

Special Feature: Decision-Making in the Dark—ASEAN+3 Monetary Policy in a High-Uncertainty Environment

"If everyone is saying... that the only certainty is uncertainty, it is not difficult to imagine that decision-making is becoming increasingly difficult..."

Haruhiko Kuroda, Former Governor of the Bank of Japan (2017)

Uncertainty has always been part of monetary policymaking, but what has changed in recent years is its character and intensity. Central banks have long had to act on incomplete information, imperfect models, and evolving data. The global economy, however, has been buffeted by a succession of large and unfamiliar shocks: a pandemic that simultaneously disrupted supply and demand, geopolitical realignments reshaping trade and investment flows, and rapid technological shifts with macroeconomic effects that remain difficult to gauge. These developments have not only clouded the near-term outlook but also created unprecedented uncertainty about inflation dynamics, the nature of shocks, and the appropriate policy response.

In this context, this special feature offers a simple framework for thinking about the different types of uncertainty that monetary policymakers face. It distinguishes among structural uncertainty (about how the economy works), disturbance uncertainty (about the shocks hitting it), and radical uncertainty (about futures that resist probabilistic treatment). The aim is not to provide a rigid taxonomy, but rather to sharpen the diagnostic questions that arise when policy must be set under unclear conditions: whether to respond to a given shock, when to act, and how forcefully to move. The final section considers how this way of thinking applies to ASEAN+3 economies, where overlapping uncertainties and the diversity of institutional settings make these questions particularly salient.

Distinguishing Types of Uncertainty

A useful starting point for thinking about uncertainty in monetary policy is to distinguish between three broad categories: structural, disturbance, and radical uncertainty. Structural uncertainty concerns how the economy works – the strength of transmission channels, the slope of the Phillips curve, the level of the neutral rate. Disturbance uncertainty concerns shocks that hit the economy – their nature, size, and persistence. Radical uncertainty concerns situations where the relevant states of the world cannot be specified nor meaningful probabilities assigned to them. Recent years have

illustrated all three: the pandemic and shifts in global trade patterns renewed uncertainty around structural concepts like the neutral rate; overlapping demand swings, supply disruptions, and tariff shocks obscured the nature and persistence of disturbances; and extreme events – from the pandemic to geopolitical conflicts – revealed the limits of prediction and the reality of “unknown unknowns”. This framework is not intended as a rigid taxonomy, but as a lens for diagnosing the dominant source of uncertainty in a given situation and considering how it might shape the policy response.

Structural Uncertainty

Structural uncertainty encompasses doubts about the fundamental workings of the economy. How sensitive is inflation to unemployment? What is the economy's natural rate of interest? How quickly does monetary policy transmit to the real economy? Within this broad category, it is helpful to distinguish three related elements. Model uncertainty questions whether the economic framework is correct at all: – it could be that the relationship between inflation and unemployment has fundamentally changed, or financial frictions now dominate traditional channels.

Parameter uncertainty concerns the true values of coefficients within a given framework, it may be accepted that the Phillips curve relates inflation to slack, but remain unsure how steep that relationship is. State and data uncertainty adds measurement challenges: preliminary statistics are often revised substantially, key variables like potential output cannot be directly observed and must be estimated with considerable error, and real-time assessments frequently differ from what can be learned in hindsight.

Different dimensions of structural uncertainty point toward different policy approaches. When the uncertainty is primarily about effect magnitudes – “I know raising rates will slow the economy, but by how much?” – the classic Brainard principle suggests responding more cautiously to avoid overshooting.⁴ However, when the uncertainty is about whether key relationships have shifted or whether inflation will persist, the greater danger may lie in losing the expectation anchor, and policy may need to lean more decisively. To deal with broader model uncertainty, central

banks have increasingly relied on approaches that reduce dependence on any single framework – for example, the US Federal Reserve’s emphasis on robust policy rules that do not rely heavily on unobservable variables (Williams 2025), or the European Central Bank’s multimodel cross-checking (ECB 2021). Many central banks in the region, including the Bank of Thailand and the Monetary Authority of Singapore, similarly use multiple models and indicator-based strategies to navigate model uncertainty (Enzler and others 2005; Amatyakul and others 2021).

Disturbance Uncertainty

Disturbance uncertainty focuses on the shocks themselves: their nature, size, likely persistence, and interactions. This category proved central during the 2021–2023 inflation episode, when central banks worldwide struggled to determine whether price pressures represented transitory supply disruptions that policy could safely “look through” or persistent disturbances requiring a forceful response. The distinction matters: supply shocks create trade-offs between inflation and output stabilization, while demand shocks generally do not; temporary shocks may warrant patience, while persistent shocks call for action. Policy choices therefore hinge on judging persistence and the balance of risks. Transitory shocks accompanied by well-anchored expectations can often be looked through, but suspected persistence – whether through drifting expectations or demand weakness that feeds on itself – makes delay more costly. Research suggests that high

inflation tends to be self-reinforcing once expectations begin to de-anchor or wage- and price-setting behavior adjusts (Bems and others 2018; BIS 2022),⁵ while prolonged weakness in demand can tip the economy toward a deflationary trap. Both aspects argue for early action when risks are clearly skewed.

The challenge is that real-time shock identification is notoriously difficult. COVID-19 illustrated this starkly: the pandemic struck simultaneously as a supply shock (factory shutdowns, fractured supply chains) and a demand shock (collapsing spending and investment), with the dominant force shifting over time. Misdiagnosis proved costly. The core task is to distinguish demand from supply shocks and transitory from persistent ones – an endeavor that requires robust monitoring, high-frequency indicators, and systematic cross-checks across data sources and models.

Radical Uncertainty

Radical uncertainty represents situations that reflect fundamental limits of knowledge – not merely unknown outcomes with calculable probabilities, but true unknowability. Frank Knight drew this distinction a century ago (Knight 1921): risk involves known probabilities over unknown outcomes; radical uncertainty means that information needed to form those probabilities is not available. COVID-19 exemplified this vividly. In the first quarter of 2020, central banks could not provide conventional forecasts because no historical precedent

existed for a simultaneous, policy-induced shutdown of economic activity. How does one forecast when the entire framework assumes the economy is operating, not deliberately shuttered? Similarly, climate transition, major geopolitical realignments, and transformative technologies like artificial intelligence involve “unknown unknowns” that resist standard probabilistic treatment.

Under radical uncertainty, traditional optimization gives way to risk-management approaches.⁶ Scenario analysis

⁴ William Brainard (1967) formalized this intuition in what became known as the “Brainard conservatism principle”—when policymakers face multiplicative uncertainty about the strength of the transmission mechanism, they should attenuate their response. The logic is straightforward: if uncertain whether turning the steering wheel 10 degrees will turn the car 5 or 15 degrees, turn it less to avoid overshooting. However, substantial subsequent research has shown this principle frequently reverses. Söderström (2002) demonstrates that when uncertainty concerns inflation persistence rather than transmission strength, optimal policy becomes more aggressive to prevent expectations de-anchoring. Orphanides and Williams (2007) show similar reversals when central bank credibility is imperfect.

⁵ The mechanism works through shifting attention and expectation formation. When inflation is low and stable, agents exhibit “rational inattention”—they don’t spend cognitive resources closely monitoring prices (Reis 2006). But when price pressures broaden, inflation moves out of the zone of “rational inattention”, within which it has little impact on behavior, into that of sharp focus, in which it starts to influence behavior more substantially. Economies could shift into a high-inflation regime where expectation de-anchoring and wage-price feedback become more likely (BIS 2022). When long-term inflation is poorly anchored, shocks tend to have a significant and persistent effect on consumer price inflation (Bems and others 2018).

⁶ In his influential speech on monetary policy under uncertainty at the Jackson Hole Symposium, Greenspan (2004) argues that under uncertainty, policymakers should manage risks rather than optimize around a single forecast, by considering the distribution of possible outcomes and the robustness of alternative policy choices, at times taking preemptive “insurance” actions against low-probability but severe tail risks.

becomes a central tool – building multiple plausible narratives without false precision – supported by robust-control methods and “least-regrets” thinking. For example, the Bank of Thailand conducted alternative scenarios and stress tests to prepare for worst-case outcomes during the pandemic (BoT 2021). Communication must also adapt:

credibility comes not from projecting false confidence but from acknowledging uncertainty while clearly explaining how policy would respond across different scenarios. Bangko Sentral ng Pilipinas, for instance, regularly publishes inflation scenarios to communicate risks and the range of possible outcomes (BSP 2025).

Table 1.4 A Three-Category Framework for Monetary Policy Under Uncertainty

Category	What it concerns	Key questions	Policy approach	Practical tools
Structural Uncertainty	How the economy works and where we are	<ul style="list-style-type: none"> • What are the true parameter values? • Is our model still valid? • What is the current state given measurement error? 	Reduce the uncertainty Use multiple models; rely more on observables; cross-check across approaches; employ robust simple rules	<ul style="list-style-type: none"> • Multimodel analysis • Real-time data monitoring • Forecast evaluation • Sensitivity analysis • Observable-based rules
Disturbance Uncertainty	The shocks hitting the economy and their evolution	<ul style="list-style-type: none"> • Supply or demand shock? • How large? • Transitory or persistent? • How will it evolve? 	State-contingent response Look through if transitory and expectations anchored; act forcefully if persistent; pre-empt when de-anchoring risk high	<ul style="list-style-type: none"> • High-frequency indicators • Shock decomposition • Persistence diagnostics • Expectations surveys • Sectoral intelligence
Radical Uncertainty	Fundamental unknowability	<ul style="list-style-type: none"> • What are the possible states of the world? • Can we assign probabilities? • What don't we know that we don't know? 	Risk management Use scenarios without false precision; prepare for worst-case; “least regrets” analysis; preserve policy flexibility	<ul style="list-style-type: none"> • Scenario narratives • Robust control • Stress testing • War-gaming exercises • Clear mandate communication

Source: AMRO staff.

Policy Trade-Offs Under Uncertainty

The framework outlined above is diagnostic, but its practical value lies in how it informs recurring dilemmas of decision-making in monetary policy. Three policy choices arise repeatedly: whether to respond to a shock or look through it; when to act – immediately or after waiting for more information; and how forcefully to move. These are not new questions, but the heightened uncertainty of recent years

has made them more difficult to answer with confidence. Each type of uncertainty – structural, disturbance, and radical – bears on these choices in different ways, and the balance often shifts depending on which uncertainty dominates at a given moment. The subsections that follow examine each trade-off in turn, while Table 1.5 summarizes how the three types of uncertainty map onto the three policy dilemmas.

Looking Through Versus Responding to Shocks

Perhaps the most consequential choice is whether to respond to a shock at all. This question is especially acute for supply shocks, which create trade-offs between inflation and output stabilization that demand shocks typically do not. Standard theory suggests that when shocks are clearly transitory and expectations remain well anchored, policymakers can afford to look through the initial price impact rather than tighten and sacrifice output unnecessarily (Clarida and others 1999).

The difficulty is that the conditions for looking through are hard to verify in real time and the costs of getting it wrong are

asymmetric. For example, policymakers cannot afford to wait until de-anchoring appears in the data; by then, it is typically too late to prevent the kind of self-reinforcing dynamics that make inflation persistent. The 2021–2023 inflation episode illustrated the danger: most central banks initially characterized price pressures as transitory, a judgment that proved costly once persistence became undeniable (Aguilar and others 2024). De-anchored expectations are far more costly to reverse than a modest policy overshoot, which tilts the balance toward responding when the persistence of a shock is genuinely uncertain.

Acting Early Versus Preserving Policy Space

Once policymakers judge that a shock warrants a response, the next question is when to act. The traditional argument favors moving early: monetary policy works with long lags, and delay can prove costly if it allows inflation to embed or pushes the economy toward the effective lower bound (ELB) where policy traction weakens.⁷ For many emerging markets, there is an additional consideration – the need to adjust ahead of US Federal Reserve tightening cycles to avoid sudden stops or capital-flow volatility (BIS 2022).

Yet the experience of recent years has shifted the discussion. With shocks arriving from multiple directions and the outlook changing rapidly, many policymakers now place greater weight on preserving policy space rather than exhausting it prematurely. Real-options logic offers

a way to think about this: when decisions are costly to reverse and uncertainty resolves over time, there can be value in waiting for clearer information (Dixit and Pindyck 1994). The case for patience is strongest when transmission is uncertain, shock persistence is unclear, or new data arrives quickly enough to inform near-term decisions.

How this dilemma resolves depends, again, on diagnosis. Structural parameter uncertainty – where the policymaker is unsure how strongly the economy will respond – tends to favor preserving flexibility. Persistent disturbance uncertainty with expectations risk tilts toward earlier action. And radical uncertainty with asymmetric tail risks often calls for an insurance approach: acting to avoid worst-case outcomes even when the baseline case might counsel patience.

Gradualism Versus Frontloading

The final choice concerns pace: whether to move gradually or to frontload the policy response. Gradualism has long been the default, and for good reasons. It allows policymakers to learn from each step, helps maintain stability in long-term rates, and minimizes financial market disruption (Bernanke 2004). But gradualism carries its own risks, particularly when shocks are persistent. Gradual moves can leave policy “behind the curve”, allowing inflation to embed in expectations and ultimately requiring a sharper correction later. Research on the Brainard principle – that uncertainty about transmission strength should make policy more cautious – shows that the logic reverses when the uncertainty concerns inflation

persistence: underestimating persistence is costlier than overestimating it, making more aggressive policy optimal (Söderström 2002; Tetlow 2018).

In practice, most central banks operate with a form of state-contingent gradualism: gradualism as the default, but a willingness to front-load when facing clear asymmetric risks, evidence of persistence, expectation drift, or proximity to policy constraints. The US Federal Reserve’s rapid 2001–2003 easing amid growing deflationary pressure and concerns about approaching the effective lower bound, compared with its more measured 2004–2006 tightening amid strengthening growth and inflation, illustrates the approach.

Which Uncertainty Matters When

All three types of uncertainty bear on policy, but their practical relevance differs across the policy cycle. Structural uncertainty about the neutral rate, transmission strength, or the slope of the Phillips curve, is largely addressed by improving measurement, refining models, and strengthening the analytical framework before shocks arrive. Radical uncertainty calls for contingency planning and scenario analysis that sit alongside the policy framework rather than within day-to-day decisions.

Disturbance uncertainty, by contrast, is what policymakers must resolve in real time once a shock materializes. The diagnostic questions – is this demand or supply driven, transitory or persistent? – directly determine whether, when, and how forcefully to respond. Box S1 examines this dimension more formally, drawing on Wang and Ng (2026) to show how uncertainty about the nature and persistence of shocks shapes optimal policy under high uncertainty.

⁷ The ELB constraint fundamentally changes optimal policy by creating a deflationary bias even when not currently constrained. European Central Bank research quantifies the tail risk induced by the ELB could cause inflation to undershoot the target by as much as 45 basis points at the economy’s risky steady state (Hills, Nakata, and Schmidt 2016). When the probability of hitting the ELB is positive, frontloading easing when approaching the bound becomes optimal because waiting may eliminate future policy space entirely.

Table 1.5. Policy Trade-Offs Under Different Types of Uncertainty

Trade-off	Under Structural Uncertainty	Under Disturbance Uncertainty	Under Radical Uncertainty
Look Through vs Respond	→ Context-dependent: Depends on measurement precision of underlying inflation; cross-check multiple indicators	→ Respond if persistent: Cannot look through persistent shocks even if supply-driven; expectation drift too costly	→ Respond when anchor at risk: Risk management favors response over accommodation when fundamental uncertainty about persistence
Act Early vs Wait	→ Preserve flexibility: Value of waiting to learn about parameters and transmission; gradualism allows assessment	→ Act if persistent: If shock shows persistence or expectations drift, option value of waiting collapses; transitory shocks allow patience	→ Insurance approach: Act to avoid worst outcomes (ELB, de-anchoring); cannot optimize so minimize regret
Gradualism vs Frontload	→ Gradualism: Learning-by-doing valuable when unsure about transmission strength; assess effects at each step	→ Frontload if persistent: Gradual response risks “behind curve” with persistent shocks; Brainard principle reverses	→ Frontload if tail risk: When facing catastrophic outcomes (deflation spiral, hyperinflation), frontload insurance action

Source: AMRO staff.

Policy Implications for ASEAN+3 Economies

For ASEAN+3 central banks, the framework developed above speaks directly to challenges that have become increasingly familiar in recent years. The region’s experience during the 2021–2023 inflation episode illustrated how all three types of uncertainty can operate simultaneously: disturbance uncertainty about whether price pressures were supply- or demand-driven and how long they would persist; structural uncertainty about whether pandemic-era disruptions had altered transmission channels or shifted underlying inflation dynamics; and, at least initially, radical uncertainty about how economies would respond to unprecedented policy interventions and supply-chain dislocations. Compared with other major regions, ASEAN+3 inflation proved more moderate and short-lived – an outcome that reflected both structural features (including high trade openness, competitive retail sectors, and relatively low service-sector wage pressures) and timely policy responses that combined monetary tightening with fiscal cushioning and supply-side management (AMRO 2025a). Yet even with this favorable outcome, the episode underscored how difficult real-time diagnosis can be when shocks overlap and evolve.

The macroeconomic diagnostic challenges are, if anything, likely to intensify. A confluence of structural forces is now reshaping the region – demographic aging, trade reconfiguration amid geoeconomic fragmentation, and rapid technological change – with each acting as a slow-moving supply shock whose effects on potential growth, inflation dynamics, and policy transmission are difficult to gauge in real time (AMRO 2024). Meanwhile, the region’s

high trade openness means that external disturbances – whether from abrupt shifts in trade policy, swings in commodity prices, or changes in global demand – transmit quickly and through multiple channels. For smaller, highly open economies, the shocks that matter most may not originate domestically at all, yet central banks must still judge their persistence and calibrate the appropriate response. And because monetary policy frameworks differ across the region, the same external shock can pose quite different diagnostic questions across different policy settings.

What this implies for macroeconomic surveillance is straightforward in principle but demanding in practice. The framework’s value lies in sharpening the diagnostic questions: Demand or supply? Transitory or persistent? How strong is transmission? But answering them requires granular, high-frequency monitoring; systematic cross-checks across data sources and models; and the capacity to update assessments as new information arrives. During the post-pandemic inflation episode, several regional central banks complemented conventional forecasting with alternative scenarios, sectoral intelligence, and real-time indicators of expectations and price-setting behavior – approaches that allowed them to adjust course as the balance of shocks shifted from supply to demand and as persistence became clearer. Embedding this kind of diagnostic discipline more broadly, and ensuring that analytical capacity keeps pace with the complexity of shocks the region faces, is among the more practical implications of the framework developed here.

Box S1:

When to Act – The Option Value of Waiting in Monetary Policy

Uncertainty about the nature and persistence of shocks is among the most pressing challenges for monetary policymakers. When a shock hits, should central banks act immediately to stabilize the economy, or wait until the picture clarifies to avoid costly policy mistakes? The tension is real: acting too early on a misdiagnosed shock risks destabilizing the economy, but waiting too long can allow inflation to embed or output losses to deepen. This box draws on Wang and Ng (2026) to examine these questions more formally. Using a stylized New Keynesian framework that embeds into the central bank’s optimization problem the option value of waiting, the analysis yields a set of threshold rules and practical insights for navigating disturbance uncertainty.

The analysis is based on a stylized two-period model in which uncertainty and the option value of waiting is embedded into the central bank’s optimization problem. The core idea is that under high uncertainty, waiting has value. The policymaker observes the first-period shock but remains uncertain about future shocks. It may act immediately – with its policy action influencing the next period – or delay action to obtain clearer information.

The essential result from the model is a threshold rule: when uncertainty is elevated, the option value of waiting rises, warranting a more cautious approach. However, if the economy is hit by a shock

that is sufficiently large or persistent, early action rather than delay becomes optimal. Extensions building on this threshold rule yield four key insights.

Insight 1: Uncertainty alters the optimal timing of policy and justifies a cautious approach. When the nature and persistence of shocks are unclear, the risk of policy miscalibration increases. Even a single additional period of data can materially improve the diagnosis of whether inflation pressures stem from demand strength or supply constraints. In such environments, waiting is not passive but an optimal strategy that preserves flexibility and reduces the likelihood of costly mistakes. This dynamic helps explain why many regional authorities have favored patience and stronger data dependence in recent months.

Insight 2: Persistent shocks reduce the value of waiting and warrant earlier action. When disturbances are likely to last, the cost of inaction rises as expected future deviations in inflation and output widen. The threshold for waiting therefore falls. A persistent negative demand shock calls for earlier easing to prevent a deeper slowdown, while a persistent supply shock may require earlier tightening to avoid embedding inflation pressures. Greater clarity regarding persistence thus shifts the balance away from caution and toward prompt, pre-emptive response.

Figure 1.35. Model-Implied Optimal Responses to Different Types of Shocks

	Transitory	Persistent
Negative Demand Shock	<p>Wait and See Risk of overreaction</p>	<p>Front-load Easing Avoids cumulative loss</p>
Negative Supply Shock	<p>Wait and See Risk of over-tightening, inflation self corrects</p>	<p>Gradual Tightening Need to balance policy trade-offs</p>

Source: AMRO staff.

This box was written by Haobin Wang and Yuhong Wu.

Insight 3: Effective-lower-bound (ELB) risk shifts optimal policy toward front-loaded easing. When interest rates are already low and downside risks dominate, the probability of reaching the ELB reduces future policy space. Waiting becomes more costly because the central bank may later be unable to ease as needed. These considerations also underscore the importance of monetary-fiscal coordination at the ELB: when monetary policy space is limited, credible and well-targeted fiscal support can help stabilize demand, reduce the burden on monetary policy, and lower the probability of being trapped at the ELB in the first place.

Insight 4: State-contingent communication is more credible and flexible under high uncertainty. Rigid forward guidance can be counterproductive when conditions change unexpectedly, forcing a policy reversal and risking credibility loss. By contrast, state-contingent communication – explaining how policy would respond under different scenarios – preserves both clarity and flexibility. This approach aligns with

the framework's emphasis on updating decisions as information improves, helping maintain credibility when the outlook is uncertain and the distribution of shocks is wide.

Taken together, these results point toward a nuanced view of caution under uncertainty. Waiting is not passivity – it is an optimal strategy when the nature of a shock remains unclear and the risk of policy miscalibration is high. But caution has limits. When shocks are clearly persistent, when expectations show signs of drifting, or when the effective lower bound constrains future action, the option value of waiting diminishes and the case for early, decisive response strengthens. The framework also underscores the value of state-contingent communication: rather than offering precise forecasts or rigid forward guidance, central banks can maintain credibility by explaining how policy would respond across a range of scenarios. This approach is particularly suited to an environment where the distribution of shocks is wide and the outlook uncertain.

Sharpening diagnosis is only part of the challenge. Acting effectively on those judgments requires institutional settings that give central banks the credibility and flexibility to make difficult choices. When expectations are well anchored, policymakers have room to look through temporary disturbances, move gradually as the picture clarifies, or preserve policy space for larger shocks – flexibility that erodes quickly once credibility weakens. Credibility, in turn, rests on a track record of delivering on mandates, on frameworks that markets and the public understand and trust, and on institutional independence that allow policy to be guided by evolving assessments of economic conditions rather than shorter-term considerations. In an environment where uncertainty is elevated and the appropriate response is often unclear, maintaining this credibility is not incidental to good policy – it is what makes good policy possible.

It is also worth recognizing that monetary policy, however well-calibrated, cannot address every dimension of macroeconomic adjustment. This is particularly true when shocks usually carry supply-side, distributional, or financial-stability dimensions. Fiscal policy can cushion

demand without stoking inflation; macroprudential tools can lean against financial imbalances that might otherwise constrain monetary space; foreign exchange intervention and capital flow management measures can help absorb external shocks in highly open economies; and structural policies can ease supply bottlenecks and improve transmission over time. The goal is not rigid coordination, but complementarity – ensuring that the broader policy toolkit supports the task of anchoring prices and stabilizing the economy, rather than leaving monetary policy to compensate for gaps elsewhere.

Uncertainty is not a problem to be solved, but a condition to be navigated. The framework developed in this special feature distinguishes structural, disturbance, and radical uncertainty but will not eliminate the difficulty of real-time policymaking. However, it can help clarify the kind of problem a central bank is facing and which considerations should weigh most heavily in response. In a region where shocks are frequent, overlapping, and often externally driven, that kind of diagnostic discipline – supported by credible institutions and a coherent policy mix – offers a sound basis for navigating the uncertainties ahead.