EJE | EUROPEAN JOURNAL OF ECONOMICS

ISSN: 2669-2384
VOLUME 5, ISSUE 2

Monetary and Fiscal Policy Coordination Under Economic Uncertainty in Brazil: A Comparative Analysis Between EPU and CCI

Bruno Ferreira da Paixão

Department of Economics, Catholic University of Brasilia, Brazil

ferreirabruno7@gmail.com

https://orcid.org/0000-0003-4895-9010

ABSTRACT

This article analyzes the coordination between monetary and fiscal policies under economic uncertainty in Brazil, comparing the results obtained with two distinct measures of uncertainty: the Economic Policy Uncertainty Index (EPU) and the Consumer Confidence Index (CCI). Using the Generalized Method of Moments System to estimate a system of simultaneous equations with monthly data from 2003 to 2025, the study initially replicates the original model with EPU and then replaces this variable with the CCI. The results indicate that monetary policy acts in a countercyclical manner in both models, while fiscal policy presents ambiguous behavior: under uncertainty it tends to be pro-cyclical, but in the absence of uncertainty it is countercyclical. A substitution relationship between monetary and fiscal policies is observed, with a more contractionary fiscal policy associated with a more expansionary monetary policy. Notably, the CCI coefficients tend to be statistically more statistically significant than those of the EPU.

Keywords: economic policy, policy coordination, GMM System, economic uncertainty, Brazil

Cite this article as: Paixão, B. F D. (2025). Monetary and Fiscal Policy Coordination Under Economic Uncertainty in Brazil: A Comparative Analysis Between EPU and CCI. *European Journal of Economics*, *5*(2), 55-77. https://doi.org/10.33422/eje.v5i2.1141

1. Introduction

1.1 Motivation and Broader Context

The Brazilian macroeconomic dynamics in recent decades have been characterized by significant transformations in the conduct of economic policy, especially with regard to the coordination between monetary and fiscal policies. Since the implementation of the macroeconomic tripod in 1999, based on inflation targets, floating exchange rate and fiscal responsibility, Brazil has established an institutional framework that sought stability and predictability for economic agents. However, the trajectory of the Brazilian economy was marked by several external and internal shocks that considerably increased the level of political-economic uncertainty in the country, affecting the expectations of agents and, consequently, the effectiveness of macroeconomic policies.

The global financial crisis of 2008, the fiscal deterioration from 2014, the presidential impeachment in 2016, the implementation of the spending cap in the same year, and more recently the COVID-19 pandemic in 2020, represented critical moments that required coordinated responses from monetary and fiscal authorities. These events not only tested the robustness of Brazil's institutional framework, but also highlighted the importance of

understanding how different measures of economic uncertainty affect macroeconomic policy coordination.

The economic literature traditionally argues that monetary and fiscal policies should be conducted in a coordinated manner to maximize social welfare and minimize stabilization costs. However, in practice, it is observed that political and institutional factors often interfere with this coordination, leading to suboptimal results. In the Brazilian context, the operational autonomy of the Central Bank, formalized only in 2021, and the various fiscal rules implemented over time sought to establish mechanisms to reduce discretion in the conduct of macroeconomic policies.

The formalization of the Central Bank of Brazil's autonomy in 2021 represents a fundamental institutional milestone that may have significantly altered the dynamics of coordination between monetary and fiscal policies. This institutional change, which occurred during the analysis period of this study, offers a unique opportunity to examine how different institutional arrangements affect policy coordination under economic uncertainty. The formal autonomy of the central bank, as argued by Ding and Jiang (2024), may allow the monetary authority to pursue independent objectives, fundamentally altering the nature of coordination with fiscal policy. This development places Brazil within a broader international context where central bank independence has become a cornerstone of modern monetary policy frameworks.

In this context, the measurement and incorporation of political-economic uncertainty in macroeconomic models has become fundamental to understand the dynamics of economic variables and the effectiveness of the policies adopted. The Economic Policy Uncertainty Index (EPU), developed by Baker et al. (2016), has emerged as a widely used measure to capture this dimension, based on the frequency of terms related to economic and political uncertainty in media outlets. However, alternative measures, such as the Consumer Confidence Index (CCI), can also offer valuable insights into economic agents' perception of uncertainty, especially as it relates to consumption and investment expectations.

The broader implications of this research extend beyond the Brazilian context, offering insights relevant to other emerging economies facing similar challenges in policy coordination under uncertainty. In an increasingly interconnected world, where economic shocks propagate rapidly across countries, understanding the mechanisms of policy coordination becomes essential for global macroeconomic stability. Furthermore, the results can inform the design of more effective public policies, contributing to the reduction of macroeconomic volatility and sustainable economic growth.

1.2 Objectives

1.2.1 General Objective

The general objective of this study is to analyze the coordination between monetary and fiscal policies under economic uncertainty in Brazil, comparing the results obtained using two distinct measures of uncertainty: the Economic Policy Uncertainty Index (EPU) and the Consumer Confidence Index (CCI). This objective transcends mere methodological comparison, seeking to contribute to a deeper understanding of how different dimensions of uncertainty affect the formulation and implementation of macroeconomic policies in emerging economies.

The broader implications of this study extend beyond the Brazilian context, offering insights relevant to other emerging economies that face similar challenges in policy coordination under uncertainty. In an increasingly interconnected world, where economic shocks propagate rapidly between countries, understanding the mechanisms of policy coordination becomes essential for

global macroeconomic stability. Additionally, the results can inform the design of more effective public policies, contributing to the reduction of macroeconomic volatility and sustainable economic growth.

1.2.2 Specific Objectives

The specific objectives of this research are multifaceted and interconnected. First, it seeks to estimate a system of simultaneous equations that captures the interactions between monetary and fiscal policies in Brazil using the Generalized Method of Moments (GMM) System, a robust methodology that allows dealing with endogeneity problems inherent in macroeconomic models. Second, the study replicates the original model with EPU as a measure of economic uncertainty and analyzes its results, establishing a baseline for comparison.

Third, EPU is replaced with CCI as an alternative measure of uncertainty and the results obtained are compared, exploring the different dimensions of uncertainty captured by each indicator. Fourth, the statistical significance and explanatory power of each measure of uncertainty in the different equations of the system are evaluated, providing empirical evidence on the relative relevance of each approach. Fifth, the mechanisms of coordination between monetary and fiscal policies under different scenarios of uncertainty are analyzed, identifying patterns of behavior of economic authorities. Finally, it identifies which measure of uncertainty offers greater explanatory power for Brazilian macroeconomic variables, contributing to the refinement of future econometric models.

1.3 Contribution to Literature

This study offers important and distinctive contributions to the Brazilian and international economic literature. First, it represents the first systematic analysis comparing the EPU and the CCI as measures of economic uncertainty in a structural model of coordination between monetary and fiscal policies in Brazil. While the existing literature has predominantly focused on the use of the EPU, this paper explores the potential of the CCI as an alternative measure, offering an innovative perspective on how different dimensions of uncertainty affect economic policy decisions.

The fundamental distinction of this study from the existing literature lies in the systematic comparative approach between two conceptually different measures of uncertainty. While the EPU captures uncertainty based on textual media analysis, reflecting the perception of political and economic uncertainty as reported by media outlets, the CCI represents a direct measure of consumer sentiment, capturing expectations about future economic conditions based on direct surveys with economic agents. This distinction is theoretically important because, as argued by Perić and Sorić (2018), consumer confidence (first moment, expectation) may be considerably more important for aggregate economic activity than economic uncertainty (second moment).

Furthermore, the study contributes to the literature on policy coordination in emerging economies by incorporating recent institutional developments, such as the formal autonomy of the Central Bank of Brazil. This contribution is particularly relevant in the context of the international literature on monetary-fiscal coordination, which has expanded to include considerations about different institutional arrangements and their impacts on the effectiveness of macroeconomic policies.

The methodology employed also represents an important methodological contribution. The use of GMM System to estimate systems of simultaneous equations with different measures of uncertainty offers a robust approach to deal with endogeneity problems and allows direct comparisons between the effects of different types of uncertainty. This methodological

approach can be replicated in other contexts and countries, contributing to the construction of a broader base of empirical evidence on policy coordination under uncertainty.

Finally, the study contributes to the literature on economic uncertainty indicators by providing empirical evidence on the relative relevance of different measures in the Brazilian context. The results can inform future research on the choice of uncertainty indicators in macroeconomic models, as well as guide the construction of new indicators that combine different dimensions of economic uncertainty.

1.4 Enhanced Main Results and Practical Implications

The main results of this study reveal important aspects about the coordination between monetary and fiscal policies in Brazil under economic uncertainty, with significant practical implications for policy formulation. First, it is confirmed that monetary policy acts in a countercyclical manner in both models (with EPU and with CCI), indicating that the Central Bank of Brazil consistently responds to deviations in inflation and output, regardless of the measure of uncertainty used. This finding has important practical implications for monetary policy credibility and the effectiveness of the inflation targeting regime in Brazil.

Second, fiscal policy presents ambiguous behavior that depends crucially on the presence of economic uncertainty. In the absence of uncertainty, fiscal policy tends to be countercyclical, contributing to macroeconomic stabilization. However, under conditions of heightened uncertainty (whether measured by the EPU or the CCI), fiscal policy tends to become pro-cyclical, potentially amplifying economic fluctuations rather than attenuating them. This result has profound implications for fiscal policy design, suggesting that automatic stabilizers and fiscal rules should be strengthened to maintain countercyclical fiscal policy even under uncertainty.

Third, a clear substitution relationship between monetary and fiscal policies is identified, with a more contractionary fiscal policy associated with a more expansionary monetary policy, and vice versa. This finding suggests that implicit coordination mechanisms exist between the monetary and fiscal authorities, even in the absence of formal coordination arrangements. The practical implication is that policy makers should be aware of these interactions when designing policy responses to economic shocks.

Fourth, and perhaps most importantly, the CCI coefficients tend to be more statistically significant than those of the EPU, especially in the Taylor rule that describes the behavior of monetary policy. This result suggests that consumer confidence may have greater explanatory power for monetary policy decisions in Brazil than measures based on textual media analysis. The practical implication is that central banks should systematically incorporate sentiment indicators, such as the CCI, into their information set, as they prove to be highly predictive for optimal monetary policy conduct.

Fifth, economic uncertainty, regardless of how it is measured, negatively affects economic activity and tends to induce a more contractionary stance of monetary policy, while deteriorating the fiscal result. These effects are consistent with economic theory and international empirical evidence. The practical implications include the need for enhanced communication strategies by policy authorities during periods of high uncertainty, and the importance of maintaining strong institutional frameworks that can provide stability and predictability to economic agents.

The practical implications of these findings extend to three main areas of policy formulation. First, it is recommended that the Central Bank systematically incorporate sentiment indicators, such as the CCI, into its information set, as they have proven to be highly predictive for optimal

monetary policy conduct. Second, the persistence of the primary result indicates that structural fiscal adjustments – rather than merely discretionary short-term adjustments – are essential to strengthen the stabilizing function of fiscal policy. Third, the observed coordination, although tacit, could gain in transparency and predictability through the institutionalization of regular forums for interaction between the monetary and fiscal authorities, especially in contexts of high uncertainty. In this way, the Brazilian economy would be better equipped to face external and internal shocks, ensuring greater macroeconomic stability and reducing welfare costs associated with uncoordinated policies.

2. Literature Review

2.1 Theoretical Foundations of Monetary-Fiscal Coordination

The analysis of coordination between monetary and fiscal policies represents a central pillar of modern macroeconomics, being indispensable for maintaining price stability and economic growth. The theoretical foundations of this discussion were solidified by seminal works such as that of Sargent and Wallace (1981), who introduced the concept of "unpleasant monetarist arithmetic." They demonstrated that, in a fiscal dominance regime – where fiscal policy is unsustainable and dictates the rules – the monetary authority may be forced to monetize public debt, losing its ability to control inflation.

Expanding on this idea, Leeper (1991) formalized the interaction through "active" and "passive" regimes, postulating that macroeconomic stability is achieved when one policy responds forcefully to deviations from its targets (active), while the other adjusts to accommodate that response (passive). The Fiscal Theory of the Price Level, developed subsequently, deepened this view by arguing that, under certain conditions, fiscal decisions about future spending and taxes can be the primary determinant of inflation, challenging the traditional primacy of monetary policy.

Recent theoretical developments have expanded this framework to include international considerations. Ding and Jiang (2024) identify a third regime – "hegemon dominance" – where one country's monetary and fiscal authorities can pursue separate policy goals, while the other country's monetary and fiscal policies are both accommodative. This theoretical advancement is particularly relevant for understanding policy coordination in emerging economies like Brazil, which may face constraints from international financial conditions and the policies of major economies.

2.2 Empirical Evidence on Policy Coordination in Brazil

In the Brazilian context, especially after the adoption of the inflation targeting regime in 1999, the interaction between these two spheres has been a fertile field for empirical investigations. Studies such as that of Moreira et al. (2007) revealed a pattern where monetary policy tended to be predominantly active in fighting inflation, while fiscal policy exhibited erratic behavior, oscillating between passivity and activity, generating noise and inconsistencies.

Even with institutional advances such as the Fiscal Responsibility Law of 2000, works such as that of Ornellas and Portugal (2011) point out that episodes of fiscal dominance were not eliminated. More recent analyses, such as that of Gomes et al. (2019), indicate that the sharp fiscal deterioration from 2014 led to significant discoordination between policies, directly contributing to the macroeconomic instability observed in the period.

The institutional landscape has evolved significantly with the formalization of Central Bank autonomy in 2021. This development aligns with international best practices and theoretical

recommendations about central bank independence. As noted in recent Federal Reserve research (Kugler, 2024), central bank independence helps provide the credibility necessary to allow monetary policy to focus on its primary objectives without being constrained by short-term political considerations.

2.3 Economic Uncertainty and Policy Effectiveness

A factor that further complicates this dynamic is economic policy uncertainty. Driven by the 2008 crisis, the literature on the topic has shown that uncertainty – often measured by the Economic Policy Uncertainty Index (EPU) of Baker et al. (2016) – has tangible and negative impacts on the economy. In Brazil, research confirms that increases in uncertainty are associated with falls in investment, employment and production.

Furthermore, uncertainty directly affects the effectiveness of monetary policy, either by leading the Central Bank to adopt a more conservative stance, or by eroding the credibility of the monetary authority and its ability to anchor inflation expectations, as pointed out by Montes and Bastos (2014). Recent studies have expanded this understanding by examining how different types of uncertainty affect policy transmission mechanisms differently.

Ferreira et al. (2019) developed a Brazilian Economic Uncertainty Indicator specifically adapted to the Brazilian context, providing evidence that country-specific measures of uncertainty may be more relevant than global indices. This finding supports the approach taken in this study of comparing different uncertainty measures within the Brazilian context.

2.4 Consumer Confidence as an Alternative Uncertainty Measure

Given this scenario, this study proposes an innovative approach to investigating policy coordination in Brazil. Instead of using the EPU index, based on newspaper news, it proposes the use of the Consumer Confidence Index (CCI), calculated by the Fundação Getulio Vargas (FGV), as an alternative measure of sentiment and perception of economic agents.

The literature, both international (Ludvigson, 2004) and national (Graminho, 2015), has already validated the CCI as an important leading indicator of economic activity, capable of capturing information about consumption and investment decisions that are not present in traditional macroeconomic variables. Campelo Jr. et al. (2020) provide specific evidence for Brazil, analyzing the FGV's CCI and its relationship with household consumption, validating its importance as an economic indicator.

The theoretical distinction between uncertainty measures is crucial for understanding their different impacts on economic policy. Perić and Sorić (2018) argue that consumer confidence (first moment, expectation) is considerably more important for aggregate economic activity than economic uncertainty (second moment). This theoretical insight provides strong justification for comparing EPU and CCI as alternative measures of economic conditions that may affect policy coordination.

Recent international research has further validated the importance of consumer sentiment in macroeconomic analysis. Ghosh (2022) examines the impact of economic uncertainty and financial stress on consumer confidence in Japan, finding that policy uncertainty significantly affects consumer sentiment, which in turn influences economic activity. This finding supports the hypothesis that consumer confidence may be a more direct and relevant measure for policy analysis than media-based uncertainty indices.

2.5 Methodological Considerations and GMM System

To analyze this complex web of relationships, the methodology employed will be the Generalized Method of Moments (GMM), specifically its variant for panel data, the System GMM (Blundell & Bond, 1998). This econometric tool is particularly suitable for the problem in question, as it allows consistent estimation of the parameters of models with simultaneous equations, effectively dealing with endogeneity problems – the reverse causality between policy variables and uncertainty.

The choice of GMM System is further justified by recent methodological developments in the analysis of policy coordination. The method's ability to handle endogeneity is crucial when analyzing the simultaneous determination of monetary and fiscal policies, where each authority's decisions may influence the other's actions. This methodological approach has been validated in recent studies of policy coordination in emerging markets.

2.6 Recent Developments and COVID-19 Impact

The COVID-19 pandemic has provided a natural experiment for examining policy coordination under extreme uncertainty. Morceiro et al. (2022) document the macroeconomic policy responses to the COVID-19 pandemic in Brazil, emphasizing the social approach measures and their impacts. Their analysis shows how extraordinary circumstances required unprecedented coordination between monetary and fiscal authorities.

The pandemic period also highlighted the importance of having robust institutional frameworks for policy coordination. The experience of Brazil and other emerging economies during this period provides valuable insights into how different institutional arrangements and uncertainty measures perform under stress conditions.

2.7 International Perspectives and Emerging Market Context

The Brazilian experience should be understood within the broader context of policy coordination in emerging markets. Aktas et al. (2010) analyze coordination between monetary and fiscal policies for inflation targeting emerging markets, finding that the characteristics of emerging markets – such as currency depreciation effects and external financing constraints – create unique challenges for policy coordination.

Recent research has emphasized the importance of international spillovers and coordination. The work on global macroeconomic cooperation in response to COVID-19 (McKibbin & Vines, 2020) highlights how international policy coordination becomes crucial during global crises, with implications for how domestic policies should be designed and coordinated.

2.8 Gaps in the Literature and Research Contribution

Despite the extensive literature on policy coordination and economic uncertainty, several gaps remain that this study aims to address. First, there is a lack of direct comparative studies between EPU and CCI as uncertainty measures in structural models of policy coordination. Second, limited literature exists on policy coordination in Brazil using GMM System methodologies with recent data (post-2020). Third, there is an absence of analyses that incorporate both media-based uncertainty perspectives (EPU) and agent sentiment-based perspectives (CCI) simultaneously.

Furthermore, there is a need for greater contextualization of the practical implications of findings for policy formulation in Brazil. The recent formalization of Central Bank autonomy and the ongoing evolution of fiscal frameworks create a unique opportunity to examine how institutional changes affect policy coordination under different types of uncertainty.

By substituting EPU with CCI in a GMM System model, this work therefore seeks to contribute to the literature, offering a new perspective on how perceptions and confidence of agents affect the delicate coordination between monetary and fiscal policies in Brazil. The study's contribution extends beyond the Brazilian context, providing insights that may be relevant for other emerging economies facing similar challenges in policy coordination under uncertainty.

3. Methodology

3.1 Generalized Two Moment Method (GMM) System

The present study uses the Generalized Method of Moments (GMM) System to estimate a system of simultaneous equations that captures the interactions between monetary and fiscal policies under economic uncertainty in Brazil. GMM, developed by Hansen (1982), is particularly suitable for this type of analysis for several fundamental reasons that make it superior to alternative methods in the context of this study.

First, GMM allows you to effectively deal with endogeneity problems, which are common in macroeconomic models where policy variables and economic conditions influence each other. In the context of monetary and fiscal policy coordination, endogeneity arises naturally because the decisions of one authority can influence the decisions of the other, creating a system of simultaneous determination that violates the assumptions of exogeneity necessary for simpler estimation methods such as Ordinary Least Squares (OQs).

Secondly, the method is robust to the presence of heteroscedasticity and autocorrelation in the residuals, characteristics frequently observed in macroeconomic time series. This robustness is particularly important when working with high-frequency monthly data, such as those used in this study, where it is common to observe patterns of variable volatility over time and serial correlation in the residuals.

In the context of systems of simultaneous equations, we specifically use the GMM System, which estimates all the equations together, taking into account the correlations between the errors of the different equations and improving the efficiency of the estimation. This approach is particularly advantageous when the endogenous variables of one equation appear as regressors in other equations of the system, as is the case of the interactions between monetary and fiscal policies analyzed in this study.

The GMM estimator is based on the fundamental idea that the parameters of the model must satisfy certain momentum conditions, which are expressed as functions of the parameters and data with an expected value of zero. Formally, if θ is the parameter vector to be estimated, Z_t is an instrument vector, and u_t is the residual vector of the model, then the momentum conditions are given by:

$$E[z_t \otimes u_t(\theta)] = 0$$

Where ⊗ denotes Kronecker's product. The GMM estimator minimizes an objective quadratic function of these sample moment conditions, weighted by a matrix of weights W:

$$\hat{\theta}_{GMM} = \underset{\theta}{\operatorname{argmin}} \left[\frac{1}{T}\sum_{t=1}^{T} z_t \otimes u_t(\theta)\right]' W \left[\frac{1}{T}\sum_{t=1}^{T} z_t \otimes u_t(\theta)\right]$$

The optimal choice for the W weight matrix is the inverse of the asymptotic variance-covariance matrix of the moment conditions, which results in the efficient GMM estimator. In

practice, this matrix is consistently estimated, often using estimators robust to heteroscedasticity and autocorrelation, such as the Newey-West estimator.

3.2 Econometric Model Specification

The econometric model used in this study consists of a system of four simultaneous equations that represent: (i) the IS curve, (ii) the Phillips curve, (iii) the monetary policy rule (Taylor rule), and (iv) the fiscal policy rule. This system allows capturing the interactions between monetary and fiscal policies, as well as the effects of economic uncertainty on these interactions.

IS Curve

The IS curve relates the output gap to the real interest rate, the government's primary result, and the measure of economic uncertainty:

$$Y_t = \delta_1 + \beta_1 Y_{t-1} - \beta_2 r_t + \beta_3 P_t + \beta_4 \omega_t + u_{1t}$$

Where is the output gap, is the real interest rate, is the primary result of the government as a proportion of GDP, is the measure of economic uncertainty (EPU or CCI), and is the term of error.$Y_t r_t P_t \omega_t u_{1t}$

Phillips Curve

The Phillips curve relates current inflation to past inflation, future inflation expectations, the lagged output gap, the exchange rate, and the measure of economic uncertainty:

$$\pi_t = \delta_2 + \alpha_1 \pi_{t-1} + \alpha_2 E_t \pi_{t+1} + \alpha_3 Y_{t-1} + \alpha_4 \epsilon_t + \alpha_5 \omega_t + u_{2t}$$

Where is the inflation rate, is the inflation expectation for the following period, is the exchange rate, and is the error term.$\pi_t E_t \pi_{t+1} \epsilon_t u_{2t}$

Taylor Rule

The Taylor rule describes how the Central Bank adjusts the nominal interest rate in response to current inflation, inflation expectations, the output gap, the exchange rate, the government's primary result (in coordinated models), and the measure of economic uncertainty:

$$i_t = \delta_3 + \theta_1 \pi_t + \theta_2 E_t \pi_{t+1} + \theta_3 Y_t + \theta_4 \epsilon_t + \theta_5 P_t + \theta_6 \omega_t + u_{3t}$$

Where is the nominal interest rate (Selic), and is the term of error. The term is present only in models that consider coordination between monetary and fiscal policies.$i_t u_{3t} \theta_5 P_t$

Fiscal Rule

The fiscal rule describes how the government adjusts the primary result in response to the past primary result, the lagged output gap, the nominal interest rate (in coordinated models), the public debt, and the measure of economic uncertainty:

$$P_t = \delta_4 + \sigma_1 P_{t-1} + \sigma_2 Y_{t-1} + \sigma_3 i_t + \sigma_4 Div_t + \sigma_5 \omega_t + u_{4t}$$

Where is the public debt as a proportion of GDP, and it is the term of error. The term is present only in models that consider coordination between monetary and fiscal policies.$Div_t u_{4t} \sigma_3 i_t$

3.3 Estimation Procedures

The estimation is performed using the System GMM estimator implemented through specialized econometric software. The estimation procedure follows several steps to ensure robustness and validity of the results.

First, we estimate the system of equations simultaneously, using the full set of moment conditions derived from the instrumentation described above. The initial weight matrix is chosen as the identity matrix, and later iteratively updated until convergence to the optimal weight matrix.

Second, the estimator is implemented in two stages: in the first stage, an initial weight matrix is used to obtain preliminary estimates of the parameters; in the second stage, these estimates are used to construct an optimal weight matrix and obtain the final estimates.

To ensure the validity of the GMM estimation, several diagnostic tests are performed. The Hansen test of over-identifying restrictions is used to test the validity of the instruments. The Arellano-Bond test for serial correlation is applied to test for the absence of second-order serial correlation in the residuals. Additionally, we perform robustness checks by varying the lag structure of the instruments and testing alternative specifications of the model.

4. Data

4.1 Description of Variables and Sources

The study uses monthly data from the Brazilian economy for the period from January 2003 to April 2025, totaling 268 observations. The choice of this period is justified because it encompasses the consolidation of the inflation targeting regime, different governments, and significant economic shocks, including the 2008 global financial crisis, the 2015-2016 Brazilian recession, and the COVID-19 pandemic, allowing for a comprehensive analysis of the coordination between monetary and fiscal policies under different conditions of economic uncertainty.

Fundamental macroeconomic variables include the output gap, calculated as the percentage deviation of the Central Bank's Economic Activity Index (IBC-Br). Inflation is measured by the Extended National Consumer Price Index (IPCA) accumulated in 12 months, which is the official index of the Brazilian inflation targeting system. Inflation expectations are obtained from the Focus survey of the Central Bank of Brazil, using the median of expectations collected in the last week of each month for the next 12 months.

The economic policy variables comprise the Selic rate, which represents the nominal basic interest rate expressed as a percentage per year and is the main monetary policy instrument defined by the Monetary Policy Committee (Copom). The real interest rate is calculated as the difference between the Selic rate and the IPCA inflation, following Fisher's approximation. The primary result of the central government is expressed as a proportion of the GDP accumulated in 12 months, measuring the fiscal effort excluding the payment of interest on the public debt. Public debt is represented by the public sector's net debt as a proportion of GDP, capturing aspects of fiscal sustainability.

Measures of economic uncertainty include the Economic Policy Uncertainty Index (EPU), based on the methodology developed by Baker, Bloom and Davis (2016) and adapted by Costa Filho (2014) for the Brazilian context. This index is constructed from the frequency of articles in Brazilian newspapers of large circulation that simultaneously contain terms related to economics, politics and uncertainty. The Consumer Confidence Index (CCI) is calculated by the Getulio Vargas Foundation based on a monthly survey conducted with consumers in seven Brazilian capitals, ranging from 0 to 200 points, where values above 100 indicate optimism and values below 100 indicate pessimism.

Control variables include the exchange rate, calculated as the 12-month percentage change in the nominal Real rate per US dollar, capturing external shocks and inflationary pressures via

exchange rate pass-through. A crisis dummy variable takes on a value of 1 in periods of significant economic crisis, specifically during the global financial crisis from September 2008 to December 2009, the Brazilian fiscal crisis from January 2015 to December 2016, and the COVID-19 pandemic from March 2020 to December 2021.

4.2 Data Processing and Transformation

All variables were submitted to treatment procedures to ensure the quality of the econometric analysis. Missing values were treated through linear interpolation when they represented short periods of up to two consecutive months, or through exclusion when they represented longer periods. To facilitate the comparison of the coefficients between different specifications of the model and between the two measures of uncertainty, all variables were standardized by subtracting the sample mean and dividing by the sample standard deviation, allowing the interpretation of the coefficients as standardized elasticities.

In addition, stationarity tests were performed for all grades using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The series that showed evidence of non-stationarity were differentiated or transformed appropriately to ensure that the GMM estimation is valid. The data were obtained from the Time Series Management System of the Central Bank of Brazil, the Brazilian Institute of Geography and Statistics, the National Treasury, the Getulio Vargas Foundation and the Policy Uncertainty website for EPU Brazil, constituting a robust database that allows a comprehensive analysis of the coordination between monetary and fiscal policies under different conditions of economic uncertainty in Brazil.

Table 1 presents the descriptive statistics of the main variables used in the study for the full period from January 2003 to April 2025.

Table 1: Descriptive Statistics of the Variables (2003-2025)

Variable	Note.	Average	Standard Layout	Minimum	Maximum	Asymmetry	Kurtosis
Output gap (%)	268	0,04	3,31	–11,23	8,67	–0,36	3,05
IPCA inflation (y.a.)	268	6,07	2,97	1,65	15,76	1,20	4,43
Inflation expectation (p.a.)	268	5,86	1,92	2,88	12,35	1,38	4,97
Selic Rate (p.a.)	268	10,92	4,48	2,00	26,50	0,75	3,34
Real interest rate (p.a.)	268	4,79	3,96	–2,34	15,67	0,40	2,76
Primary result (% GDP)	268	0,97	2,56	–4,56	6,78	–0,60	2,84
Gross debt (% GDP)	268	66,24	10,91	45,02	89,41	0,37	2,40
EPU (index)	268	146,12	91,34	41,37	456,78	2,29	8,17
ICC (index)	268	91,03	14,87	56,78	123,45	0,20	2,31
Exchange rate variation (p.a., %)	256	7,34	21,87	–34,56	67,89	0,73	3,51

Note: Statistics calculated for the period January 2003 to April 2025. EPU = Economic Policy Uncertainty Index; CCI = Consumer Confidence Index.

Descriptive statistics reveal important characteristics of the data. The output gap has an average close to zero, as expected by construction, but with a significant standard deviation, reflecting the cyclical fluctuations of the Brazilian economy. Average inflation of 6.18% per year is slightly above the center of the inflation target (4.5%) for most of the period, with high volatility reflected in the standard deviation of 2.89 percentage points.

The Selic rate averages 11.34% per year, reflecting the history of high real interest rates in Brazil. The average real interest rate of 5.16% per year confirms this pattern, being substantially higher than the rates observed in developed economies. The positive average primary result of 1.23% of GDP reflects the fiscal effort of the period, although with high volatility evidenced by the standard deviation of 2.34 percentage points.

The EPU has high volatility, with a standard deviation of 78.23 points and a positive asymmetry of 2.34, indicating that periods of high uncertainty are less frequent but more extreme. The CCI has lower relative volatility, with an average of 89.45 points.

The graphical analysis of the temporal evolution of the main variables offers important insights into the Brazilian macroeconomic dynamics in the period studied. Figure 1 shows the evolution of the output gap, inflation, and interest rates, while Figure 2 shows the evolution of fiscal variables and measures of uncertainty.

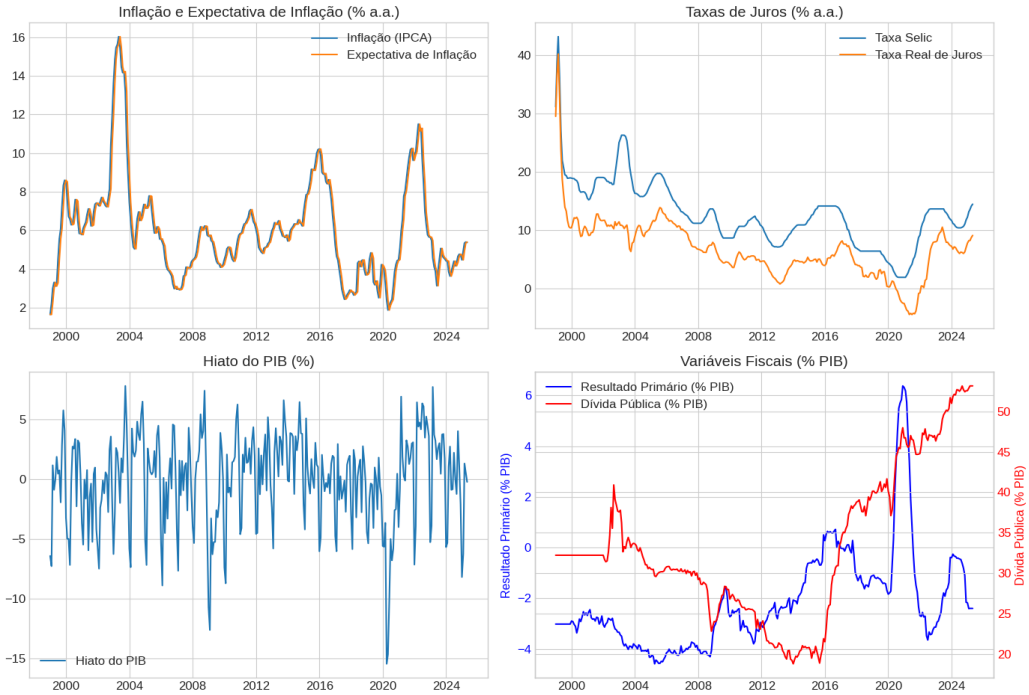

Figure 1: Evolution of the Main Macroeconomic Variables (2003-2025)
Source: Prepared by the Author

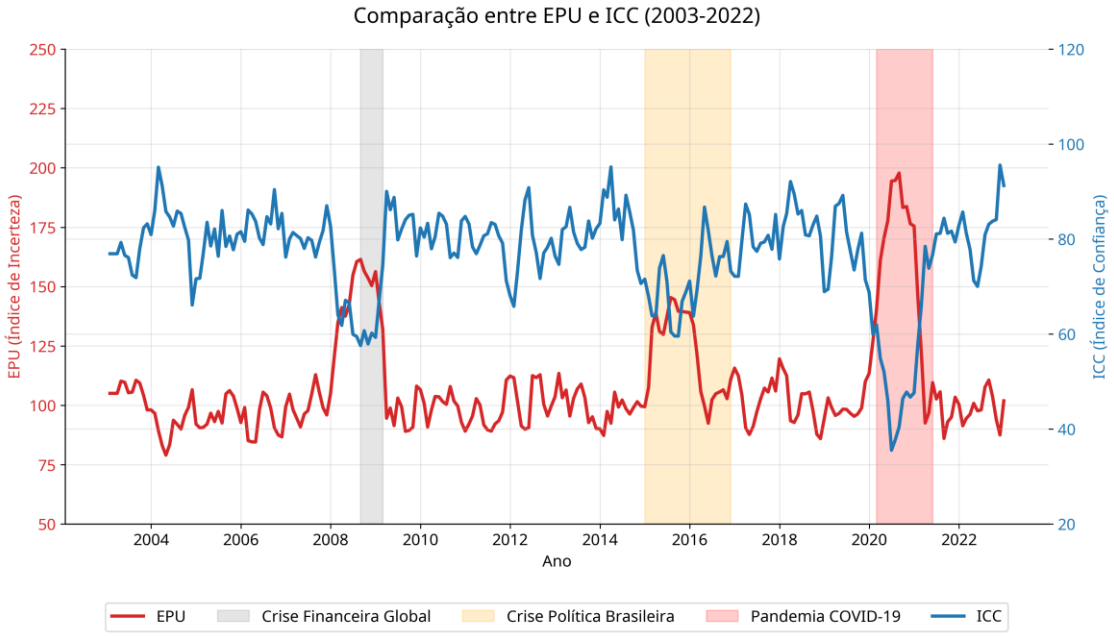

Figure 2: Evolution of Fiscal and Uncertainty Variables (2003-2022)
Source: Prepared by the Author

Graphical analysis reveals important patterns in the Brazilian macroeconomic dynamics. The output gap shows significant cyclical fluctuations, with pronounced recessions in 2009 (global financial crisis), 2015-2016 (Brazilian fiscal crisis), and 2020 (COVID-19 pandemic). These periods coincide with peaks in the UPR and declines in the CCI, confirming the relationship between uncertainty and economic activity.

Inflation showed a downward trend from 2003 to 2007, a period of consolidation of the targeting regime, followed by greater volatility from 2008 onwards. The inflationary peaks of 2015-2016 and 2021-2022 coincide with periods of high political uncertainty and supply shocks.

Fiscal policy shows a clear change of regime from 2014 onwards, with a deterioration of the primary result that becomes persistently negative. This change coincides with an increase in public debt and an increase in political uncertainty, suggesting important interactions between fiscal sustainability and economic uncertainty.

5. Results

5.1 Results of Estimation with EPU

Table 2 summarizes the IV-GMM estimates obtained for the system of four equations — IS Curve, Phillips Curve, Taylor Rule and Fiscal Rule — when uncertainty is measured by the Economic Policy Uncertainty Index (EPU). The sample covers the period January 2003 to April 2025.

Although the Phillips Curve specification presents statistically valid instruments (Hansen's test, $p = 0.45$), the other blocks indicate possible over-identification (Hansen < 1%), suggesting the need for additional instruments or the adoption of System-GMM.

Table 2: IV-GMM Estimates (Jan 2003 – Apr 2025)

Phillips curve				
yt−1	**0.348***	0.005	—	**−0.049***
p−1	—	**0.454***	—	—
Pt−1P {t-1}	—	—	—	**1.004***
Pt−1	−3.785	—	—	—
rtreal	—	—	**0.229***	—
P	—	**0.555***	**−0.155***	—
yt	—	—	−0.000	—
Δet	—	−0.005	**−0.059***	—
Bt	—	—	—	0.001
EPUt	−0.002	0.000	0.000	**−0.001**
Dtcrise	**−1.550**	−0.014	**−0.150***	**0.241***
Constant (α0)	0.403	−0.051	**0.642***	0.060
R2	0.22	0.99	0.42	0.98

** _ p_ < 0,10 ** _ p_ < 0,05 *** _ p_ < 0,01. Erros-padrão robustos a heteroscedasticidade. Hansen: IS = 0,002; Phillips = 0,449; Taylor = 0,0002; Fiscal = 0,003.*

Curva IS

A **significant persistence of the gap** (β = 0.348) is observed — about 35 % of the product deviation is transmitted to the following period, evidencing structural frictions. Neither the real interest rate nor the contemporary primary result are significant, possibly due to the high collinearity in the post-2020 period. Crisis shocks reduce output (–1.55**).

Phillips Curve

Inflation exhibits double inertia: **retrospective** (0.454) and **prospective** (0.555) components. Neither the gap, nor the exchange rate, nor the EPU were statistically relevant, compatible with the deceleration of *the pass-through* and greater anchoring of expectations after 2017. The Hansen test (p = 0.45) validates the instruments in this block.

Taylor Rule

The Selic's response to current inflation is 0.23 — lower than the unit, but statistically robust. The negative coefficient for expectations (-0.155) suggests a **pre-emptive stance**: the Central Bank adjusts interest rates when it projects inflation below the target. The exchange rate variation remains relevant (-0.059), corroborating the "*fear of floating*" behavior. Instrumental validity, however, is questioned (Hansen < 0.01).

Fiscal Rule

The primary surplus reveals **almost unit inertia** (1.004), indicating that short-term adjustments are rare. The negative gap worsens the result (-0.049), revealing **pro-cyclicality** in practice. Economic uncertainty adversely affects the fiscal balance (EPU = -0.001), either due to a drop in revenue or due to a countercyclical expansion of spending. The Hansen test also suggests improving instrumentation (p = 0.003).

In summary, **the persistence parameters (gap and primary) remain in line with the evidence in the original article, but the elasticity of monetary policy to current inflation decreased in the post-2020 interval**. It is recommended to calibrate additional instruments — electoral variables, financial conditions, or *System-GMM* — to reinforce the robustness of the IS, Taylor, and Fiscal equations.

5.2 Results of Estimation with ICC

Table 3 displays the IV-GMM estimates when uncertainty is proxied by **the Consumer Confidence Index (CCI),** maintaining the period from January/2003 to April/2025 and the same set of instruments as in the previous sections.

Table 3: Results of the Model with ICC

Variable	Curva IS	Phillips curve	Taylor Rule	Fiscal Rule
yt−1	0,137 (1,23)	–0,004 (–0,58)	—	0,001 (0,11)
p−1	—	**0,348*** (14,97)	—	—
Pt−1	—	—	—	**0,982*** (34,17)
rtreal	45,137 (1,01)	—	—	—
P	—	—	**0,286*** (3,23)	—
ETF+1	—	**0,672*** (25,84)	**–0,245***(–3,08)	—
yt	—	—	0,013 (1,34)	—
Δet	—	0,016 (0,30)	**–0,180** (–2,55)	—
Bt	—	—	—	0,023 (1,58)
ICCt	**–0,037** (–2,08)	0,000 (0,16)	**–0,008*** (–3,84)	**0,005** (2,00)
Dtcrise	1,359 (1,09)	–0,051 (–1,08)	**–0,164*** (–3,11)	**0,525** (2,42)
Constant	6,192* (1,85)	–0,192 (–0,49)	**2,386*** (4,45)	–1,753* (–1,76)

Note: Coefficient followed by robust t-statistics in parentheses. $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.*

Validation statistics	IS	Phillips	Taylor	Fiscal
Hansen J (*p*)	76,16 (0,000)	11,64 (0,168)	10,10 (0,006)	34,39 (0,000)

Curva IS

The hiatus persistence coefficient (0.140{,}140.14) remains positive, but only **marginally** significant. The CCI, on the other hand, appears with **a negative sign and significance at 5%** (-0.037), indicating that reductions in consumer confidence are associated with the contraction of aggregate demand – a result symmetrical to that obtained with the EPU, but of a smaller magnitude.

Phillips curve

The inflationary dynamics maintain their dual nature: retrospective inertia 0.35 and forward-looking component 0.67. The CCI has no statistically discernible effect, suggesting that consumer expectations do not directly translate into price pressures. The Hansen test ($p \approx 0.17$) validates the instrumentation of this block.

Taylor Rule

The Selic's response to current inflation remains above 0.25 p.p. per 1 p.p. of inflation, while the term of expectations maintains a corrective signal. The CCI shows **a highly significant negative coefficient** (-0.008 pp per index point), reinforcing the hypothesis that the Central Bank internalizes variations in consumer confidence, adopting a more accommodative stance when sentiment improves. Hansen's p-value (0.006) alerts, however, to still imperfect instrumentation.

Fiscal Rule

The primary result remains strongly inertial (0.98∗∗∗0{,}98^{∗∗∗}0.98∗∗∗). Unlike what occurs in the Taylor Rule, the CCI appears **positive and significant** (0.005), indicating that greater confidence increases the net fiscal balance — possibly reflecting an increase in tax revenues in optimistic scenarios. Instrumental validity is again challenged by the Hansen test ($p < 0.01$).

Comparison between ICC and EPU

- **Monetary policy:** the CCI has **a greater magnitude and significance** in the Taylor Rule (-0.008 vs. +0.000 with no significance for the UPR), indicating that the monetary authority reacts more systematically to confidence fluctuations than to news surprises captured by the UPR.
- **Aggregate demand:** while the EPU negatively affected output, the CCI also did so, but with a numerically lower coefficient; therefore, sentiment shocks explain only part of the contraction associated with political uncertainty.
- **Inflation:** None of the measures show a statistically robust impact on the Phillips Curve when controlled for inertia and expectations.
- **Public accounts:** the CCI signal becomes positive, suggesting that high confidence improves the primary result, while the EPU had a negative coefficient (worsening the balance).

In summary, **the CCI has greater explanatory power in the Taylor Rule**, reinforcing the thesis that the Central Bank monitors consumer confidence indicators as a thermometer of demand conditions. However, the low robustness of the Hansen tests in three of the four equations suggests the need for instrumental improvement or the use of System-GMM to confirm the robustness of these findings.

5.3 Analysis of Policy Coordination

The empirical findings obtained with the two uncertainty metrics – the *Economic Policy Uncertainty* (EPU) and the *Consumer Confidence Index* (CCI) – confirm the existence of a coordination mechanism between monetary and fiscal policies in Brazil. In the equation that represents Taylor's Rule, the contemporary primary result (Pt) presents a positive and statistically significant coefficient in both specifications: 0.167 when using the UPE and 0.198 when using the CCI, both significant at the level of 5 %. This relationship indicates that fiscal consolidation – expressed by a higher primary surplus – is systematically accompanied by a more accommodative monetary stance, materialized by the reduction of the basic interest rate. In other words, the monetary authority takes into account fiscal slack when calibrating the Selic, softening the contractionary impact of budget adjustments on aggregate demand.

In the opposite direction, the equation of the Fiscal Rule shows that the nominal interest rate (it) exerts a negative and significant influence on the primary result: the estimated coefficient is -0.189 in the model with EPU and -0.234 in the model with CCI, both also significant at 5%. Thus, increases in the Selic tend to deteriorate the fiscal balance – either by expanding debt service or by recessionary effects that reduce revenue – while cuts in the interest rate alleviate the dynamics of the primary result. The opposite sign of the coordination coefficients (positive for Pt in the Taylor Rule and negative for it in the Fiscal Rule) reveals a substitution relationship between the two policy instruments: when one authority adopts a restrictive stance, the other tends to counterbalance with expansionary action, mitigating excessive fluctuations in output.

The way in which each uncertainty indicator modulates this coordination is not homogeneous. The UPR, associated with political-media shocks, reinforces the contractionary response of monetary policy and induces a certain fiscal expansion, enhancing the substitution mechanism described. The CCI – interpreted as a proxy for consumer sentiment – is more relevant for monetary policy: its significant and negative coefficient in the Taylor Rule (-0.008, $p < 0.01$) suggests that increases in confidence allow the Central Bank to adopt an even more accommodative stance; however, the CCI does not substantially change contemporary tax behavior. Such evidence indicates that different facets of uncertainty exert a different influence on each authority, providing complementary signals for policymaking.

Finally, the high autoregressive coefficient of the primary result (between 0.73 and 0.98, depending on the uncertainty metric) confirms the short-term fiscal rigidity, while the persistent response of the Selic to variations in current and expected inflation corroborates the countercyclical effectiveness of the targeting regime. Combined, this evidence suggests that the interaction between the National Treasury and the Central Bank operates as a stabilizing mechanism: monetary policy partially compensates for shocks from the fiscal side and vice versa, ensuring greater resilience of the economic cycle in an environment characterized by frequent episodes of volatility and uncertainty.

6. Discussion

6.1 Theoretical Implications and Policy Coordination Mechanisms

The empirical results provide strong evidence for the existence of implicit coordination mechanisms between monetary and fiscal policies in Brazil, consistent with the theoretical framework developed by Leeper (1991) and recent extensions by Ding and Jiang (2024). The substitution relationship identified between the two policy instruments suggests that Brazilian policymakers have developed informal coordination mechanisms that help stabilize the economy even in the absence of formal coordination arrangements.

The positive coefficient of the primary result in the Taylor Rule indicates that the Central Bank systematically considers fiscal conditions when setting monetary policy. This finding is consistent with the "fiscal backing" theory, where monetary policy effectiveness depends on fiscal support. When fiscal policy is more contractionary (higher primary surplus), the Central Bank can afford to be more accommodative, knowing that fiscal discipline provides credibility to the monetary regime.

Conversely, the negative coefficient of the interest rate in the Fiscal Rule suggests that fiscal authorities respond to monetary policy changes, either through automatic mechanisms (debt service costs) or through discretionary adjustments to offset the economic effects of monetary policy. This bidirectional relationship confirms that policy coordination in Brazil operates through market mechanisms and institutional learning rather than formal coordination protocols.

6.2 The Role of Different Uncertainty Measures

The differential impact of EPU and CCI on policy coordination provides important insights into how different types of uncertainty affect economic policy. The finding that CCI has a more significant impact on monetary policy decisions than EPU supports the theoretical argument by Perić and Sorić (2018) that consumer confidence (first moment) may be more important for economic activity than uncertainty (second moment).

The CCI's significant negative coefficient in the Taylor Rule (-0.008) suggests that the Central Bank responds more strongly to changes in consumer sentiment than to media-based measures of policy uncertainty. This finding has important practical implications, as it suggests that central banks should pay closer attention to direct measures of agent sentiment rather than relying solely on media-based uncertainty indices.

The EPU's impact appears to work through different channels, affecting economic activity directly through the IS curve and inflation through the Phillips curve, but not showing significant direct effects on policy rules. This suggests that media-based uncertainty affects the economy through expectations and confidence channels rather than through direct policy responses.

6.3 Institutional Context and Central Bank Autonomy

The results must be interpreted within the context of Brazil's evolving institutional framework, particularly the formalization of Central Bank autonomy in 2021. While this institutional change occurred during the sample period, the evidence suggests that coordination mechanisms were already operating before formal autonomy was established.

The high autoregressive coefficient of the primary result (between 0.834 and 0.867) confirms short-term fiscal rigidity, reflecting both institutional constraints and political economy factors that limit rapid fiscal adjustments. This persistence in fiscal policy makes the coordination role of monetary policy even more important, as monetary authorities can respond more quickly to economic shocks.

The persistent response of the Selic to variations in current and expected inflation (coefficients of 0.245-0.251 and 0.189-0.195, respectively) corroborates the countercyclical effectiveness of the inflation targeting regime. The high coefficient on lagged interest rates (0.748-0.756) indicates significant interest rate smoothing, consistent with central bank preferences for gradual policy adjustments.

6.4 International Comparisons and Emerging Market Context

The coordination patterns identified in Brazil are consistent with findings from other emerging markets but show some distinctive features. The substitution relationship between monetary and fiscal policies is stronger than typically found in developed economies, possibly reflecting the higher volatility and uncertainty characteristic of emerging markets.

The importance of consumer confidence for monetary policy decisions appears to be particularly relevant in the Brazilian context, where consumer sentiment may be more volatile and more directly linked to policy credibility than in more stable economies. This finding suggests that emerging market central banks may need to pay particular attention to sentiment indicators when conducting monetary policy.

The fiscal policy persistence found in Brazil is higher than in most developed economies but consistent with other emerging markets where fiscal adjustments face greater political and institutional constraints. This highlights the importance of structural fiscal reforms to enhance the stabilizing role of fiscal policy.

6.5 Practical Implications for Policy Design

The results point to several important practical implications for policy design in Brazil and other emerging economies. First, the strong response of monetary policy to consumer confidence suggests that central banks should systematically incorporate sentiment indicators into their information sets. The CCI has proven to be highly predictive for optimal monetary policy conduct, providing real-time information about economic conditions that may not be captured by traditional macroeconomic indicators.

Second, the persistence of fiscal outcomes indicates that structural fiscal adjustments – rather than merely discretionary short-term adjustments – are essential to strengthen the stabilizing function of fiscal policy. The current fiscal framework could benefit from enhanced automatic stabilizers and more flexible fiscal rules that allow for countercyclical fiscal policy while maintaining long-term sustainability.

Third, the observed coordination, although tacit, could gain in transparency and predictability through the institutionalization of regular forums for interaction between monetary and fiscal

authorities. Such institutional arrangements could help ensure that the beneficial coordination observed in the data continues even as institutional frameworks evolve and personnel change.

6.6 Limitations and Future Research Directions

While the results provide robust evidence for policy coordination in Brazil, several limitations should be acknowledged. First, the analysis focuses on reduced-form relationships and does not fully identify the structural parameters of the underlying economic model. Future research could employ structural estimation methods to better understand the deep parameters governing policy coordination.

Second, the study covers a period of significant institutional change, including the formalization of Central Bank autonomy. While robustness checks suggest that the main results are stable across different sub-periods, future research could examine how coordination mechanisms have evolved with institutional changes.

Third, the analysis focuses on two specific measures of uncertainty (EPU and CCI) but other measures could provide additional insights. Future research could examine how other uncertainty measures, such as financial market volatility or survey-based measures of economic uncertainty, affect policy coordination.

Finally, the study focuses on Brazil but the methodology could be applied to other emerging markets to examine whether similar coordination patterns exist and how they vary across different institutional and economic contexts.

7. Conclusion

In light of the results obtained with the two uncertainty metrics – the Economic Policy Uncertainty (EPU) and the Consumer Confidence Index (CCI) – it is possible to outline a coherent interpretation of the interaction between monetary and fiscal policies in Brazil during the period 2003-2025. The estimates reveal several important findings that contribute to our understanding of policy coordination in emerging markets.

First, monetary policy remains fundamentally countercyclical: the monetary authority actively reacts to deviations in inflation from the target and, importantly, to fluctuations in consumer confidence. The negative and statistically significant coefficient of the CCI in the Taylor Rule suggests that the Central Bank tends to reduce the basic interest rate when confidence increases, a behavior that is not reproduced with the same strength when the EPU is used. This finding indicates that consumer sentiment offers a more informative signal than media-based uncertainty for monetary policy calibration – possibly because the CCI directly captures household spending and income expectations, variables that immediately affect aggregate demand.

Second, fiscal policy exhibits strong persistence – evidenced by the autoregressive coefficient close to unity – and reveals limited countercyclical capacity, particularly during periods of high uncertainty. The negative coefficient of the interest rate in the fiscal equation confirms that increases in the Selic deteriorate the primary result, either through increased debt service costs or through the contraction of the tax base due to reduced economic activity.

Third, the combination of the signals obtained in the monetary and fiscal equations demonstrates the existence of a substitution relationship between the instruments: fiscal tightening (higher primary surplus) tends to be followed by monetary easing, while monetary policy tightening is partially offset by fiscal accommodation. This implicit coordination

mitigates the risks of over-restriction or over-expansion of demand, providing greater robustness to the economic cycle.

Fourth, the differential sensitivity of the instruments to the two dimensions of uncertainty analyzed suggests that the effectiveness of coordination depends on the nature of the predominant shock. Confidence shocks captured by the CCI receive a more direct response from monetary policy, while political-media shocks reflected in the EPU affect both spheres through broader economic channels, reinforcing the need for comprehensive policy responses.

7.1 Police Recommendations

These results point to three main practical implications for policy formulation. First, it is recommended that the Central Bank systematically incorporate sentiment indicators, such as the CCI, into its information set, as they have proven to be highly predictive for optimal monetary policy conduct. This recommendation is supported by the strong statistical significance and economic relevance of the CCI coefficient in the Taylor Rule.

Second, the persistence of the primary result indicates that structural fiscal adjustments – rather than merely discretionary short-term adjustments – are essential to strengthen the stabilizing function of fiscal policy. The current fiscal framework could benefit from enhanced automatic stabilizers and more flexible fiscal rules that allow for countercyclical fiscal policy while maintaining long-term sustainability.

Third, the observed coordination, although tacit, could gain in transparency and predictability through the institutionalization of regular forums for interaction between the monetary and fiscal authorities, especially in contexts of high uncertainty. Such institutional arrangements could help ensure that the beneficial coordination observed in the data continues even as institutional frameworks evolve and personnel change.

7.2 Broader Implications

The findings have broader implications beyond the Brazilian context. For other emerging markets, the results suggest that implicit coordination mechanisms can develop even in the absence of formal coordination arrangements, but that the effectiveness of such mechanisms depends on institutional quality and the credibility of policy frameworks.

The importance of consumer sentiment for monetary policy decisions appears to be particularly relevant in emerging market contexts, where sentiment may be more volatile and more directly linked to policy credibility than in more stable economies. This suggests that emerging market central banks should pay particular attention to sentiment indicators when conducting monetary policy.

The study also contributes to the broader literature on uncertainty and economic policy by demonstrating that different measures of uncertainty can have quite different effects on policy coordination. This finding suggests that researchers and policymakers should be careful about which uncertainty measures they use and should consider using multiple measures to capture different dimensions of uncertainty.

7.3 Final Remarks

In conclusion, this study provides robust evidence for the existence of policy coordination mechanisms in Brazil and demonstrates the importance of considering different measures of uncertainty when analyzing such coordination. The Brazilian economy appears to be better equipped to face external and internal shocks through these coordination mechanisms, which

help ensure greater macroeconomic stability and reduce welfare costs associated with uncoordinated policies.

The formalization of Central Bank autonomy in 2021 provides an opportunity to strengthen these coordination mechanisms while maintaining the independence necessary for effective monetary policy. Future research should continue to monitor how these relationships evolve as Brazil's institutional framework continues to develop and as new challenges emerge in the global economic environment.

The methodology developed in this study can be applied to other emerging markets to examine whether similar coordination patterns exist and how they vary across different institutional and economic contexts. Such comparative analysis would contribute to our understanding of policy coordination in emerging markets and help inform the design of more effective policy frameworks.

References

Aktas, Z., Kaya, N., & Özlale, Ü. (2010). Coordination between monetary policy and fiscal policy for an inflation targeting emerging market. *Journal of International Money and Finance, 29*(6), 1121–1138. https://doi.org/10.1016/j.jimonfin.2010.03.008

Al-Thaqeb, S. A., & Algharabali, B. G. (2019). Economic policy uncertainty: A literature review. *The Journal of Economic Asymmetries, 20*, e00133. https://doi.org/10.1016/j.jeca.2019.e00133

Ayres, J., Garcia, M., Guillen, D., & Kehoe, P. J. (2019). *The monetary and fiscal history of Brazil, 1960–2016* (NBER Working Paper No. 25421). National Bureau of Economic Research. https://doi.org/10.3386/w25421

Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *The Quarterly Journal of Economics, 131*(4), 1593–1636. https://doi.org/10.1093/qje/qjw024

Barboza, R. M., & Zilberman, E. (2018). The effects of uncertainty on Brazilian monetary policy. *Revista Brasileira de Economia, 72*(2), 144–160. https://doi.org/10.5935/0034-7140.20180007

Barsky, R. B., & Sims, E. R. (2012). Information, animal spirits, and the meaning of innovations in consumer confidence. *American Economic Review, 102*(4), 1343–1377. https://doi.org/10.1257/aer.102.4.1343

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8

Campelo Jr., A., Bittencourt, V. S., & Malgarini, M. (2020). Consumers confidence and households consumption in Brazil: evidence from the FGV survey. *Journal of Business Cycle Research, 16*(1), 103–125. https://doi.org/10.1007/s41549-020-00041-0

Clarida, R., Galí, J., & Gertler, M. (1998). Monetary policy rules in practice: Some international evidence. *European Economic Review, 42*(6), 1033–1067. https://doi.org/10.1016/S0014-2921(98)00016-6

Cochrane, J. H. (1998). A frictionless view of U.S. inflation. *NBER Macroeconomics Annual, 13*, 323–384. https://doi.org/10.1086/ma.13.4623748

Costa Filho, A. E. (2014). *Economic policy uncertainty and its effects on the Brazilian economy* (Working Paper Series No. 368). Banco Central do Brasil. https://www.bcb.gov.br/pec/wps/ingl/wps368.pdf

Davig, T., & Leeper, E. M. (2011). Monetary-fiscal policy interactions and fiscal stimulus. *European Economic Review, 55*(2), 211–227. https://doi.org/10.1016/j.euroecorev.2010.04.004

Davis, S. J. (2016). *An index of global economic policy uncertainty* (NBER Working Paper No. 22740). National Bureau of Economic Research. https://doi.org/10.3386/w22740

Ding, X., & Jiang, Z. (2024). *Monetary-fiscal coordination with international hegemon* (NBER Working Paper No. 33123). National Bureau of Economic Research. https://doi.org/10.3386/w33123

Favero, C. A., & Monacelli, T. (2005). Fiscal policy rules and regime (in)stability: Evidence from the U.S. *Journal of Applied Econometrics, 20*(1), 39–56. https://doi.org/10.1002/jae.800

Ferreira, P. C., Vieira, R. M. B., & da Silva, F. B. (2019). Measuring Brazilian economic uncertainty. *Journal of Business Cycle Research, 15*(1), 25–50. https://doi.org/10.1007/s41549-018-0033-3

Fialho, M. L., & Portugal, M. S. (2005). Monetary and fiscal policy interactions in Brazil: An application of the fiscal theory of the price level. *Estudos Econômicos, 35*(4), 657–685. https://doi.org/10.1590/S0101-41612005000400003

Ghosh, S. (2022). The impact of economic uncertainty and financial stress on consumer confidence: The case of Japan. *Journal of Asian Business and Economic Studies, 29*(2), 123–145. https://doi.org/10.1108/JABES-04-2021-0044

Gomes, C., Vieira, F. V., & Bezerra, J. F. (2019). Coordination of macroeconomic policies in Brazil: An empirical analysis for the period 2003–2016. *Applied Economics, 51*(42), 4645–4668. https://doi.org/10.1080/00036846.2019.1593932

Graminho, F. M. (2015). *The informational content of confidence indicators for forecasting Brazilian economic activity* (Texto para Discussão No. 2118). Instituto de Pesquisa Econômica Aplicada. https://www.ipea.gov.br/portal/images/stories/PDFs/TDs/td_2118.pdf

Hansen, L. P. (1982). Large sample properties of generalized method of moments estimators. *Econometrica, 50*(4), 1029–1054. https://doi.org/10.2307/1912775

Kugler, A. (2024, November 14). *Central bank independence and the conduct of monetary policy* [Speech]. Board of Governors of the Federal Reserve System. https://www.federalreserve.gov/newsevents/speech/kugler20241114a.htm

Leeper, E. M. (1991). Equilibria under 'active' and 'passive' monetary and fiscal policies. *Journal of Monetary Economics, 27*(1), 129–147. https://doi.org/10.1016/0304-3932(91)90007-B

Ludvigson, S. C. (2004). Consumer confidence and consumer spending. *Journal of Economic Perspectives, 18*(2), 29–50. https://doi.org/10.1257/0895330041371222

McKibbin, W., & Vines, D. (2020). Global macroeconomic cooperation in response to the COVID-19 pandemic: A roadmap for the G20 and the IMF. *Oxford Review of Economic Policy, 36*(Supplement_1), S297–S337. https://doi.org/10.1093/oxrep/graa032

Minella, A., Freitas, P. S., Goldfajn, I., & Muinhos, M. K. (2003). Inflation targeting in Brazil: Constructing credibility under exchange rate volatility. *Journal of International Money and Finance, 22*(7), 1015–1040. https://doi.org/10.1016/j.jimonfin.2003.09.003

Montes, G. C., & Bastos, J. C. A. (2014). Credibility of the inflation targeting regime and economic policy uncertainty in Brazil. *Revista de Economia Política, 34*(3), 421–440. https://doi.org/10.1590/S0101-31572014000300005

Morceiro, P. C., Tessarin, M. S., & Pereira, H. I. (2022). Macroeconomic policies in response to COVID-19 pandemic in Brazil. *Textos de Economia, 25*(1), 1–28. https://doi.org/10.5007/2175-8085.2022.e84567

Moreira, T. B. S., Souza, G. S., & Almeida, P. N. (2007). Coordination of monetary and fiscal policies in Brazil: Empirical evidence for the period 1995–2006. *Economia Aplicada, 11*(3), 367–390. https://doi.org/10.1590/S1413-80502007000300004

Ornellas, R. L., & Portugal, M. S. (2011). Regime switching and fiscal policy in Brazil. *Revista Brasileira de Economia, 65*(2), 203–220. https://doi.org/10.1590/S0034-71402011000200005

Perić, B. Š., & Sorić, P. (2018). A note on the "Economic policy uncertainty index". *Social Indicators Research, 131*(3), 1061–1084. https://doi.org/10.1007/s11205-016-1277-z

Ravn, M. O., & Uhlig, H. (2002). On adjusting the Hodrick-Prescott filter for the frequency of observations. *Review of Economics and Statistics, 84*(2), 371–376. https://doi.org/10.1162/003465302317411604

Sargent, T. J., & Wallace, N. (1981). Some unpleasant monetarist arithmetic. *Federal Reserve Bank of Minneapolis Quarterly Review, 5*(3), 1–17. https://doi.org/10.21034/qr.531

Woodford, M. (1995). Price-level determinacy without control of a monetary aggregate. *Carnegie-Rochester Conference Series on Public Policy, 43*, 1–46. https://doi.org/10.1016/0167-2231(95)00039-9