

## Supply Shocks and Implications for Monetary Policy

### Introduction

Malaysia's position as an open and trade-reliant economy makes it particularly vulnerable to supply shocks arising from external disruptions. In addition, domestic policy shifts can also create supply-side disturbances. These shocks generally have opposing effects on inflation and growth, making it especially challenging for the central bank to balance between price stability and sustainable economic growth, particularly in a post-COVID-19 environment marked by structural shifts and heightened geopolitical tensions.

Recent domestic policy adjustments, including the Government's subsidy rationalisation measures since 2023, have added new dimensions of complexity to the dynamics of supply shocks. Measures affecting chicken, utilities and diesel prices will improve fiscal sustainability and address market distortions, but at the same time, bring near-term inflationary pressures. Together with more structural reforms under Budget 2025,<sup>1</sup> these policies represent efforts to strengthen fiscal and economic resilience as well as improve the operation of market mechanisms, including by enhancing price discovery and competition in the affected markets. A key challenge of policymakers is to ensure careful and effective implementation of these measures without generating excessive price pressures.

This article examines the dynamics of supply shocks, both external and policy-induced, and their implications for monetary policy.<sup>2</sup> It aims to provide insights on how policymakers navigate the trade-offs between controlling inflation and sustaining economic growth, as Malaysia embarks on crucial reforms amid heightened global uncertainties.

### Defining supply shocks and their dynamics

Supply shocks are generally defined as disruptions that increase production costs or constrain output due to factors such as geopolitical tensions, natural disasters or policy changes. These disruptions may temporarily or permanently change prices, quantities or inputs of production, sometimes leading to higher inflation and reduced economic activity. Supply shocks are usually unexpected, but those from policy measures or pre-announced adjustments can be anticipated. Nonetheless, their timing and size, as well as impact on prices and economic activities may still be uncertain.

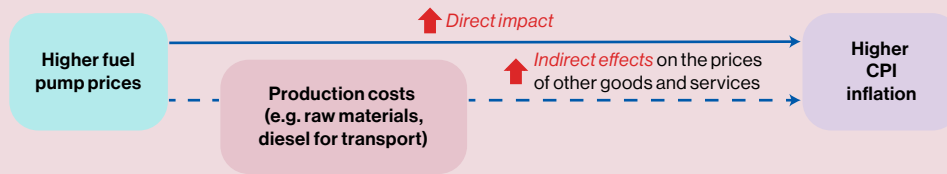
Externally driven supply shocks, such as disruptions in global supply chains, can raise domestic production costs. As key imported inputs like raw materials become more expensive,<sup>3</sup> firms could face higher production costs. To maintain profit margins and/or business operations, firms may pass on these higher costs to consumers, contributing to inflationary pressures.

Similarly, policy measures like subsidy reforms can also induce supply shocks by directly increasing prices or affecting access to key production inputs. To illustrate how policy-induced supply shocks transmit through the economy, consider the removal of fuel subsidies. The resulting higher fuel prices **directly affect** the fuel component of the consumer price index (CPI) basket (Diagram 1). Such increases can additionally lead to broader price pressures through **indirect effects**, as it increases the production costs of domestically produced items in the CPI basket. These may include the costs of transportation, logistics and utilities.

<sup>1</sup> These include, among others, adjustments to RON95 fuel prices, labour market policies such as minimum wage and progressive wage model, and the expansion of the Sales and Services Tax (SST).

<sup>2</sup> The article focuses on policy shocks affecting the supply side due to their complexity and the challenging policy trade-offs they entail. In contrast, policy-driven demand shocks, which typically move inflation and output in the same direction, are relatively more straightforward for monetary policy to address.

<sup>3</sup> This results in higher marginal costs for firms, which refers to the additional cost of producing one more unit of a good or service.

**Diagram 1: Illustrative Transmission Channels from Policy-induced Shocks**


Source: Bank Negara Malaysia

Spillovers to broader prices could also be amplified by the prevailing strength of demand conditions and the extent of targeted financial assistance<sup>4</sup> accompanying the rationalisation of fuel subsidies. In cases where demand is strong or targeted assistances are generous, firms may find it easier to pass on costs to consumers, leading to more generalised price pressures. Additionally, wage-price dynamics can pose a risk of **second-round effects**, which could make price increases become more persistent and pervasive. Second-round effects may occur if businesses raise prices to protect margins or face pressure to increase wages due to higher prices and inflation expectations. Higher wages could, in turn, boost spending and further create more inflationary pressures.

### Identification of supply shocks

Given that monetary policy is primarily a demand management tool, it is crucial to accurately identify the type of shocks affecting the economy. Demand shocks typically increase both prices and output, while supply shocks raise prices but lower output (Blinder, 2010). It is important to distinguish between the type of shocks, though it is not always discernible in real-time where many factors interact. Identifying these effects often requires robust analytical approaches, two of which are widely used:

- 1. Top-down approach:** This method uses macro-level frameworks to identify the dominant demand and supply factors influencing inflation and output. For instance, sign restrictions on consumption data within a Vector Autoregression (VAR) framework can indicate whether shocks are supply- or demand-driven (Shapiro, 2024). Eickmeier and Hofmann (2022) demonstrate the application of principal component analysis (PCA) to isolate common factors affecting inflation and GDP at the aggregate level.
- 2. Bottom-up approach:** This traces how increases in production costs propagate through sectors and supply chain, using tools like input-output analysis and industry-level data for a more granular perspective on inflation drivers (Giovanni et al., 2022; Redl, 2023).<sup>5</sup>

Complementing past studies, a historical decomposition of Malaysia's core inflation was conducted using a top-down approach with sign restrictions to assess whether changes in prices can be explained by supply or demand shocks.<sup>6</sup> The results indicate that core inflation, which reflects the more persistent trend of inflation, is typically driven by demand factors (Chart 1).<sup>7</sup> This reflects the sensitivity of underlying inflation to macroeconomic factors such as the strength of the economy, though broad-based cost shocks from large supply disruptions, for instance, did occasionally dominate.

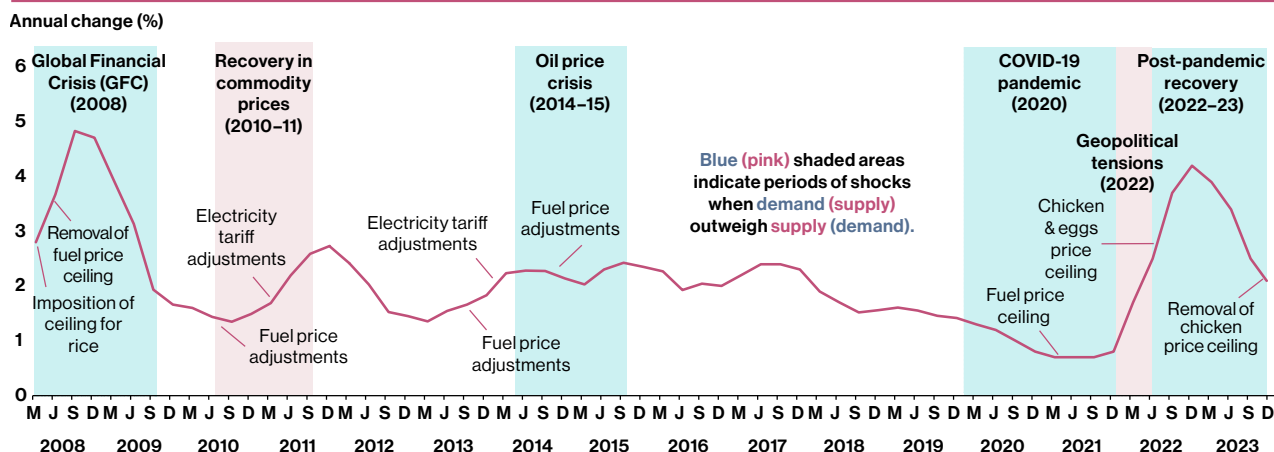
<sup>4</sup> These could include cash transfers, vouchers, and wage support measures, among others.

<sup>5</sup> This more granular approach can be useful in cases where an initial supply shock(s) trigger changes in aggregate demand larger than the shock(s) themselves (i.e. the so-called Keynesian supply shocks). This makes it difficult to distinguish between demand and supply shocks at the aggregate level. Sector-specific data can reveal supply constraints that might otherwise appear similar to demand-driven shocks in aggregate analyses (Redl, 2023; Guerrieri et al., 2022).

<sup>6</sup> For more details on the drivers of underlying inflation and the distinctions between broad-based and idiosyncratic price shocks, please refer to the box articles entitled i) 'Underlying Inflation at its Core' in BNM's Economic and Monetary Review 2023 and ii) 'Understanding Inflation Drivers: Differentiating Common and Idiosyncratic Dynamics in Malaysia' in BNM's Second Quarter of 2023 Quarterly Bulletin.

<sup>7</sup> The GFC and COVID-19 both triggered economic slowdowns, affecting household spending and business activity to varying degrees. In contrast, the oil price crisis (2014–15) saw the economy showing greater resilience, with limited impact on growth and inflation. In all these cases, demand shocks consistently outweighed supply shocks.

**Chart 1: Core Inflation and Decomposition of Shocks (2008–23)**



Note: Core inflation was decomposed using Structural Vector Auto Regression (SVAR). Sign restrictions are used to identify shocks – namely to ascertain residuals as demand shocks if they move GDP growth and inflation in the same direction, and as supply shocks if they move GDP growth and inflation in opposite directions. Nonetheless, unlike Shapiro (2024), who refines the analysis with quantity-level data, the lack of such granular and high frequency data for Malaysia poses considerable estimation challenges, particularly in disentangling sector-specific dynamics with greater precision.

Source: Bank Negara Malaysia

## Guiding monetary policy responses to supply shocks and exploring their implications

A typical monetary policy response aims to ‘look through’ transitory supply shocks, given the limited influence of monetary policy on near-term price pressures. This is because the main effects of monetary policy on the economy are transmitted through with some delay.<sup>8</sup> Yet, multiple and persistent supply shocks risk de-anchoring inflation expectations, potentially requiring monetary policy intervention to maintain price stability.

This segment highlights the delicate balance monetary policy needs to achieve when responding to supply shocks. Acting too early risks slowing economic growth while delaying action could lead to more prolonged price increases, potentially necessitating stronger subsequent monetary policy actions, with a greater impact on output. Addressing these challenges effectively requires the need for a robust analytical framework to guide decisions. The framework should account for the balance of risks to both inflation and growth, macro- and micro-level analyses, along with assessments of how shocks are transmitted.

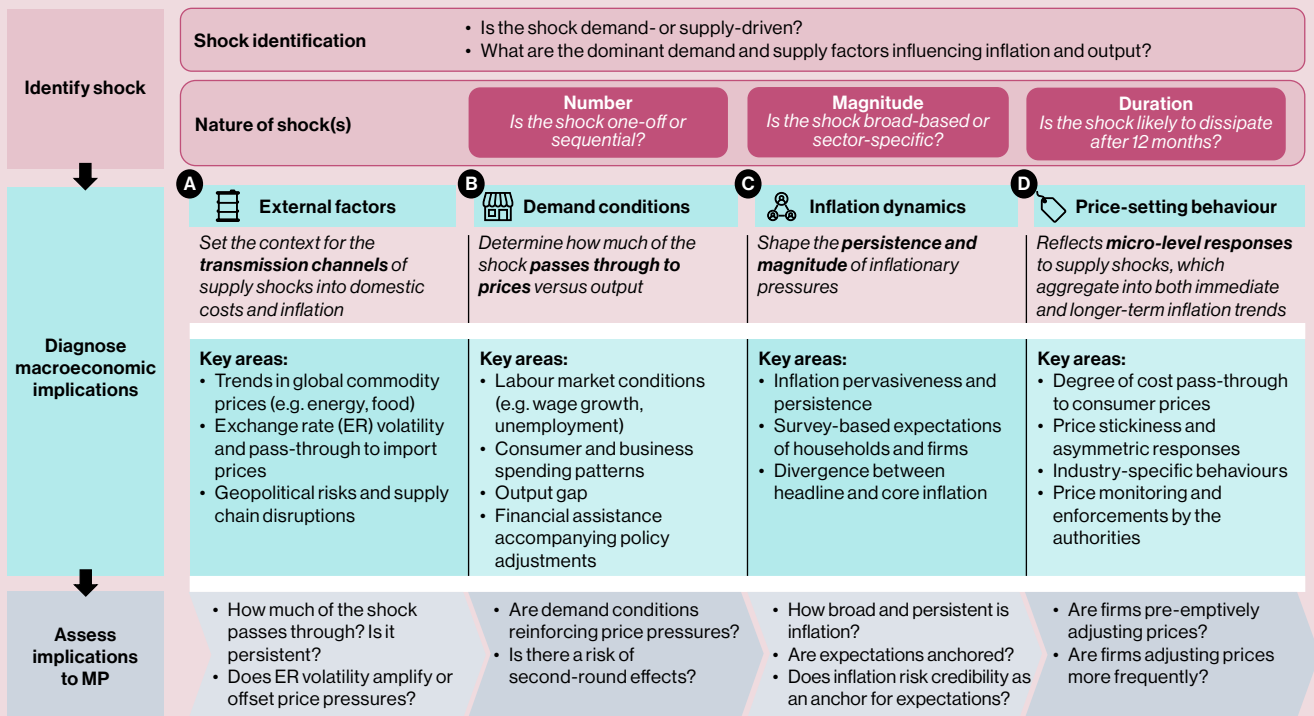
Based on the analytical framework (Diagram 2), monetary policy intervention<sup>9</sup> would be required to prevent the initial inflation impulse arising from supply shocks becoming entrenched. If left unaddressed, second-round effects could emerge, especially if amplified by strong demand, leading to more persistent and pervasive inflationary pressures. Furthermore, even in the absence of second-round effects, salient price shocks can destabilise inflation expectations.<sup>10</sup> This can be driven by shifts in price-setting behaviour among firms that amplify the initial price pressures, necessitating a policy response to anchor expectations and prevent inflation from becoming more persistent and widespread.

<sup>8</sup> The speed of policy transmission can slightly vary across economies and over time. Recent findings indicate that the monetary transmission in Malaysia typically begins to show significant effects after 14–15 months (Eklou, 2023). A study of 40 emerging market economies found that monetary transmission achieves peak effects on prices at around 15 months (Brandao-Marques et al., 2020). Meanwhile, Deb et al. (2023) observed that both emerging and advanced economies tend to reach their peak impact at a similar time (around 18 months).

<sup>9</sup> For example, the Bank of England in its September 2024 MPC Report outlined three scenarios on how monetary policy stance could evolve based on changes in macroeconomic conditions, offering insights into possible approaches to assessing monetary policy responses: i) disinflation driven by fading external shocks, necessitating a quicker reduction in policy rate; ii) persistent second-round effects on inflation, requiring a continued restrictive MP stance; and iii) shocks that cause deeper structural changes, needing a prolonged restrictive MP stance to prevent long-lasting adverse inflationary dynamics.

<sup>10</sup> Salient prices are the prices of goods or services that change frequently or are regularly paid by households, such as fuel, groceries, rent and energy prices. These prices can play a significant role in shaping the formation of inflation expectations among households. For example, salient price shocks, such as sharp increases in the cost of food or fuel, can disproportionately influence inflation expectations, consistent with behavioural theories and the expectations-augmented Philips Curve. Unanchored expectations risk shifting inflation dynamics, requiring timely intervention, including via central bank communication (D’Acunto et al., 2024).

Diagram 2: Analytical Framework – Monetary Policy Considerations for Supply Shocks



Source: Bank Negara Malaysia

During past adjustments of domestic fuel prices, BNM had not found it necessary to adjust monetary policy in direct response to the shocks. Thus far, Malaysia’s first and largest fuel subsidy rationalisation exercise occurred in mid-2008,<sup>11</sup> shortly before the onset of the Global Financial Crisis (GFC), which increased headline inflation to 7.7% in June 2008 (March 2008: 2.8%). Notwithstanding a sharp increase in prices,<sup>12</sup> BNM, nevertheless, decided to ‘look through’ the shock as it was assessed to be temporary and self-correcting. This was based on the prognosis that the sharp increase in domestic energy prices as well as the unfolding global crisis would significantly dampen demand and thus, ease underlying inflationary pressures in the medium term. Accordingly, the upside risks to inflation and downside risks to growth were assessed to be balanced at that point. This analysis and policy call proved prescient, as inflation eased rapidly after peaking in 3Q 2008 (December 2008: 4.4%; August 2008: 8.5%), falling below trend in 2009.<sup>13</sup>

Unlike past episodes of supply shocks, the post-COVID-19 period between January 2022 and December 2023 introduced new challenges, as global supply disruptions coupled with shifting domestic demand drove inflationary pressures higher and more persistent. These developments have rather reshaped the inflation dynamics, revealing the increasingly far-reaching and enduring nature of supply shocks, which can be further exacerbated by demand factors and shifts in inflation expectations. This underscores the need for a clearer understanding of these dynamics and how best to manage these shocks effectively. The post-COVID-19 period offers valuable insights into the role of four key factors – external factors, demand conditions, inflation dynamics, and price-setting behaviour – in shaping monetary policy decisions (see charts on the next page):

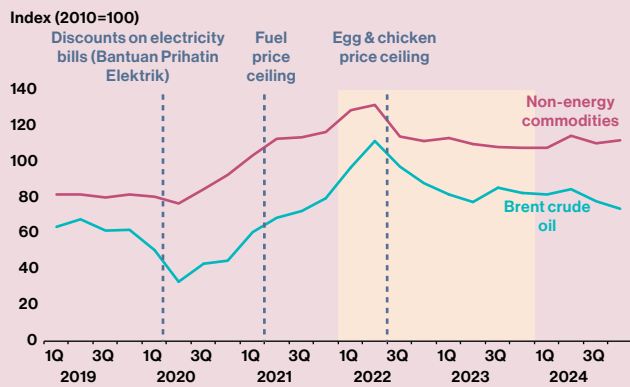
<sup>11</sup> RON95 and diesel prices were increased by 74 sen and 100 sen, representing a 39% and 63% rise in prices respectively.

<sup>12</sup> 28.6% of items with month-on-month growth in June 2008 (May 2008: 16%) exceeding two standard deviations of their long-term average (1990–2005).

<sup>13</sup> During the period, Brent crude prices also sharply declined by over 60%. The OPR was reduced by 125bps over three consecutive MPC meetings in late 2008 and early 2009 amid prevailing downside risks to the global economic outlook.

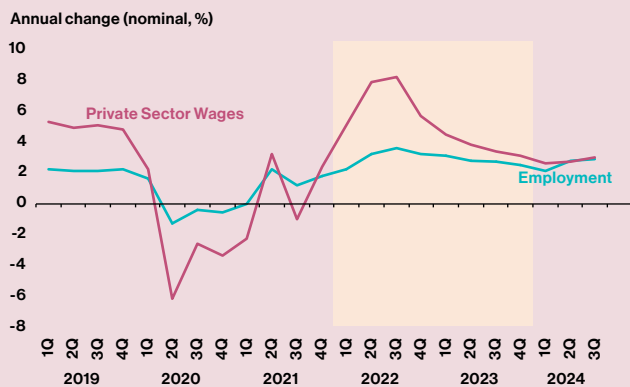
The impact of higher global commodity prices was partly mitigated by price controls...

**Chart 2: Commodities and Price Controls**



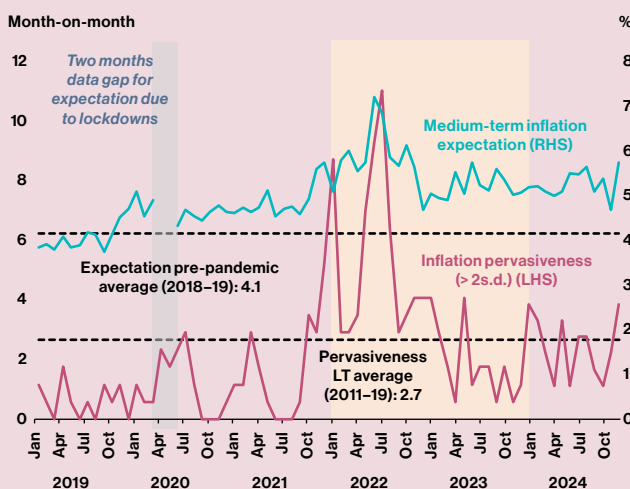
The strong and sustained expansion in wages and employment supported consumption...

**Chart 4: Labour Market Conditions**



Pervasiveness of price increases grew, peaking alongside expectations before both began to ease.

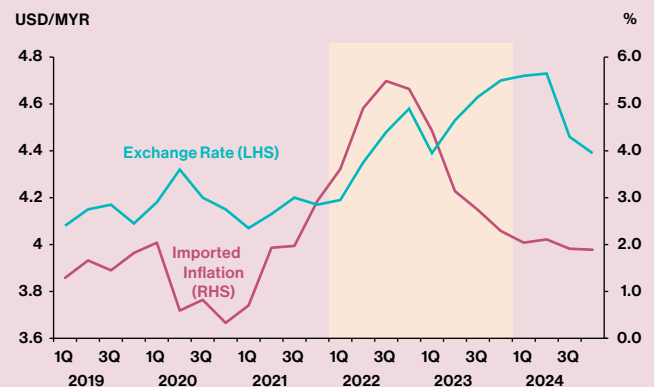
**Chart 6: Pervasiveness and Inflation Expectation**



Source: Bank Negara Malaysia estimates based on World Bank Commodity Price Data (The Pink Sheet), Bloomberg Imported inflation and Exchange Rate Data, Department of Statistics, Malaysia, BNM Consumer Sentiment Survey, BNM Regional Economic Surveillance

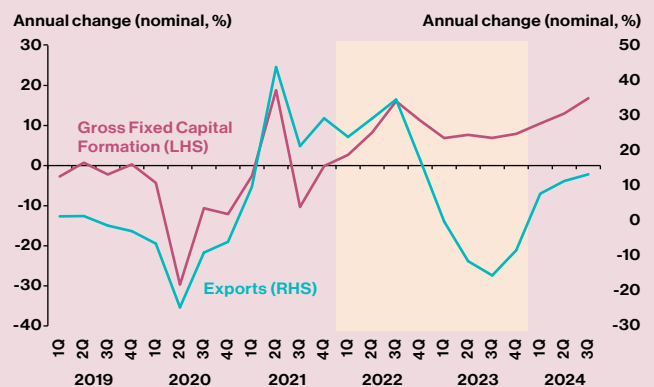
...though cost pass-through seeped through higher imported inflation as the ringgit depreciated.

**Chart 3: Exchange Rate and Imported Inflation**



...and capital investments raised growth, while weaker global demand dragged on exports.

**Chart 5: Gross Fixed Capital Formation and Exports**



Post-COVID-19, firms have generally adjusted prices gradually even as they face higher input costs.

**Diagram 3: Findings from Engagements with Firms**

- Retain profit margin as a priority for business**
  - Most respondents cited retaining profit margin was the priority for firms when deciding to pass on costs to customers.
  - Majority of respondents cited that after several attempts of absorbing cost, they would adjust prices to retain profit margin.
- Gradual price adjustment due to higher costs of raw materials**
  - Firms have adjusted prices in a gradual manner to manage sentiments among customers.
  - Considerable share of respondents have adjusted prices due to higher cost, primarily reflecting higher prices of raw materials.
- Harder to raise prices for micro and small firms**
  - While higher inflation made it easier for some firms to raise prices, this was not necessarily the case for micro and small firms.
  - Minority of respondents in small and micro businesses indicated that they tolerated lower profitability and gave price promotions.

These insights highlight the challenges of formulating policy decisions during the post-pandemic recovery. During this period, BNM adopted a measured policy stance that carefully balanced inflation control while supporting growth as the economy recovered from the COVID-19 crisis. Underlying inflation was firmly on an upward trend, with price increases becoming increasingly widespread amid strengthening demand conditions following the reopening of the economy. This allowed firms to gradually pass through costs amid persistent pressures from external factors. Reflecting these conditions, policy normalisation was deemed appropriate, with BNM gradually raising the overnight policy rate (OPR) by 25 basis points (bps) in four consecutive Monetary Policy Committee (MPC) meetings in 2022. This stood in contrast to the more aggressive tightening seen in advanced economies and several emerging and regional economies, which faced more pressing inflation pressure.<sup>14</sup>

In Malaysia, inflation expectations initially edged higher but later eased, suggesting they remain anchored. In addition, the higher OPR helped pre-emptively contain the risk of second-round effects, enabling wages and the economy to recover without posing risks of overheating. Inflation has since stabilised around its long-term average, supported by disinflationary forces and the effects of OPR adjustments. Similarly, facilitated by a conducive domestic environment, growth has remained resilient, driven by positive labour market conditions and robust investment activity. This experience highlights the need to calibrate monetary policy to the specific nature of each shock, with the ultimate goal of achieving price stability and sustainable growth in an evolving landscape.

### Additional policy imperatives for managing recurring supply shocks

Going forward, supply shocks are likely to increase in scale, frequency, and persistence, driven by factors such as geopolitical tensions, deglobalisation trends, demographic shifts and climate change challenges, among others.<sup>15</sup> These emerging dynamics emphasise the need for policymakers to be equipped with tools and strategies to navigate increasingly complex disruptions. This section highlights three additional factors that are critical in shaping effective policy responses to supply shocks, facilitating readiness for future uncertainties.

First, timely and informed responses require **strong institutional capabilities**. Strong cooperation across policymakers is important to assess supply shocks more comprehensively, capturing both immediate effects and longer-term structural implications. Regular and focused engagements with industry players in sectors such as logistics and manufacturing, can offer critical insights into the direct and spillover effects of policy reforms. Additionally, enhancing capabilities to anticipate supply chain bottlenecks – particularly those affecting price-setting behaviour – will facilitate more effective and timely policy measures.<sup>16</sup>

Second, monetary policy cannot work in isolation from other policies, particularly in responding to policy-induced supply shocks. **Close coordination between fiscal and monetary policies** is crucial for a more coherent and effective response.<sup>17</sup> Fiscal measures such as cash transfers can help ease the financial burden on the most affected households. Nonetheless, it is important to ensure that assistance is not overly generous and is carefully targeted to limit undue pressures on demand, and in turn, their impact on overall prices. This complements monetary policy in keeping inflation expectations stable.

In addition to designing effective policies, public communication is key to building trust and ensuring smooth implementation. Clear messages about the roles of various policy tools and the implementation of key structural reforms to secure fiscal sustainability and reduce market distortions, help anchor expectations and prevent overreactions from households and businesses.

<sup>14</sup> For Malaysia, the extent of upward pressures to inflation was partly contained by the price controls and fuel subsidies that were introduced during the pandemic.

<sup>15</sup> These interconnected global trends suggest a more volatile economic landscape where traditional demand-management tools are insufficient, requiring more collaborative monetary and fiscal policies to respond to supply-side challenges (Carstens, 2023; Bénassy-Quéré, 2024).

<sup>16</sup> For example, the European Central Bank coordinates closely with European Union agencies to monitor supply chain risks, particularly in energy and semiconductors.

<sup>17</sup> For more details on the interactions between monetary and fiscal policy, please refer to the box article entitled 'Navigating Economic Cycles: Interactions between Monetary and Fiscal Policy' in BNM's Economic and Monetary Review 2023.

Finally, **clear, timely and transparent communication of monetary policy objectives** is essential for shaping public and market expectations, especially during periods of economic reform. Consistent and credible messaging reduces uncertainty, limits overreaction by households and businesses, and lowers the risk of inflation expectations from becoming easily unhinged (Blinder et al., 2008). For example, highlighting the temporary nature of inflationary pressures linked to reforms can ease concerns on elevated inflation generating uncertainties to economic activity.

In addition, it is also important to systematically communicate uncertainty, particularly during periods of frequent and large supply shocks.<sup>18</sup> Internally, BNM uses scenario analysis to develop narratives about how the economy might evolve under various conditions. These scenarios range from likely outcomes to extreme events to capture the potential impact of domestic reforms and supply shocks on growth and inflation. The use of scenario analyses has enhanced BNM's ability to communicate its outlook effectively. By illustrating potential trade-offs and uncertainties under various scenarios, these analyses help explain the rationale behind policy decisions, fostering understanding among households, businesses, and markets. This approach strengthens transparency and credibility, supporting BNM's objectives of price stability and sustainable growth.

### Conclusion

Effectively managing supply shocks requires a balance of analytical rigour, strategic coordination, and credible communication. The framework outlined here provides a structured approach to understanding and responding to supply shocks, ensuring that monetary policy decisions are informed and context-specific. The COVID-19 experience, coupled with the threat of increasing frequency and severity of supply shocks going forward, underscores the importance of a balanced and thoughtful approach to the conduct of monetary policy. This includes tailoring responses to domestic conditions and the specific nature of each shock, as well as ensuring that monetary policy is calibrated in an appropriate and timely manner. Such an approach helps achieve price stability over the medium term without placing undue pressure on economic activity. By applying these insights, BNM can better navigate complex challenges, foster public trust, and support its objectives of price stability and sustainable growth.

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<sup>18</sup> The recent review of the Bank of England's forecasting framework emphasises the importance of communicating uncertainty through scenarios, helping policymakers and the public understand a range of potential outcomes (Clare, 2024). It also highlights the need for greater transparency in forecasting methods and advocates for clearer, more accessible presentation of economic projections to improve decision-making in uncertain times.

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