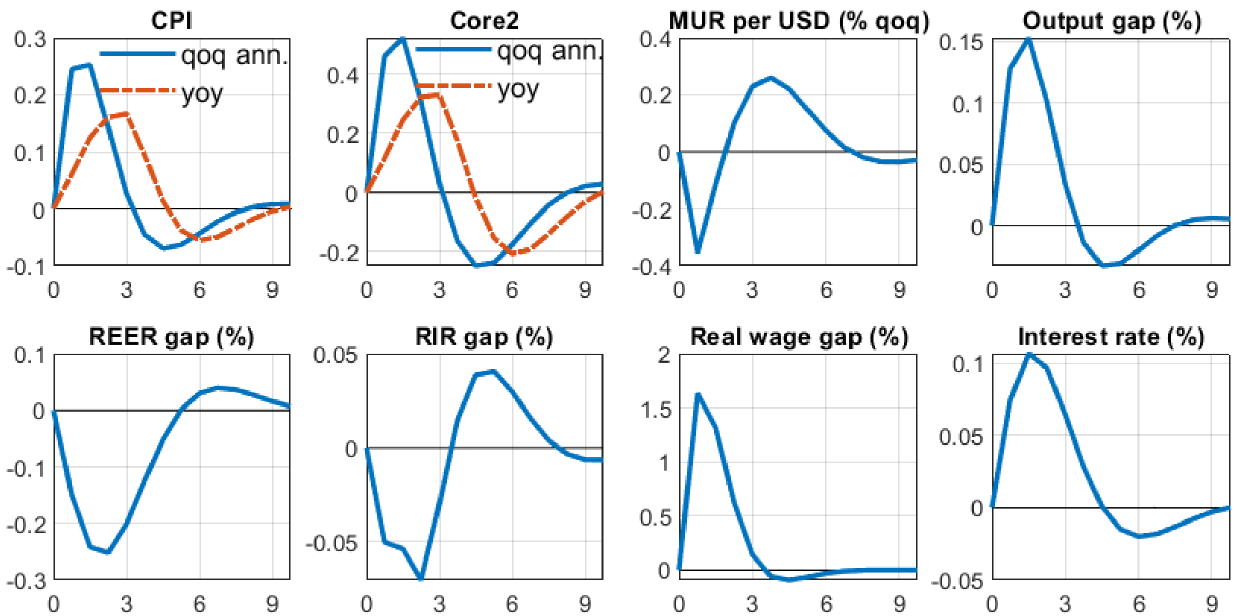
Figure 13: Exchange rate (UIP) shock



Source: Authors' simulations.
Note: The figure depicts the responses of selected macroeconomic variables, expressed in percentage deviations from their steady states. Horizontal axes denote quarters, with the shock occurring in the first quarter.

Figure 14 depicts the responses to a 10 percent shock in nominal wages quarterly annualized growth. IRFs posit that the wage shock lifts real labor incomes, which cause the real wage gap to open. As a result, labor income effects encourage consumption spending and drive economic activity, thus translating into positive domestic output gap. Higher wages also lead to increased labor costs for firms, which may eventually push them to lay off workers, driving unemployment up. Faced with both demand- and supply-side pressures on inflation, the central bank is reacting to expected inflation deviating from the target and the widening output gap by engineering a policy rate increase. However, the RIR gap turns negative initially as inflationary effects dominate, thus contributing to looser monetary conditions through the real interest rate component. The exchange rate appreciates in both nominal and real terms, owing to favorable (nominal) interest rate differentials. Consequentially, monetary conditions turn out to be more restrictive (due to the higher weight on exchange rate), eventually allowing a gradual narrowing of the output gap and inflation converging back to its target.

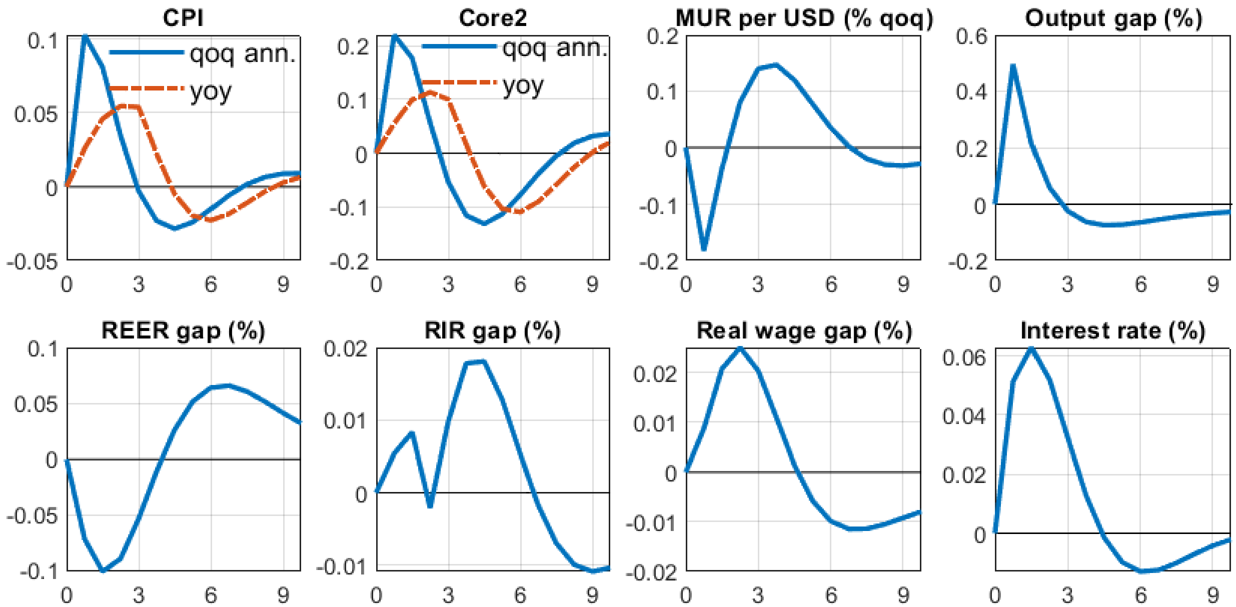
Figure 14: Wage growth shock



Source: Authors' simulations.
Note: The figure depicts the responses of selected macroeconomic variables, expressed in percentage deviations from their steady states. Horizontal axes denote quarters, with the shock occurring in the first quarter.

Figure 15 presents the responses to a 1 percent increase in structural fiscal deficit GDP ratio, which amounts to a stimulative fiscal impulse. A positive fiscal shock supports domestic economic activity and causes the output gap to widen, given the assumed direct impact of the fiscal impulse on aggregate demand (1), with the contemporaneous multiplier of a_4 = 0.5. At the same time, this triggers demand-side pressures on inflation. With stronger momentum in output, firms face greater demand for workers and unemployment declines, which then pushes up nominal wages. Real wages increase in line with the strength in domestic activity, which improves workers' bargaining power and firms' ability to pay higher wages. The central bank reacts to the inflationary impulses by raising the interest rate, with the monetary policy stance becoming contractionary (positive RIR gap). The exchange rate appreciates in both nominal and real terms, reflecting positive interest rate differentials, and the REER gap turns negative. Both RIR and REER contribute to tight monetary conditions. While the effects of the shock eventually dissipate, tighter monetary conditions help to cool down economic activity and narrow the output gap. Pressures on inflation are alleviated, allowing the central bank to lower the interest rate and the exchange rate to depreciate.

Figure 15: Structural fiscal deficit shock



Source: Authors' simulations.
Note: The figure depicts the responses of selected macroeconomic variables, expressed in percentage deviations from their steady states. Horizontal axes denote quarters, with the shock occurring in the first quarter.

4.2. Model-based decompositions and historical narratives

In this subsection, we present the model-based decompositions of select equations presented in Section 3, based on Kalman filter results for the data sample 2001Q1:2025Q1. Observed data for most variables is available until 2024Q4, with 2025Q1 observations representing nowcast values. In addition, we are focusing on the more recent period and ignore the early 2000s. Therefore, the figures below show only the 2010Q1:2024Q4 sample.[15]

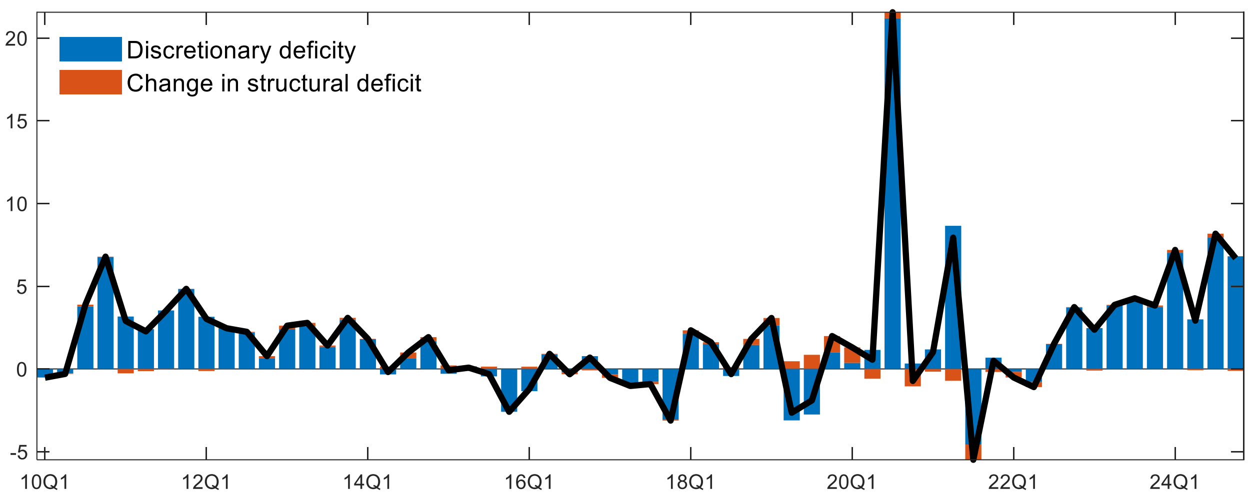
Figure 16 shows the model-based estimation and decomposition of the fiscal impulse according to equation block (3).[16] Prior to the pandemic, and especially in the early-2010s, the model estimates systematically positive fiscal impulses. This aligns with the historical evidence of government investing

[15] The multivariate Kalman filtration applied to estimate the gaps and trends ensures the endogeneity between key economic variables and sectors as specified in the structure of model and calibration of parameters. However, the dynamic equations for most trends are specified in terms of simple univariate first-order autoregressions. Accordingly, the QPM-based trends could deviate from the analogous estimates using other methods, including those with structural underpinnings, such as the REER trend consistent with economic fundamentals and desirable policies in IMF (2025a), real interest rate trend consistent with demographic evolutions, or potential output estimated with the production function approach.

[16] Given data limitations regarding the exact amounts of the Special Funds budget positions, the associated shock introduced in equation (3) is estimated to be zero throughout the historical data filtration sample, and is primarily used to conduct forecast scenarios.

continuously in order to generate economic growth and create jobs. With government support measures during the pandemic, a significantly large fiscal impulse is estimated in 2020. Government generated less revenue but spent more on recurrent expenditure, thus running historically high deficits. The pandemic-related fiscal measures included funding for the health sector (vaccination campaigns), social assistance to vulnerable people, financial support to population and workers, and various other initiatives. Once the economy started to recover, the government scaled back the assistance measures, thus leading to a negative fiscal impulse in late-2021 and early-2022—in line with the post-pandemic fiscal consolidation efforts. As the economy exited the pandemic, the government introduced the debt ceiling of 80 percent of GDP to help reduce debt vulnerabilities and maintain a sustainable level of budget deficit. More recently, however, the fiscal impulse is estimated to be positive, in line with the high budget deficit for fiscal year 2024-25, as documented in Section 2 and Figure 3.

Figure 16: Fiscal impulse (%)

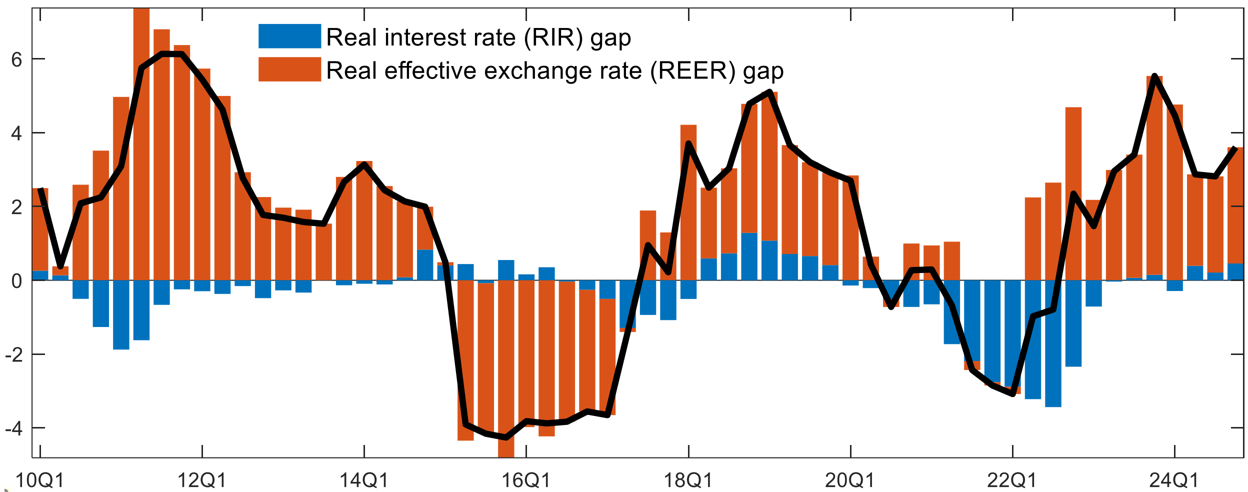


Source: Authors' estimations.

Figure 17 presents the dynamics or the real monetary conditions index (RMCI), split into its two constituent drivers—real interest rate (RIR) gap and real effective exchange rate (REER) gap. For most of the period preceding the pandemic, the exchange rate maintained an appreciating trend (positive contributions in Figure 17). This is reflected in overvalued REER stance during 2010-19, with the exception of the depreciation episode in 2015-16. Given the small open economy dimension of Mauritius as well as the monetary policy framework anchored on exchange rate that prevailed during the period, the composite monetary conditions reflected primarily the contribution from the tight REER stance. Predominantly tight monetary conditions during the 2010s largely contributed to restraining excessive demand and real marginal costs, thus supporting price stability. Before the recently introduced flexible IT framework, the contributions of interest rate policy to aggregate monetary conditions were relatively less meaningful.

However, with the onset of COVID-19 pandemic, both interest rate and exchange rate channels worked together to foster relatively quickly a loose monetary conditions stance in order to support aggregate spending and encourage economic activity. As the economic recovery took hold and a sequence of adverse exogenous supply-type shocks hit the economy starting 2021, leading to accelerated price increases causing inflation to become more deep-rooted, the central bank shifted gears and withdrew policy support by actively raising interest rates. Over time, the real impact was reinforced by the gradual deceleration in inflation and inflation expectations, making RIR gap more restrictive even with flat nominal interest rates. The exchange rate also firmed amidst improved market conditions and stronger economic prospects, which effectively ensured tight real monetary conditions starting late-2022.

Figure 17: Real monetary conditions index (%, positive: tight)



Source: Authors' estimations.

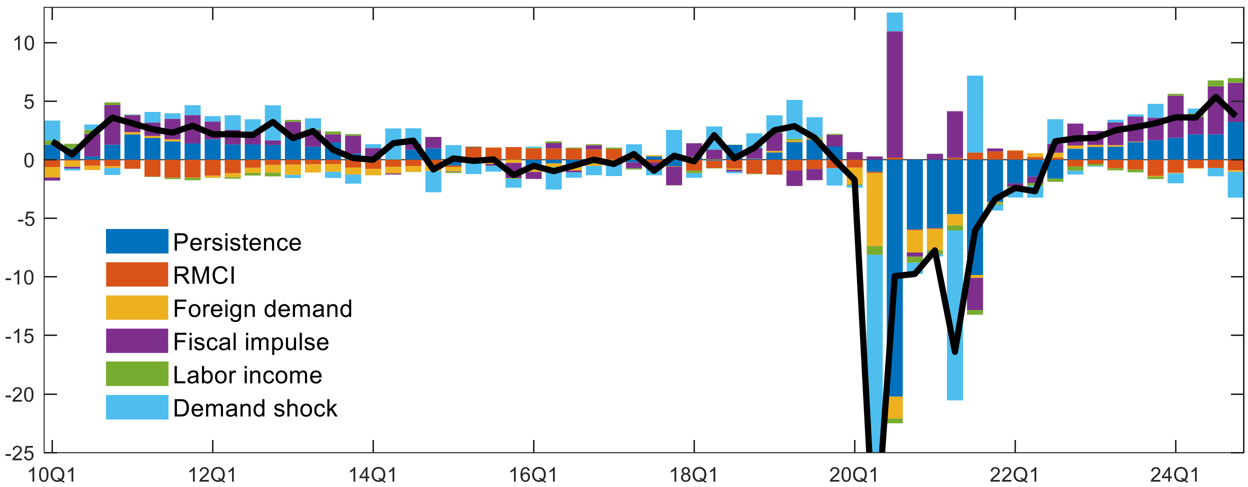
Figure 18 demonstrates the decomposition of the output gap into its main components as specified in the aggregate demand equation (1). Focusing on the past 15 years, the output gap trajectory indicates mainly mild fluctuations around zero before the pandemic, in line with a stable GDP growth rate (Figure 1). The predominantly positive values during 2010-15 and 2018-19 reflect the contributions from stimulative fiscal conditions and favorable demand shocks, partly offset by the effects of tight monetary conditions. The latter highlights the countercyclical monetary policy stance, through both interest rate and exchange rate components (see Figure 17 above on RMCI decomposition).

The output gap registered an unprecedented decline in 2020, reflecting the pandemic-induced sharp economic contraction. The outbreak of the COVID-19 pandemic caused a national lockdown and sanitary curfews that restricted mobility, as well as temporary closures of businesses and factories—mainly captured through the negative demand shock. Weaker foreign demand and lack of foreign tourists also contributed to the depressed output gap.[17] However, the extent of the contraction was somehow restrained following both fiscal and monetary support from the authorities. The fiscal measures are captured by positive fiscal impulse (particularly in 2020Q3), while loose monetary conditions reflect primarily a stimulative RIR gap. Nevertheless, the economy registered another major contraction in 2021Q2, though less pronounced than the previous year, amidst the second wave of COVID-19 infections, resulting in a second sanitary lockdown and temporary cessation of activities in certain sectors. Following the full reopening of the national borders in October 2021 and successful vaccination campaigns, the economy embarked solidly on a recovery track, with spare capacity gradually dwindling and the negative output gap closing by end-2022. Thereafter, the output gap remained positive, with the

[17] Ongoing model extension work focuses on separating tourism sector from total output, which allows to better characterize the economic narrative during the pandemic crisis and the post-pandemic recovery.

economy operating close to or above potential. Fiscal policy remained stimulative, captured via positive fiscal impulse contributions. On the other hand, real monetary conditions turned restrictive and acted in a countercyclical manner. Domestic economy remained resilient going into 2023, causing the positive output gap to become more entrenched. Favorable demand shocks, significant fiscal spending, and the persistent effect of previous measures supported growth, with the economy operating above its potential and constituting a source of inflationary pressures. These were partly mitigated by the monetary conditions remaining tight starting 2023.

Figure 18: Output gap (%)

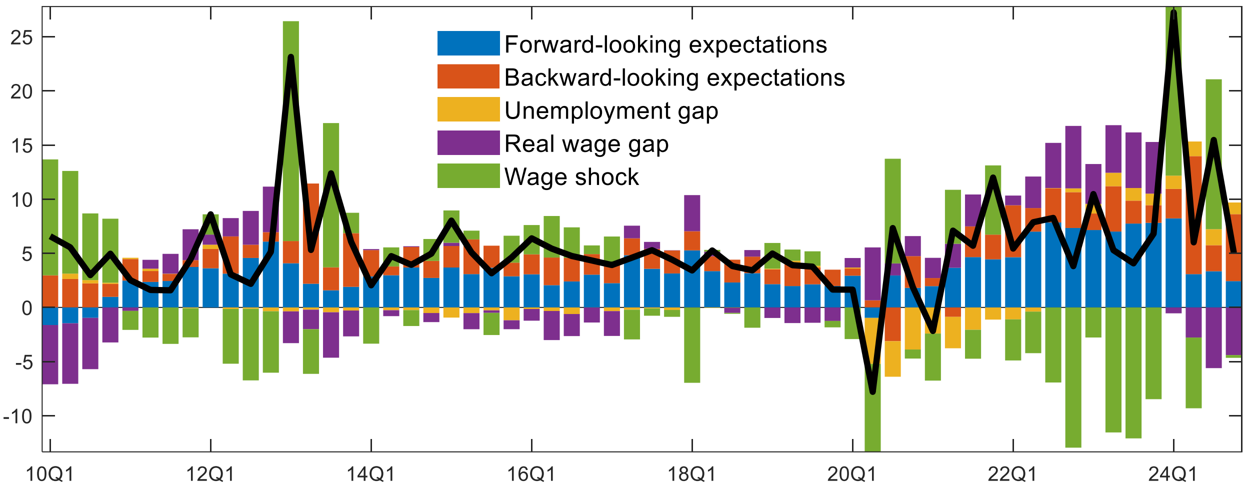


Source: Authors' estimations.

As presented in Figure 19, nominal wage growth (quarterly annualized rate) was primarily driven by expectations (both backward- and forward-looking), and, to a lesser extent, by the catching-up component captured through the real wage gap, which intuitively produced counterbalancing effects and pushed wage growth back to neutral levels. The impact of short-term fluctuations in unemployment rate was more evident during the pandemic period, when the prevalence of economic slack exerted negative influences on wage developments. More recently, the recovery in economic activity and the accompanying employment gains boosted demand for labor and supported the pick-up in nominal wage growth. The shock term, on its part, captures the occasional spikes in wage dynamics, associated to exogenous and unpredictable factors like the impact of specific wage policies outlined by the Pay Research Bureau, special compensations, minimum wages and other allowances.

The historical decomposition of the CPI composite real marginal costs, obtained by weighing sector-specific RMCs in equations (9), (12) and (15), shows that externally sourced inflation and exchange rate dynamics have played an important role in shaping domestic cost pressures, given the country's heavy reliance on imports—see Figure 20. Domestic-originated costs, coming from aggregate demand and real wages, had a more discernible impact on the RMC during the COVID-19 shock. In the early-2010s, RMCs were strongly inflationary, on account of high global commodity prices, partly counterbalanced by an overvalued exchange rate. Next, between 2014-19, the composite RMC has remained mainly in negative territory, with disinflationary pressures emanating from the weak international food prices being partly counterbalanced by impulses from the above-trend oil prices, in the context of sequential under- and overvaluation of the real exchange rate, consistent with REER stance as presented in Figure 17 above.

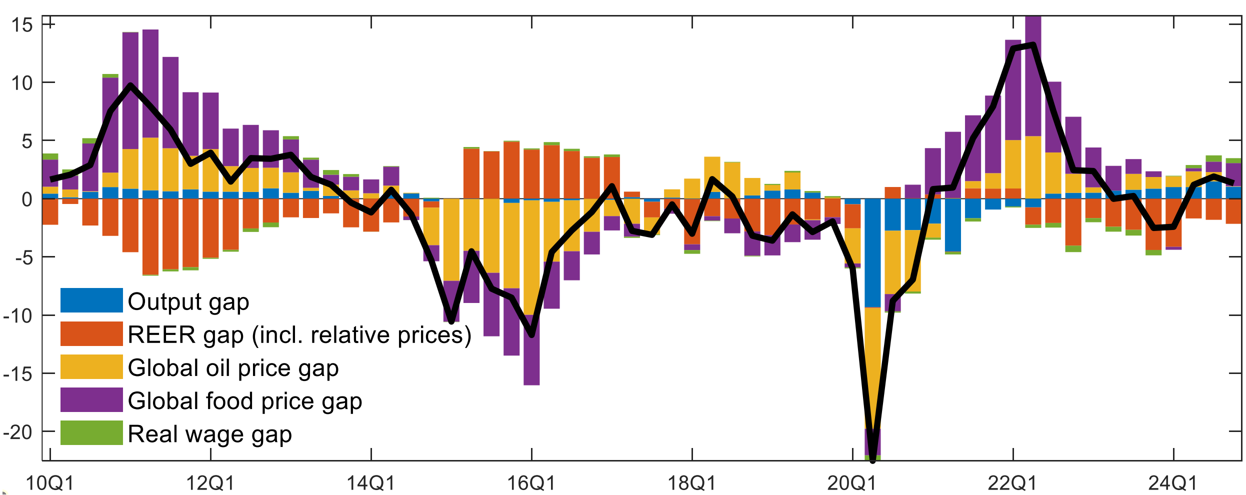
Figure 19: Nominal wages (%, qoq ann.)



Source: Authors' estimations.

During the COVID-19 crisis, the RMC was largely disinflationary, driven by subdued aggregate demand, a negative real wage gap, and lower international commodity prices amidst the deleterious global effects of the pandemic lockdowns. The RMC increased significantly thereafter, underpinned by the rise in global commodity prices amidst stretched supply conditions and the Russia's invasion of Ukraine, as well as some depreciation of the exchange rate. However, the persistent negative output and real wage gaps, reflecting the longer-lasting effects of the pandemic shock, worked in the opposite direction and helped, to some extent, to keep a lid on inflationary impulses emanating from the cost channels. In mid-2023 the RMC moved back into the disinflationary region, led by the decline in global food prices and the real appreciation of the rupee, although the positive output and global oil price gaps continue to exert upward price pressures in the recent quarters.

Figure 20: CPI composite real marginal costs (%)

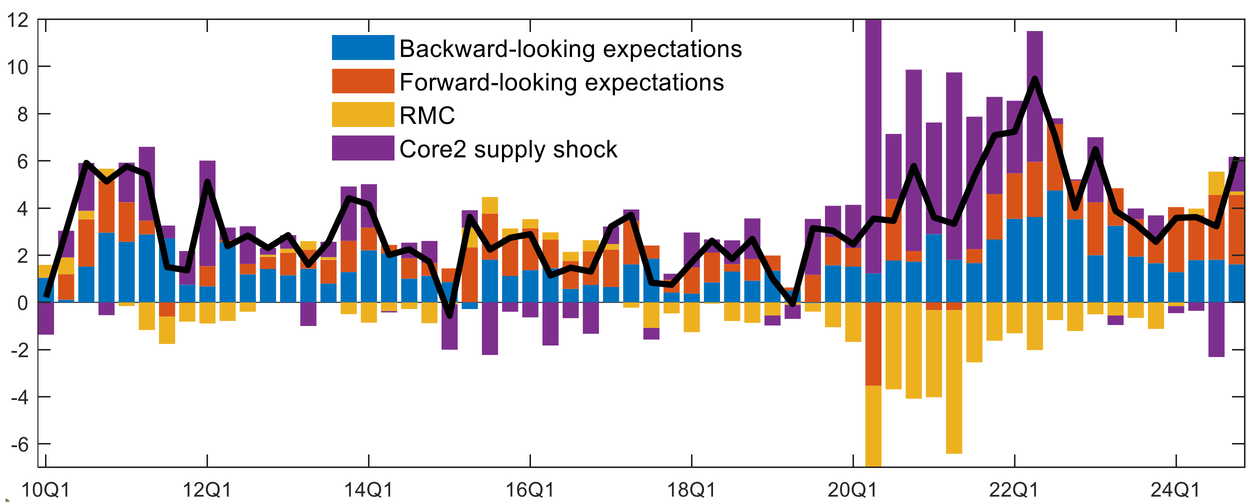


Source: Authors' estimations.

Inflation in Mauritius is largely explained by external factors, considering the elevated degree of openness of the economy and relatively high marginal propensity to import. Consequentially, the pass-through effect from imported prices—captured by three components of the CPI composite RMC, i.e., gaps in REER, global oil prices, and global food prices (Figure 20 above)—into domestic prices is inexorable. The model-based decomposition of core2 inflation (quarter-on-quarter annualized rate) in Figure 21 points out that pre-pandemic cost pressures through the domestic and import channels were mostly benign. On average, domestic business cycle developments and movements in REER produced counterbalancing effects, keeping input costs under control. Inflation expectations were thus relatively stable, despite a sequence of positive supply shocks linked to stronger pass-through of higher imported input costs, and realized core2 inflation was thus increasingly tilted to the downside.

At the start of the pandemic, the large negative output gap (reflecting lockdown measures and border closures, captured by adverse demand shocks—see Figure 18 above) and falling commodity prices maintained disinflationary pressures and partly offset the effects of the rupee's real depreciation. However, with the unfolding of the commodity price shocks around mid-2021, the situation quickly reversed, as evidenced by the build-up of cost pressures. This rise in core2 prices was mainly driven by cost push factors, as mobility restrictions for domestic producers and additional bottlenecks to source imported goods created demand-supply mismatches and resulted in adverse inflationary shocks. In addition, the lagged effects of past inflation (backward-looking expectations) and the gradual pass-through of the rise in commodity prices and freight costs into certain sectoral prices, including transport services and processed food service activities, contributed to an increase in core2 inflation.

Figure 21: Core2 (%, qoq ann.)



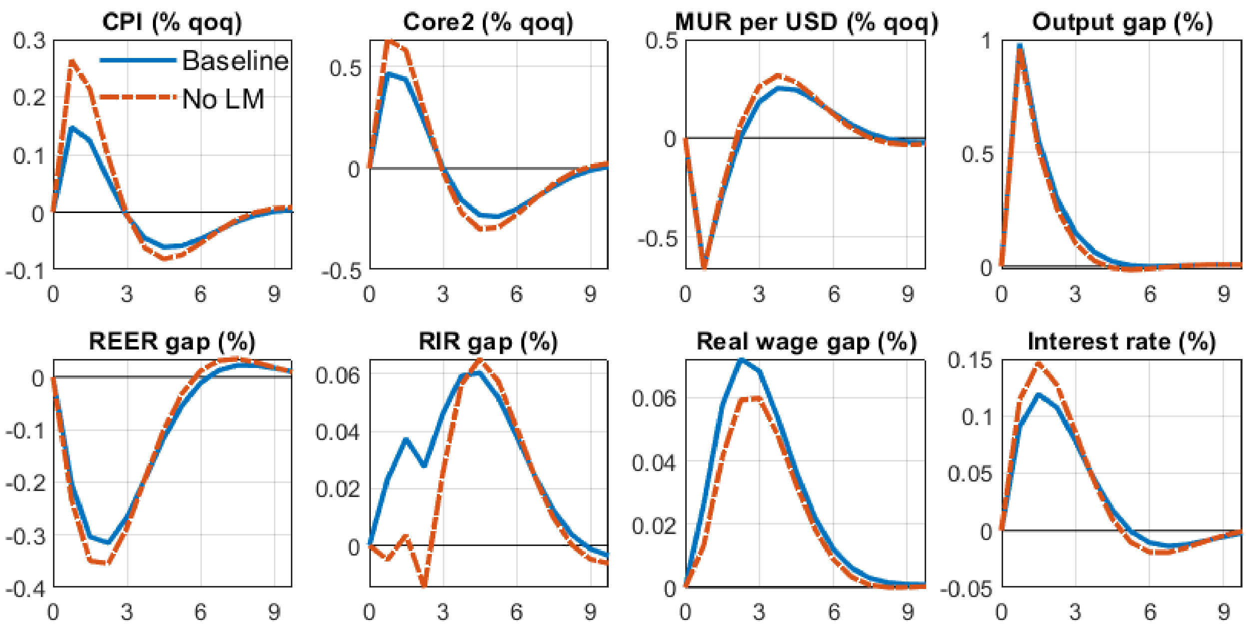
Source: Authors' estimations.

Of late, core2 real marginal costs have largely receded, on account of favorable cost factors such as declining global food and energy prices and fading supply chains disruptions, despite some moderate demand-side pressures emanating from the ongoing economic recovery. The policy tightening implemented by the central bank has also contributed to keeping demand pressures at bay. These factors have thus contributed to a gradual decline in core2 inflation and steering it back towards the central bank's target starting mid-2023.

4.3. Labor market block: additional considerations

One of the specific characteristics of Mauritius QPM is the labor market extension, which considers a structural determination of wage and unemployment dynamics, as formalized in Subsection 3.2. The labor market block embeds key theoretical aspects related to the bargaining power of workers and pricing power of firms, labor market tightness, productivity, and cost linkages, as well as labor income effects on aggregate demand in the IS curve (1). This adapted QPM allows to contextualize the implications of labor market and wage policy developments on macroeconomic variables and the off shoots for monetary policymaking. For instance, government decisions to review wage policies with the introduction of a new legislation are likely to trigger inflationary impulses and prompt a central bank reaction to steer back inflation towards its medium-term target and avoid a wage-inflation spiral via de-anchored expectations. The incorporation of the labor market block helps to structure discussions around the labor market dynamics and the relevance for policy formulation while embracing a forward-looking approach, thus providing the necessary analytical support to the BOM's MPC process.

Figure 22: Aggregate demand shock: baseline model and model without labor market ("No LM")



Source: Authors' simulations.
Note: The figure depicts the responses of selected macroeconomic variables, expressed in percentage deviations from their steady states, in the baseline model and in the alternative model without the labor market block ("No LM"). Horizontal axes denote quarters, with the shock occurring in the first quarter.

Figure 22 visualizes the differences between the baseline model (blue lines) and an alternative version without the labor market block (red lines) in terms of the IRFs to an aggregate demand shock (Figure 11 above presents the same IRFs for the benchmark model). The model with labor market block "turned off" is obtained by setting the elasticity of aggregate demand to labor income equal to zero and increasing the weights of output gap in the three sectoral RMC definitions so that the residually computed share of the real wage gap is zero.[18] In both model versions, excess demand pressures lead to higher inflation. However, in the baseline model it is assumed that labor is one of the firms' production factors so that the importance of the output gap—proxying for other domestic costs—is relatively lower and given that wages have not changed by a significant amount initially, the magnitude of demand-side price pressures is weaker. Conversely, in the alternative model wages are not affecting aggregate demand or prices (they are exogenous) and the weight of the output gap-related costs is higher, which leads to the demand shock having a larger inflationary impact.

In response to both (expected) above-target inflation and excess demand pressures, the central bank responds by raising the policy rate, which in turn leads to a nominal appreciation of the domestic currency. However, the monetary policy reaction is visibly more moderate in the baseline model, given that the presence of the labor market block makes the direct inflationary pressures of the demand shock less acute, as described above. In fact, the RIR stance remains neutral in the baseline model for the first year following the shock, compared to a right-away tightening in the alternative version without the labor market extension. Accordingly, in the initial phase, the macroeconomic adjustment in the baseline model takes place exclusively through the exchange rate channel. Overall, the comparative analysis emphasizes that incorporating the labor market block in Mauritius QPM provides a more realistic and complete picture of the propagation channels working towards macroeconomic adjustment in the face of domestic and external shocks.

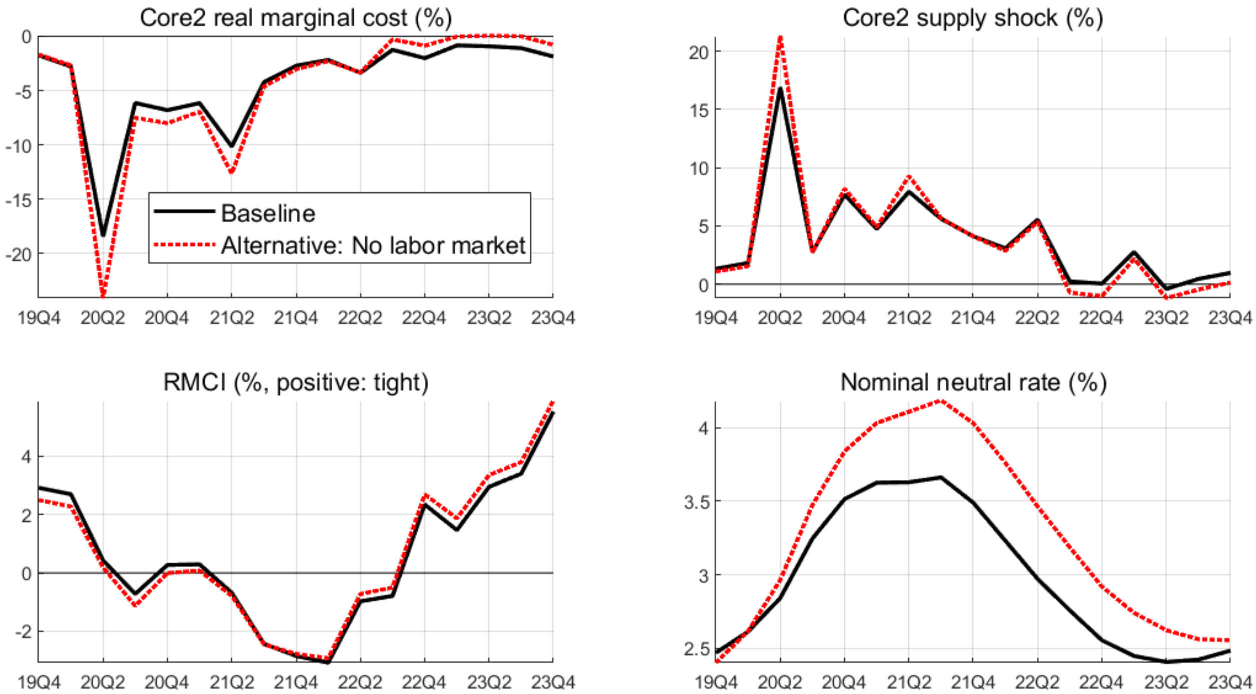
Further comparing baseline Mauritius QPM with the alternative version in which the labor market is "turned off" allows to determine the contribution of the various channels operating though the labor market. Figure 23 presents the Kalman filter estimates of several unobserved variables in the baseline (as presented in the previous subsection) and in the alternative models.

Given the increased weight of the output gap in the RMC definitions—particularly for core2—the deflationary pressures during the COVID-19 lockdowns in the alternative model are estimated to be stronger (upper-left panel). Given that inflation itself did not decrease significantly during 2020-21, the alternative specification requires larger positive supply shocks (upper-right panel). From the perspective of propagation mechanisms embedded in the model, larger supply shocks imply, ceteris paribus, an increase in inflation expectations and less restrictive or more stimulative monetary policy stance, with RMCI being marginally looser over 2020-21 (lower-left panel). Overall, the alternative model then requires tighter interest rate trajectory, with estimated nominal neutral rate being higher by a maximum of about 0.5 percentage points (lower-right panel).

Accordingly, introducing the labor market block into Mauritius QPM allows not only to take into account additional propagation channels and estimate relevant unobserved variables, like the unemployment rate gap, but also provides a more informed policy advice. For example, during the COVID-19 episode the labor market extension—by explicitly taking into account the declines in real wages and increases in unemployment—would have allowed to avoid too tight policy recommendations, which would have delayed the post-pandemic recovery.

[18] Formally, we set $a_6 = 0$ in equation (1) and $b_{13} = 0.7,\ b_{23} = b_{33} = 0.2$ in equations (9), (12), and (15). This alternative version matches the model specification and calibration of the initial version of Mauritius QPM.

Figure 23: Estimated unobserved variables: baseline model and model without labor market



Source: Authors' estimations.
Note: The figure depicts the Kalman filter estimates for several unobserved variables in the baseline model and in the alternative model without the labor market extension.

4.4. In-sample simulations

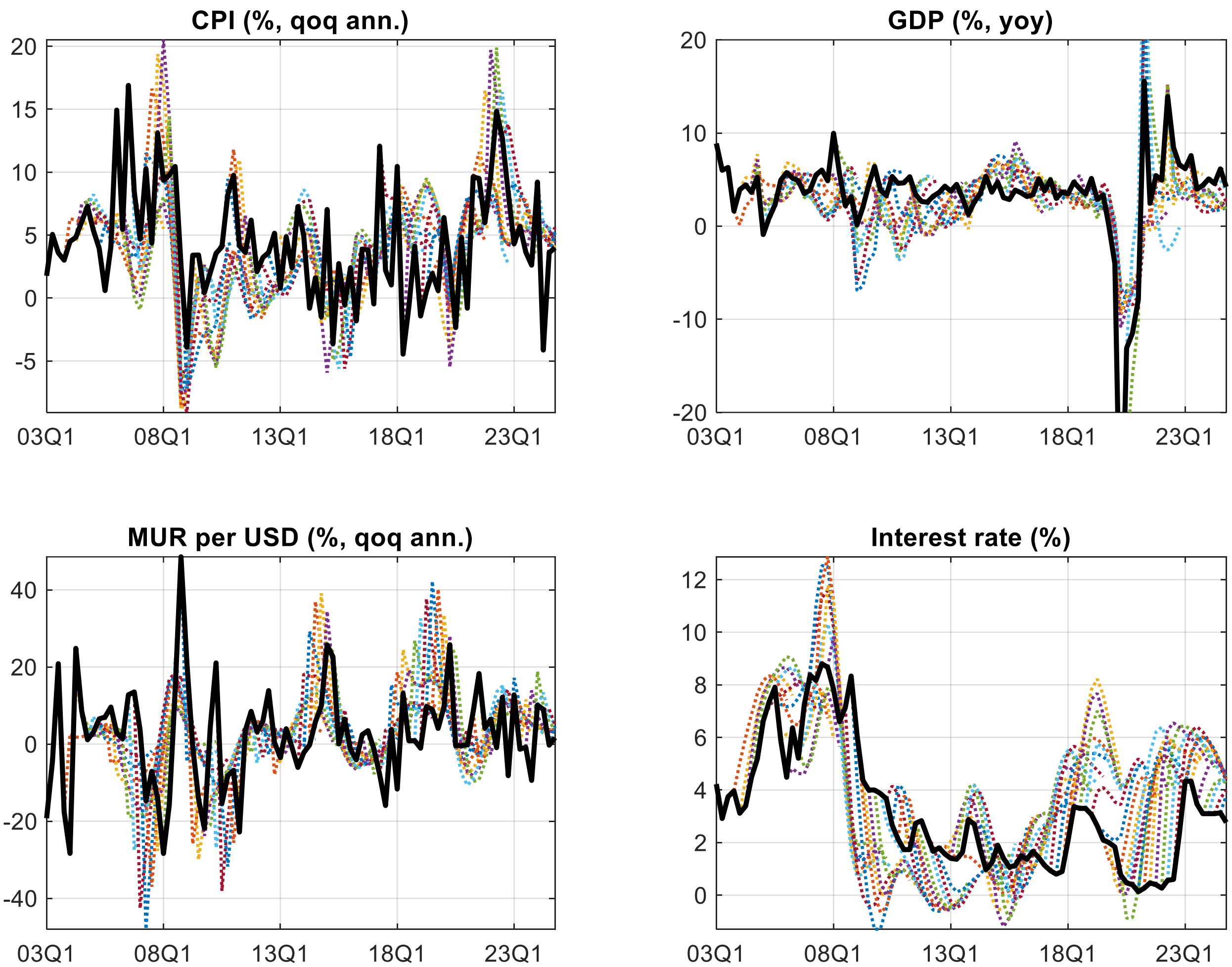
Analyzing in-sample simulations is another useful tool to gauge the adequacy of a QPM in terms of its tendency to forecast key macroeconomic variables reasonably well over time.[19] In particular, the in-sample simulations exercise implies using the QPM to generate plain recursive forecasts (without expert judgment) in each quarter assuming the data is available only up to that quarter. Frequently, the simulations are conditioned on some of the variables that the model is not supposed to be very good at forecasting. For instance, most QPMs, including the BOM's QPM, have a relatively simple and rudimentary structure for the foreign sector, given that the model is not designed to forecast these variables (like the Fed Funds rate, euro area output and inflation, international oil and food prices, etc.); in practice, their trajectories are usually provided to the model based on outside sources. A similar approach is applied to domestic trends, which are typically modeled as univariate autoregressive processes converging to the respective steady state. Hence, to gauge how well Mauritius QPM captures the domestic economy dynamics, in the in-sample simulations below we condition each forecast on actual

[19] Although useful for assessing overall QPM calibration and detecting systematic biases in forecasting specific variables, in-sample simulations are not as informative as out-of-sample forecasts, i.e., comparing the predictive accuracy of actual model-based forecasts presented by BOM staff to the MPC; see Abradu-Otoo et al. (2022) for the case of Ghana. The short historical record since the implementation of the IT regime implies a limited number of vintages that could be used to properly assess the out-of-sample forecasting performance of Mauritius QPM.

observations or full sample filtered estimates for foreign variables and trends (i.e., for each simulation, their future values are assumed to be known).

Figure 24 below shows the results of such in-sample simulations, which demonstrate the QPM's adequacy in terms of forecasting the key domestic economy variables like inflation, real GDP growth and nominal exchange rate changes. These variables' successive forecasts over time capture the tendencies in actual data reasonably well, including during the turning points.

Figure 24: In-sample forecasts (colored) and actual data (black)



Source: Authors' simulations.
Note: The figure depicts the recursive in-sample eight-quarter ahead forecasts for selected macroeconomic variables. Each forecast run is conditioned on actual values for foreign variables and full sample filtered trends.

In the case of interest rate forecasts, the accuracy is much less remarkable as compared to the other variables. In big part this is due to the monetary policy regime in previous years being different from the flexible inflation targeting regime currently in place. Given that the QPM is used to produce policy analysis and forecasts in support of the current BOM framework, the model is specified and calibrated to approximate the newly introduced MPF. As a result, for pre-2023 in-sample forecasts the QPM monetary policy reaction function that sets the interest rate based on expected inflation and output gap, which implies a rather active interest rate policy, produces more reactive interest rate predictions compared to historical values. However, interest rates forecast accuracy should improve going forward, as the QPM-based medium-term forecasts have started to become a key input to monetary policy decisions within the new (flexible inflation targeting) framework.

A more formal way to judge the QPM's in-sample forecasting accuracy is to compute the corresponding root mean squared forecast errors (RMSFE) and compare them to random walk model forecasts. The random walk benchmark is frequently used to understand how much better a model is relative to simple rules of thumb (the random walk is a useful benchmark when dealing with stationary variables, like the ones shown here).

Table 2 summarizes this comparison, showing that QPM-based inflation, GDP growth and exchange rate forecasts are significantly more accurate than the random walk benchmark, especially over the medium-term, which is the relevant horizon for QPMs. As for the interest rate, its forecasting accuracy is lower, due to the reasons mentioned above. The random walk simple forecast (i.e., assuming that the next quarter interest rate will be the same as it is in the current quarter) is a reasonable approximation of the historical behavior of interest rates, especially during the period of exchange rate-centric monetary policy framework.

Table 2: QPM Mauritius RMSFE relative to random walk models

Variable	*Forecast horizon*							
	1Q	*2Q*	*3Q*	*4Q*	*5Q*	*6Q*	*7Q*	*8Q*
CPI (%, qoq ann.)	0.98	1.02	1.01	0.84	0.90	0.81	0.72	0.68
GDP (%, yoy)	0.67	0.64	0.63	0.56	0.60	0.55	0.57	0.52
Nominal depreciation (%, qoq ann.)	1.34	0.72	0.65	0.67	0.69	0.71	0.64	0.58
Interest rate (%)	2.09	1.94	1.73	1.55	1.44	1.35	1.25	1.11

Source: Based on authors' simulations.

5. Conclusion

The Forecasting and Policy Analysis System (FPAS) implemented by the Bank of Mauritius (BOM) aligns well with its newly adopted inflation targeting monetary policy framework. The upgraded FPAS contributes to enhancing BOM's institutional capabilities in model-based forecasting and policy evaluation, provides analytical support to the monetary policy decision-making process, and strengthens the Bank's communication strategy.

At the core of the BOM's FPAS lays the updated and refined Quarterly Projection Model (QPM), which serves as a key analytical tool for producing forecasts and policy-relevant scenarios, as well as assessing the effects of monetary policy decisions in response to macroeconomic shocks. Mauritius QPM is a sophisticated extension of a canonical New Keynesian semi-structural macroeconomic model, commonly used by inflation-targeting central banks. It is customized and tailored to reflect the specific characteristics of the Mauritian economy and the policy framework currently in place. The calibration of model parameters is implemented to ensure theoretical coherency, i.e., intuitive shock propagation mechanisms and policy response channels, as well as empirical fit—which are both necessary for the QPM to provide credible and consequential analytical support to policymakers.

In practice, the BOM's modeling framework enables the exploration of a wide range of potential economic scenarios, evaluation of the trade-offs faced by the central bank during economic disturbances, and the comparison of alternative policy paths to ensure price stability. To support the QPM, a set of additional satellite tools, including near-term forecasting models and various sector-specific analysis, has been developed to provide judgment-based inputs. Accordingly, the BOM has made notable strides in strengthening its forecasting capabilities and reorganizing its policy processes, in line with best central bank FPAS practices. By broadening the scope for in-depth policy analysis and enhancing the quality and coherence of economic forecasts, Mauritius QPM plays a pivotal role in reinforcing the Bank's forward-looking monetary policy framework.

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