Monetary policy decision-making and communication under heightened uncertainty in Brazil

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Introduction

The effects of uncertainty on monetary policy decision-making and communication are pervasive. First, uncertainty poses significant challenges for the **conduct** of monetary policy. Given the multiple channels through which uncertainty can affect the economy (eg the "wait and see" approach (Leduc and Liu (2016)) and the cost of finance (Fernández-Villaverde et al (2011)), among many others) and the difficulty in assessing the dominant channels in real time, it can be prudent to act cautiously, allowing policymakers time to gather more evidence and expand their information set. This conservatism or gradualism is supported by many in the field, including Brainard (1967), Woodford (2003) and Bernanke (2004), among others. At the same time, however, monetary policy can benefit from guarding against risk scenarios and model uncertainty by adopting an approach that is robust to different outcomes. This may, at times, require a more vigorous response to shocks. Such a strategy is considered optimal in many settings, as shown by Giannoni (2002, 2007), Onatski and Stock (2002), Leitemo and Söderström (2008) and many others. The challenge for policymakers, then, is to strike a balance between these two approaches.

Second, uncertainty affects the **transmission** of monetary policy. Evidence for the United States and the euro area shows that uncertainty dampens the effects of monetary policy (Aastveit et al (2017), Falconio and Schumacher (2025)). Faced with high uncertainty, households and firms may prefer to postpone their consumption and investment decisions regardless of interest rate levels. This reduces their sensitivity to monetary policy. While this may prompt some central banks to act more aggressively in order to achieve the desired outcomes, some other policymakers may be tempted to refrain from adjusting monetary policy due to its reduced effectiveness. Ultimately, such decisions will be made on a case by case basis, but it is important not only to acknowledge that the transmission of monetary policy depends on the level of uncertainty but also to internalise it within models.

Finally, uncertainty adds complexity to **communication**. On the one hand, central bank communication is considered more important in times of heightened uncertainty as it can serve as a guide to help economic agents navigate turbulent conditions. On the other hand, communication becomes more difficult since the economic outlook and, therefore, the next steps are also less clear to the central bank. This is the trade-off central banks face: balancing information revelation with the risk of introducing noise. Compared with the previous points, there is limited empirical

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evidence on where central bankers currently stand on this trade-off and on whether they should communicate more or less, as well as what the content of this communication should be.

In this chapter, we briefly discuss the Brazilian experience in dealing with uncertainty. We start with an analysis of different indices of uncertainty and how different they are over time. Not only do different measures provide different results, but, as we elaborate in the following section, in periods of high uncertainty monetary policy has a lower impact on some of the transmission mechanisms. In this analysis, we also elaborate on how the Central Bank of Brazil (BCB) acknowledges, captures and conveys uncertainty in various aspects of monetary policy decision-making and communication.

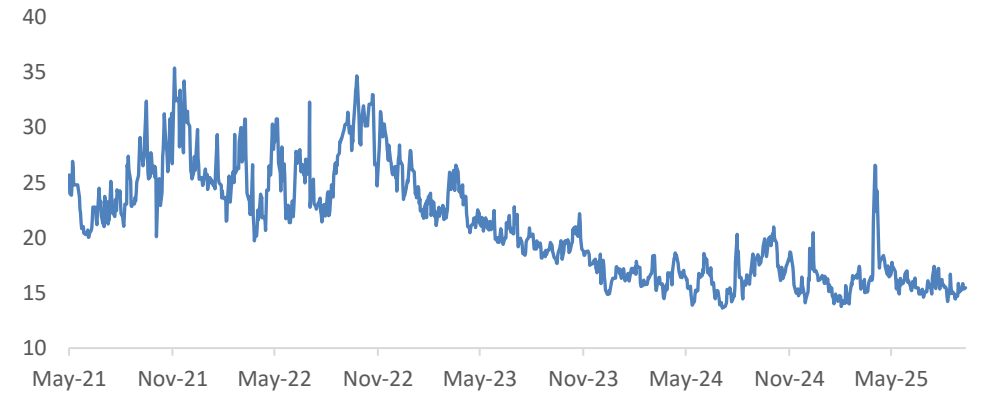
Acknowledging uncertainty

In this section, we examine various measures of uncertainty in Brazil, categorising them into market-based, news-based and econometric-based indices. We analyse each index individually and explore the cross-correlations among them. As highlighted by Ahir et al (2025), there remains considerable uncertainty about how uncertainty itself should be measured. Different indices capture distinct dimensions of uncertainty, which underscores the importance of monitoring a diverse set of indicators to gain a comprehensive understanding of economic sentiment and risk.

Market-based

The first measure is the S&P/B3 Ibovespa VIX (Graph 1). Like the US version, it measures the 30-day implied volatility in the stock market, reflecting investor sentiment about the expected volatility in the Brazilian benchmark equity index, the Bovespa index. What is different from the US VIX, however, is that it has been available for a very short span. According to this measure, uncertainty reached its highest level during the Covid-19 pandemic and, more recently, right after "Liberation Day" in April 2025.

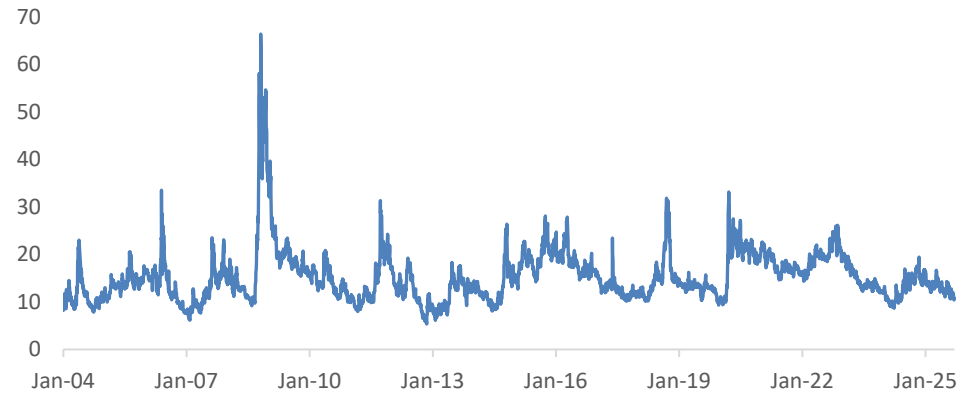
S&P/B3 Ibovespa VIX — Graph 1



This is why we also pay close attention to other market-based measures, for example, the implied volatility of the Brazilian real (relative to the US dollar), which is available for a longer period (Graph 2). According to this measure, uncertainty peaked

in October 2008 during the Great Financial Crisis, and the outbreak of the Covid-19 pandemic was only the third highest level. Based on this measure, recent uncertainty has been significantly lower than in past historical episodes.

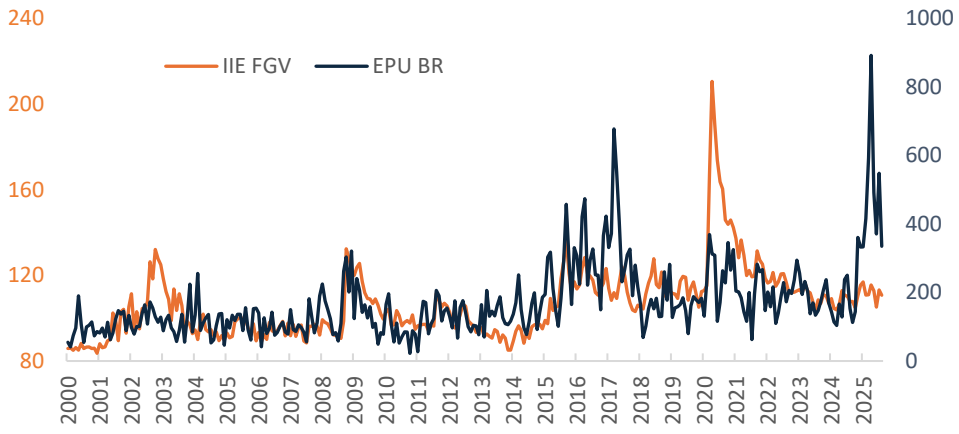
USDBRL one-month implied volatility ATM — Graph 2



News-based

In Brazil, there are also two news-based indices. The first is the Economic Policy Uncertainty (EPU) Index for Brazil, a text-based metric developed by Baker et al (2016) and replicated for Brazil. The authors count uncertainty terms in Folha de São Paulo from 1991 onwards. The second is the Economy Uncertainty Index (IIE-Br), which is constructed by Fundação Getúlio Vargas (FGV) and composed of two parts: (i) the media component, reflecting the incidence of terms related to uncertainty in articles published in six of Brazil's main newspapers, with a weight of 80%; and (ii) the expectation dispersion component, which is based on the dispersion of specialist forecasts for macroeconomic variables, with a weight of 20%.

News-based indices — Graph 3



Graph 3 shows that there are important differences in the behaviour of these series. They peak at different times, and the EPU for Brazil is much more volatile than the IIE-Br. The latter seems to better match the narrative account of the events throughout the years, whereas the EPU seems to overreact to some incidents. While

informative in some respects, the adequacy of measures based on news counts as proxies for uncertainty depends on how strongly they are correlated with this latent process as highlighted by Jurado et al (2015). Moreover, as Ahir et al (2025) point out, text-based measures can sometimes be excessive due to the intense media focus, diverging from the latent process they aim to capture.

Econometric-based

Such concerns about the use of news-based metrics to capture uncertainty led to the development of an alternative, econometric-based measure (Ferreira (2025)). This measure is constructed based on a large Bayesian vector autoregressive (BVAR) model with errors whose time-varying volatility is driven by a common unobservable component in line with Carriero et al (2018) and Chan (2020). The model is estimated with standard Bayesian methods, 12 lags and 16 publicly available monthly macroeconomic variables, starting in January 2003. The resulting common stochastic volatility (CSV) is the measure of uncertainty (Graph 4). Evidence for the United States (eg Carriero et al (2018), Alessandri and Mumtaz (2019)) shows that this measure tracks uncertainty effectively. Some well known episodes of high uncertainty coincide with spikes in the series, such as the Great Financial Crisis, periods of political instability and the Covid-19 pandemic.

Econometric-based measure of uncertainty (CSV) Graph 4

[1] To facilitate the comparison, the common stochastic volatility is rescaled so that its first year, 2004, has a mean of 100.

Uncertainty about uncertainty

These uncertainty measures can differ significantly during some periods, which is why it is important to track different measures as well as to understand why this may be so. This happens because they may be capturing different uncertainty drivers. Comprehending this is crucial to the conduct of monetary policy. VIX, IIE-BR and CSV always show pairwise correlation of 0.60 between them, while the EPU BR exhibits lower correlation with the other measures (Table 1).

Matrix of correlations Table 1

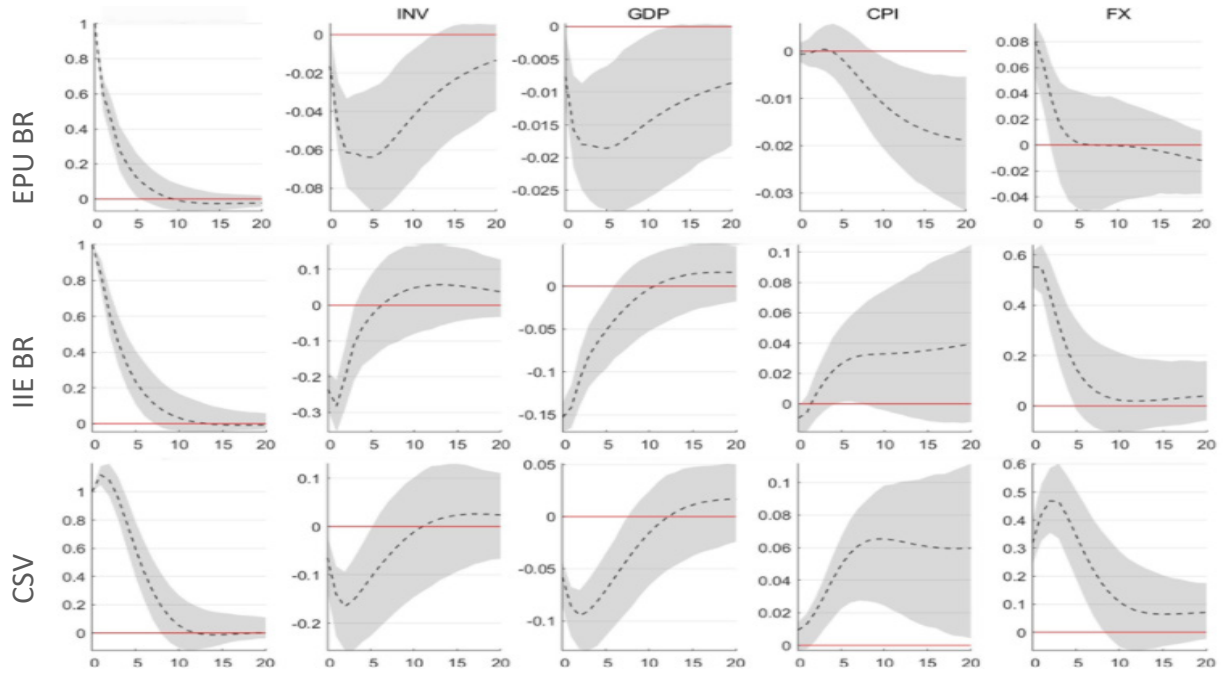
	VIX	FX Vol	IIE FGV	EPU BR	CSV
VIX	1	0.83	0.60	–0.24	0.66
FX Vol		1	0.53	0.26	0.53
IIE FGV			1	0.45	0.62
EPU BR				1	0.14
CSV					1

Most importantly, different measures of uncertainty lead to different impulse response functions (IRFs) for the CPI following a 1% uncertainty shock, as shown in Graph 5. Such IRFs are produced by a BVAR estimated with standard Minnesota NIW priors and prior tightness optimally set as in Ferreira et al (2025b) and Giannone et al (2015). The sample period starts in Q1 2004 and ends in Q2 2025, and estimation up to Q4 2019 produces similar results. Identification is recursive, with uncertainty ordered first.

The effects are similar when IIE BR or CSV are used, with uncertainty exerting an inflationary effect, consistent with firms' precautionary pricing behaviour (Fernández-Villaverde et al (2015), Mumtaz and Theodoridis (2015)). Nevertheless, in the BVAR with EPU BR, uncertainty has deflationary effects, acting as aggregate demand shocks (Leduc and Liu (2016), Basu and Bundick (2017)). The latter, however, should be interpreted with caution, as the peaks in the EPU BR time series around 2016–17 were followed by disinflation periods driven by other factors, which may be influencing the findings.[2]

[2] Interestingly, nothing particularly uncertain took place in M3 2017, the local maximum and the second global maximum of the time series.

Impulse response functions following a 1% uncertainty shock[1] Graph 5



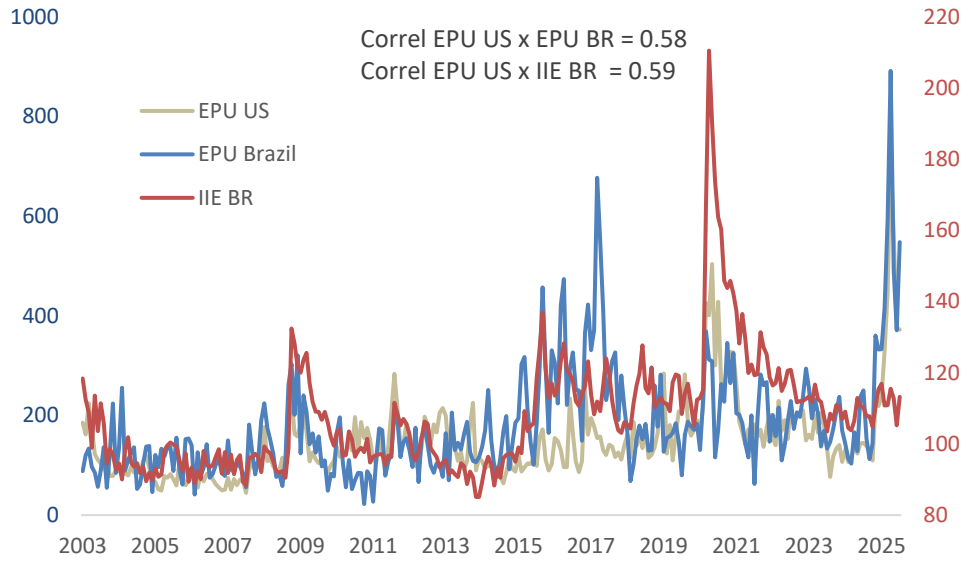
[1] The solid lines are the medians, while the shaded area represents the 68% error bands. Each row corresponds to a different measure.

Uncertainty across countries

Another feature worth highlighting is that, although uncertainty has recently reached historical highs in both advanced economies (AEs) and emerging market economies (EMEs), an analysis of previous years reveals an important difference between these two groups. While elevated uncertainty is a relatively recent phenomenon in the United States, Brazil's time series reveals multiple episodes of heightened uncertainty over the years (Graph 6). Consider the news-based EPU indices for Brazil and the United States and the IIE-BR. At times, the series co-move, suggesting an external source for the uncertainty in Brazil, such as global events like "Liberation Day".[3] At other times, however, the uncertainty in Brazil is driven by domestic factors, such as the period 2015–17, when political instability significantly affected the economy.

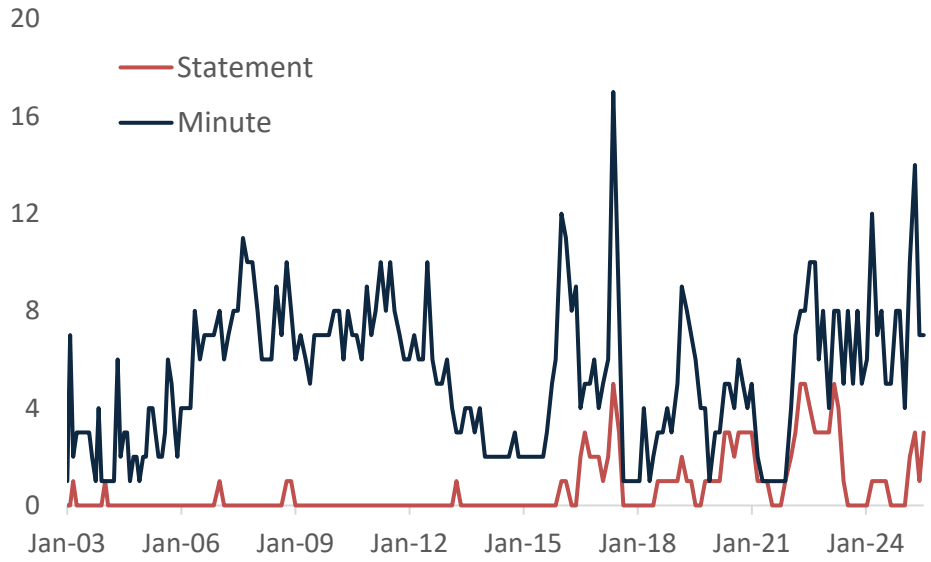
[3] Note, however, that this peak does not translate to IIE-BR with the same intensity, highlighting the importance of following alternative measures.

EPU for Brazil and the United States and IIE BR Graph 6



A natural corollary is that central banks in EMEs may be more accustomed to conducting policy under uncertain conditions. Indeed, Graph 7 shows the BCB has been acknowledging the presence of uncertainty in its official communication for some time. Appropriate tracking and acknowledgement of uncertainty are essential to incorporate it properly into the monetary policy framework.

Occurrence of the term "uncertainty" in the BCB's communication Graph 7



Incorporating and conveying uncertainty

In economic analysis

Since the Bernanke review of the Bank of England framework (Bernanke (2024)), much has been said and written about the importance of publishing alternative scenarios as a way to provide the public with information about the Monetary Policy Committee's policy reaction function and its views on the monetary transmission mechanism.

In times of high uncertainty, the complexity in the use of alternative scenarios increases even further. Not only are many scenarios possible, reducing the added value of each, but economic conditions may suddenly change, making these scenarios outdated in a matter of weeks or even days. This could generate the unintended result of compounding uncertainty. In fact, when messages become too complex, agents tend to oversimplify them, often resulting in an inaccurate interpretation (Blinder (2018)). Simplicity plays a key role in anchoring expectations. Simplicity regarding the framework with a clear mandate at every point in time helps with anchoring expectations and allowing the policy reaction to be more predictable.

In the case of Brazil, the central bank has usually emphasised the uncertainty around the reference scenario, even though it has provided alternative scenario forecasts during some periods. Coupled with the reference scenario, the BCB's Monetary Policy Committee publishes the balance of risks. There are basically two sources of risks considered. The first is related to the use, in the reference scenario, of conditioning assumptions based on the established governance, as is the case of the Selic rate, exchange rate, and oil price trajectories, which do not necessarily reflect the most likely scenario assessed by the Committee. The second stems from the assessment of the possibility of materialisation of certain events and their impacts on inflation, not considered as the most likely when building the reference scenario.

In the reaction function

As in advanced economies, heightened uncertainty reduces the sensitivity of the Brazilian economy to monetary policy. We formally assess this heterogeneity by estimating a threshold VAR (TVAR) model defined as:

$$Y_t = c_1 + \sum_{j=1}^{4} \beta_{1,j} Y_{t-j} + \mu_t, Var(\mu_t) = \Omega_1 \; if \; S_t \leq \; Y^*$$

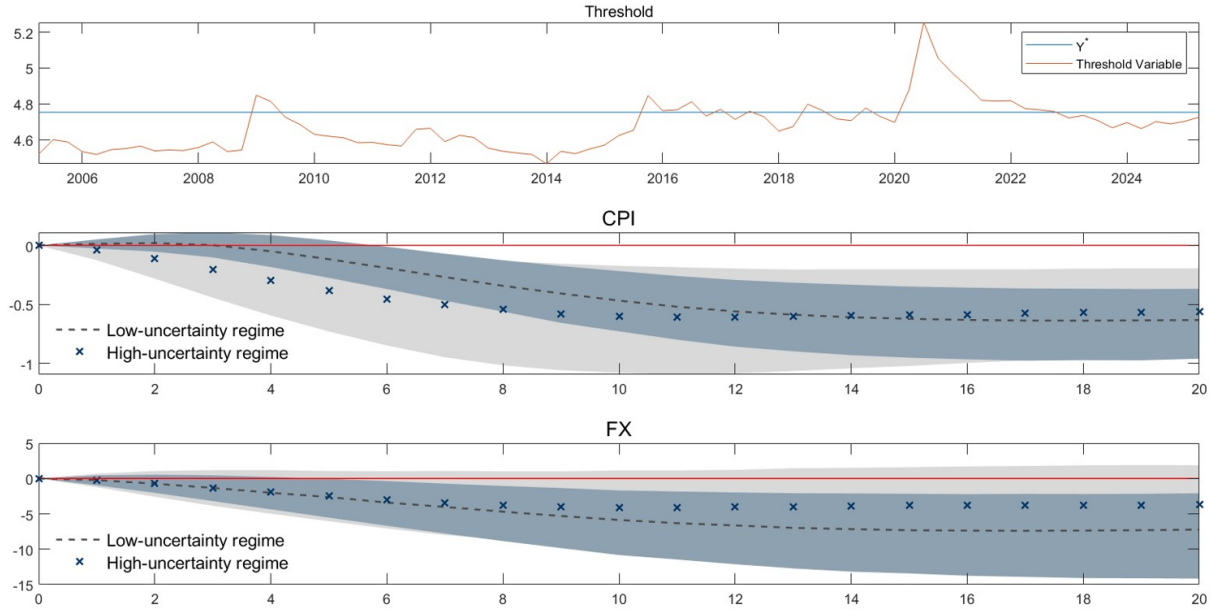
$$Y_t = c_2 + \sum_{j=1}^{4} \beta_{2,j} Y_{t-j} + \mu_t, Var(\mu_t) = \Omega_2 \; if \; S_t > \; Y^*$$

where Y_t is a matrix of five endogenous variables (uncertainty, GDP growth, CPI inflation, the exchange rate and the policy rate), $S_t = Y_{t-1,1}$ (ie the first lag of uncertainty) is the threshold variable and Y^* is the threshold level. The model is quarterly and estimated with a Gibbs sampling algorithm with a Metropolis-Hastings step to sample Y^*. The sample period starts in Q1 2004 and ends in Q2 2025. The monetary policy shock is identified recursively, with the policy rate ordered last.

Graph 8 presents the estimated threshold and the impulse response functions of the levels of CPI and the exchange rate to a 100 basis point monetary policy shock. The top panel plots the log of IIE-BR alongside the estimated threshold. The periods in which uncertainty exceeds the threshold, indicating a high-uncertainty regime, are consistent with the narrative evidence: the Great Financial Crisis, the 2015–16 political and economic crisis, and the Covid-19 pandemic.

The two bottom panels show the impulse response functions. Responses are weaker in terms of both the median estimates and the probability mass. This difference is particularly relevant for the exchange rate. In normal times, a 100 bp hike leads to a median BRL appreciation of 7.2%. However, during periods of elevated uncertainty, the effect is not statistically significant in the high posterior density (HPD) sense. Among other channels, this attenuation occurs because heightened uncertainty hampers capital inflows, reducing or even muting the impact of monetary tightening on the exchange rate. Such features must be taken into account in the conduct of monetary policy.

TVAR impulse response functions following a 100 basis point monetary policy shock[1] Graph 8



[1] Shaded areas denote 68% posterior coverage bands. The dashed line and the blue area represent the low-uncertainty regime. The line with cross markers and the grey area represent the high-uncertainty regime.

In fact, since EMEs are typically subject to larger and more frequent shocks and regimes may change more often, conducting monetary policy requires even greater caution and flexibility. Nevertheless, this approach must be balanced with the need to sometimes react more strongly to avoid inflationary risks and the de-anchoring of expectations. In fact, given their history of high inflation, some central banks in EMEs tend to respond more aggressively to inflationary pressures (Hofmann and Bogdanova (2012)).

The experience at the BCB has been marked by a careful balance between these two approaches. Several episodes in recent years provide examples of their application. In 2016–17, for instance, amid an uncertain disinflation process, the BCB initially eased policy cautiously and only accelerated rate cuts once it became clearer that inflation was on a firm downward path. In 2021, however, the strategy was different. As Brazil's economy recovered from the pandemic, inflation started to accelerate and the BCB faced uncertainty regarding the nature of the shock: temporary vs persistent. Nonetheless, the risk that inflation expectations could de-

anchor led the BCB to act pre-emptively and "front-load" aggressive interest rate hikes, raising the policy rate from 2% to above 7% within months.

In communication

Communication has become a central piece of monetary policy. Statements have become longer, minutes more analytical, speeches more frequent and, as predicted by Blinder (2018), transparency about monetary policy has increased over time. In practice, however, it is not entirely clear how much a committee should communicate, or what the content of this communication should be. Sharing views on the outlook and signalling future steps are important parts of modern monetary policy but can introduce noise.

In uncertain times, striking this delicate balance becomes even more challenging.[4] On the one hand, the more uncertain the outlook, the more guidance agents expect from the central bank. On the other hand, it is precisely during such periods that communication becomes more difficult, as the economic outlook and, therefore, the next steps are also less clear to the central bank. However, being transparent is important to coordinate expectations and also for accountability.

This is why the BCB has communicated that it may refrain from offering guidance in periods of heightened uncertainty, but that it should be transparent about the reaction function. Central bank models as well as their updates have also been published in the *Monetary Policy Report*.[5] By disclosing the framework that ensures that the decision-making process is conducted in a systematic and coherent way, the BCB adheres to best international practices in central banking and is continuously improving, and enhancing its credibility, especially in times of high uncertainty.

Conclusion

Uncertainty permeates every stage of monetary policy – from decision-making and transmission to communication. Acknowledging, measuring and transparently conveying uncertainty are essential for effective policy, especially in emerging markets where shocks are frequent and expectations can be fragile.

It is crucial that monetary policy does not become an additional source of uncertainty, and central bank communication plays a big part in achieving this. Clear, consistent and well calibrated communication helps anchor expectations, reduce noise and maintain the credibility of the monetary authority. At the same time, excessive or poorly targeted communication can inadvertently amplify uncertainty, especially when the outlook is already clouded.

Ultimately, the challenge for policymakers is to strike a careful balance: to act with both caution and flexibility, to be transparent without overcommitting, and to

[4] In related work, we have found that more communication of the Federal Reserve during high-uncertainty periods does not improve forecasts relative to a purely macro Bayesian direct forecast (Ferreira et al. (2025a)).

[5] See "Updating of small-scale semi-structural models" in the June 2024 *Inflation Report* and "Updating the model for the medium-term projection of administered prices" in the June 2025 *Monetary Policy Report* as two examples. The *Monetary Policy Report* replaced the *Inflation Report* in 2025.

provide guidance without creating confusion. As the global and domestic environment continues to evolve, this commitment to clarity and credibility will remain at the heart of effective monetary policy.

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