

Agentic AI for Advanced Economic and Financial Analysis

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ChatGPT launched just 2.5 years ago, and it's already reshaping how macroeconomists or financial analysts work.

Let's break it down in 5 points.

1. **LLM** – Foundations
2. **Agents** – How do They Work
3. **Applied Agent** – Real Use Case
4. **Multi-Agent Systems** – Workflows and Teams
5. **Next steps** – Explicability

How can I help you?

Help me to summarize the recent movements affecting the Brazilian real

Join

To research

Reason

↑

Encoder

Analyze data

Surprise me

Summarize a text

Plus

It typically requires about 10 exchanges with the chatbot to receive an accurate response.

Now, if this had to be done every day across all exchanges, it would take roughly 1,800 back-and-forths.



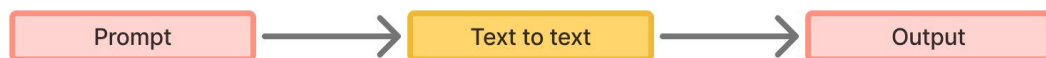
Infinite possibilities of subjects and combinations !

The diagram consists of several overlapping colored boxes. A central green box contains the text 'Infinite possibilities of subjects and combinations !'. Other visible boxes include: a red box with 'Specific Topics' and 'Geopolitics, ESG'; a yellow box with 'Personalities'; a light orange box with 'Specific Combinations', 'Sector/Country', and 'Commodity/Country'; and a grey box with 'Companies'. There are also smaller, partially visible boxes in purple, blue, and light green.

“Attention Is All You Need” (2017): The Rise of Transformers

Enable, for the first time, applications in economics that rely on rich contextual understanding.

LLM: Text2text



Purpose: Generate, complete, or transform text.

How it works: Take text as input, produce new text as output.

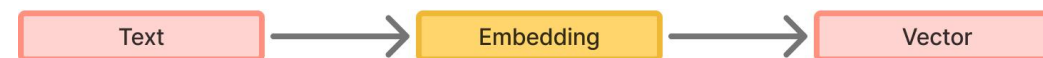
Use cases: Summarization, question answering, translation.

Core idea: Leverage probabilistic language modeling with contextual attention.

Limits:

hallucination, reasoning, input limits of LLM

Embeddings: Text2Vect



Purpose: Represent text as numerical vectors.

How it works: Encode meaning into a high-dimensional space.

Use cases: Semantic search, similarity detection, document clustering.

Core idea: Similar texts have nearby vector representations.

You are a senior financial analyst working for a leading consultancy specializing in regulatory compliance and risk management for financial institutions. Your firm has been commissioned to produce an expert-level report on Basel 4 and its potential implications for the banking sector, addressing concerns about the readiness of banks for its impending implementation and the regulator's stance on the timeline.

Context

{context}

Task

- Answer the question based on the context. If the question can't be answered based on the context or previous messages, say "I don't know".
- Write the answer in the same language as the question.
- Write a report with a few paragraph of max 1000 words each.
- Conclude the report with strategic recommendations.
- The report should be structured professionally.

Question

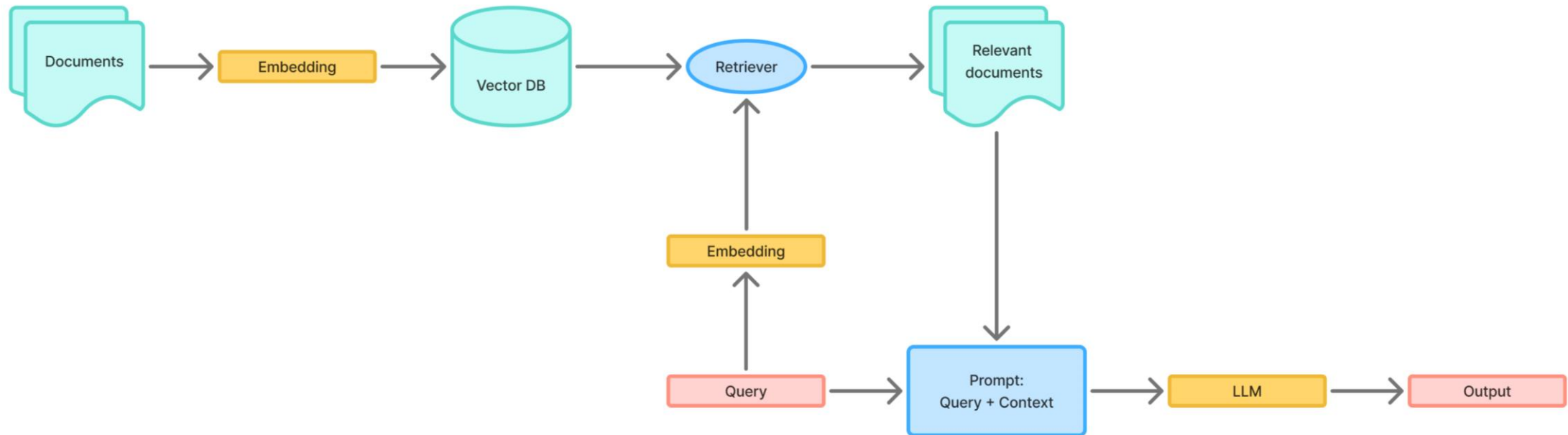
{query}

Answer

Prompting:

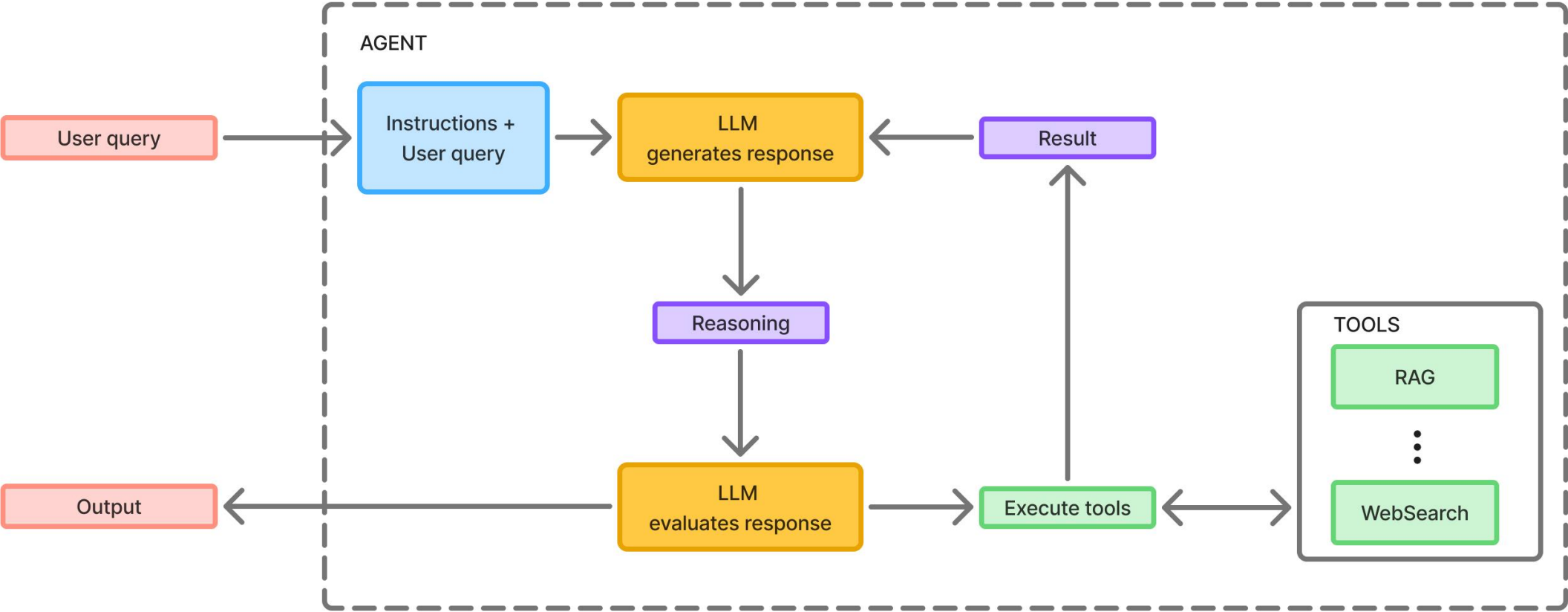
- Be clear and specific
- Provide rich context (text, documents)
- Add detailed instructions if needed
- Ask for step-by-step reasoning

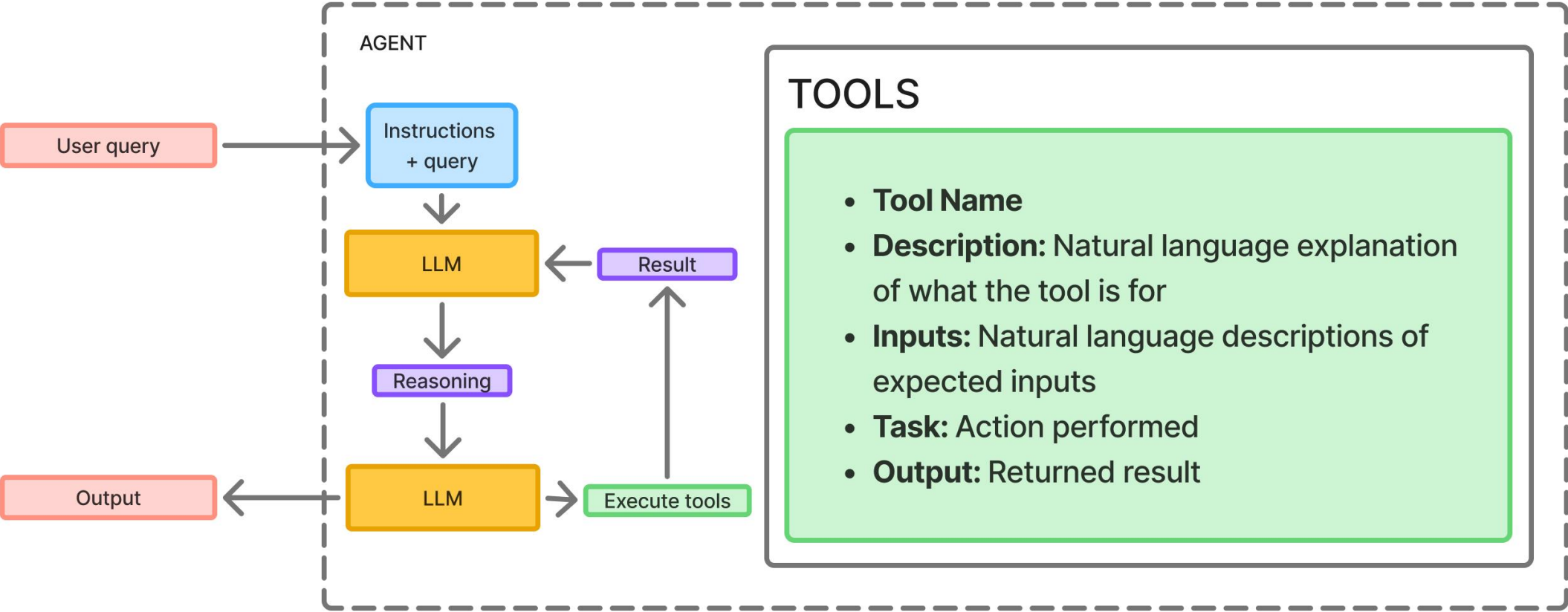
RAG (Retrival Augmented Generation)

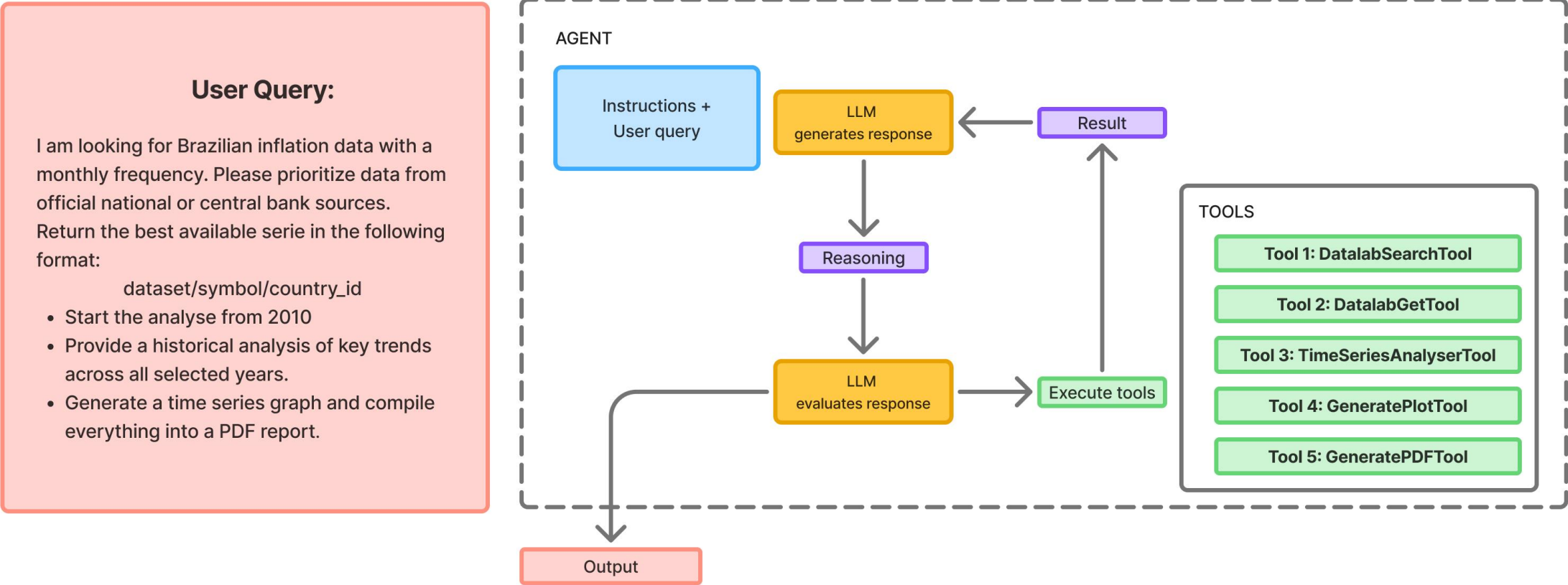


Gather evidence

Select only query-relevant information to minimize input and keep context focused.







Inflation in Brazil (2010–2025): Key Trends and Developments

Inflation in Brazil, measured by the Consumer Price Index (CPI - IPCA), has gone through several significant phases since 2010. Below is an overview of key trends and developments:

2010–2013: Moderate Inflation

Inflation began to rise gradually starting in 2010. Annual rates remained between 4.6% and 6.3% during this period, with an upward trend noted in 2011 and 2012. Monetary policies were relatively accommodative, and domestic consumption maintained some pressure on prices.

2014–2016: Inflation Peak

Inflation crossed a critical threshold in 2014, reaching levels around 7.1% to 10.7%. The worsening economic situation, particularly due to rising food and energy costs, as well as overly lax monetary policy, led to high inflation. In June 2016, inflation peaked at 9.57%.

2017–2020: Disinflation Efforts

After alarming peaks, the Central Bank took steps to stabilize the economy. Inflation rates fell significantly, reaching a low of 2.4% in 2020. Stimulus measures and interest rate cuts helped return inflation to more manageable levels.

2021–2023: Return of Inflation

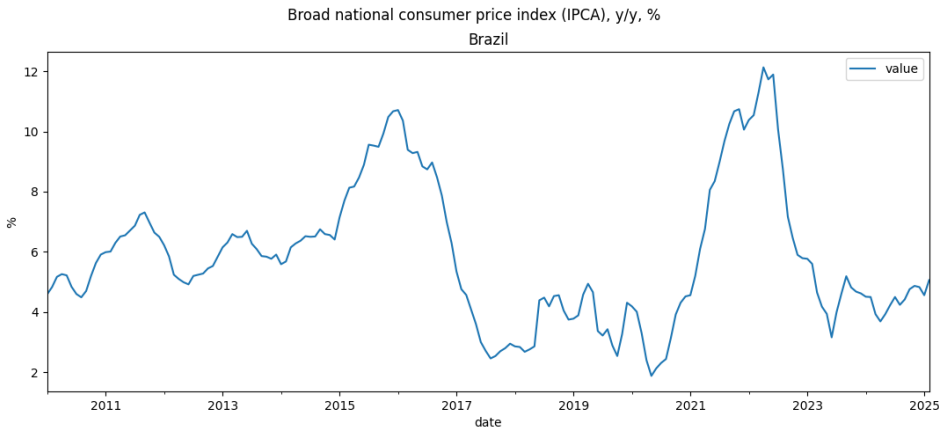
This was followed by a new surge in inflation starting in 2021, with rates exceeding 8% due to supply chain-related costs, rising food prices, and residual effects of the pandemic. In December 2022, the inflation rate was still at 5.79%.

2024–2025: Stabilization

Inflation began to slow again, reaching more moderate levels around 4.5% at the beginning of 2024. The government continues to work on monetary policies and economic measures to maintain inflation at desirable levels.

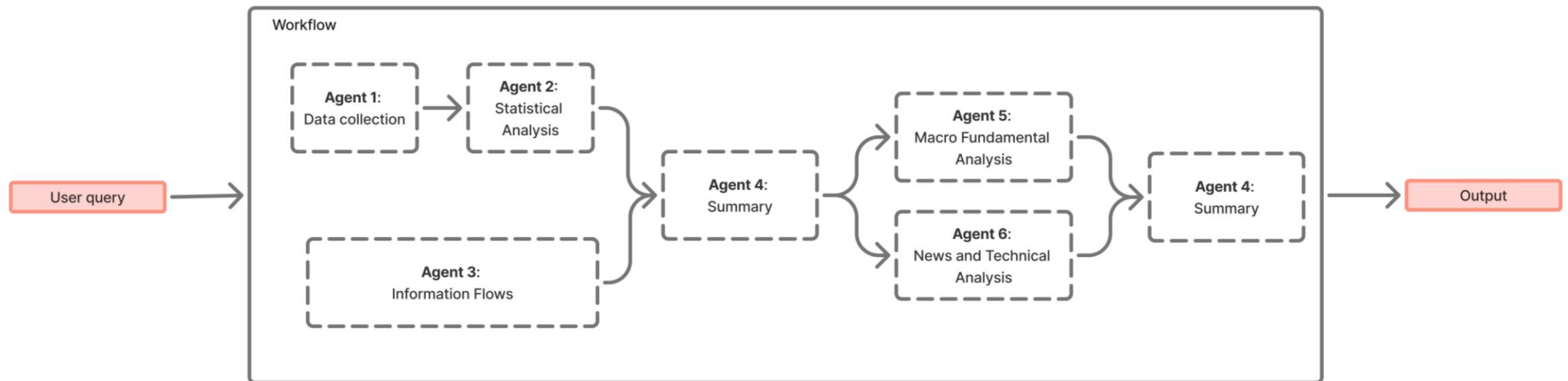
Conclusion

Overall, inflation in Brazil since 2010 has followed a tumultuous path, shifting from a period of problematic inflation to stabilization efforts, followed by new challenges. The fluctuations reflect the complexities of the Brazilian economy and the impacts of economic policies as well as global circumstances. Forecasts for 2025 point toward more stable inflation, but vigilance remains necessary due to persistent economic uncertainties.



Teams: An agent that has access to many sub-agents and uses them. It prioritizes adaptability and exploration at the cost of consistency and predictability.

Workflows: Fixed structured sequence of logical steps that the agent follows consistently.



FX AI Agentic Workflow Use Case

Country Risks

Economic Risk:

Brazil is currently experiencing a favorable economic landscape, characterized by low debt service associated with stable long-term capital inflows. This is combined with a positive domestic cyclical momentum and a neutral monetary policy, which collectively foster conditions for sustained growth. However, challenges remain, including a poor quality of foreign exchange reserves and excessive domestic financial leverage. The current account deficit highlights an excessive accumulation of foreign currency liabilities, which poses a risk to the sustainability of Brazil's economic growth. Overall, while the economic indicators suggest resilience, there are clear vulnerabilities linked to exchange rates and liquidity in foreign currencies.

Political Risk:

On the political front, Brazil faces significant challenges, primarily concerning corruption. The Control of Corruption indicator reflects negative perceptions about the extent to which public power can be exploited for private gain, impacting trust in governance. Conversely, the Voice and Accountability measure indicates that citizens enjoy certain freedoms in selecting their government and expressing their opinions, which is a positive aspect of the political landscape. The Government Effectiveness indicator shows weakness compared to other nations, signaling issues in the administration and service delivery. Therefore, while there are opportunities for citizen engagement, the overarching concerns about corruption and governance effectiveness continue to weigh heavily on Brazil's political stability.

Recent News

Here are the key insights regarding the Brazilian real and the monetary policy in Brazil based on the latest news:

Brazilian Real (BRL)

1. Current Exchange Rate Trends:

- As of May 9, 2025, the Brazilian real has appreciated to approximately 5.66 per USD, nearing its strongest point since November 2024. This rebound is attributed to a weakening dollar and improving domestic conditions in Brazil, including a downward

- adjustment in inflation forecasts (IPCA forecast for 2025 is now 5.7%) and a manufacturing PMI remaining in expansion mode at 51.8.
- However, bearish sentiment persists, with speculative positions on the BRL indicating traders are increasingly betting against the currency due to domestic political uncertainties and slower-than-expected economic growth.
- Market Sentiment:**
 - The Commodity Futures Trading Commission (CFTC) reported a decline in speculative net positions on the BRL, suggesting a cautious market outlook. As of April 4, 2025, net speculative positions fell to 37,000, down from 40,700, indicating a shift in sentiment towards the currency.
- Recent Performance:**
 - The BRL has faced downward pressure due to global economic concerns and domestic challenges. The currency's performance is closely monitored as it reacts to both local and international economic developments.

Monetary Policy in Brazil

- Interest Rate Adjustments:**
 - The Central Bank of Brazil has been actively raising interest rates to combat inflation, which remains above target levels. On May 7, 2025, the bank raised rates by 50 basis points to 14.75%, marking a continuation of its tightening cycle. This follows a series of aggressive hikes, including a 100 basis point increase in March 2025.
 - The central bank's policy committee has indicated that it will maintain a cautious approach, with future rate hikes dependent on economic data and inflation trends.
- Inflation Control:**
 - The central bank's actions are driven by the need to control inflation, which has been a persistent issue. The bank's projections suggest that inflation may only converge towards the official target of 3% by the third quarter of 2027, necessitating ongoing vigilance in monetary policy.
- Fiscal Policy Interactions:**
 - There is a noted tension between fiscal and monetary policies in Brazil. The government has announced fiscally expansionary measures, which could complicate the central bank's efforts to stabilize the currency and control inflation. Analysts emphasize the need for a balanced approach to fiscal discipline to support monetary policy effectiveness.

Additional Resources

- For more detailed information, you can explore the following articles:
 - Brazilian Real Rebounds
 - Brazil's Central Bank Signals Need for Higher Rates
 - Brazil's Central Bank Hikes Rates Again

These insights provide a comprehensive overview of the current state of the Brazilian real and the monetary policy landscape in Brazil.

Key Elements

Analysis of the Federative Republic of Brazil and the Brazilian Real

Introduction and Context Setting As of May 15, 2025, Brazil's economic landscape is characterized by a complex interplay of exchange rate dynamics, inflationary pressures, and monetary policy responses. The Brazilian real (BRL) has experienced fluctuations in its value against the US dollar, influenced by both domestic economic conditions and global market trends. This analysis synthesizes historical data from early 2024 to early 2025, alongside recent developments, to provide a comprehensive overview of the current state of the Brazilian economy and the BRL.

Historical Data Overview From January 2024 to May 2025, the exchange rate of the BRL against the USD has shown a gradual depreciation, moving from 5.135 BRL per USD in January 2024 to 5.285 BRL per USD by May 2025. Throughout this period, inflation rates have remained relatively high, with figures ranging from 4.62% to 5.15%. The Central Bank of Brazil has responded with a tightening monetary policy, maintaining a policy rate of 13.75% for most of 2024 before reducing it to 13.50% in early 2025. This historical context sets the stage for understanding the recent shifts in the BRL's performance.

Recent Exchange Rate Developments and Market Sentiment As of May 9, 2025, the BRL has appreciated to approximately 5.66 per USD, marking a significant rebound attributed to a weakening dollar and improving domestic conditions. Key indicators, such as a downward adjustment in inflation forecasts (with the IPCA now projected at 5.7% for 2025) and a manufacturing PMI of 51.8, suggest a positive economic outlook. However, bearish sentiment persists, as traders are increasingly betting against the BRL due to ongoing political uncertainties and slower-than-expected economic growth. The Commodity Futures Trading Commission (CFTC) reported a decline in speculative net positions on the BRL, indicating a cautious market outlook.

Monetary Policy and Inflation Control The Central Bank of Brazil has been proactive in addressing inflation, which remains above target levels. On May 7, 2025, the bank raised interest rates by 50 basis points to 14.75%, following a series of aggressive hikes earlier in the year. The central bank's projections indicate that inflation may not converge towards the official target of 3% until the third quarter of 2027, necessitating ongoing vigilance in monetary policy. The central bank's cautious approach suggests that future rate hikes will depend on economic data and inflation trends.

Economic and Fiscal Risk Environment Brazil's economic environment is currently favorable, characterized by low debt service and stable long-term capital inflows. However, challenges remain, including a poor quality of foreign exchange reserves and excessive domestic financial leverage. The current account deficit highlights an excessive accumulation of foreign currency liabilities, posing risks to the sustainability of Brazil's economic growth. While economic indicators suggest resilience, vulnerabilities linked to exchange rates and liquidity in foreign currencies are evident.

Political Considerations and Governance Challenges Brazil faces significant political risks, particularly concerning corruption and governance effectiveness. The Control of Corruption indicator reflects negative perceptions about the extent to which public power can be exploited

for private gain, impacting trust in governance. Conversely, the Voice and Accountability measure indicates that citizens enjoy certain freedoms in selecting their government and expressing their opinions. However, weaknesses in government effectiveness compared to other nations signal issues in administration and service delivery. These political uncertainties could counterbalance some of the economic strengths, influencing market sentiment and potentially affecting both fiscal and monetary policy outcomes.

Summary and Concluding Insights In summary, while the Brazilian real has shown resilience and recent improvements in economic conditions, ongoing external pressures and domestic policy challenges necessitate careful monitoring. The interplay between inflation control, monetary policy adjustments, and political stability will be crucial in shaping the future trajectory of the BRL. Analysts must remain vigilant to upcoming economic data and central bank communications, which will provide further insights into the currency's performance and the broader economic landscape in Brazil. The current environment underscores the importance of a balanced approach to fiscal discipline and monetary policy effectiveness to support sustainable growth.

- From **black-box** behavior to **interpretable internal structure**
- Challenge: **superposition hypothesis** \rightarrow one neuron = multiple overlapping concepts
- Solution: **Sparse Autoencoders** \rightarrow toward **monosemantic neurons**
- Next step: **explainable AI**

Thank you for your attention!

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