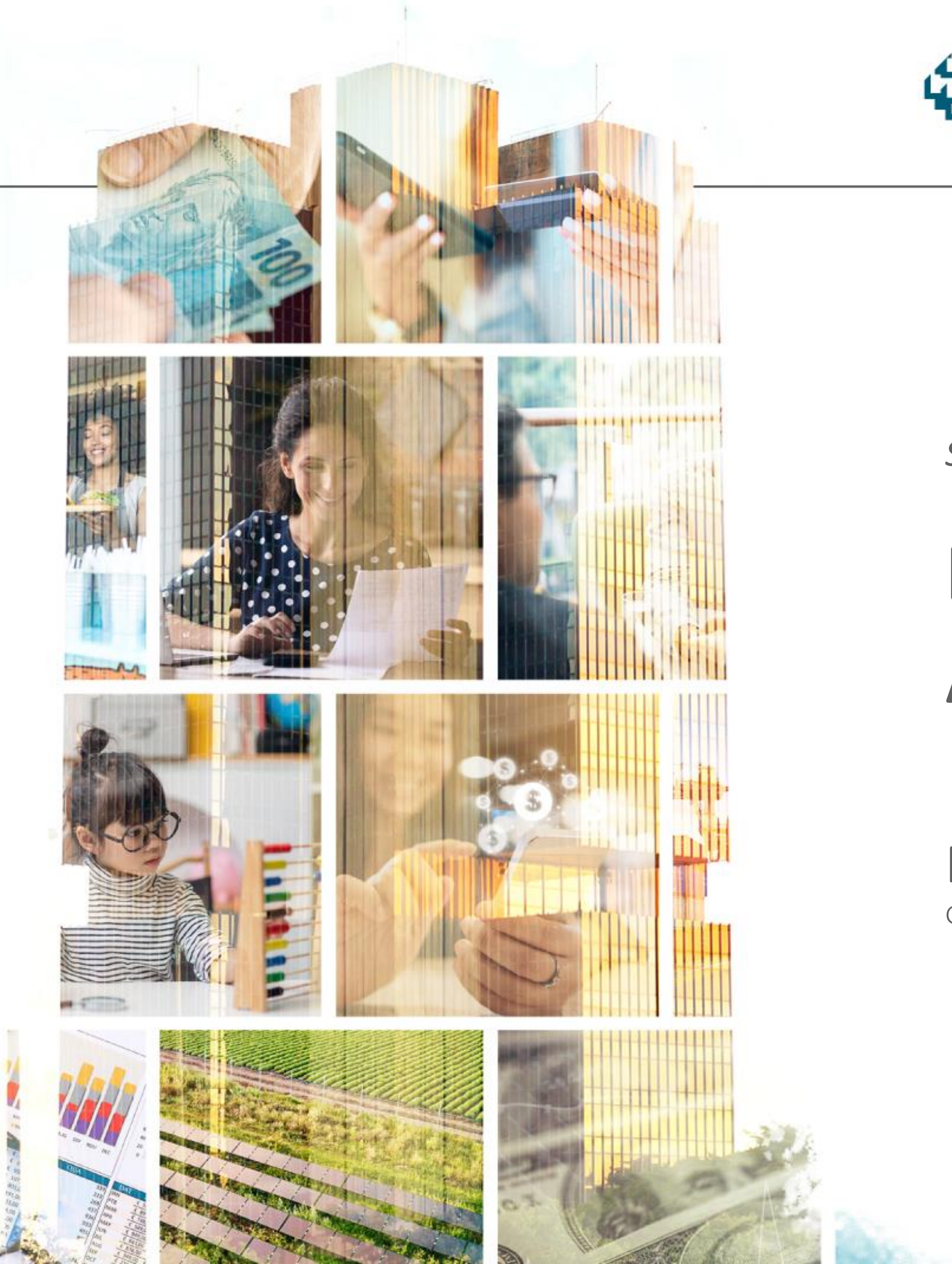


BANCO CENTRAL DO BRASIL

March 26th, 2024

Stanford Graduate School of Business

Economic Outlook and Agenda BC#

Roberto Campos Neto
Governor of the Banco Central do Brasil

Inflation targeting in Brazil

- Adopted in Brazil in 1999.
    - Presidential Decree No 3,088, of June 21st, 1999.
- The inflation target is set by the National Monetary Council (CMN).
    - The target is set in terms of the year-over-year increase of the Broad National Consumer Price (IPCA), measured by the Brazilian Institute of Geography and Statistics (IBGE)
    - The numerical target for the inflation rate is informed three years in advance in June.
        - Recently, there has been a change from a "calendar-year basis target" to a "continuous target".
    - There is a target range around the midpoint target.
- Compliance with the target: inflation within the target range.
    - In the event of non-compliance, the BCB's Governor writes an "Open Letter" to the Minister of Finance explaining the reasons as well as the actions taken to assure the future convergence of inflation to the targets path.
- Brazil's "macroeconomic tripod":
    - Inflation targeting;
    - Flexible exchange rate;
    - Fiscal responsibility.

Low inflation, with sustainable growth.

BCB’s mandate

- Price stability (keeping inflation around the target) is the fundamental objective of the BCB.

- Without compromising its fundamental objective, the BCB also aims to:
    - foster a sound, efficient and competitive financial system,
    - smooth economic activity fluctuations, and
    - foster full employment.

The separation principle

- The BCB adopts the separation principle (i.e., each policy has its own objectives and pursues them using its own instruments):
  - The policy rate (Selic rate) is the monetary policy instrument used to achieve price stability (compliance with the inflation target);
  - Macroprudential policy addresses financial stability issues; and
  - FX market interventions aim to reduce exchange rate volatility and to preserve the FX market functionality.

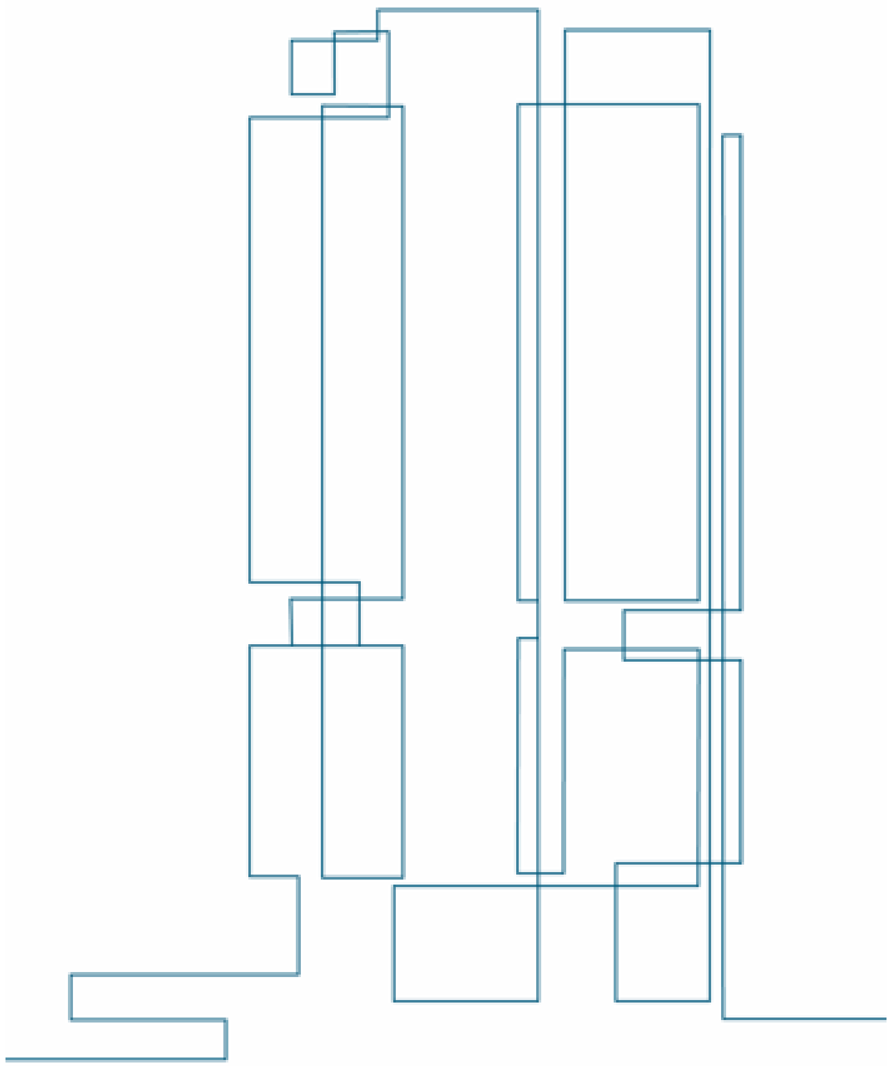
Benefits of CB autonomy

- It allows the CB to pursue the objectives established by law and by the CMN in a technical, objective and impartial manner.

- Separates the political cycle from the business cycle, reducing economic instability.

- Helps the achievement of low inflation, lower structural interest rates, lower risks and greater monetary and financial stability.

- Aligns the BCB with best international practices.
    - In general, autonomy involves three dimensions: operational, administrative and budgetary.
    - The BCB only has operational autonomy.



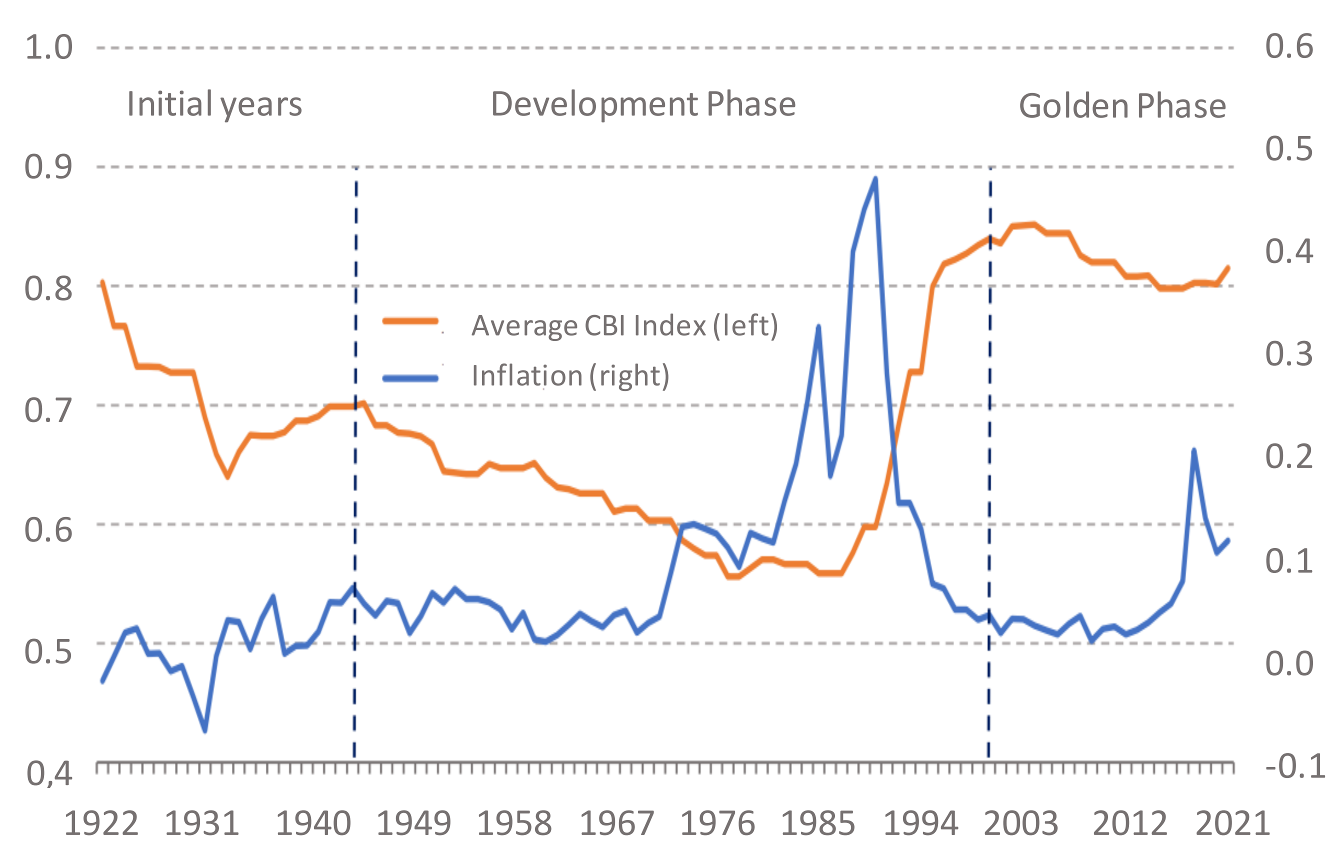
Source: Blinder, 1999. Central Banking in Theory and Practice, MIT Press.

Benefits of CB autonomy

The economic literature shows that CB autonomy is related to lower and less volatile inflation, with lower effects on GDP growth.

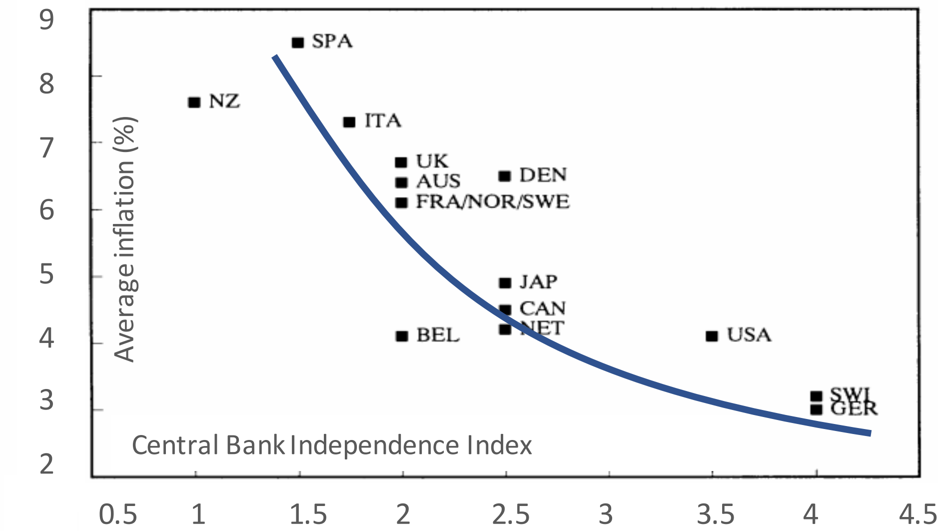
Central Bank Independence and Inflation in Latin America

(Average Central Bank Independence Index (CBI) and 1+ inflation, in logs)

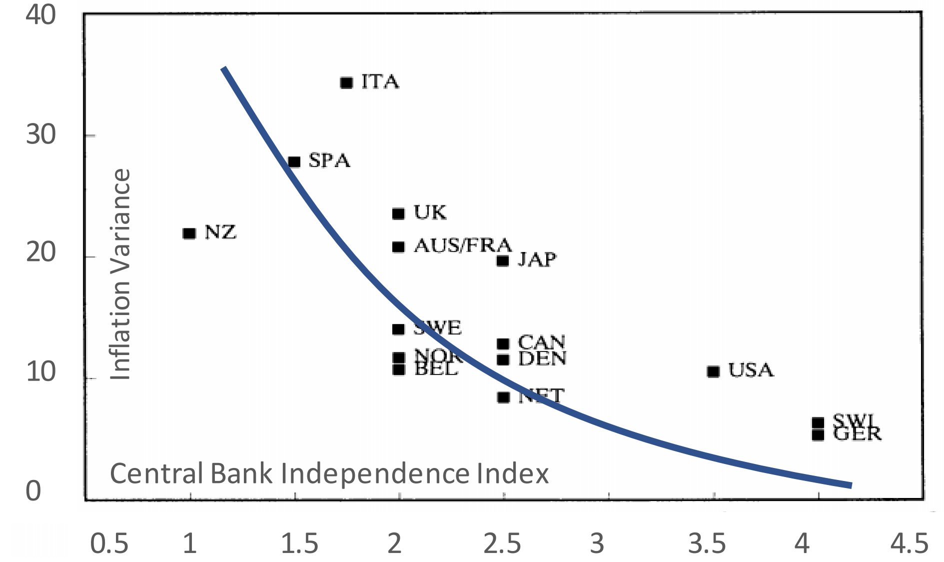


Sources: Jacome e Pienknagura (2022), Central Banks independence in Latin America – though the lens of history. IMF WP; Alesina A. e L. Summers (JMCB, 1993), Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence.

Relation between autonomy and inflation



Relation between autonomy and inflation volatility

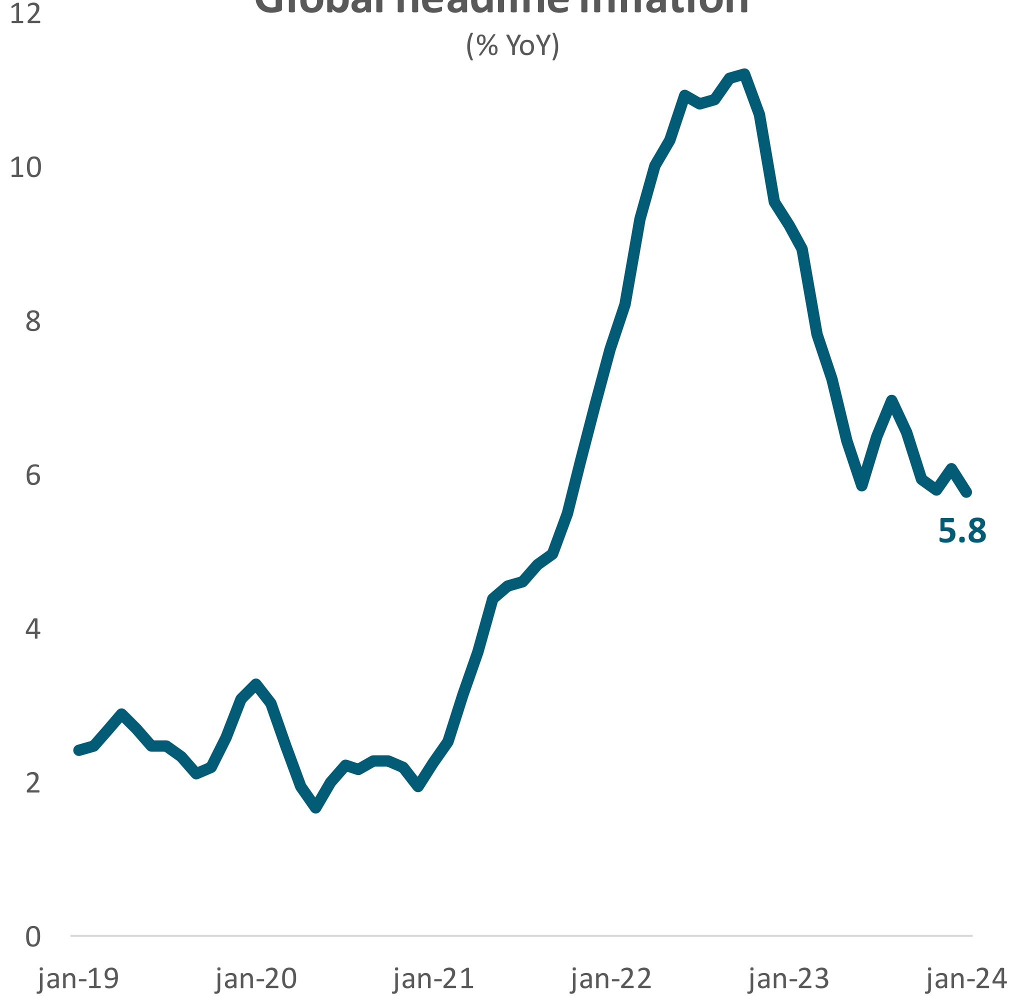


Global inflation

Decline in global inflation remains, but with debates about the speed of disinflation in many countries.

Global headline inflation*

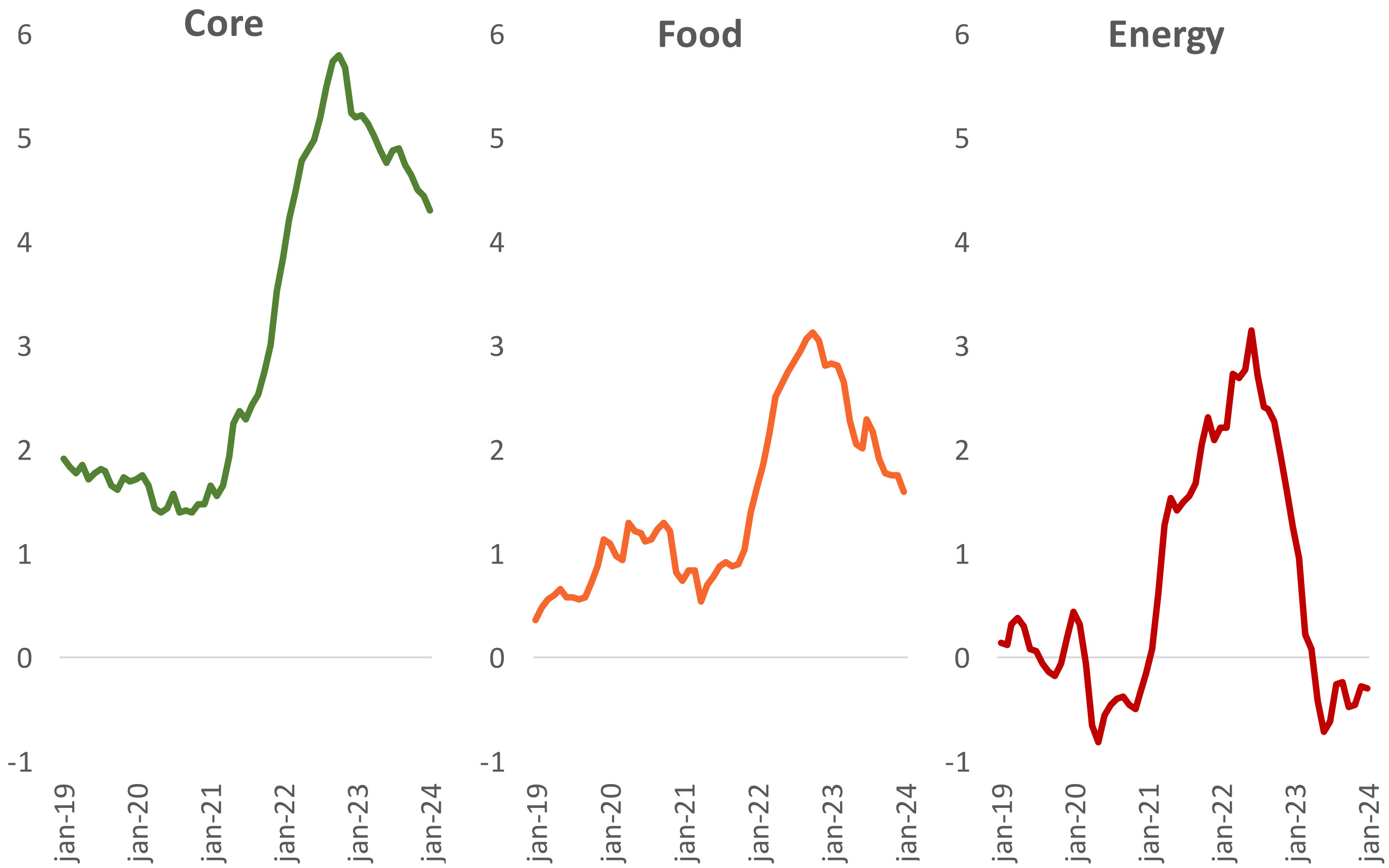
(% YoY)



Sources: Bloomberg, Refinitiv, central banks, national statistics institutes.

Contribution to global inflation

(YoY, p.p.)



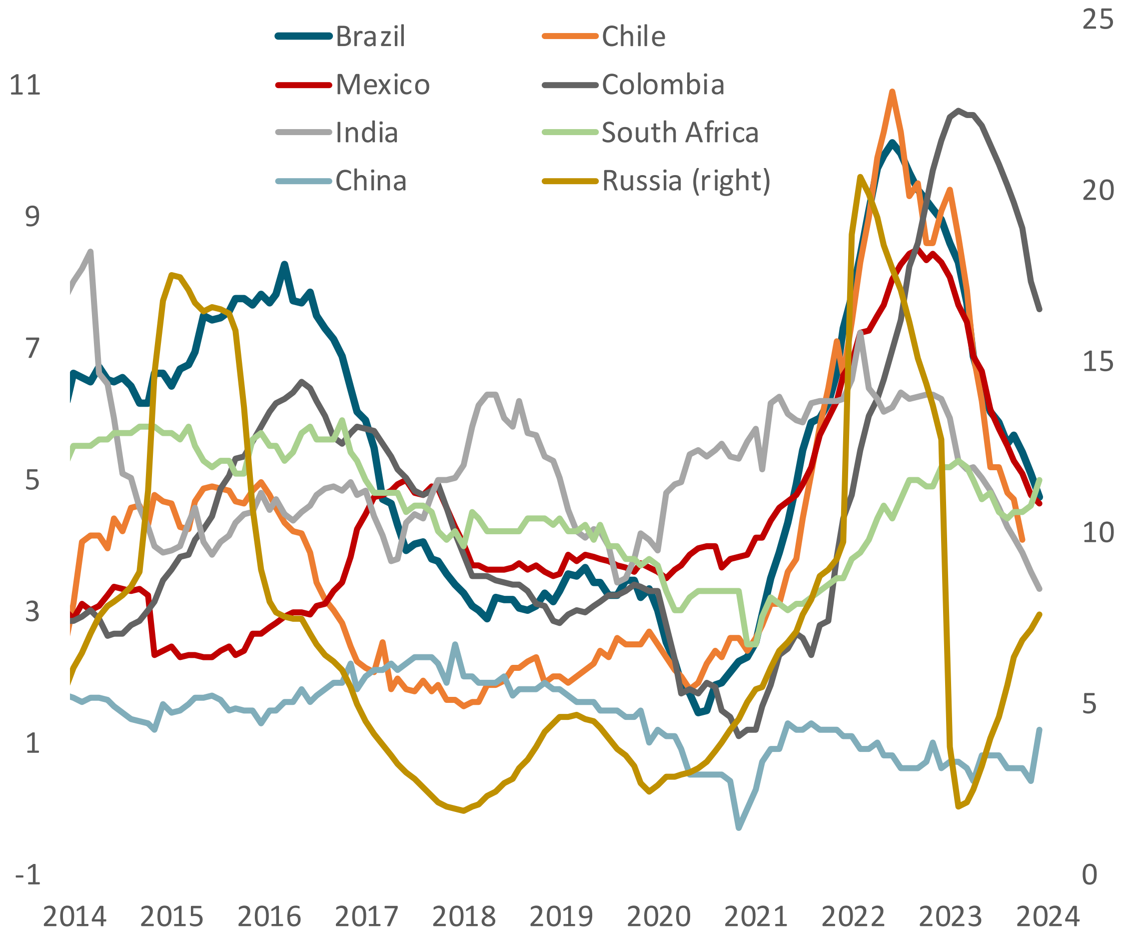
*Corresponds to 66% of global GDP except China
Countries: DE, FR, GB, IT, BE, NE, IE, SP,CH, NO, SE, DK, FI, CA, US, JP, BR, MX, CL, CO, IN, NR, ZA, BG, CZ, HU, PL, RO, SK.

EMEs: inflation

Core inflation remains declining, but levels are still high. Services inflation slowly decelerating.

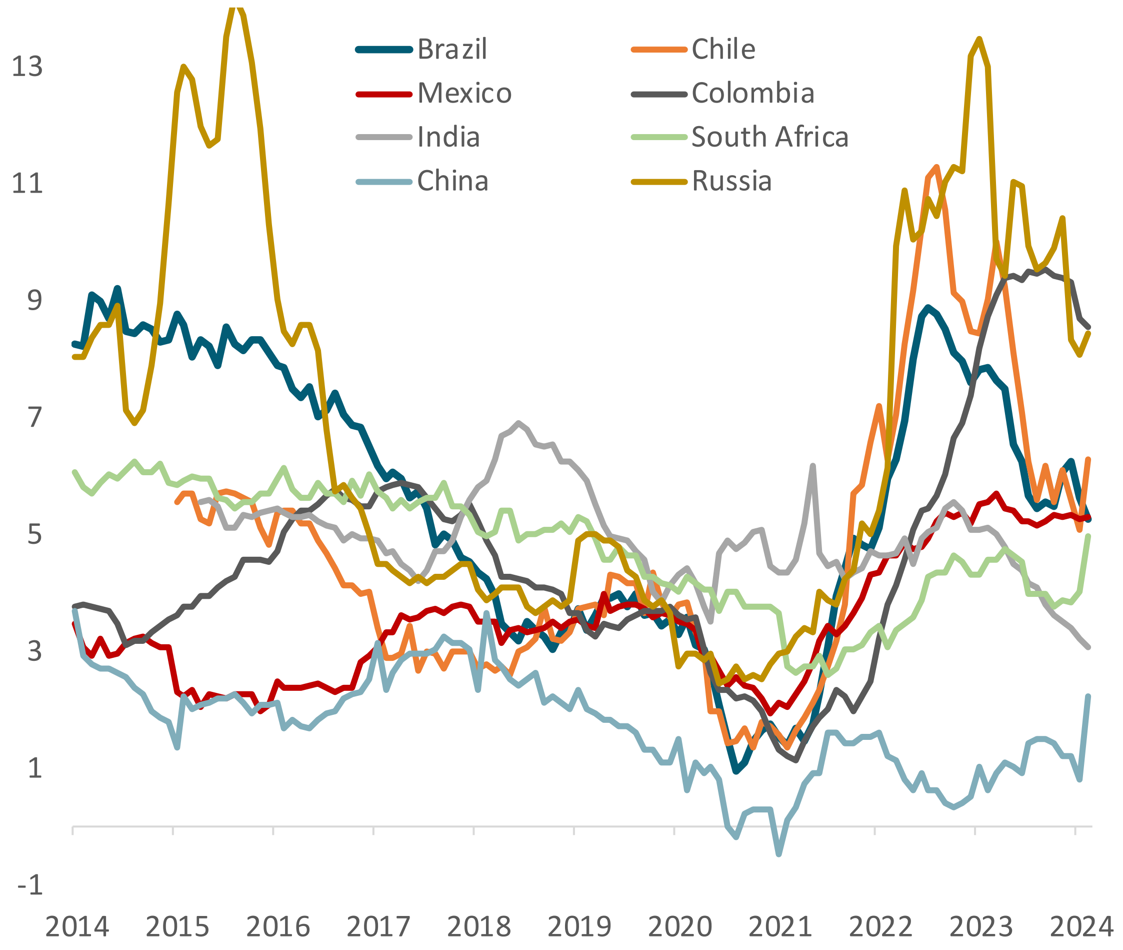
EMEs: core inflation

(% YoY)



EMEs: services CPI

(% YoY)



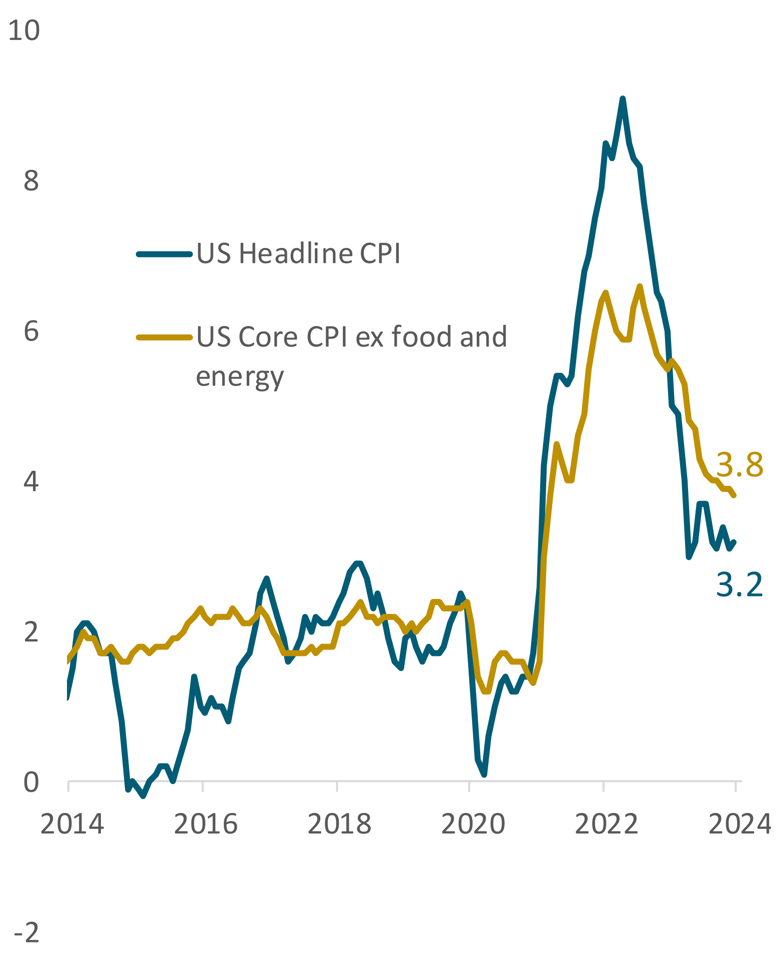
Source: Bloomberg.

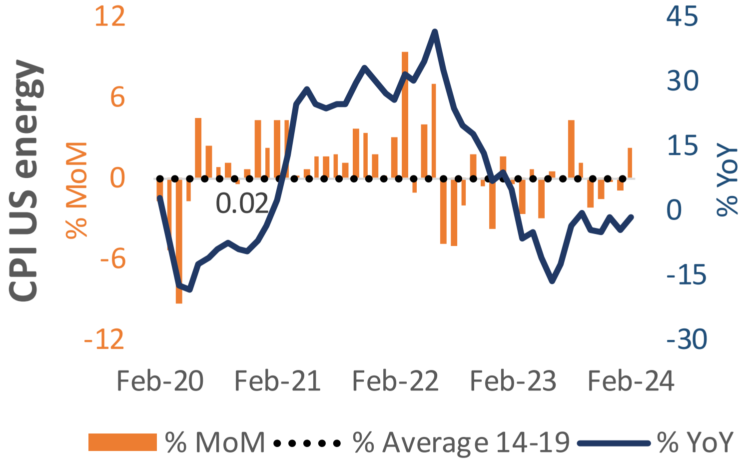
US: inflation

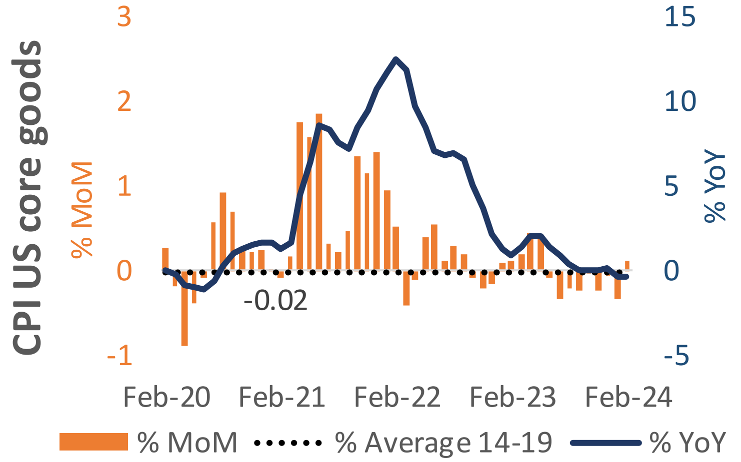
Core inflation continues with gradual deceleration. Services inflation remains resilient.

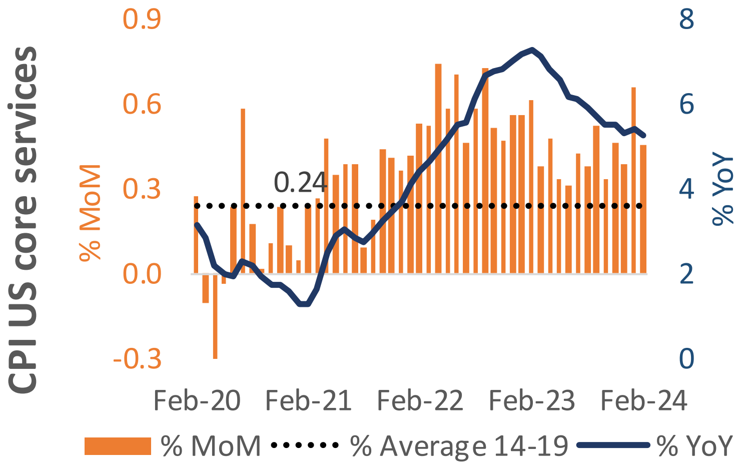
CPI: US headline and core

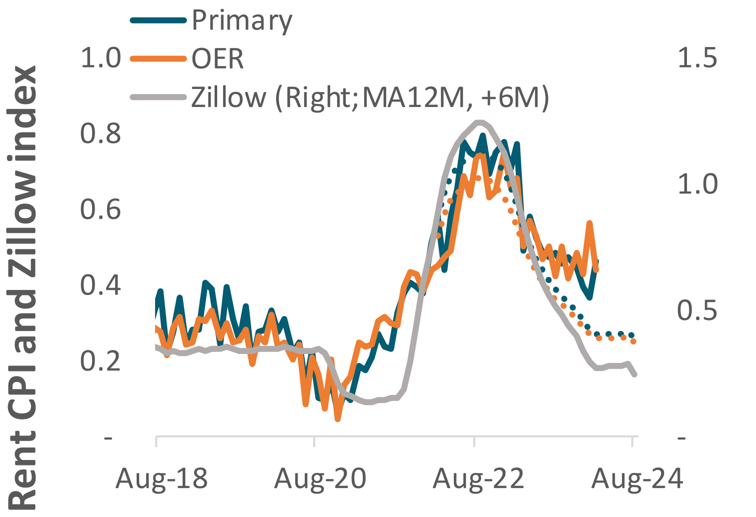
(% YoY)











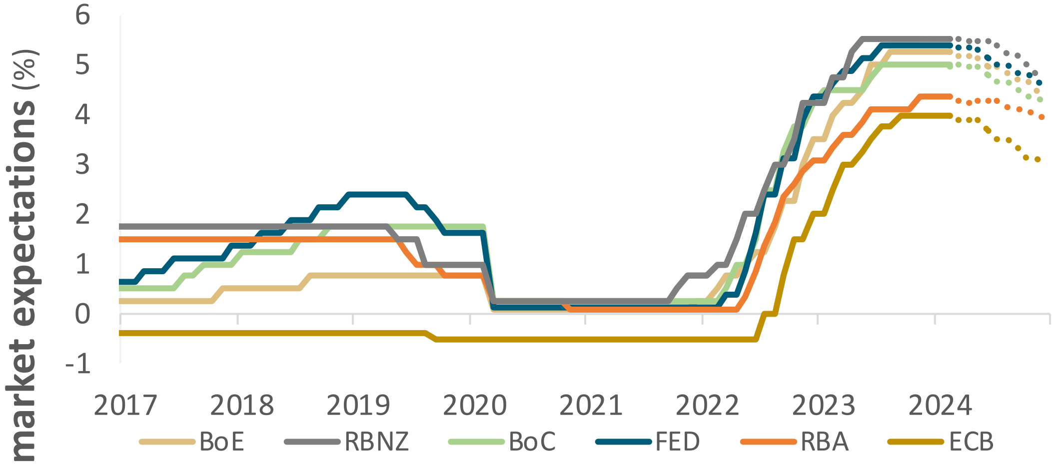
Dashed: Estimate until Mar/24 (OLS CPI vs Zillow (+6M;MA12M)

Source: Bloomberg, BEA.

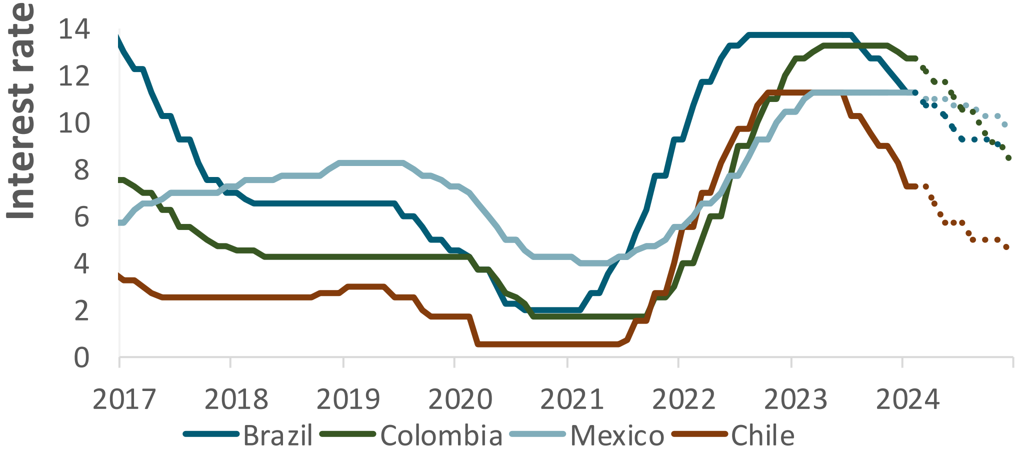
Monetary policy

The global environment remains volatile, with debates about the beginning of the easing cycle in major economies.

Advanced economies



Latin America



Monetary policy pricing

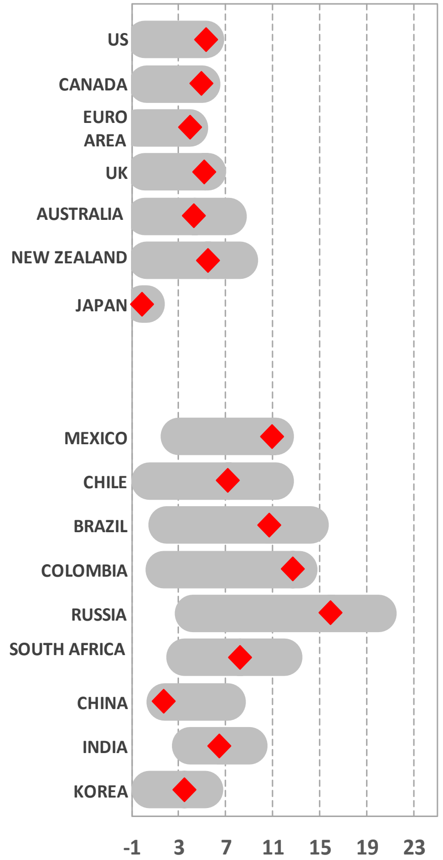
MONETARY POLICY PRICING

03/21/2024

Country	Rate (%) last decision	Pricing 6 Months base points	Pricing 1 Year base points
AEs			
US	5.38 =	-40	-94
Canada	5.00 =	-46	-96
Euro area	4.00 =	-51	-109
UK	5.25 =	-43	-98
Australia	4.35 =	-19	-48
New Zealand	5.50 =	-35	-91
Japan	0.05 ↑	+36	+55
EMEs			
Mexico	11.00 ↓	-104	-206
Chile	7.25 ↓	-233	-248
Brazil	10.75 ↓	-98	-97
Colombia	12.75 ↓	-241	-448
Russia	16.00 =	-206	-522
South Africa	8.25 =	-10	-14
China	1.80 ↓	-7	-8
India	6.50 =	-26	-55
Korea	3.50 =	-13	-34

Interval of Monetary Policy rate

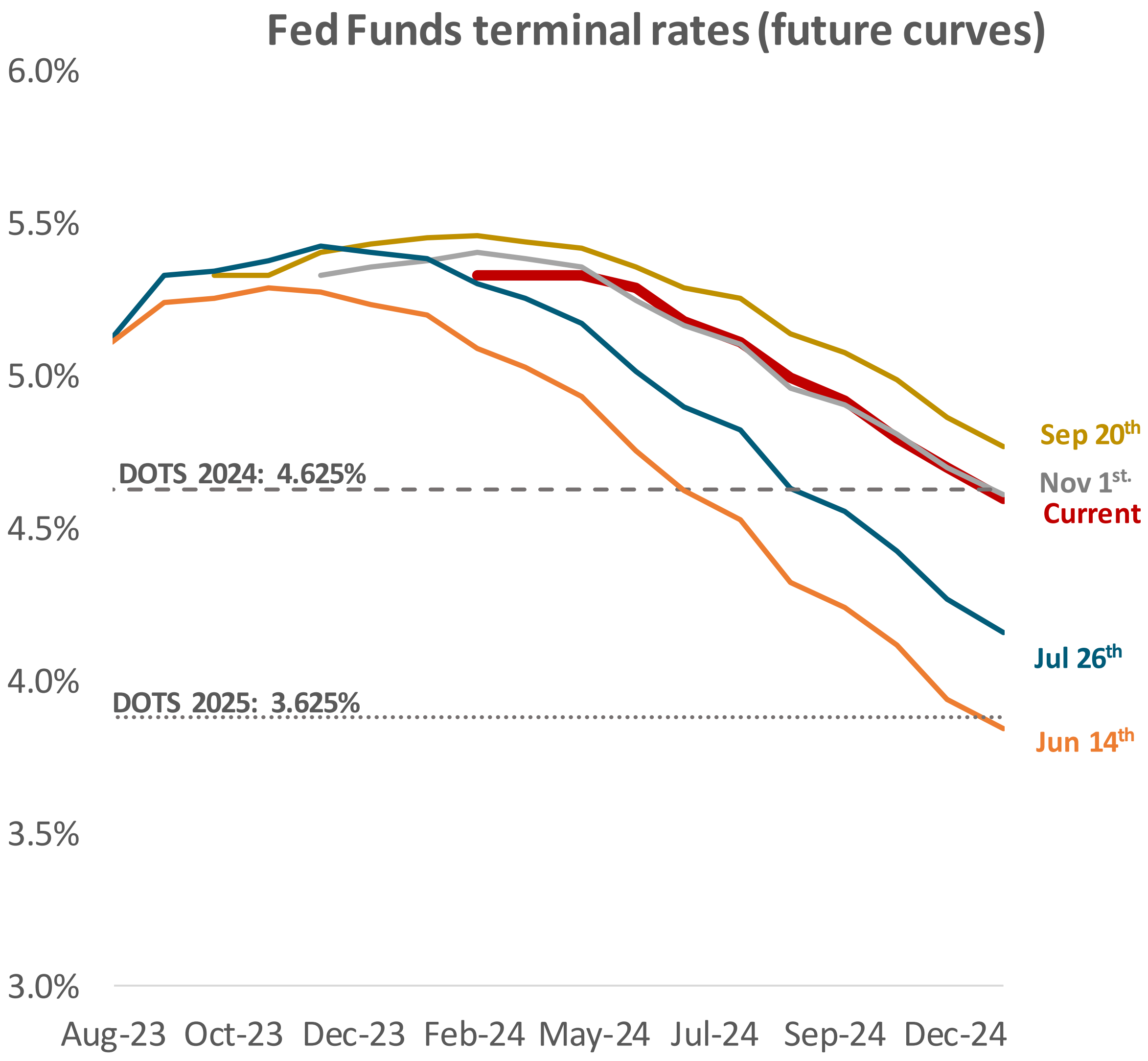
Since 2008 vs. current rate

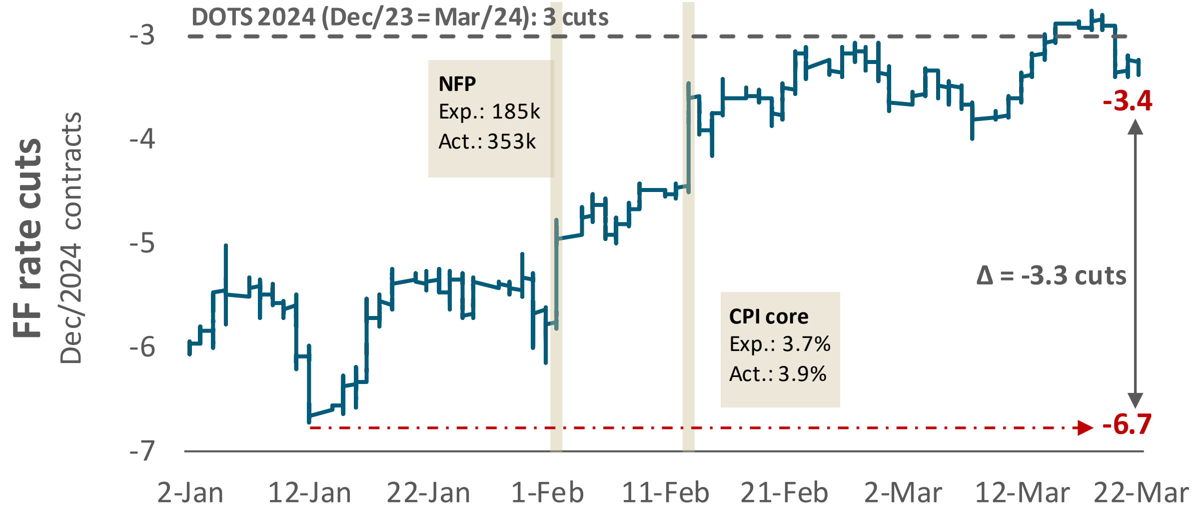


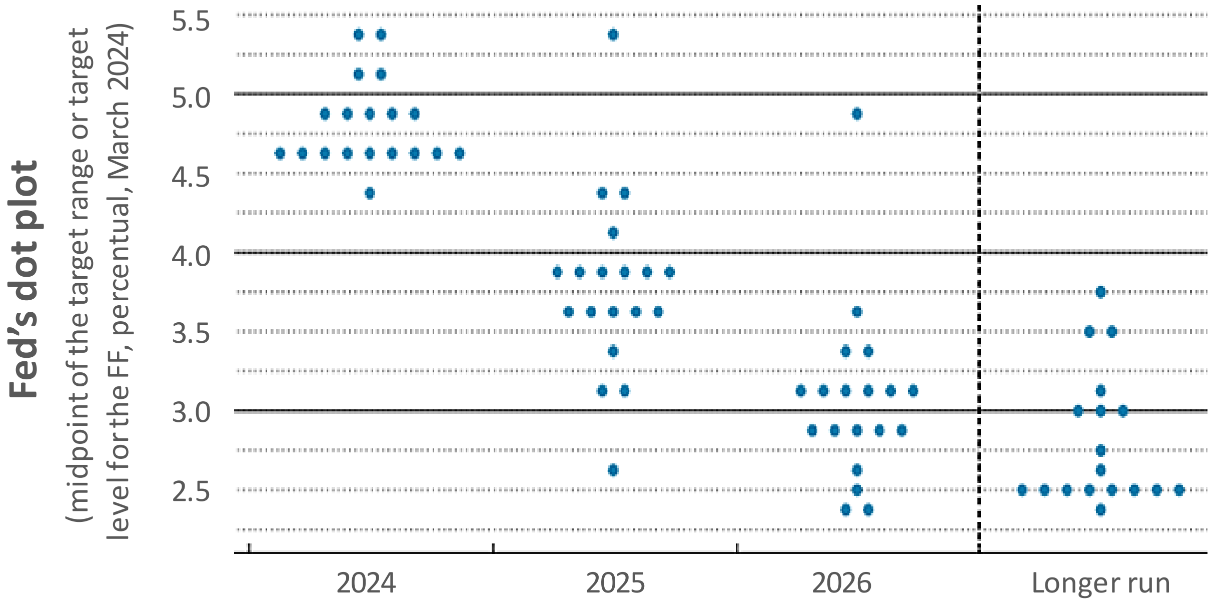
Sources: Bloomberg, central banks, BCB.

US: monetary policy

Fed funds rate kept between 5.25%-5.5% at March meeting, as expected.





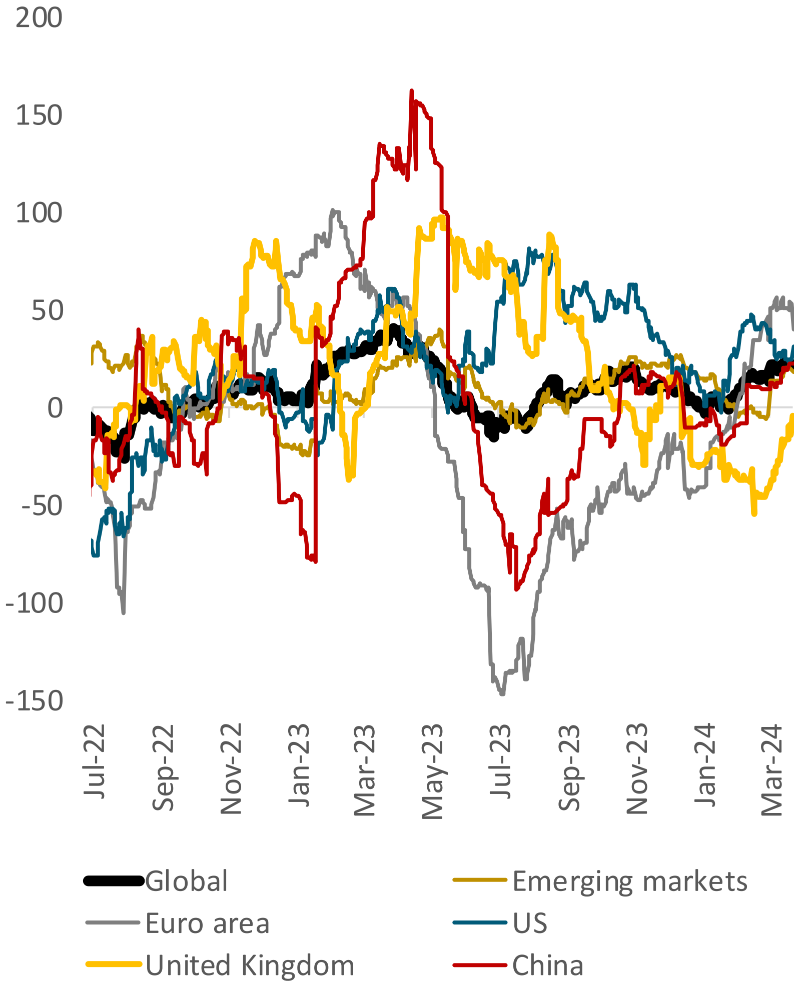


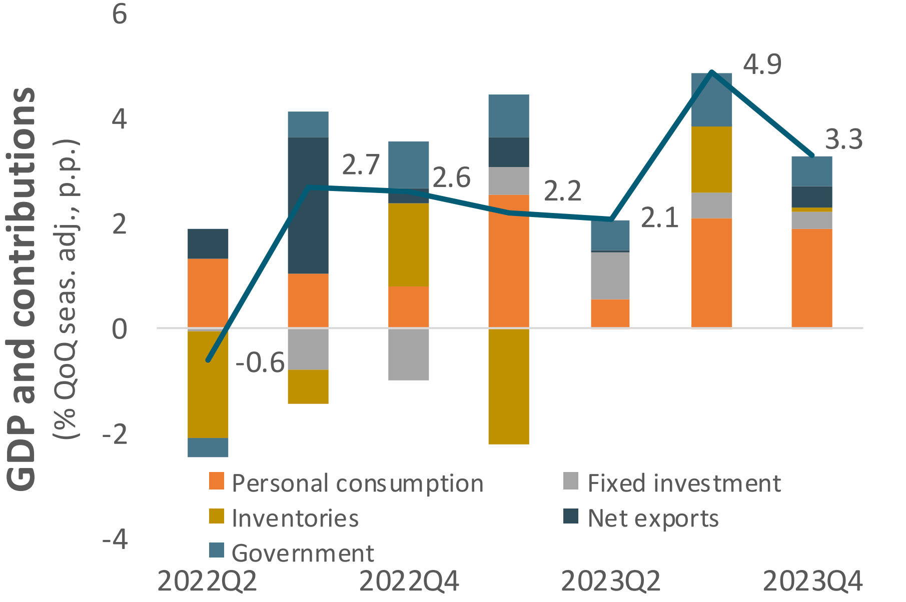
Sources: Bloomberg, Fed.

US: economic activity

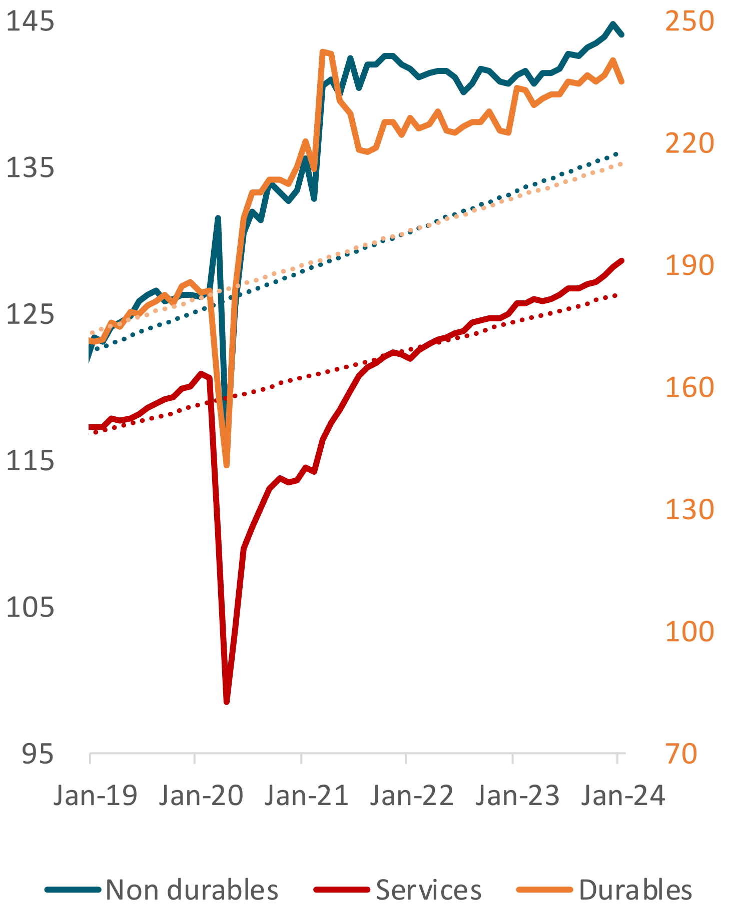
Economic activity has been resilient, supported mainly by consumption. Investments impacted by contractionary pressures.

Growth surprise index





Real consumption per components

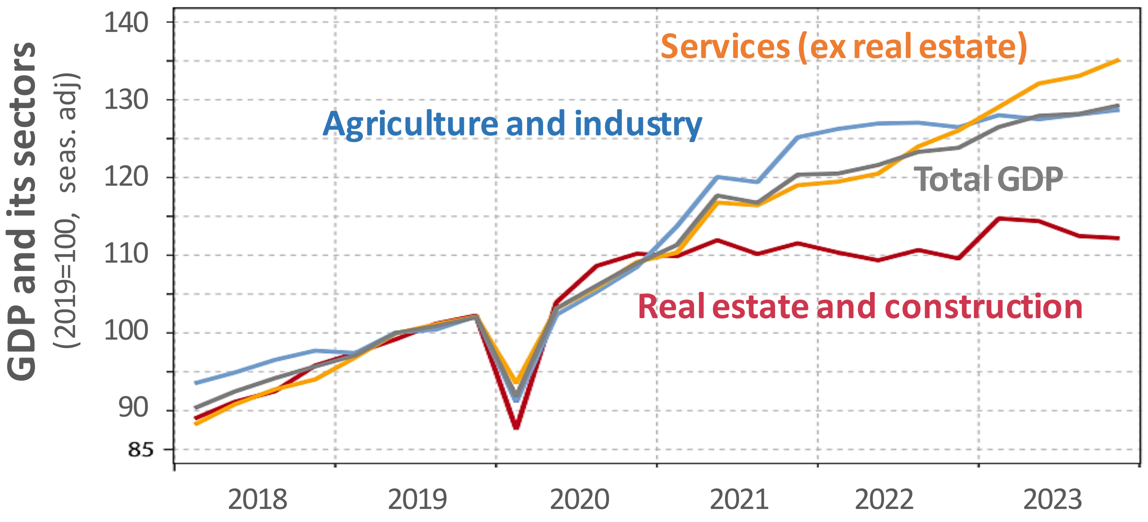


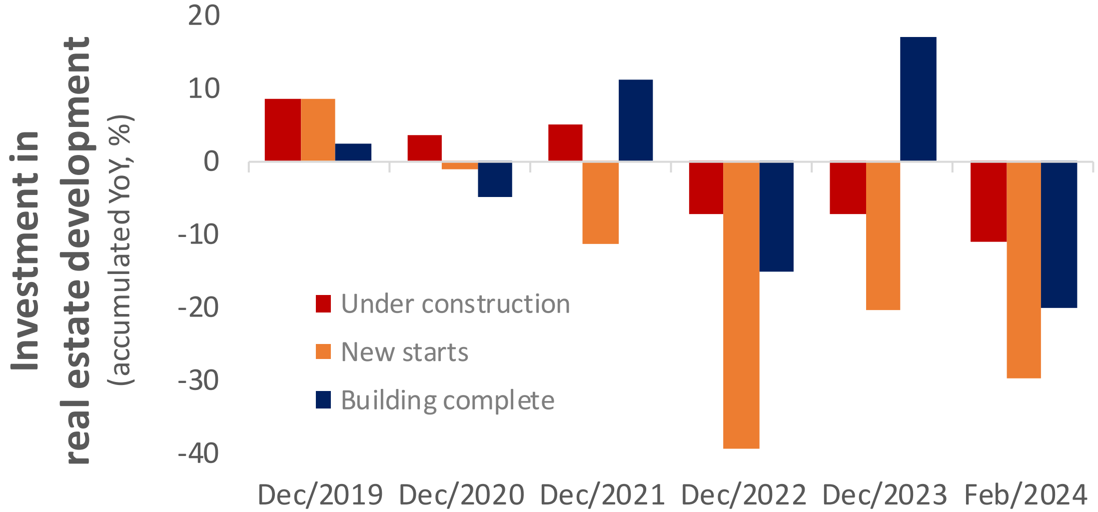
* Dotted lines: trend 2009-19

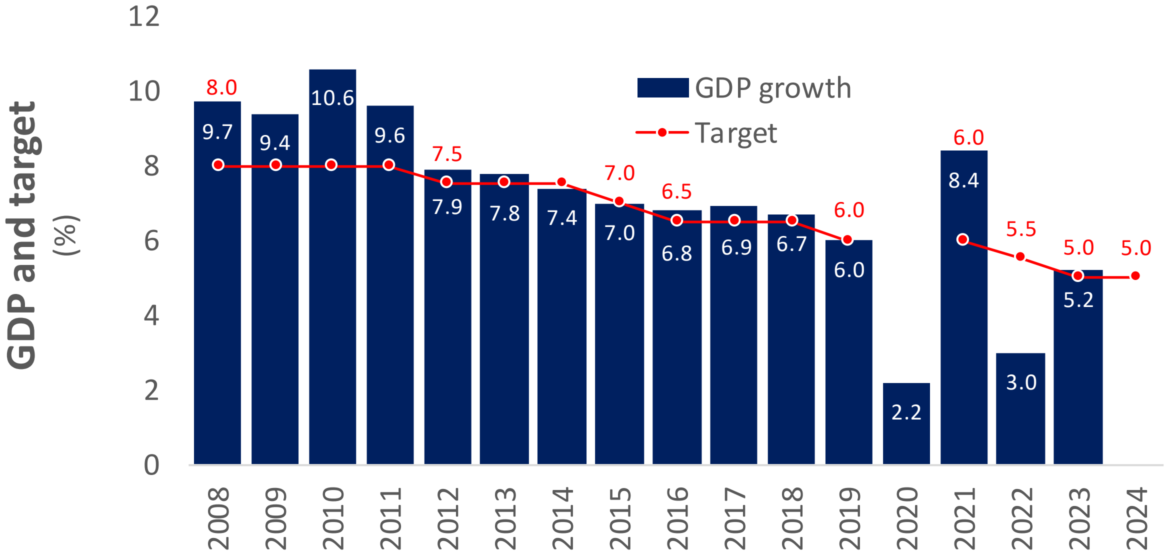
Source: Bloomberg.

China: economic activity

Real estate and construction sectors still affect negatively China's economic performance.





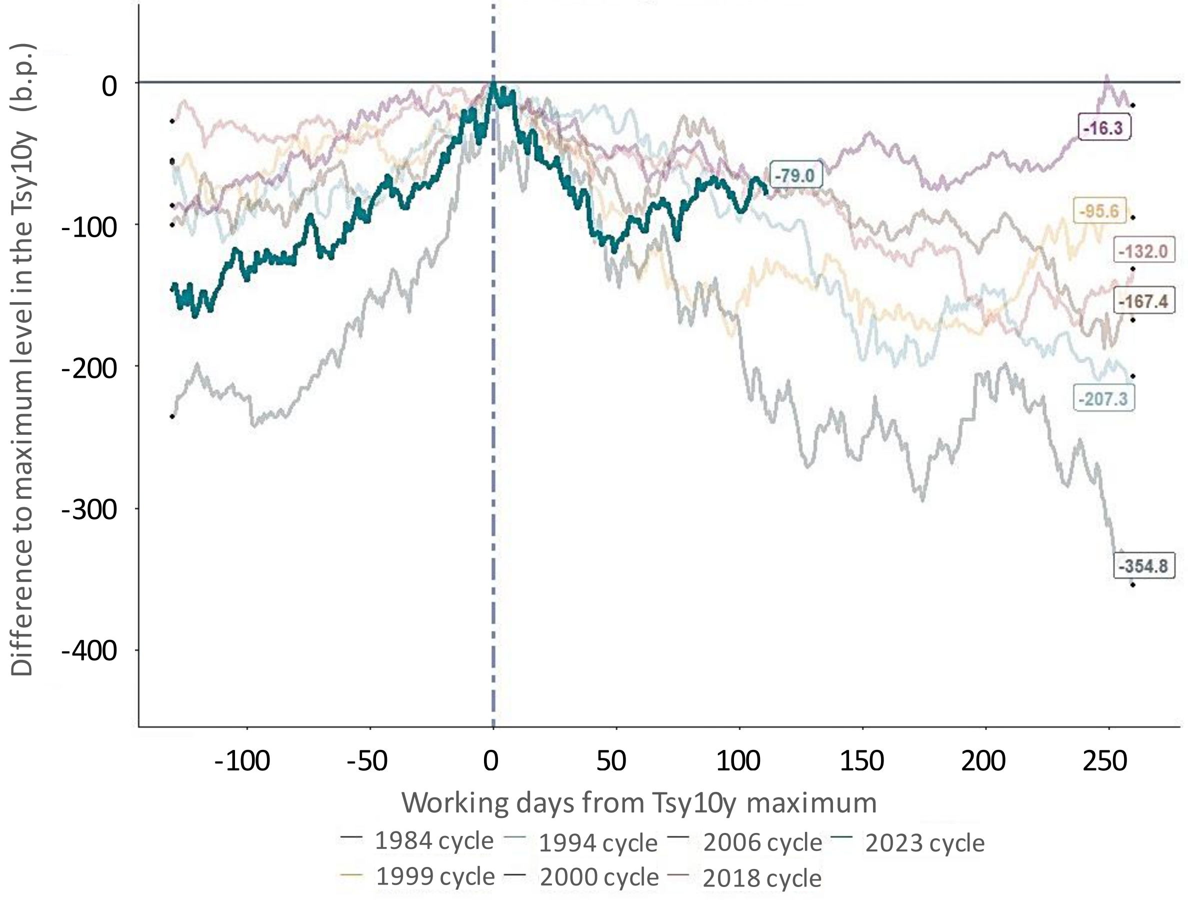


Sources: Gavekal, IMF, China StateCouncil, NBS.

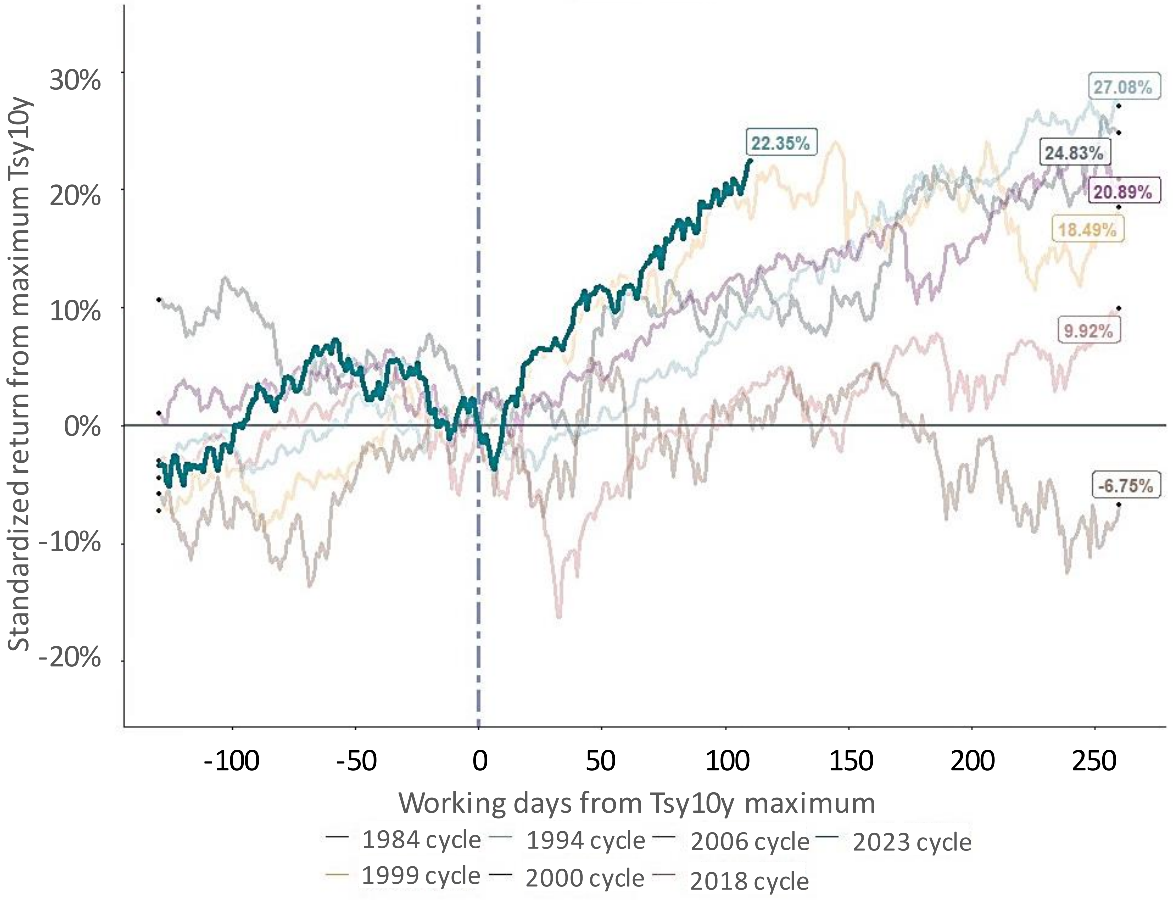
US: financial markets

Stock market at highest, despite increases in yields.

10-year Treasury



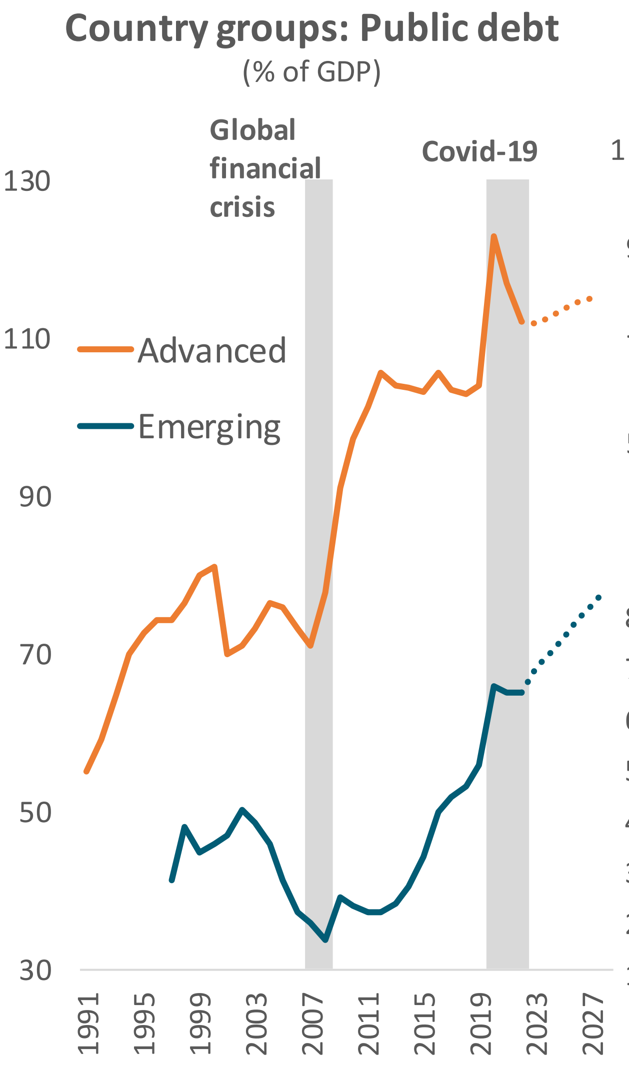
S&P 500

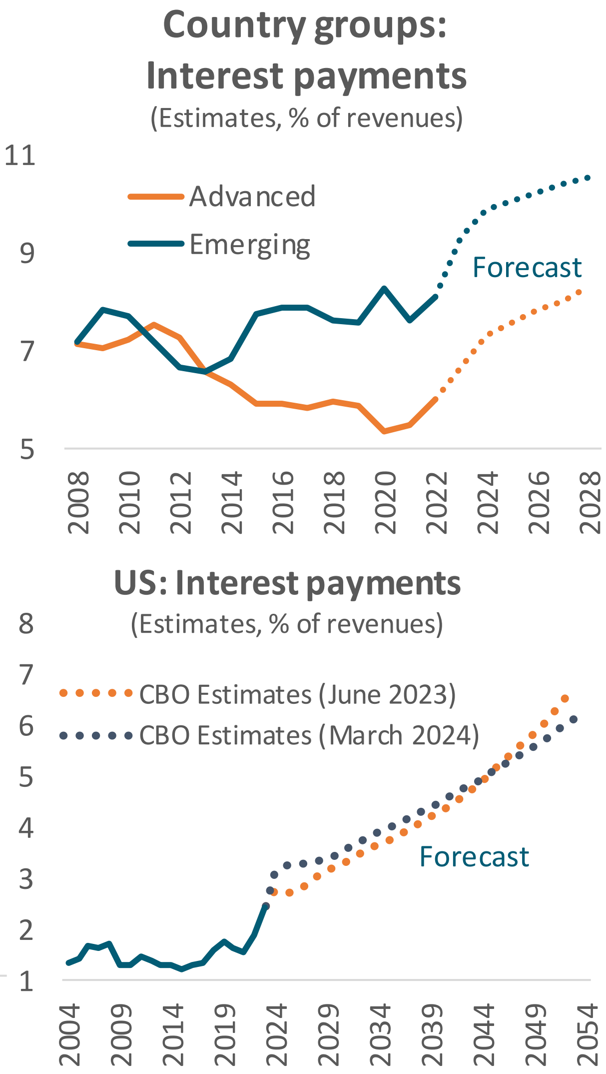


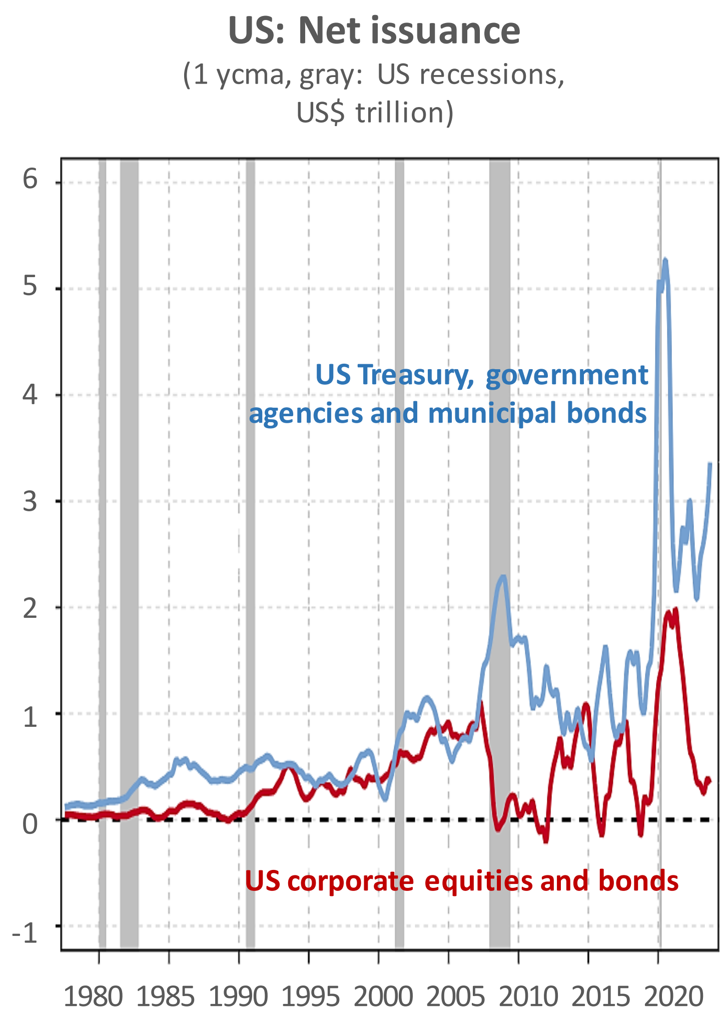
Source: Bloomberg.

Fiscal policy: public debt and debt service

Rising public debt and debt service burden demand increasing resources.







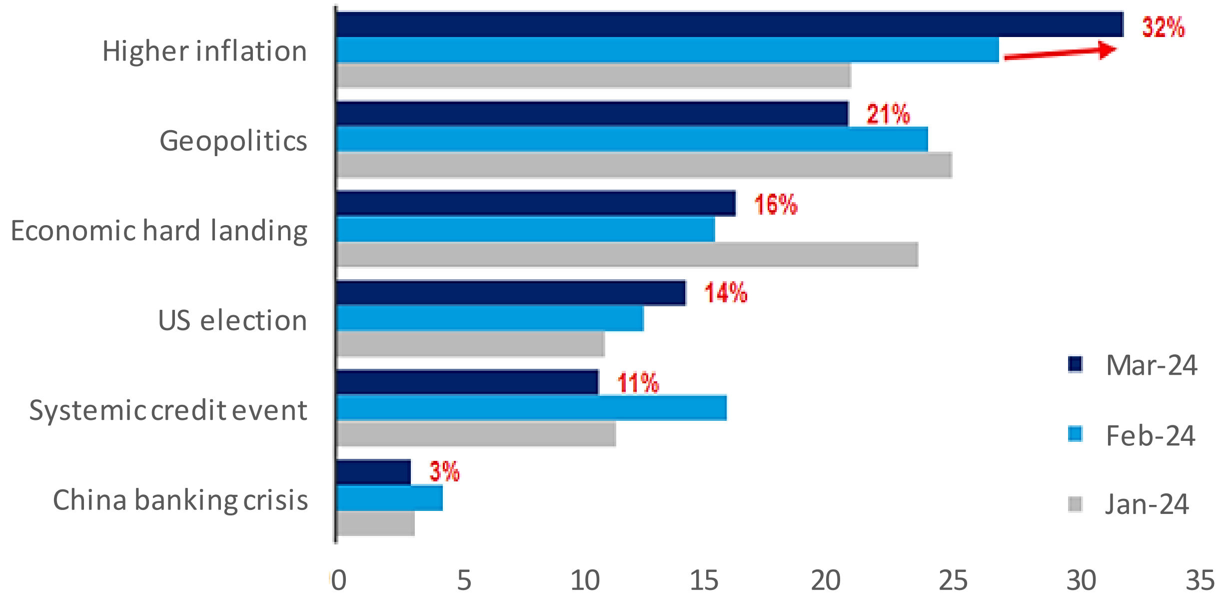
Sources: CBO, IMF, Gavekal

Risks for global economy

Inflation returns as the main source of risk for the global economy. US Commercial real estate is the most likely source for a systemic credit event.

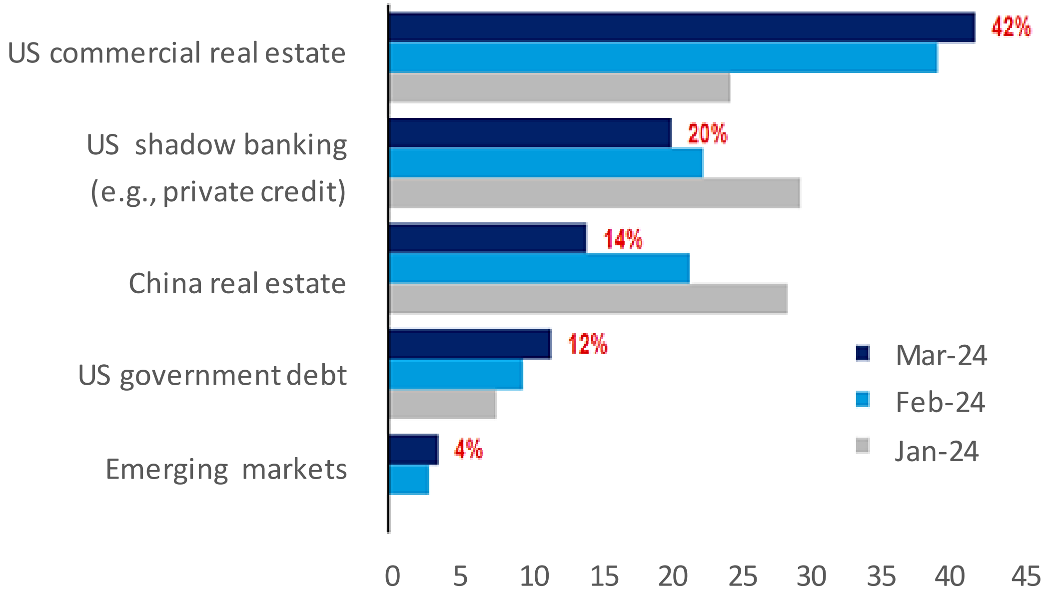
Tail risks (%)

What do you consider the biggest 'tail risk'?



Sources of credit systemic risk (%)

What is the most likely source for a systemic credit event?



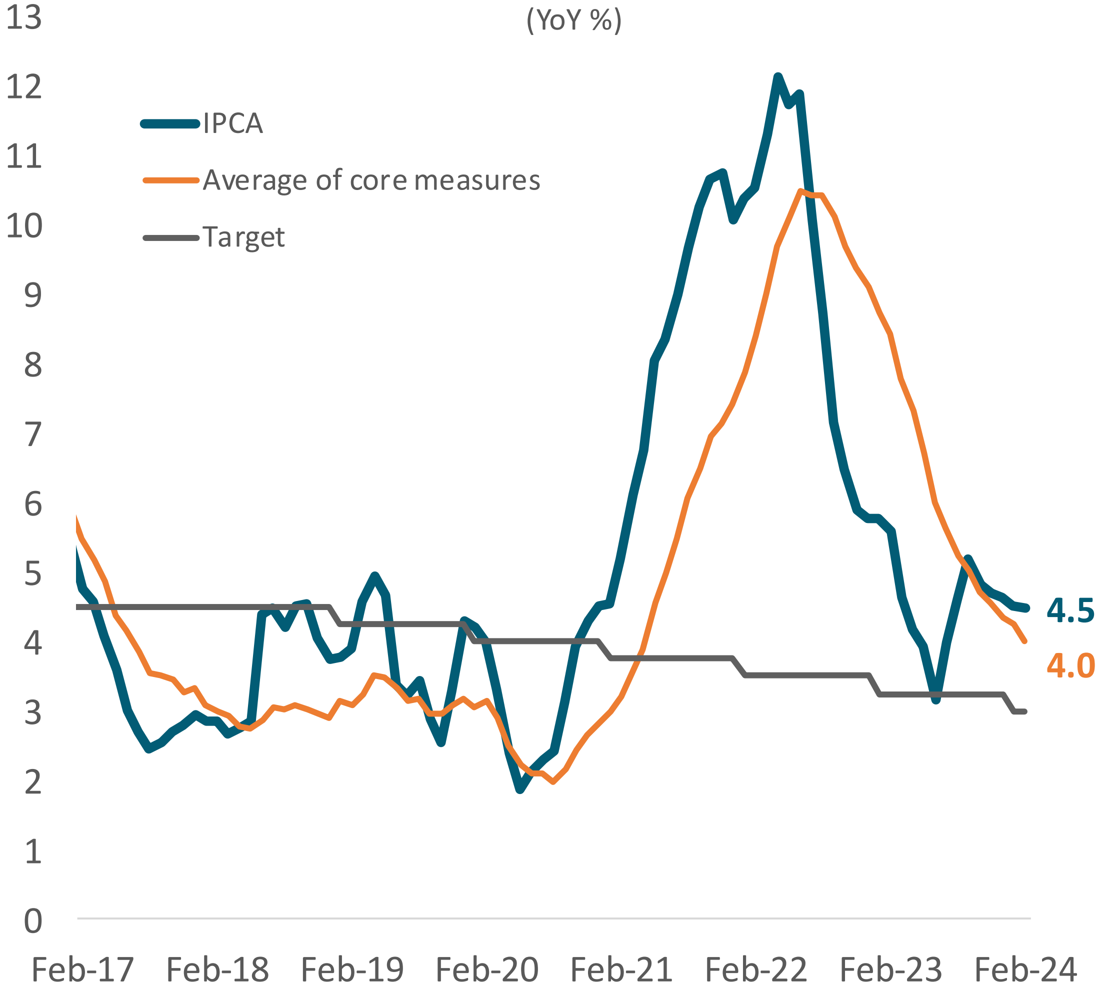
Sources: BofA Global Fund Manager Survey

Brazil: inflation

Headline consumer inflation remains in a path of disinflation, while various measures of underlying inflation are above the target in recent releases.

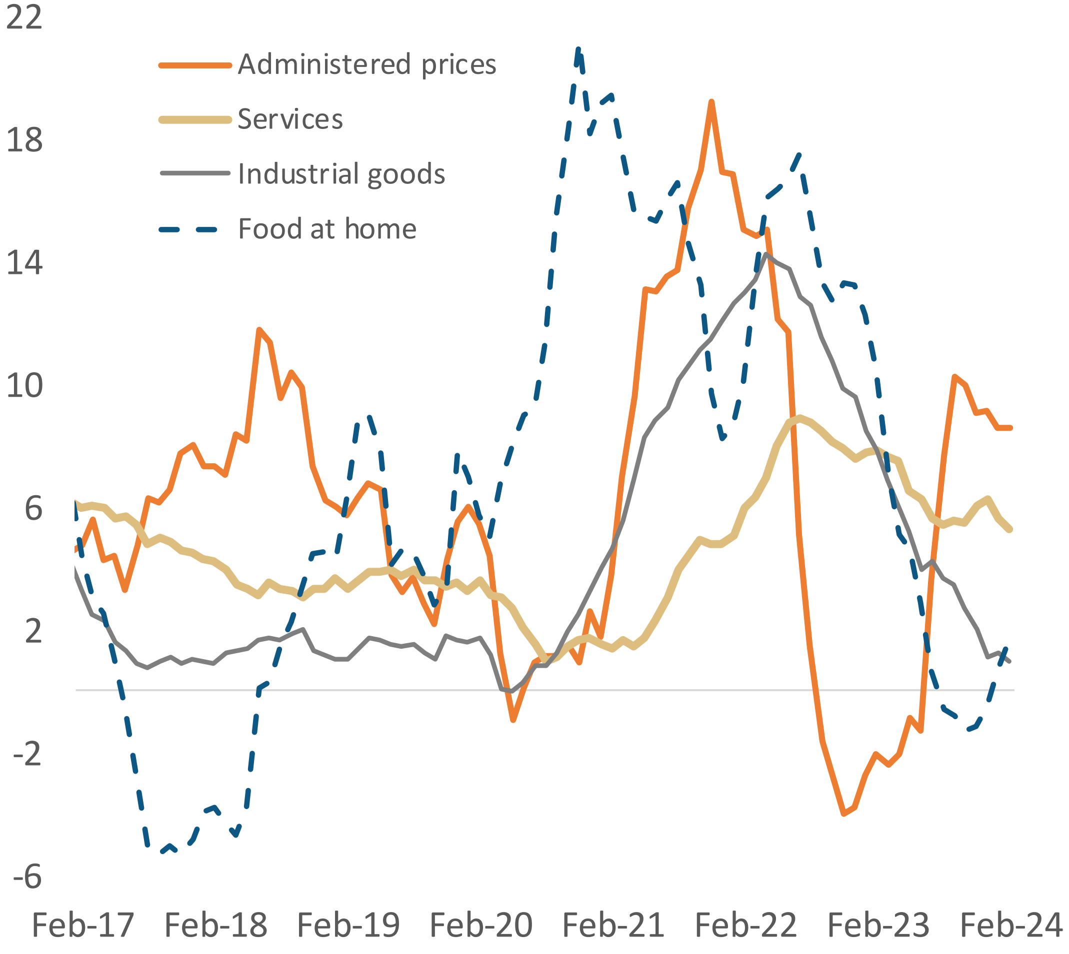
IPCA and target

(YoY %)



Inflation segments

(YoY %)



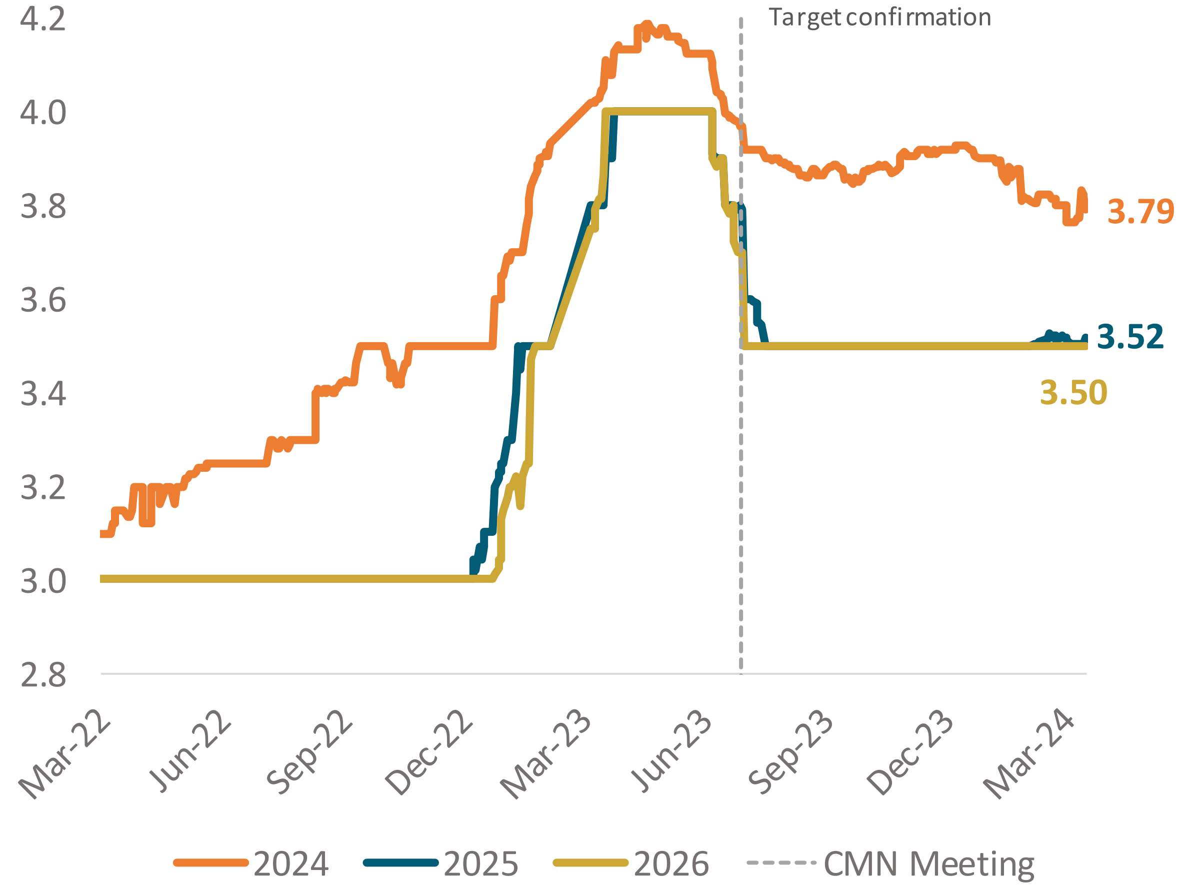
Sources: IBGE, BCB

Brazil: inflation expectations

Long-term inflation expectations remain unanchored.

Inflation expectations

(YoY %, Focus Report*, median)

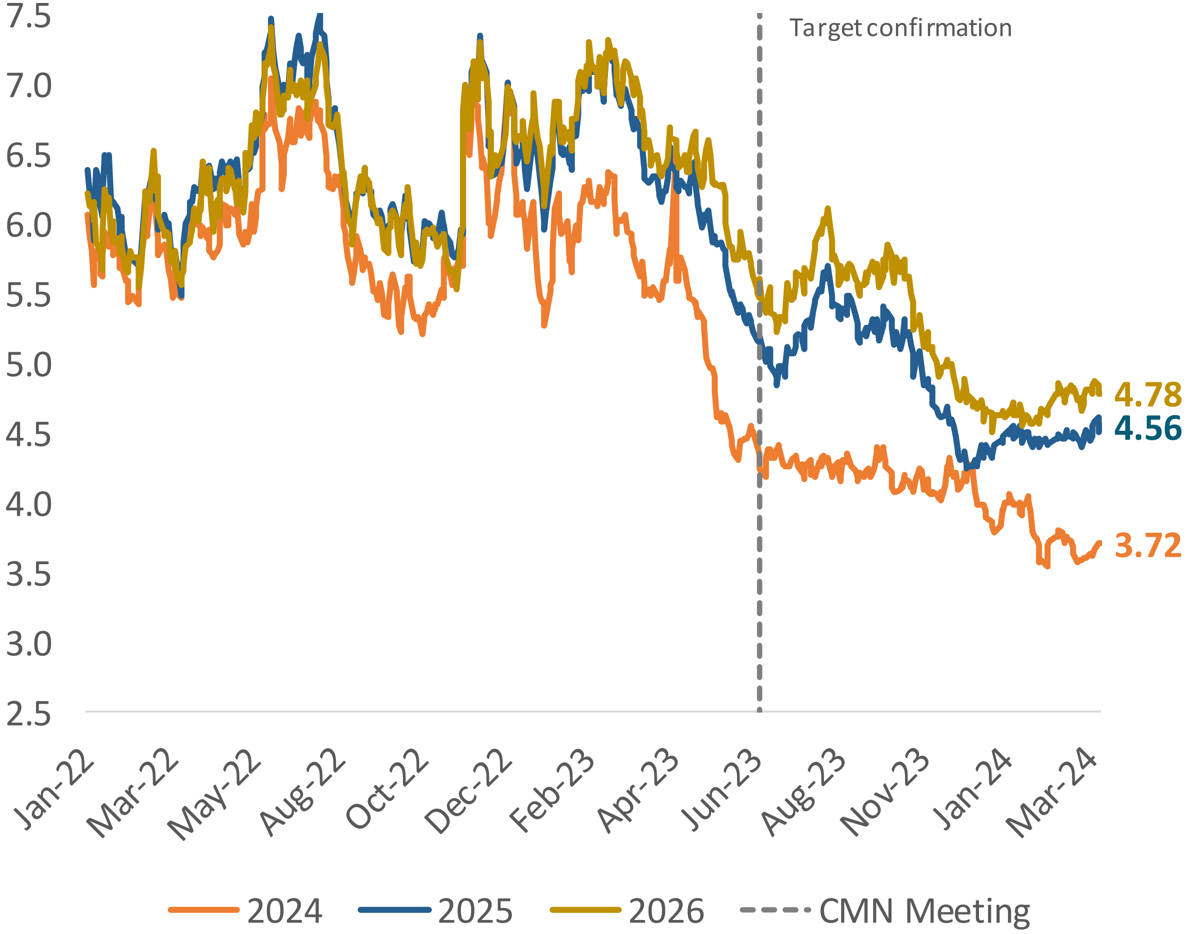


* Updated until 03/15/2024

Source: BCB

Break-even inflation

(DAP, YoY %)

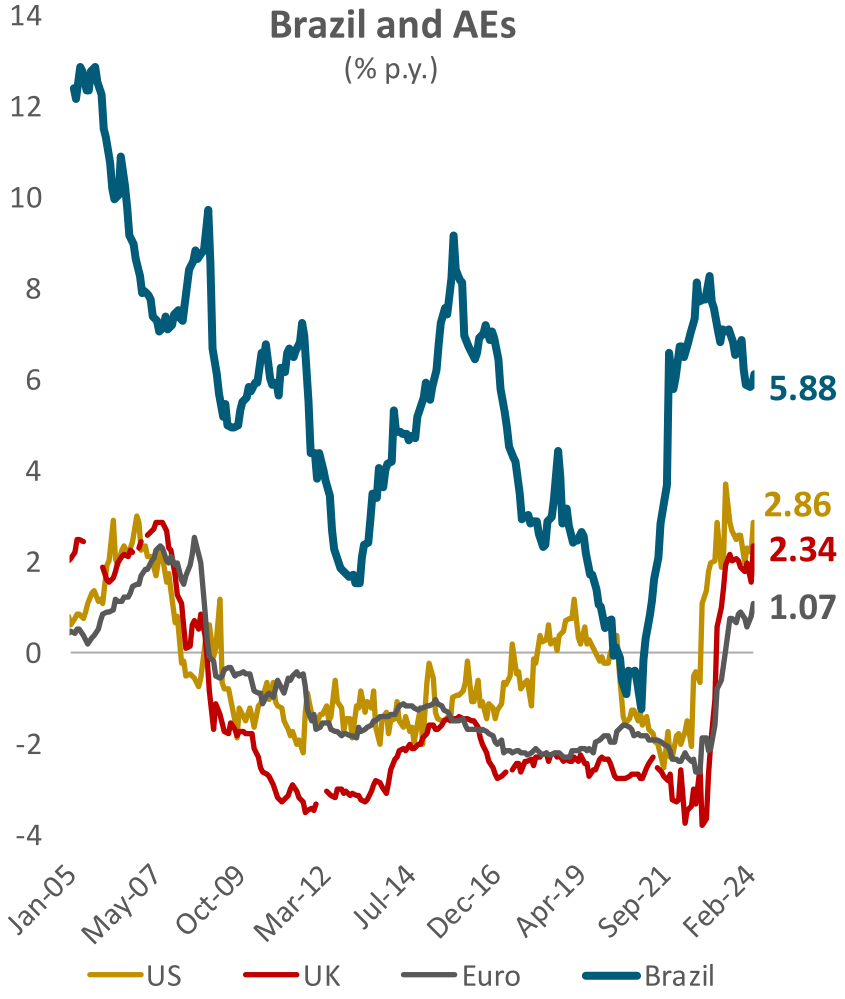


* Updated until 03/20/2024

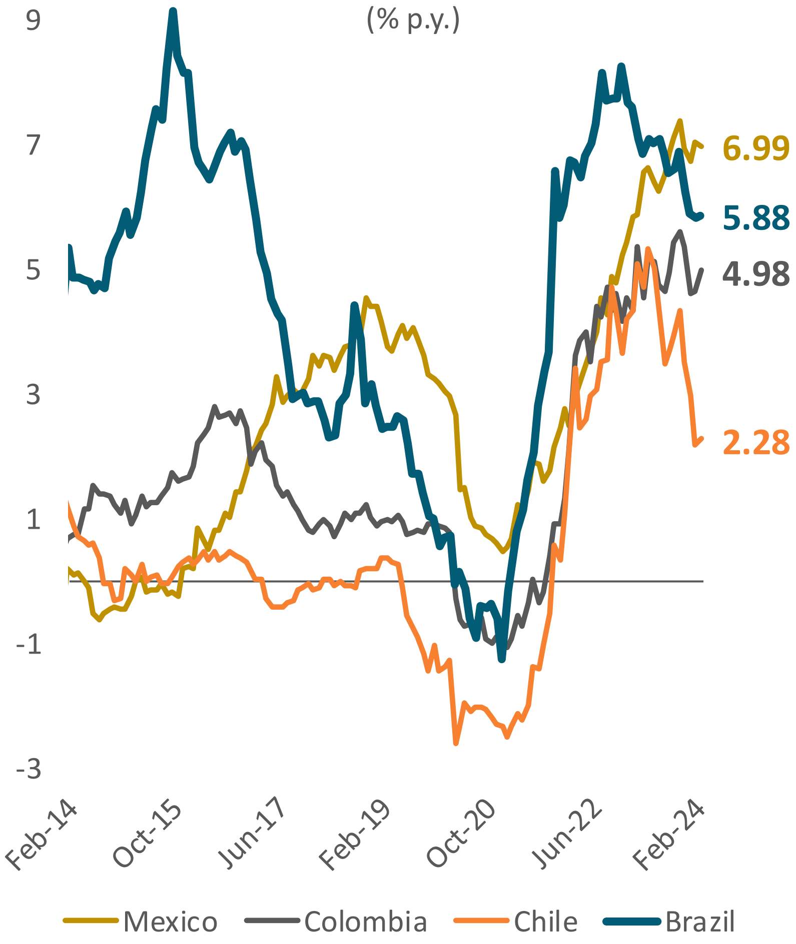
Real interest rates

Real interest rate has fallen in Brazil relative to its peers.

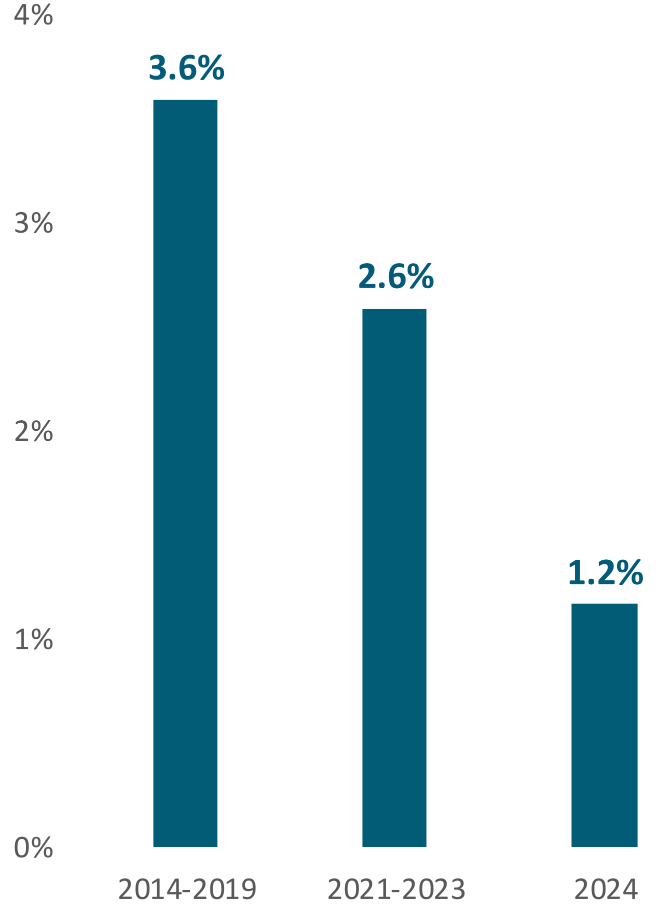
***Ex-ante* real interest rates: Brazil and AEs**
(% p.y.)



***Ex-ante* real interest rates: Brazil and EMEs**
(% p.y.)



Ex-ante* real interest rate: difference between Brazil and peer average



*Chile, Colombia, Mexico.

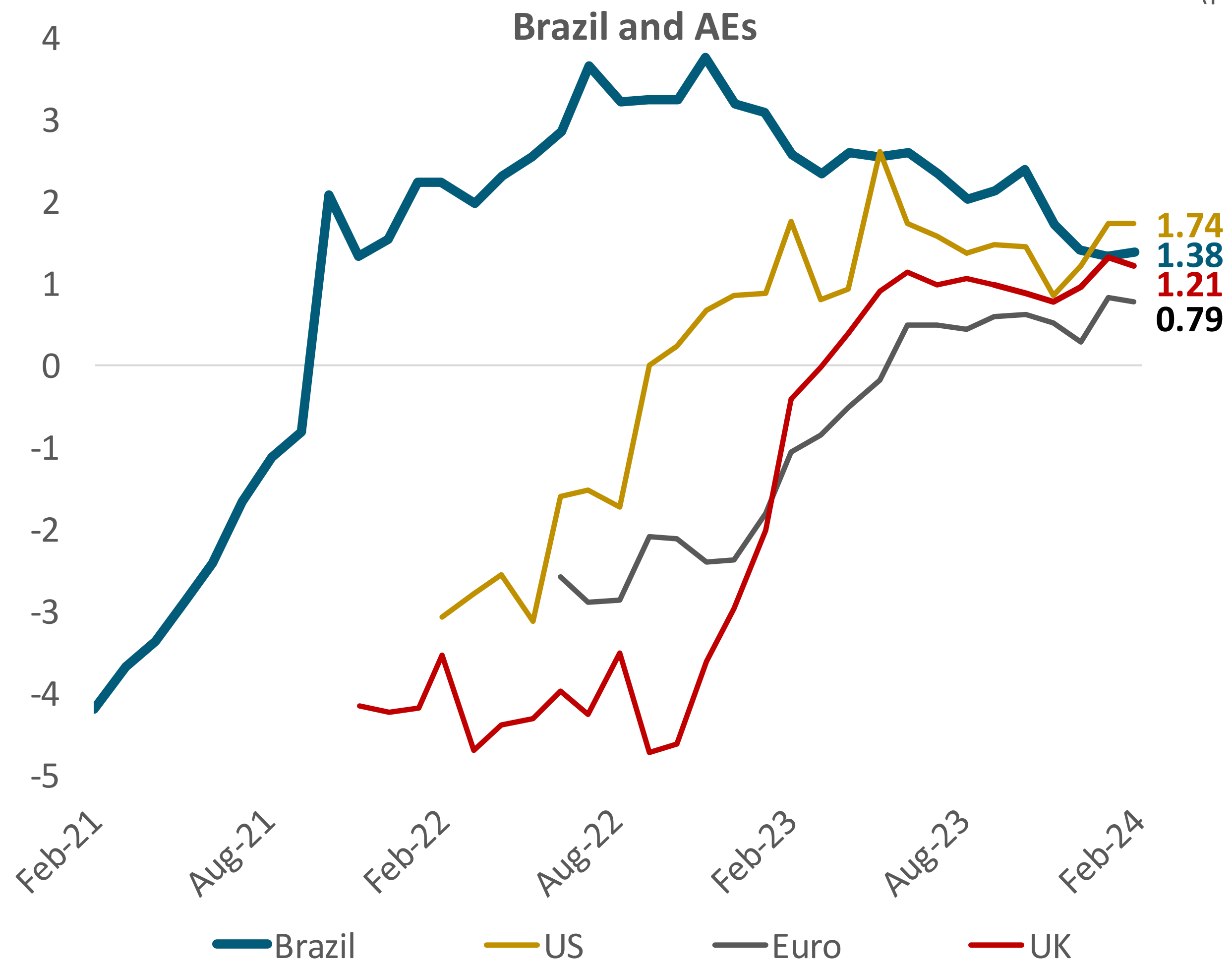
Sources: Bloomberg, central banks, BCB.

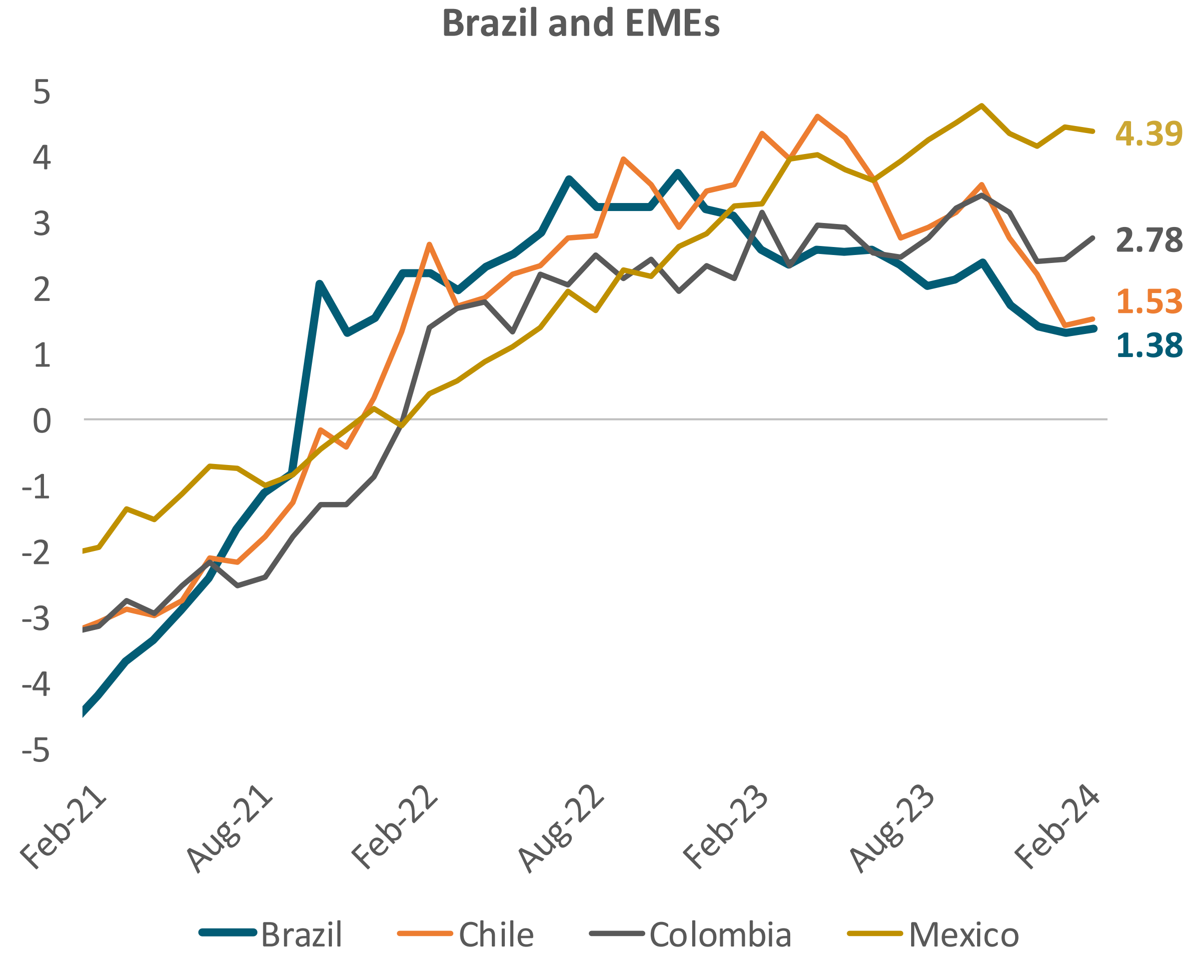
Real interest rate vs. neutral rate

Difference between the real interest rate and the neutral rate is lower in Brazil than in its peers.

Monetary effort: 1-year real interest rate minus real neutral rate

(p.p.)

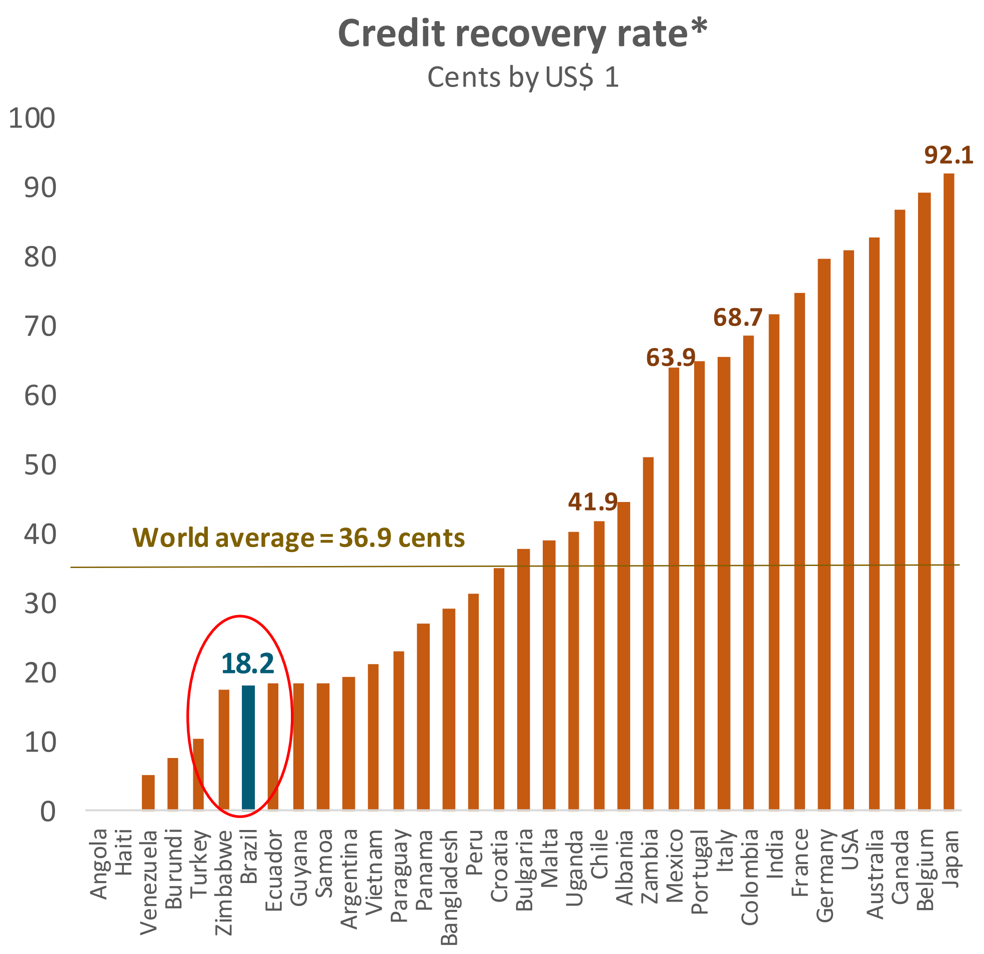




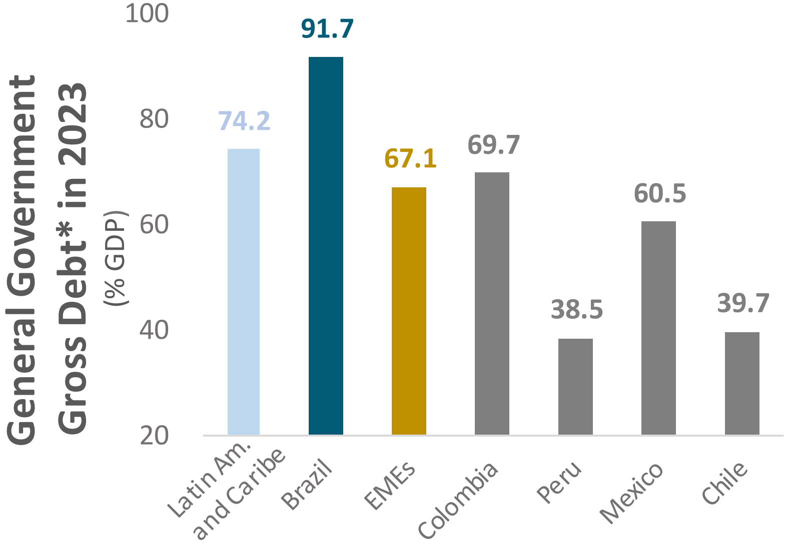
Sources: Bloomberg, central banks, BCB.

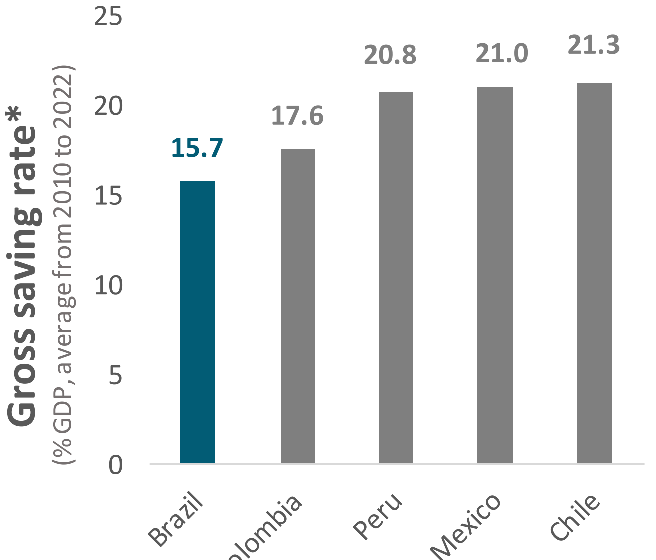
Why are interest rates so high in Brazil?

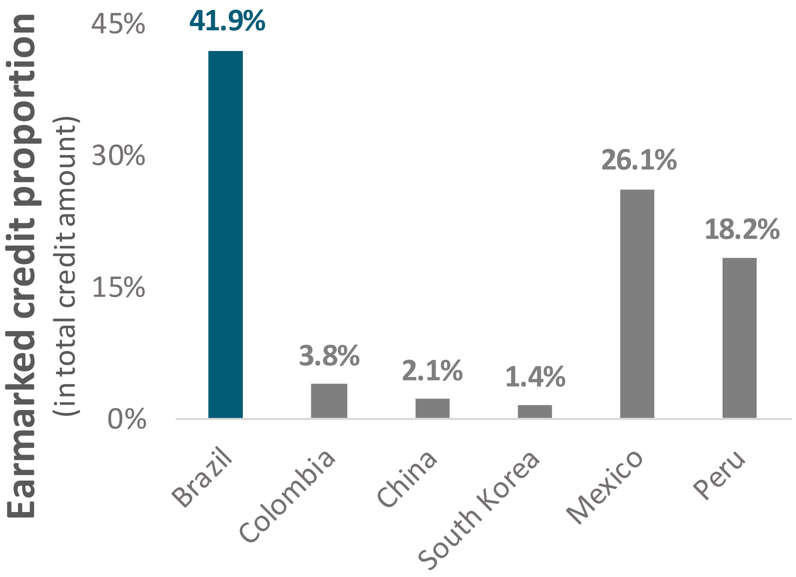
High interest rates are explained by structural features.

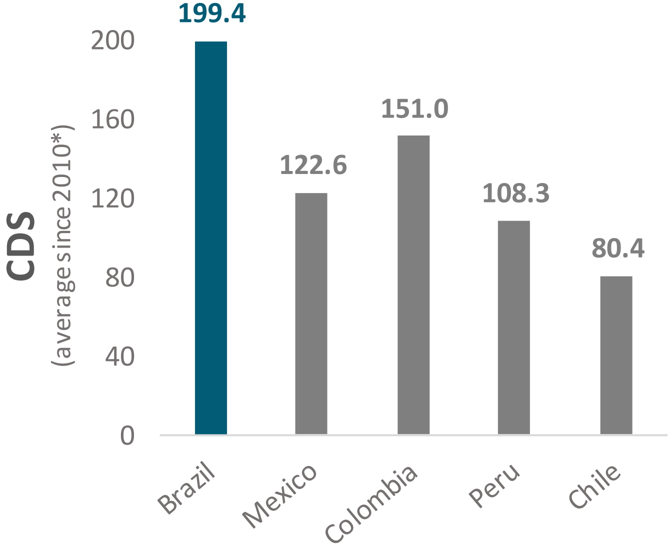


* Amount recovered by creditors when debts are enforced.









Sources: World Bank - Doing Business (2020), IMF (Fiscal Monitor), Bloomberg, BCB.

*IMF debt concept (projections)

*Until 03/25/2024

Monetary policy

261st Copom meeting – March 2024

- Considering the evolution of the disinflationary process, the assessed scenarios, the balance of risks, and the broad array of available information, Copom decided to reduce the Selic rate by 0.50 percentage point, to 10.75% p.a., and judges that this decision is consistent with the strategy for inflation convergence to a level around its target throughout the relevant horizon for monetary policy, which includes 2024 and, to a larger degree, 2025.

- Without compromising its fundamental objective of ensuring price stability, this decision also implies smoothing economic fluctuations and fostering full employment.

- The current context, characterized by a stage in which the disinflationary process tends to be slower, with only partial reanchoring of inflation expectations and a challenging global outlook, requires serenity and moderation in the conduct of monetary policy.

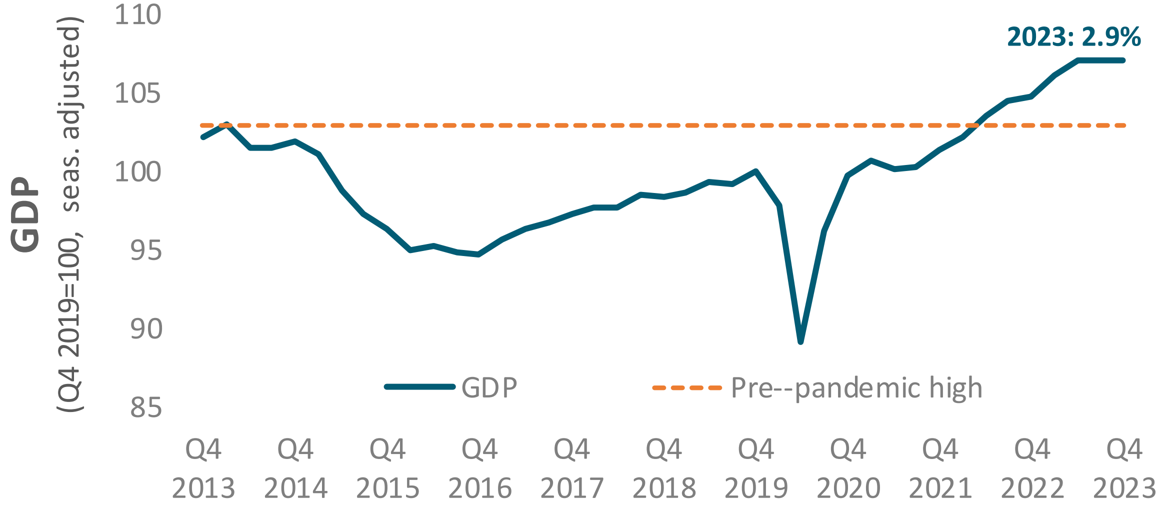
- The Committee reinforces the need to persist on a contractionary monetary policy until the disinflationary process consolidates and inflation expectations anchor around its targets.

- If the scenario evolves as expected, the Committee members unanimously anticipate a reduction of the same magnitude in the next meeting, and judge that this monetary policy stance is appropriate to keep the necessary contractionary monetary policy for the disinflationary process.

- The Committee emphasizes that the total magnitude of the easing cycle throughout time will depend on the inflation dynamics, especially the components that are more sensitive to monetary policy and economic activity, on inflation expectations, in particular the longer-term ones, on its inflation projections, on the output gap, and on the balance of risks.

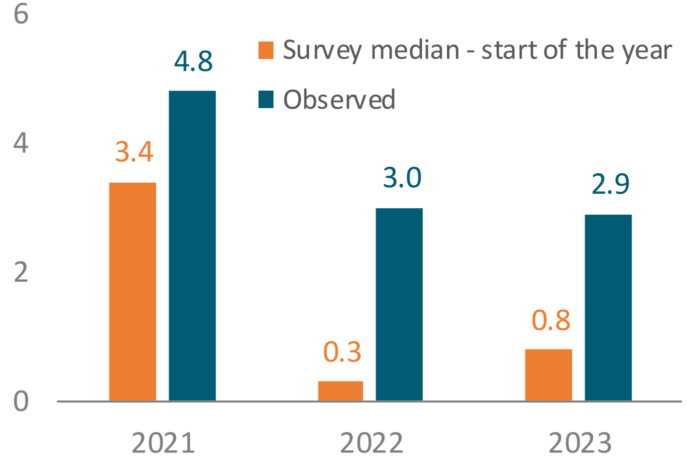
Economic activity

GDP decelerating, but recent indicators show some improvement, which is reflected in a recent rise in expectations for 2024

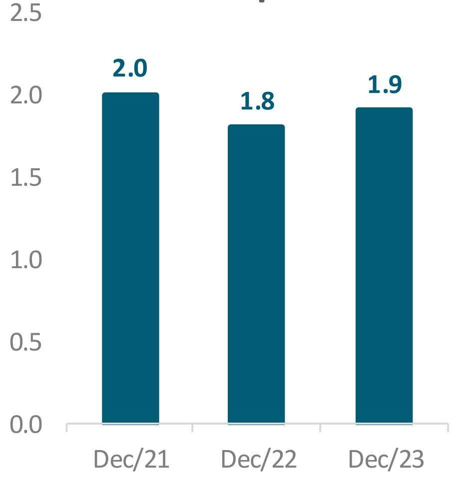


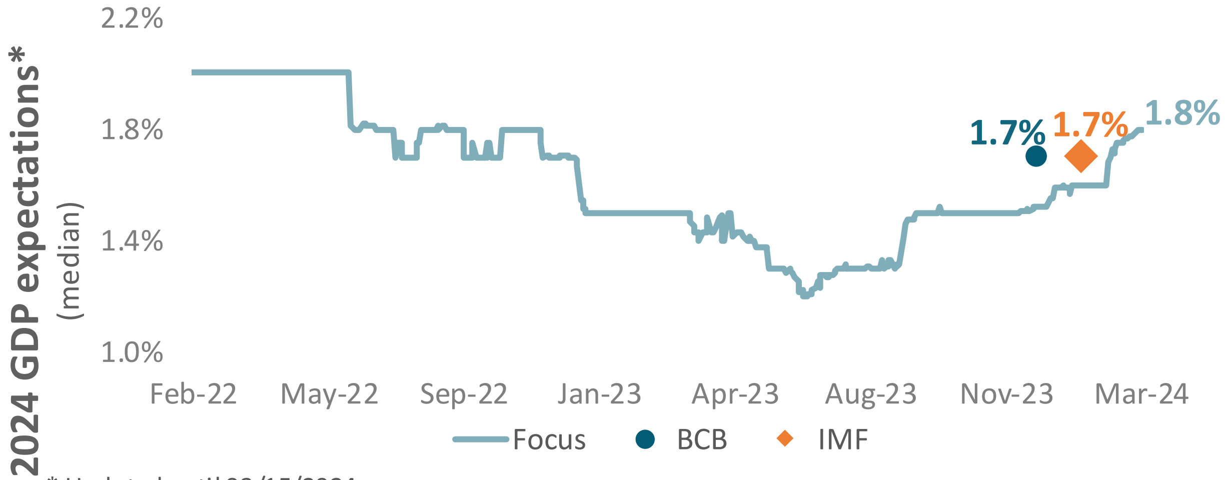
Surprise in GDP growth

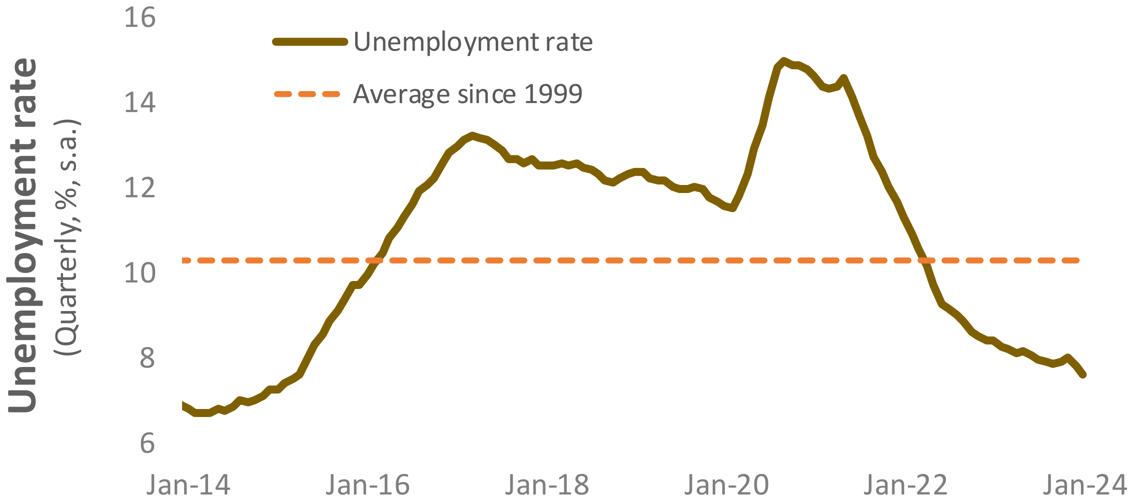
(Expectations vs observed growth)



Potential output – QPC







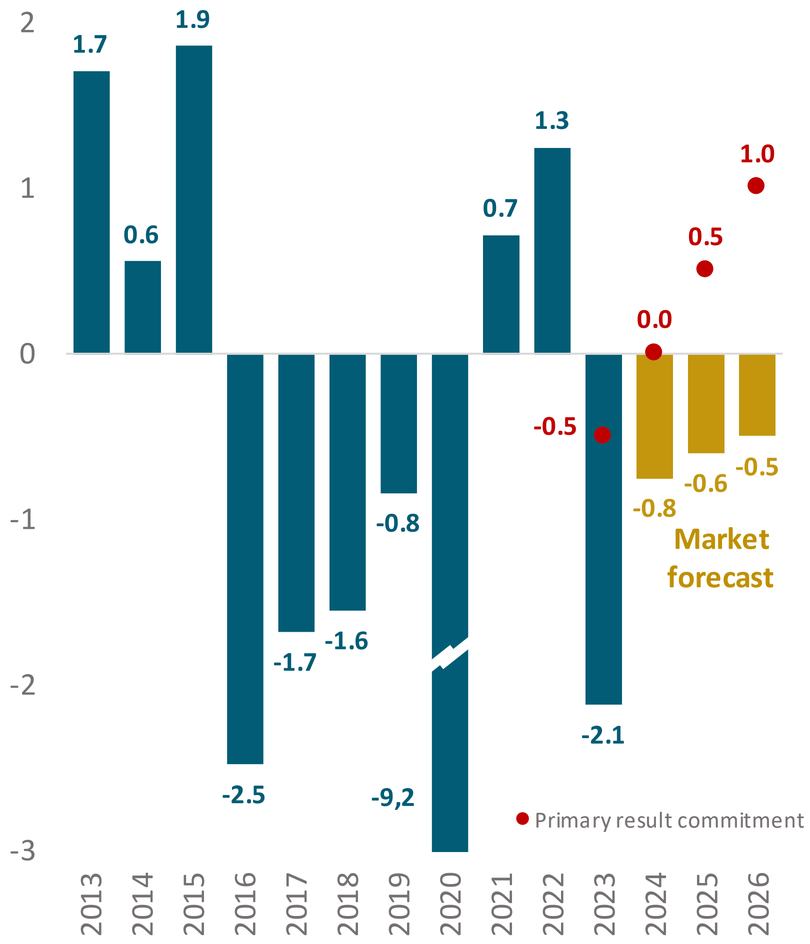
* Updated until 03/15/2024

Sources: IBGE, BCB Focus Report, QPC, Bloomberg.

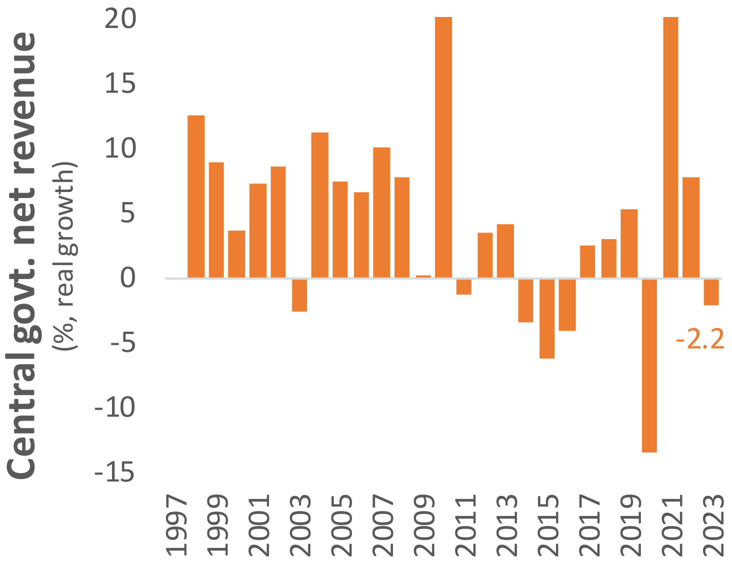
Fiscal: results and forecasts

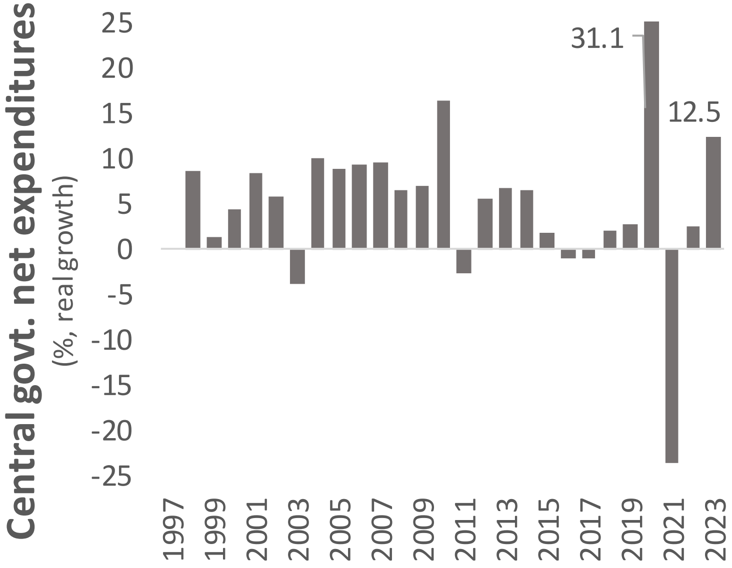
Consolidated public sector primary result

(% GDP, several years and forecast, Focus* median)



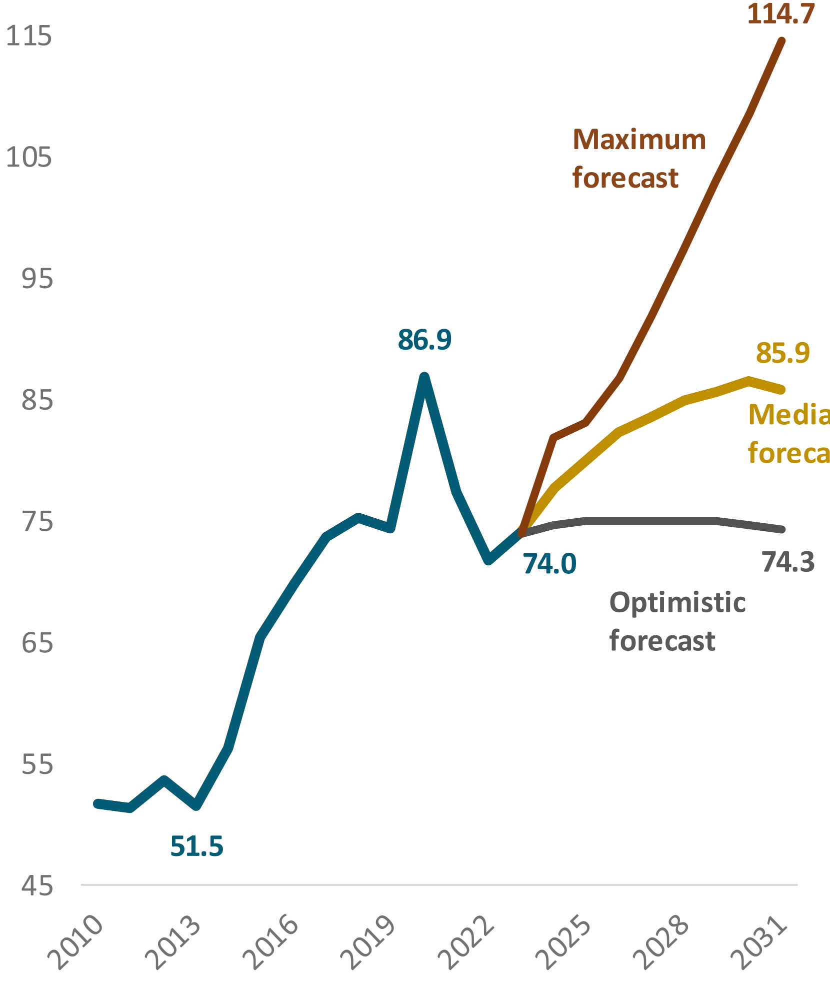
* Updated until 03/15/2024





Evolution of GGGD/GDP

(%, several years, Focus* median)



* Updated until 03/15/2024

Sources: BCB (Focus Report) and National Treasury.

Technology Agenda

Design of the financial system of the future

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Digital world transformation

- People are looking for a digital representation of value
  - Assets are becoming encrypted
  - Distributed ledgers allow assets to be verifiable and transferable, with divisibility
  - We are talking about extracting value from an asset in its digital form
    - Art, pictures, properties, ideas and even money
- Are we moving towards a tokenized economy?

If the tokenization thesis holds true then the 21st Century may see the creation of regulated, global, token-based, muti-asset networks.*

* The Regulated Internet of Value, Citi's Digital Policy, Strategy and Advisory, 06/21.

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Tokenization of the economy

- The main change is the tokenization of assets for trading
- Asset tokenization generates efficiency gains
  - Trade, register, contracts, collaterals etc.
  - Greater speed and transparency
  - Lower cost
  - More open processes
  - Programmability in the purchase and sale of assets

An integrated agenda

The four fundamental blocks

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Pix
Rail of programmable payments

Currency internationalization
Payment internationalization

Open Finance
Comparability and portability in real time

Drex
Tokenization of the economy

Additional blocks for the future

Artificial intelligence

Data monetization

Pix

Establish **rail of programmable payments**

Democratize the access to digital means of payment and **make things easier** for payers and payees

Enable **new business models and innovations in companies' payment processes**

Reduce costs

Contribute to payment **digitalization** and financial **inclusion**

Boost **competition** and increase **efficiency**

Pix gains space and increases its popularity

Pix growth promotes financial inclusion and enables small businesses

Pix growth

723 million active Pix's keys.

147 million people and **13.9 million** companies use Pix.

178 million operations in one day

4.3 billion transactions in Feb/24, against 2.5 billion in Feb/23, **increase of 72.8%.**

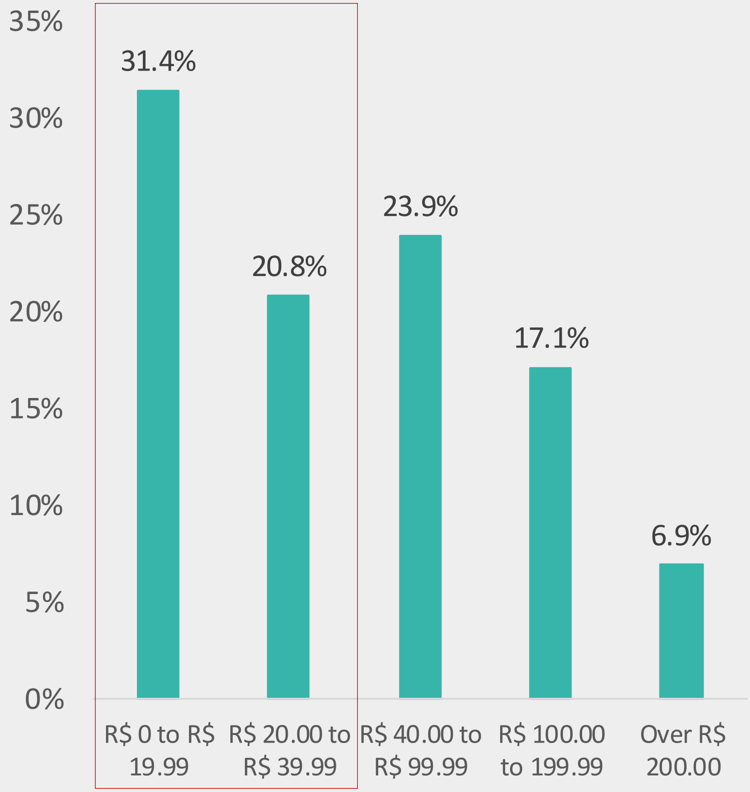
Sources: BCB, BIS.

Pix and financial inclusion

- **71.5 million** new users included with Pix.*

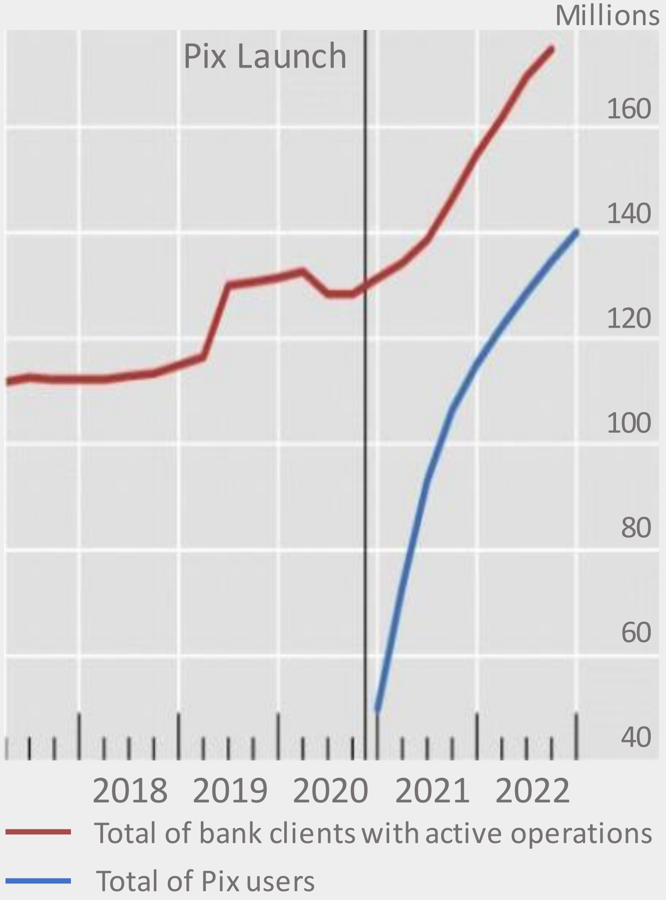
Transactions by value range

(Only natural persons payers – Nov/20 until Dec/22)



* Considering users who did not use TED in the 12 months prior to the launch of Pix and became PIX users.

Pix users vs. Bank clients



Currency internationalization

- **Connection of digital currencies.**
  - There will be real time transactions with low cost.

- **Three challenges for the connection of international payments systems:**

- **Technology**
  - Connection between DLT and centralized systems (solved)

- **Settlements**
  - Liquidity token pool (solved)

- **Governance**
  - Taxonomy (minimal rules for cross-border payments)
    - We need to advance on the topic

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openfinance

Comparability and portability in real time

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Standards and infrastructure that support the sharing of data and financial services by institutions authorized to operate by the BCB.

The Brazilian model is a global reference.

Greater financial and digital inclusion.

Convergence to marketplaces, with one or few environments for comparison of products and services.

Competition for channel and principality.

Open Finance in figures

- **27 API developed and 12 under development.**
- **More than 42 million** consents to share data.
- More than **1.4 billion** API calls, on average, per week (phases 2 and 4).
- **More than 68** billion API calls (phases 2 and 4).
- **More than 800** participating institutions (all phases).

Digital Real

Tokenization of the economy

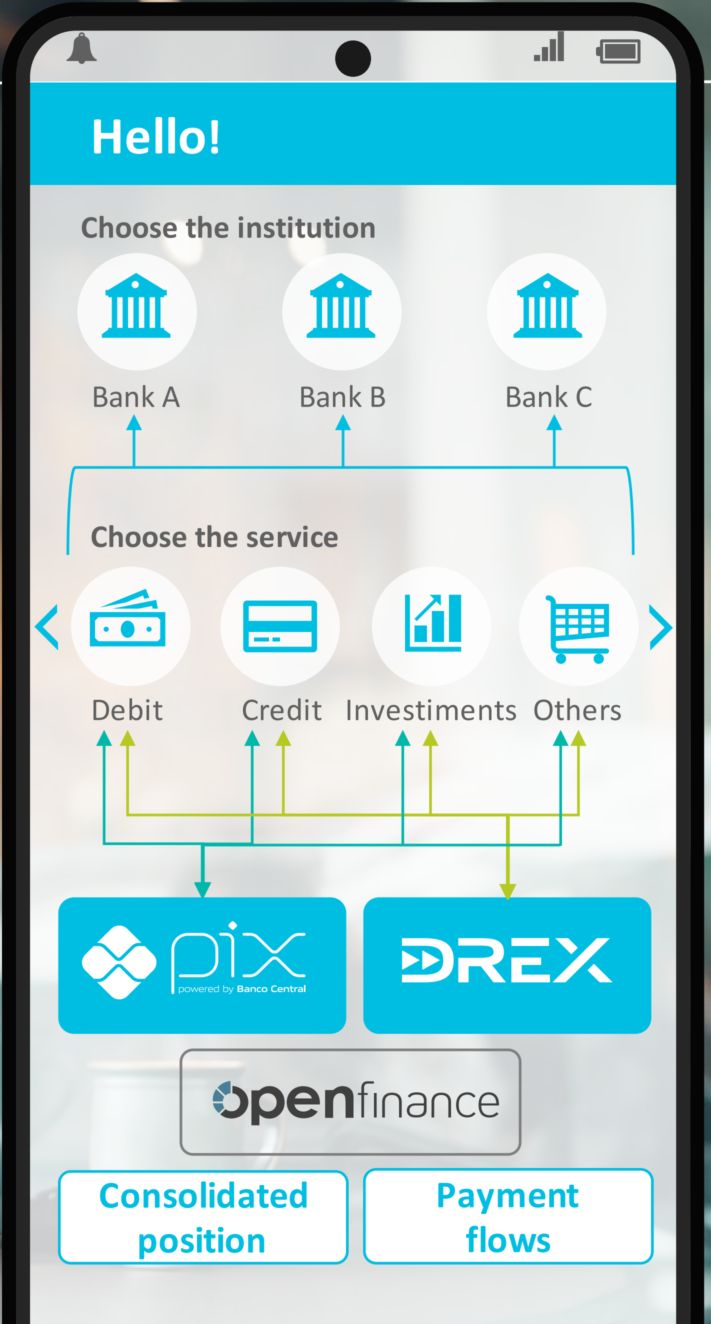
Benefits in three dimensions:

1. **Banking efficiency**
   - To introduce the concept of tokenization
     - Risk management, collateral, financing, asset management, data analysis, settlement and products

2. **Efficiency in digital payments**
   - Bridge to De-Fi environment
     - To bring decentralized finance into the regulatory perimeter
   - Efficiency in financial intermediation

3. **Efficiency in contracts and register**

Financial services aggregator



Offline

Online

Data wallet

- Marketplace environment
- Competition by channel and for principality

Data monetization

- Data has become a great asset.
- Users are the owners of their data, but it is currently very difficult for them to monetize it.
- With marketplaces and connection between platform and digital wallet, clients will be able to store their data and monetize it.
    - Interaction of tokens with digital wallet

Sustainability – actions in progress

Highlights:

Partnerships:

- Implementation of MoU with the Climate Bonds Initiative (CBI).

Regulation:

- Improvements to the disclosure of information by FIs, based on TCFD recommendations.
- Implementation of new impediments in the Rural Credit Bureau.
- Definition of social, environmental and climate benefits in rural credit operations.

Supervision:

- Improvement of the Stress Test for Climate Risks - phase II.

Policies:

- Estimation of the effects of social-environmental risks on the economy.

Internal Measures:

- Inventory of GHG emissions of the BCB and reduction and mitigation plans.
- Strengthening the culture of sustainability.
- Reducing the environmental impact of the processing of banknotes.
- Inclusion of environmental and social themes in the Money Museum.

Thank you!

Roberto Campos Neto
Governor of Banco Central do Brasil
March 26th, 2024