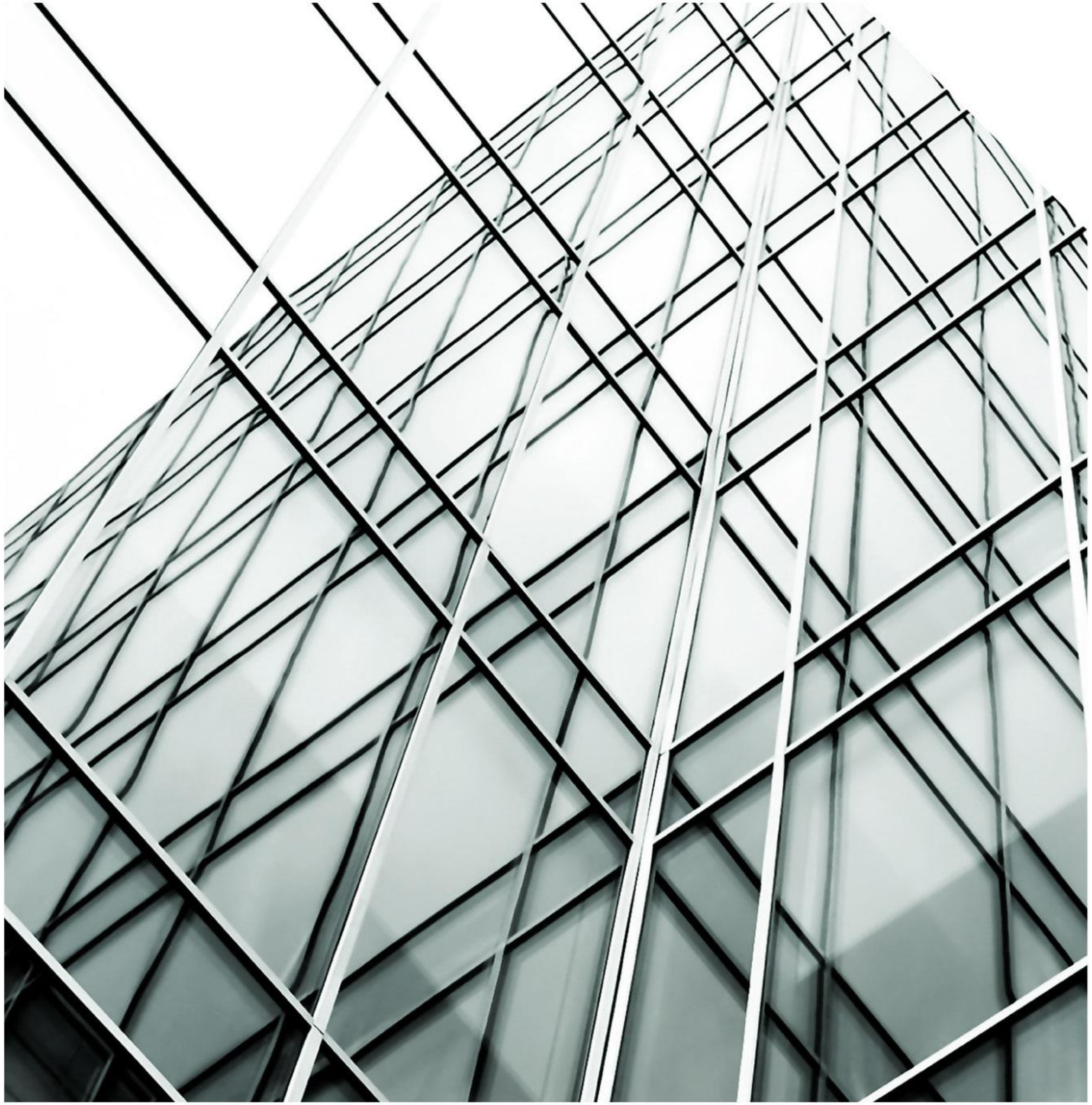
Inflation Report

December 15th, 2022



Diogo Guillen

BANCO CENTRAL DO BRASIL

Reference scenario

Global outlook

- The global environment remains adverse and volatile, marked by prospects of below-potential global growth for next year, high volatility of financial assets and an inflationary environment that remains under pressure. The process of monetary policy tightening in advanced economies and the stronger market sensitivity to fiscal fundamentals require more caution by developing economies.

Economic activity

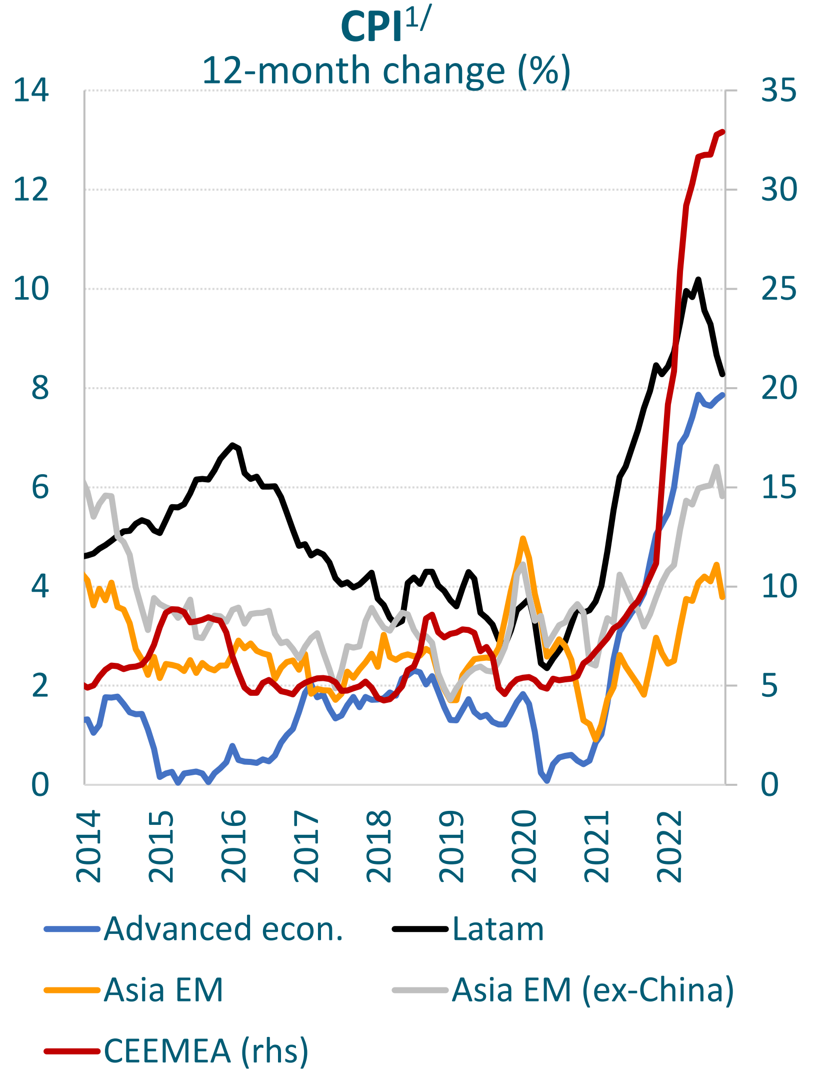
- Turning to the Brazilian economy, the release of the third quarter GDP figures suggested a more moderate growth rate. The recent set of indicators is in line with the scenario of deceleration expected by Copom.

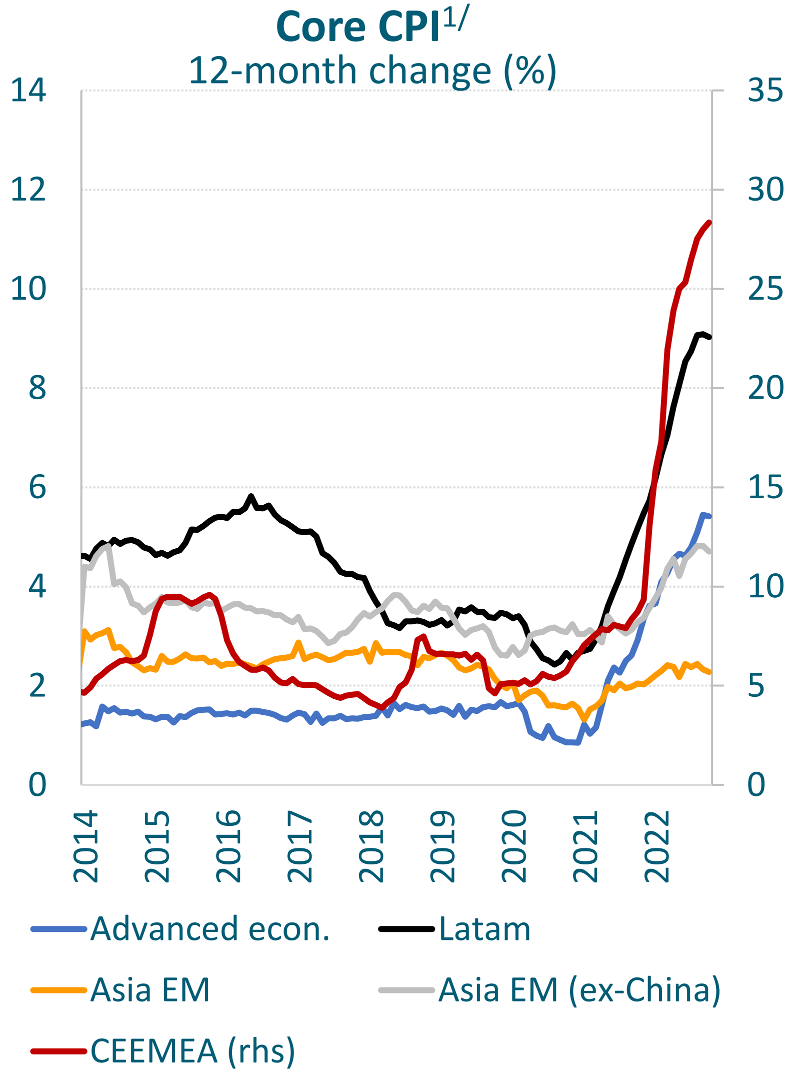
Inflation

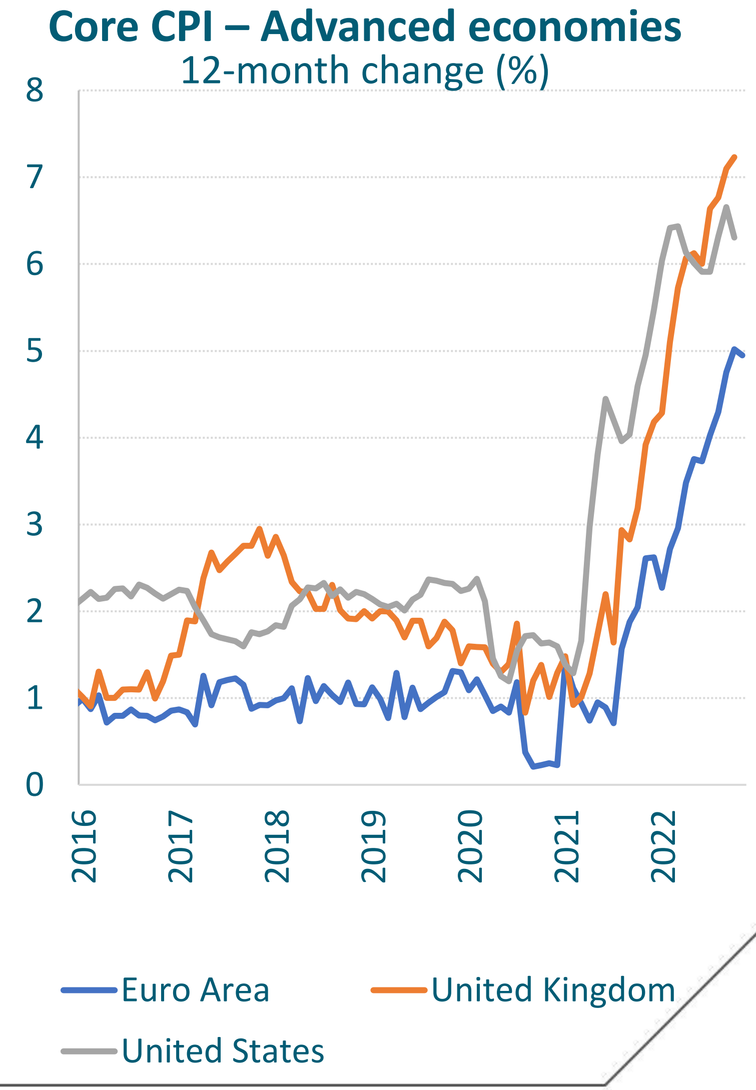
- Despite the recent inflation reduction, especially on items which are more volatile and affected by tax measures, consumer inflation remains high;
- The various measures of underlying inflation are above the range compatible with meeting the inflation target; inflation expectations for 2022, 2023 and 2024 collected by the Focus survey are around 5.9%, 5.1% and 3.5%, respectively.

Global outlook

CPIs and Core inflation

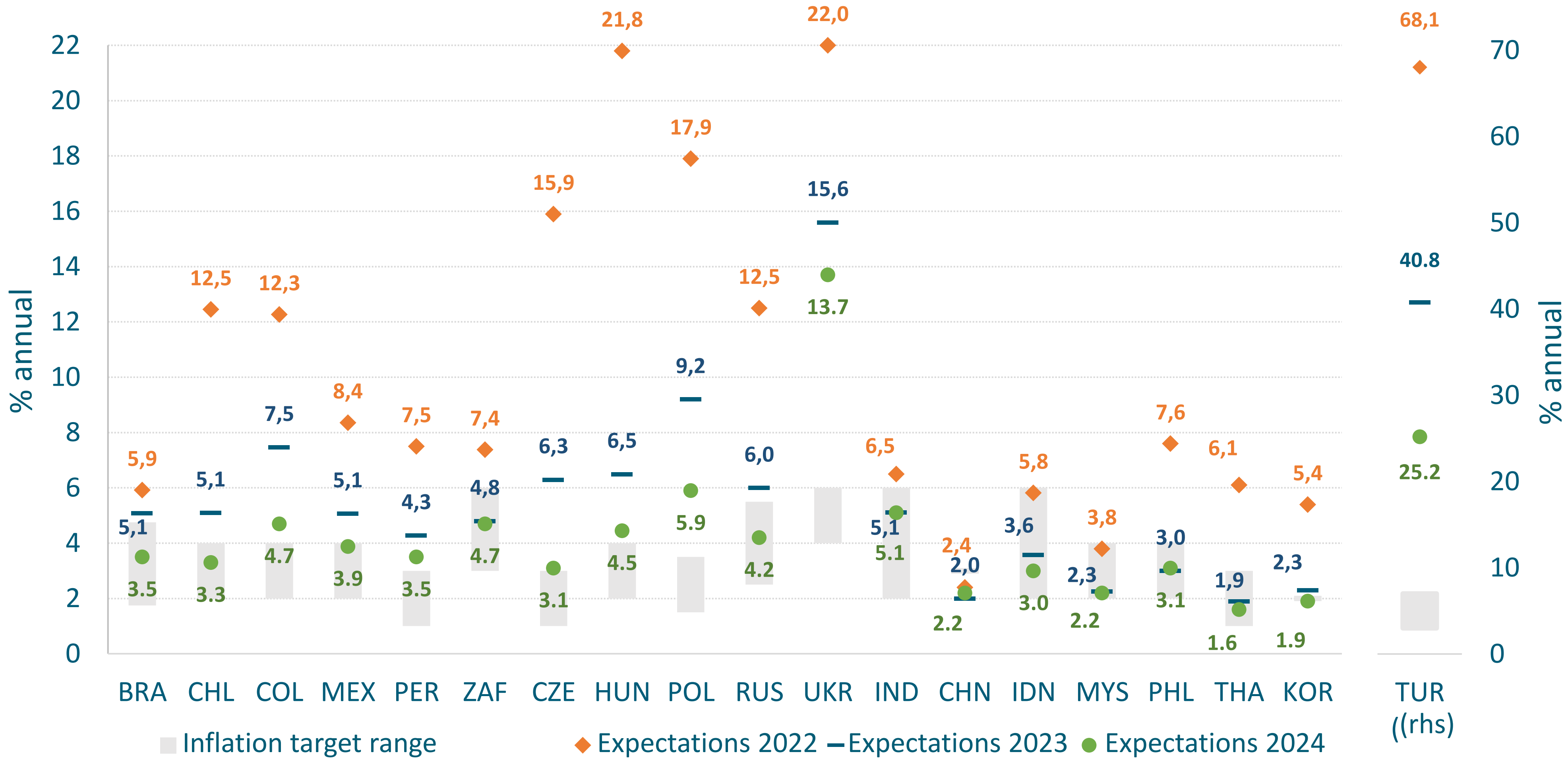






1/ Weighted by PPP; Latam: BRA, MEX, CHL, COL, PER; CEEMEA: ZAF, TUR, RUS, BGR, CZE, HUN, POL, ROU, SVK; Asia EM: CHN, IDN, IND, KOR, HKG, MYS, PHL, SGP, TWN, THA; Advanced economies: DEU, FRA, GBR, ITA, GRC, PRT, IRL, ESP, CHE, NOR, SWE, DNK, FIN, CAN, USA, JPN

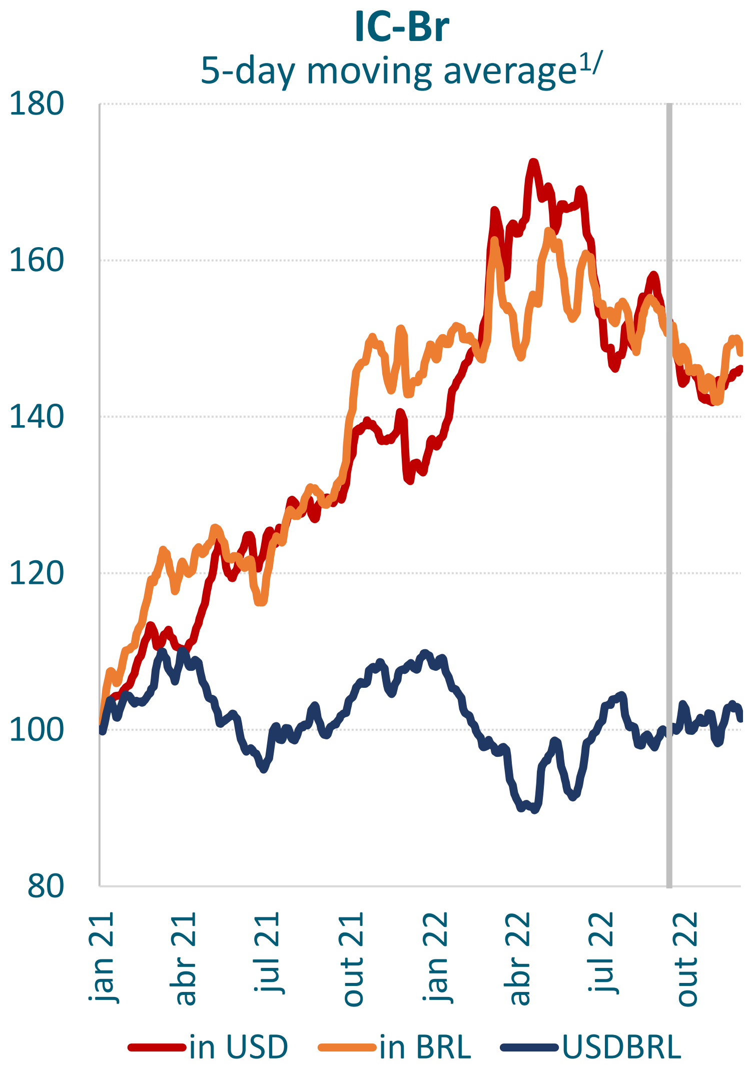
Inflation Expectations

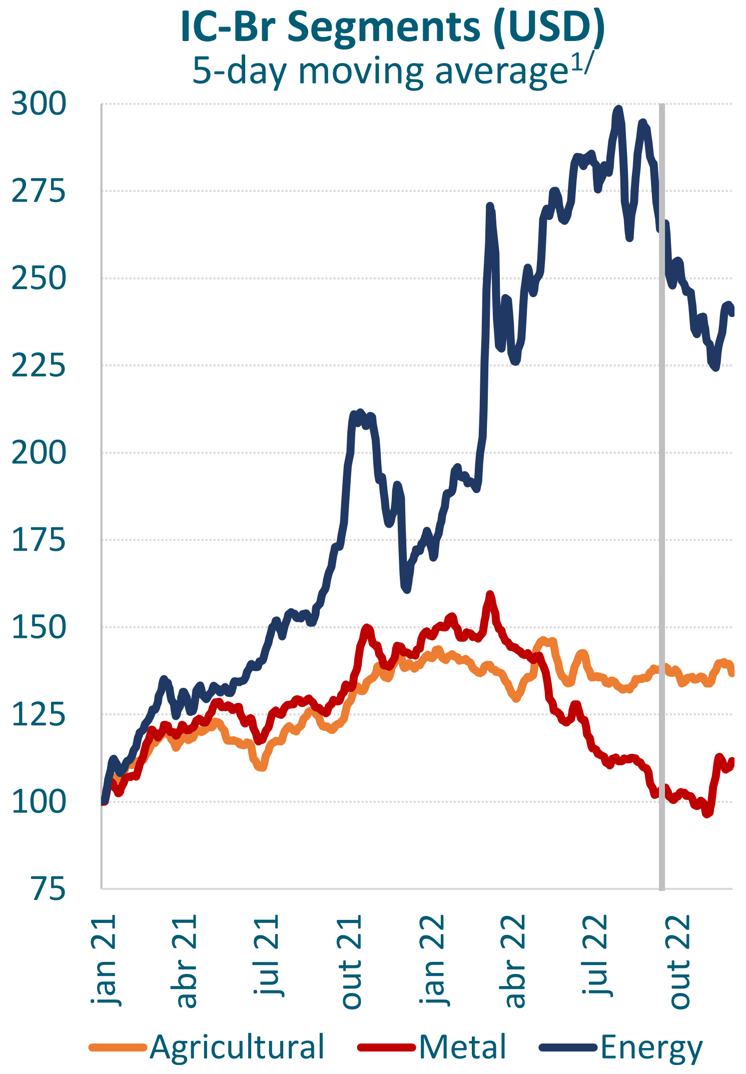


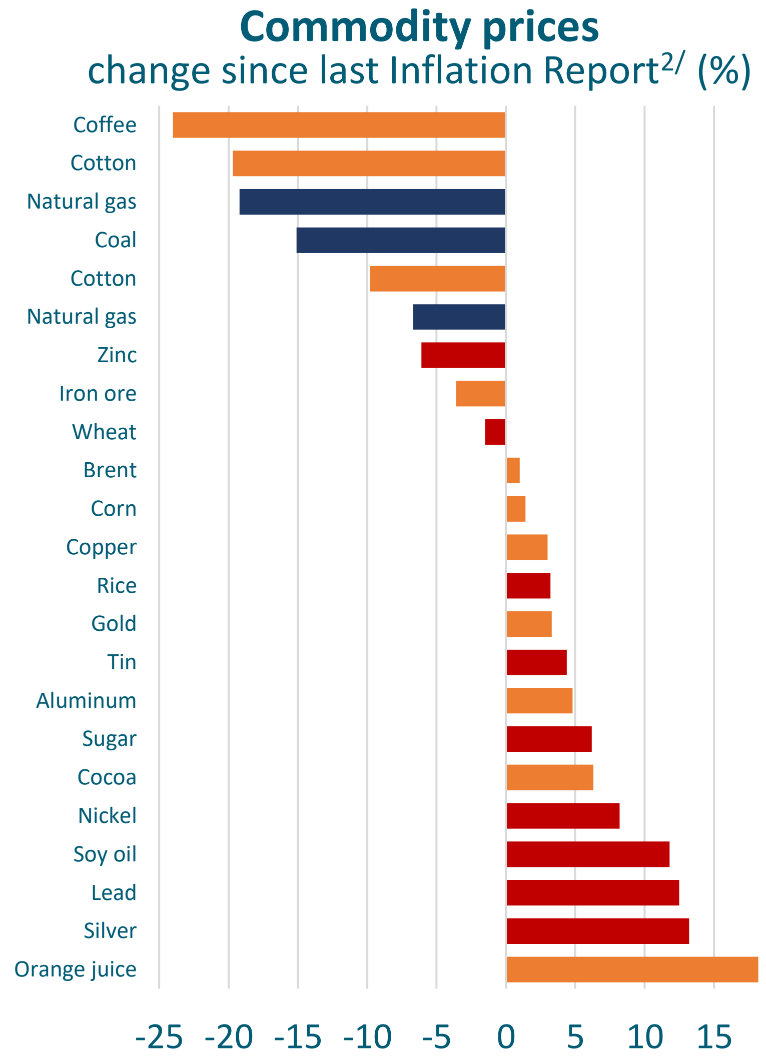
Sources: Bloomberg and surveys by central banks

Domestic surveys expectations up to 2024 for BRA, PER and RUS; up to 2023 for COL and MEX; 2022 for TUR; 2023 and 2024 for CHL.
Others: Bloomberg (2022 and 2023: YoY end of period; 2024: annual average)

Commodity prices



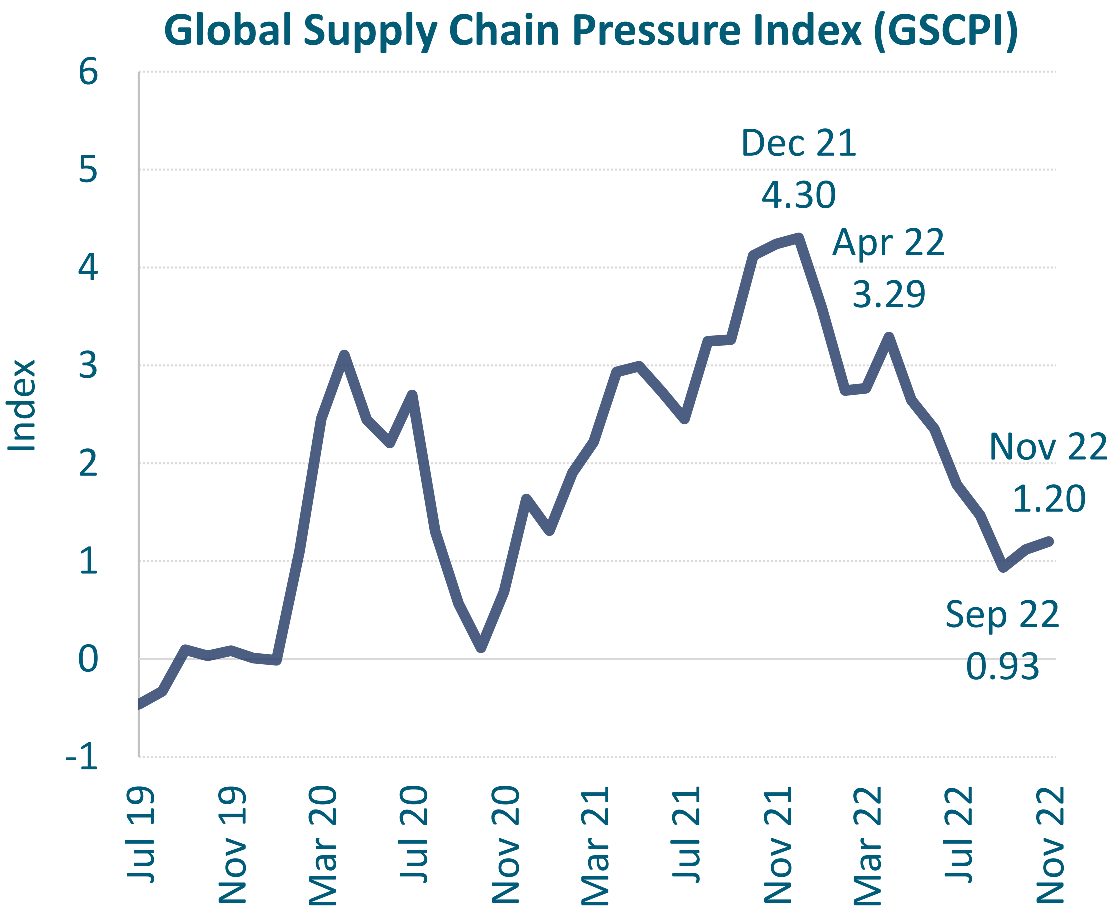


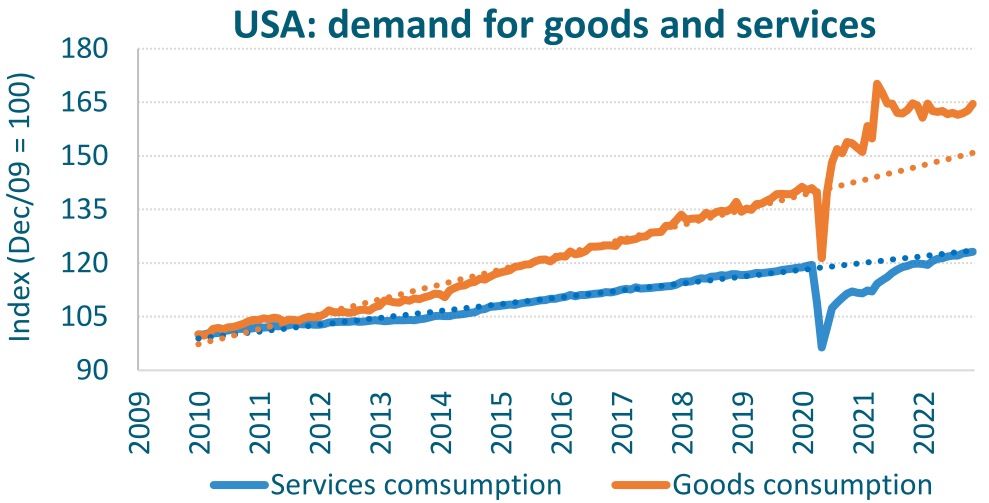


1/ index: Dec. 31st 2020 = 100

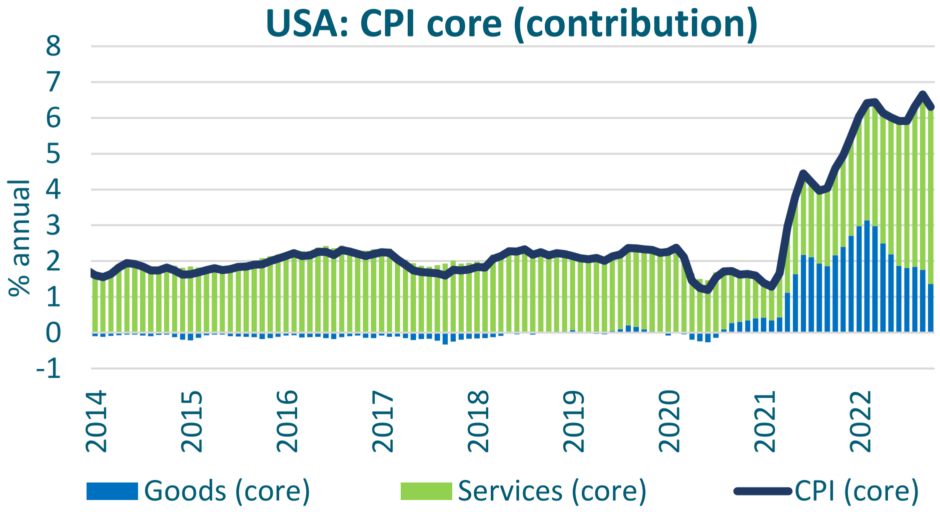
2/ change in USD from September 16th (September IR cutoff date) to December 2nd (December IR cutoff date)

Normalization of goods versus services

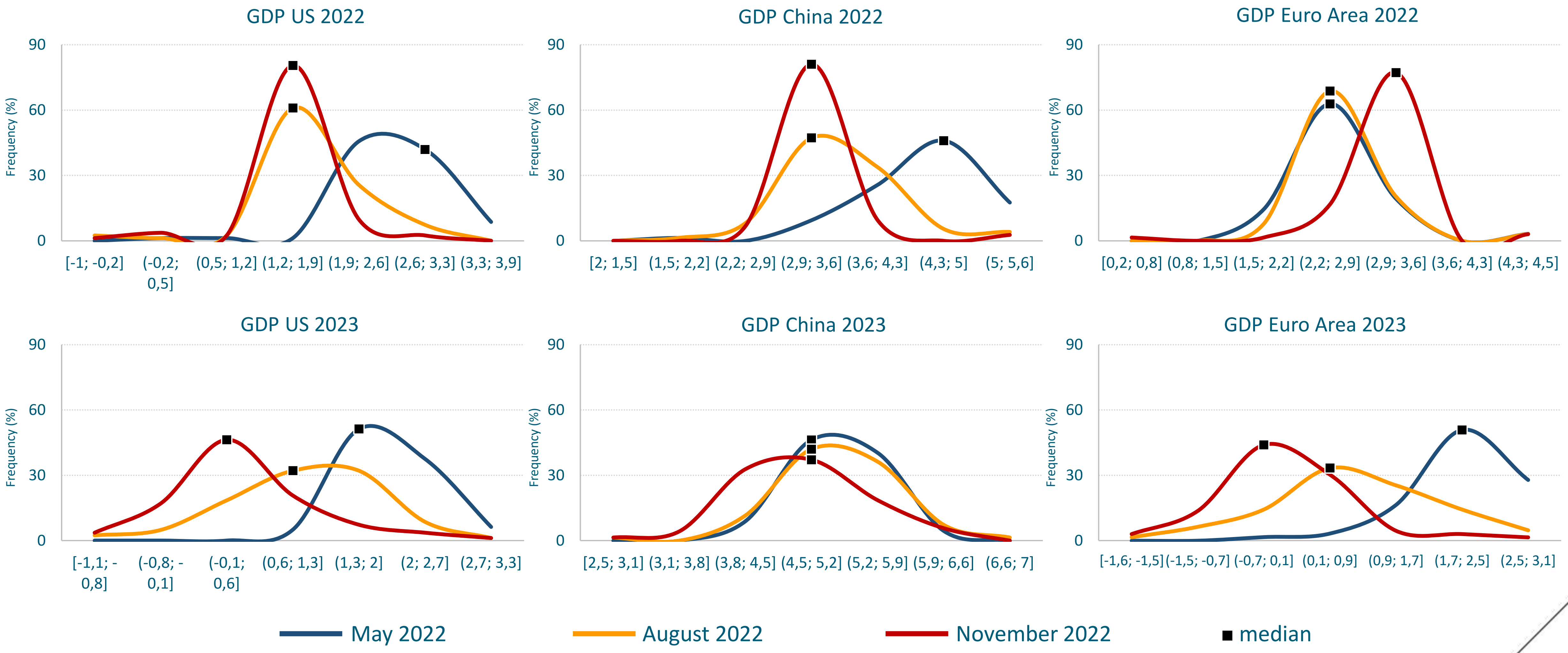




*Dotted lines refer to the extrapolation of trend lines (Jan 2010 to Feb 2020)



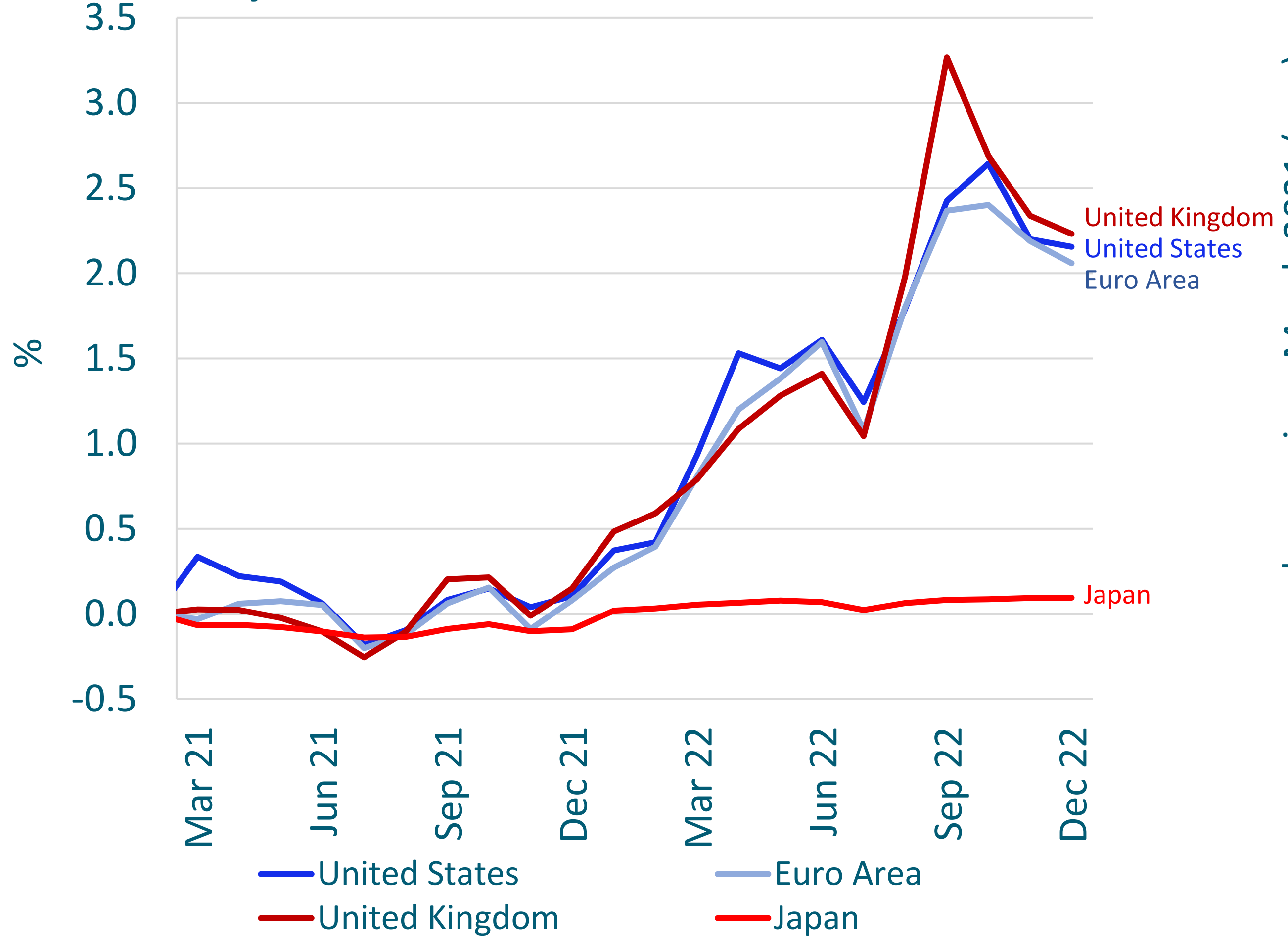
GDP growth expectations



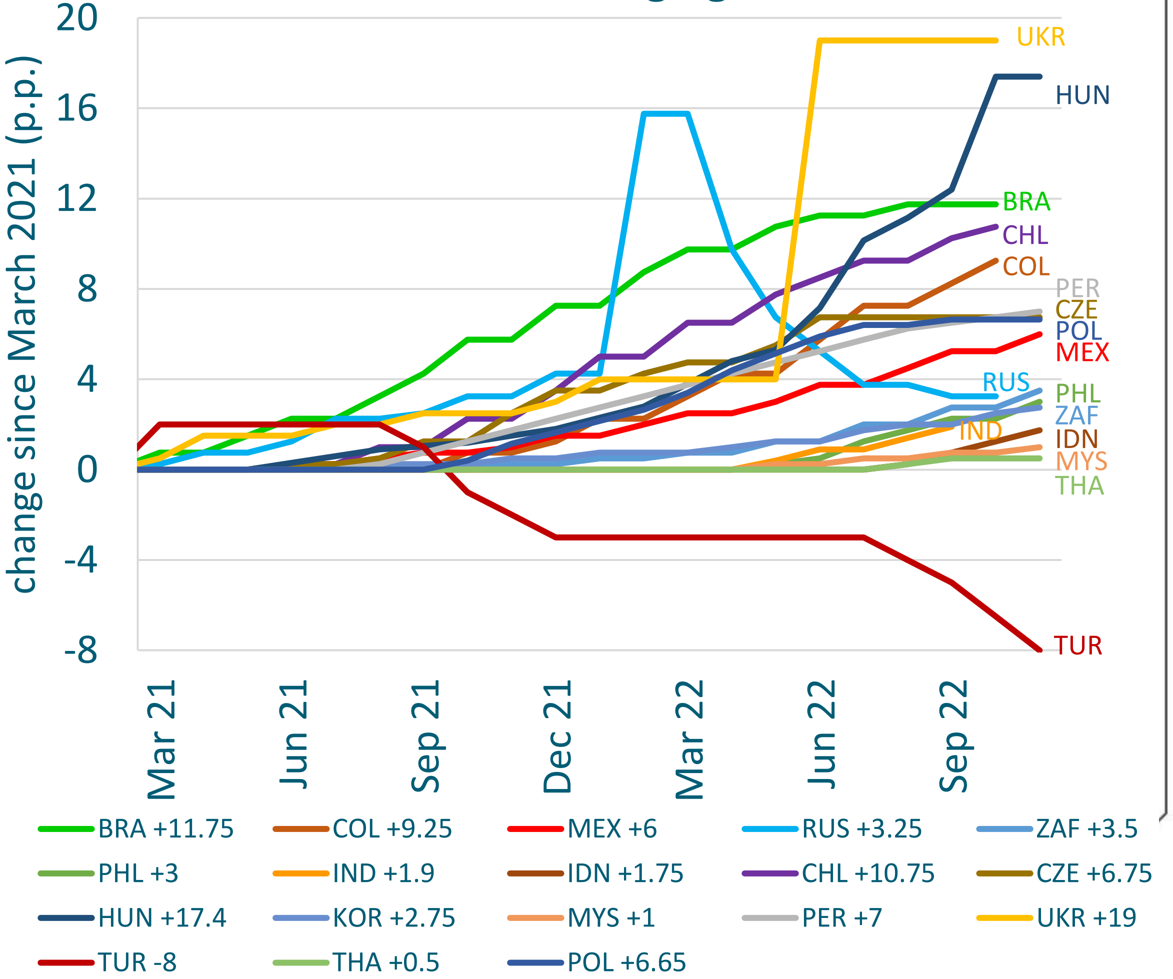
Source: Bloomberg

Monetary policy

10-year interest rates in advanced economies



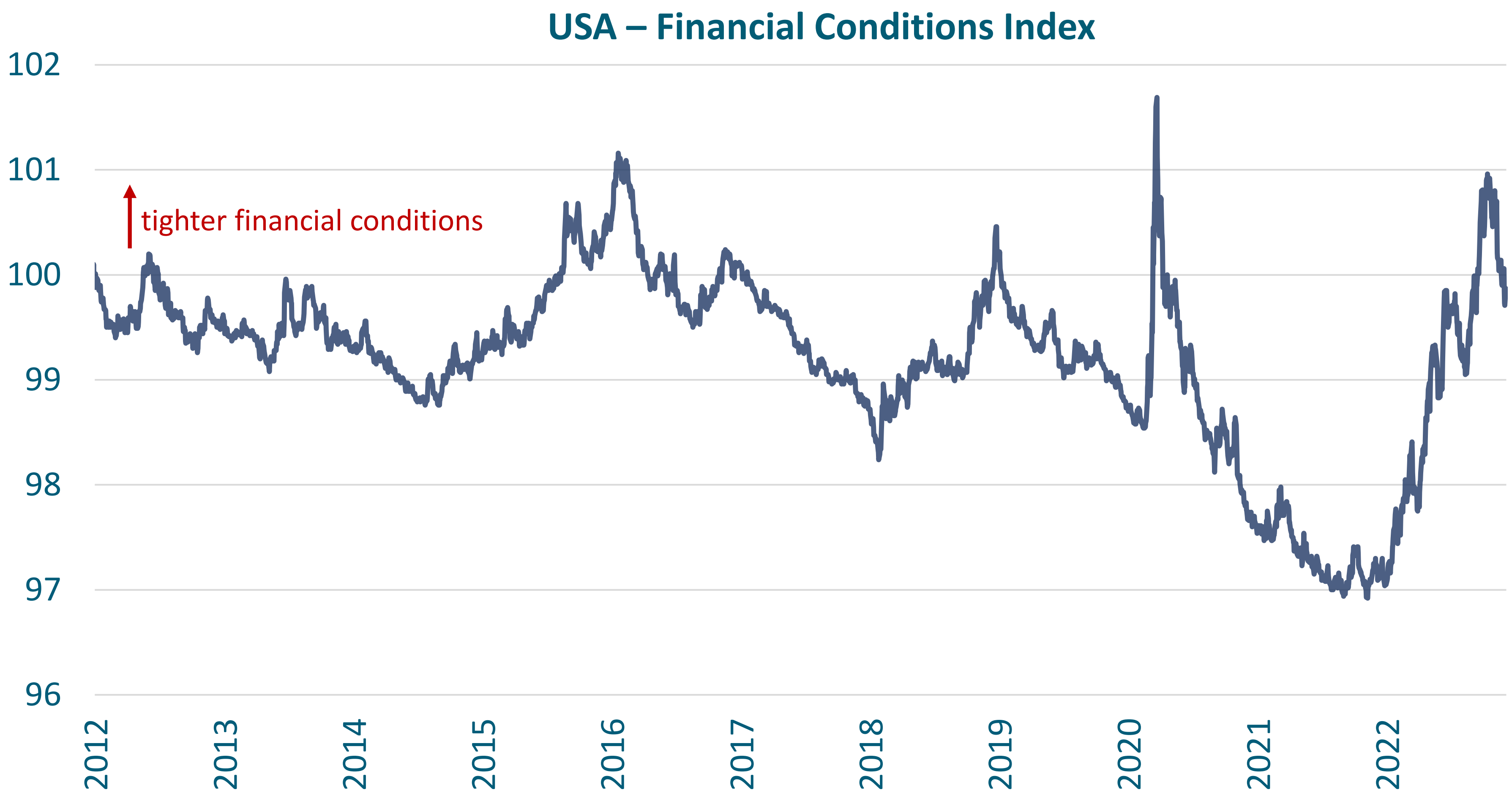
Interest rates in emerging economies



Sources: Bloomberg and central banks

up to December 2nd

Financial conditions

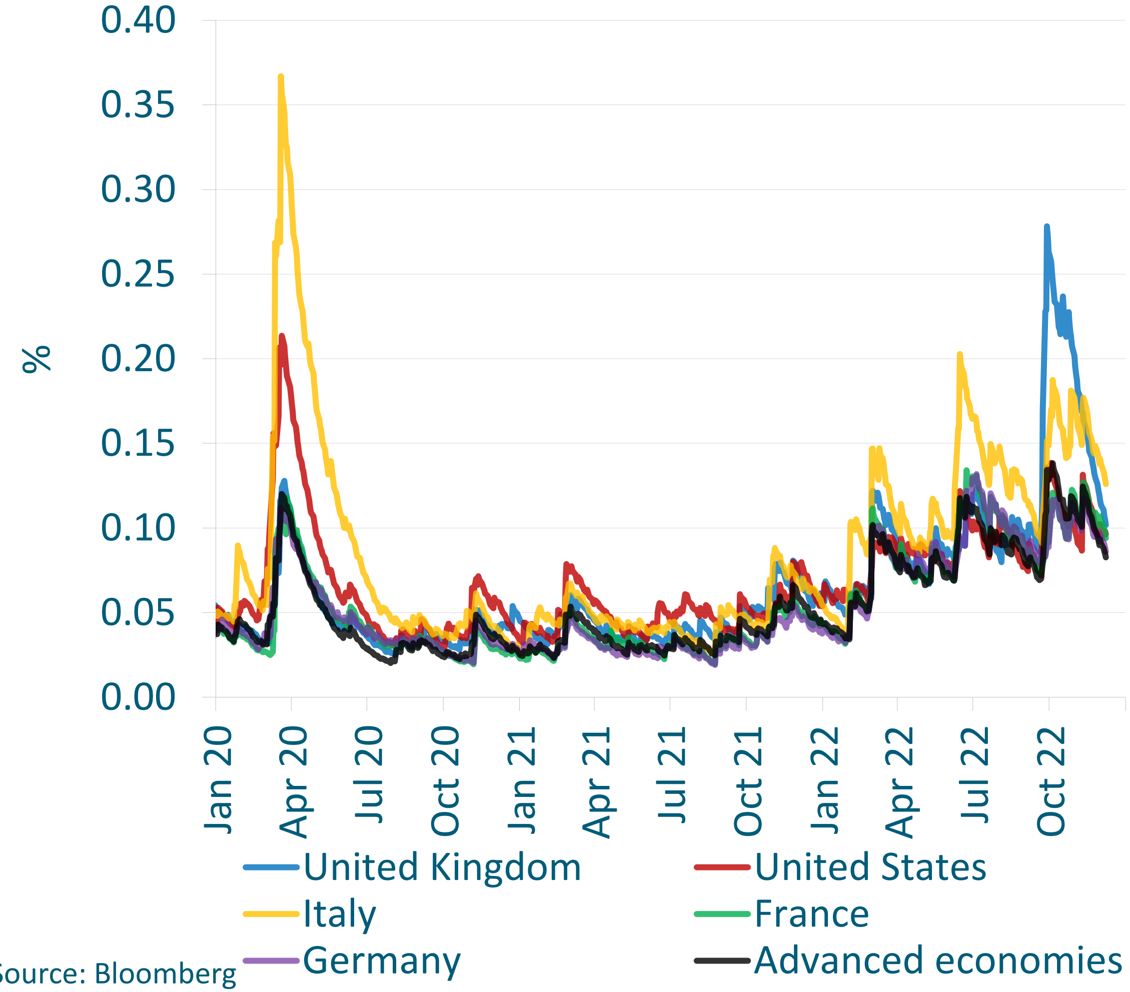


Source: Goldman Sachs

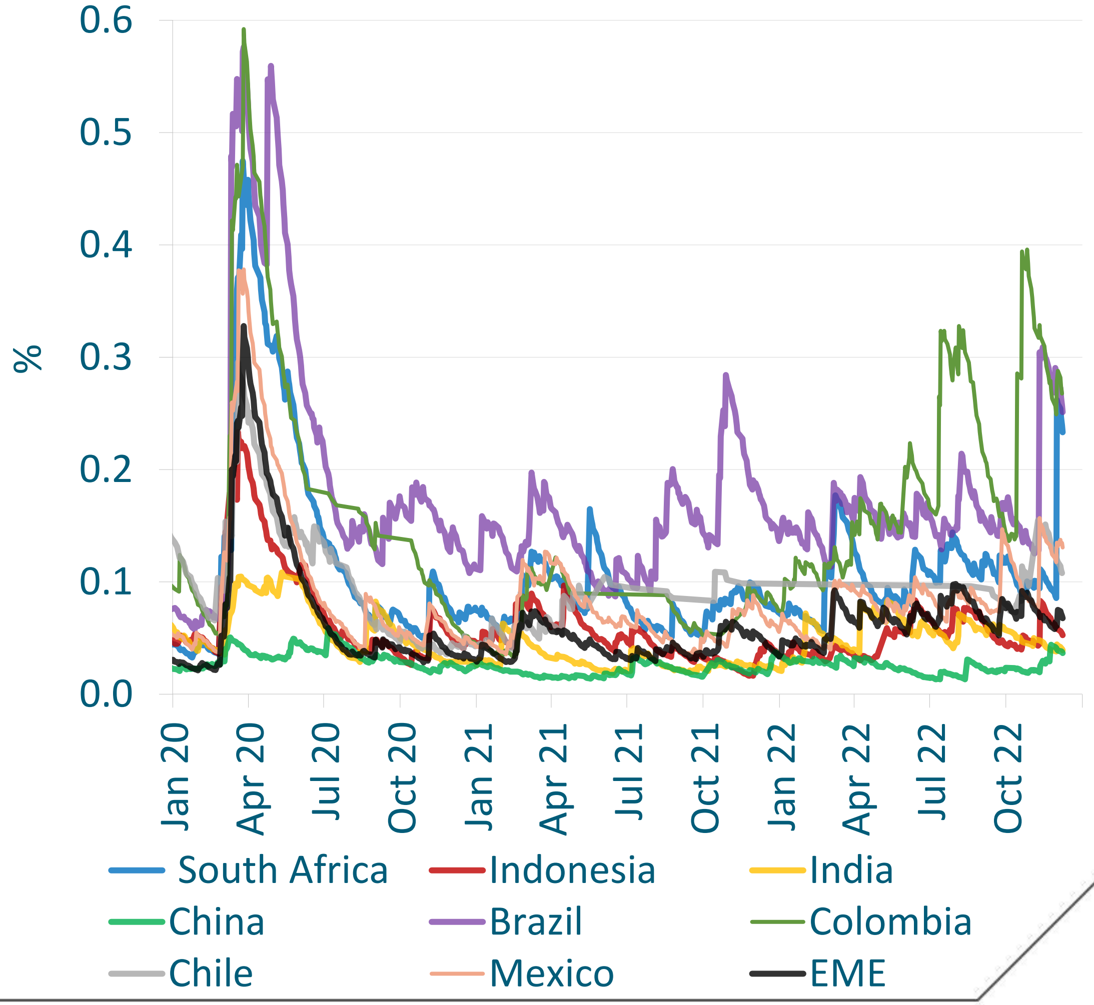
up to December 2nd

Interest rate volatility

Volatility in advanced economies



Volatility in emerging economies



Source: Bloomberg

1/ Advanced economies: United States, United Kingdom, Italy, France, Germany and Canada

2/ Emerging market economies: South Africa, Indonesia, India, Turkey, China, Brazil, Colombia, Chile, Mexico and Peru

Box – Projections for the external accounts in 2022 and 2023

USD billion

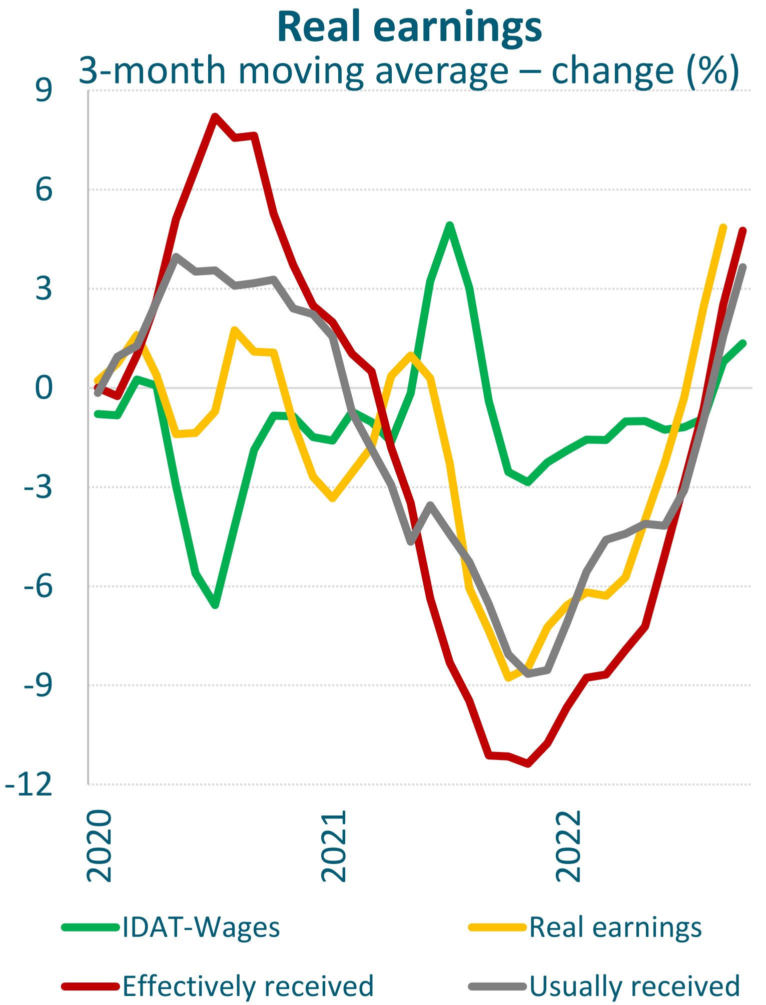
	2021	2022	Projection 2022		Projection 2023	
	Year	Jan-Oct	Previous	Current	Previous	Current
Current Account	-46	-44	-47	-60	-36	-49
Balance on Goods	36	37	42	41	54	46
Exports	284	285	331	334	338	328
Imports	248	248	289	293	284	282
Services	-27	-33	-29	-39	-33	-36
travel	-2	-6	-8	-7	-11	-11
Operating leasing services	-7	-6	-8	-8	-8	-8
Primary income	-59	-52	-63	-66	-60	-62
Interest	-21	-16	-27	-23	-29	-27
Dividends	-38	-36	-36	-43	-31	-35
Investments – liabilities	106	106	66	96	70	70
IDP	46	74	70	80	75	75
Portfolio investment	23	-7	-9	-5	-5	-5
Other investments[1/]	36	40	5	21	0	0

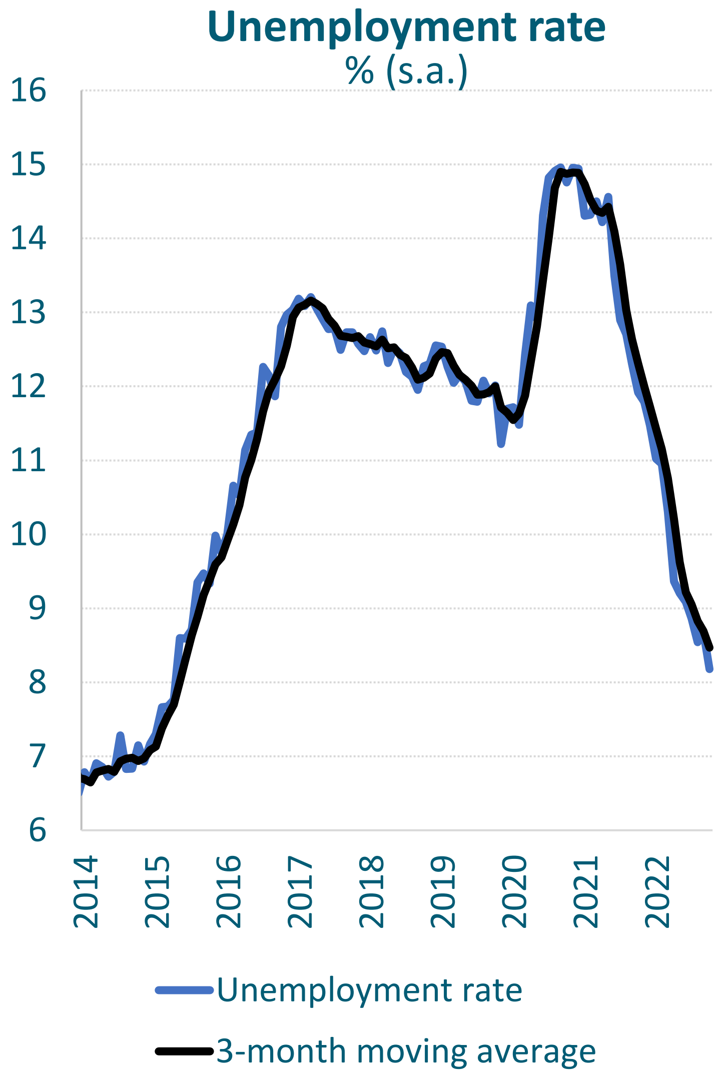
1/ Other investments includes loans, commercial credit, deposits and other investments.

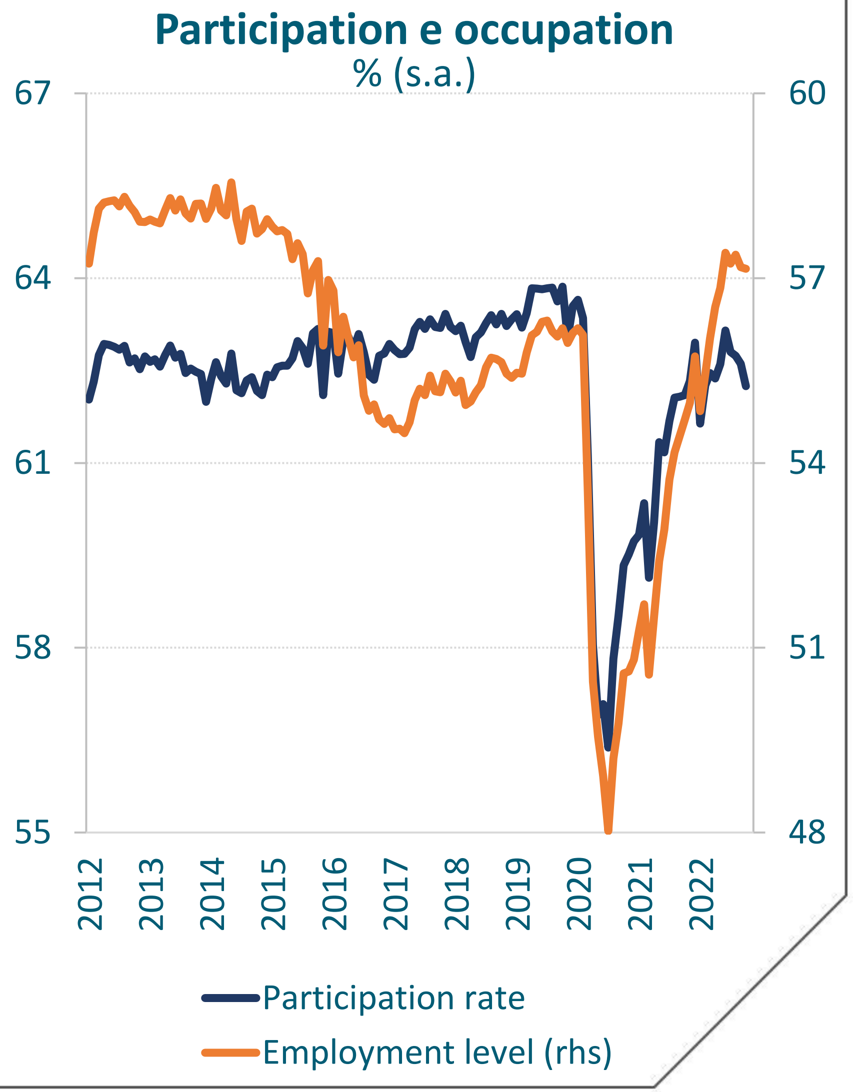
- **2022: projection for the current account balance was revised to a deficit of 3.2% of GDP (USD60 billion)**
  - Services account: incorporation of the methodological revision of the transportation account was the main factor for the US$10bn revision.
  - Primary income: surprise in the data released led to an increase in the projection for profits and dividends.
  - GDP: projection revised to US$80 billion, due to strong flows in recent months.
- **2023: reduction in the current account deficit, to 2.5% of GDP (USD49 billion), is projected:**
  - Trade balance: slightly higher surplus than in 2022, with exports impacted by the expected record grain harvest.
  - Services account: smaller deficit than in 2022, with normalization of transportation costs, partially offset by higher travel expenses.

Economic Activity

Labor market

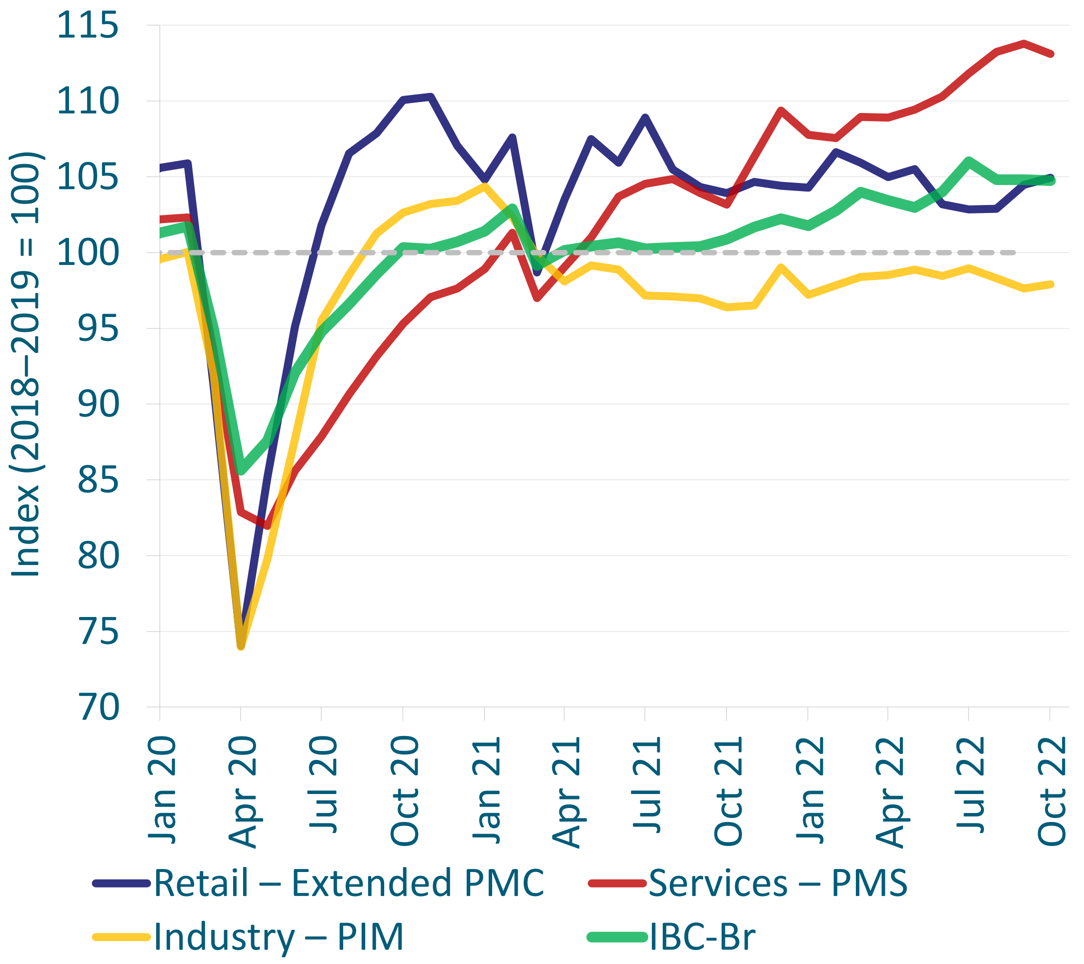


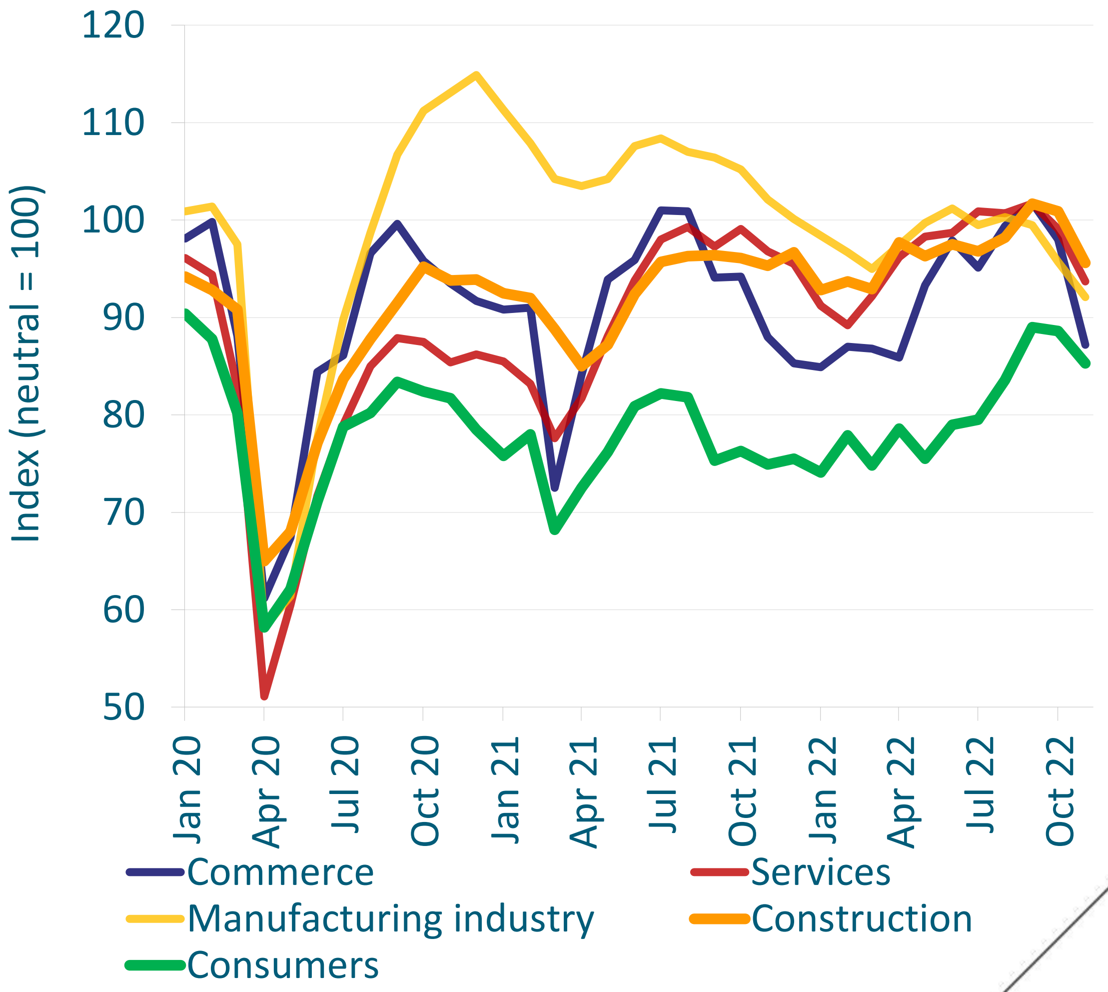




sources: Itaú and IBGE (PNADC)

Economic activity



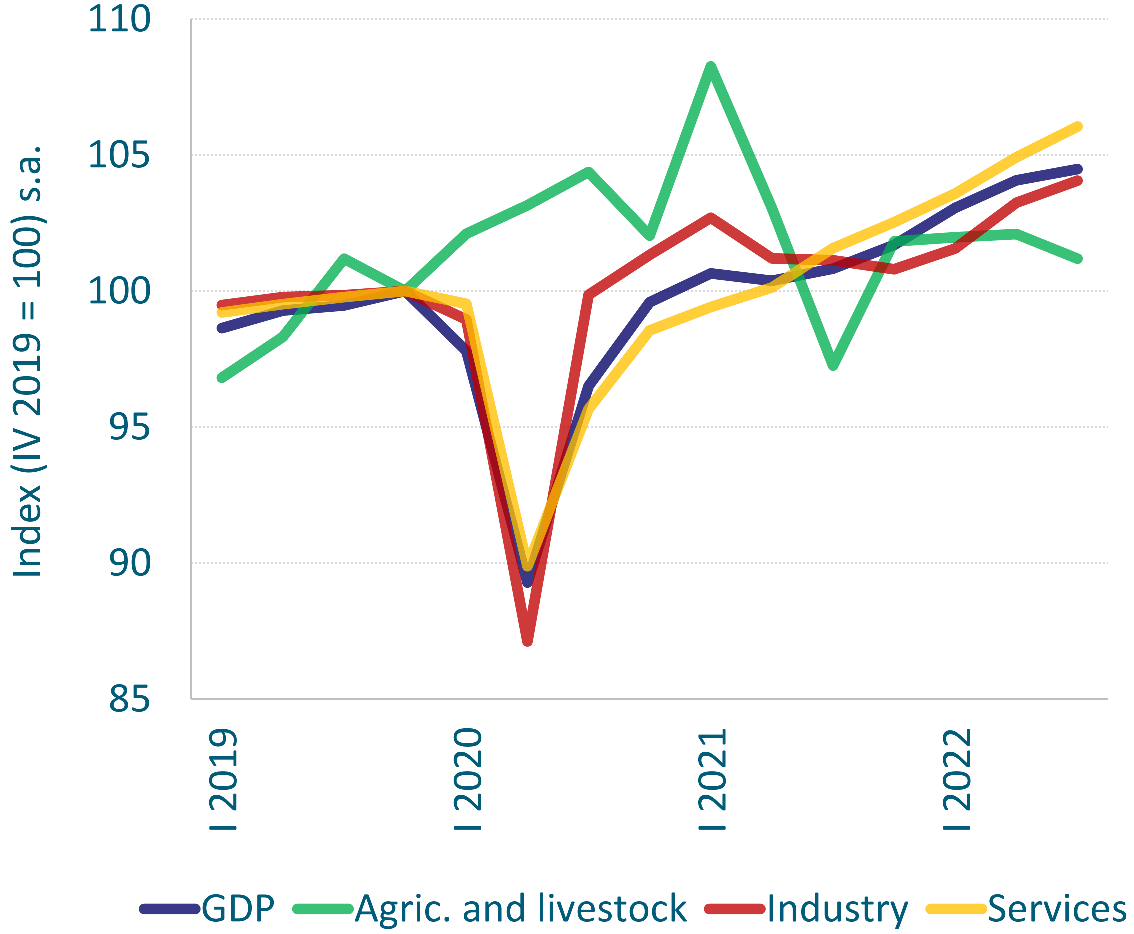


Source: IBGE, BCB e FGV

1/ PMC, PMS and IBC-Br were published after the report cutoff date

Quarterly GDP

GDP – Supply



Source: IBGE

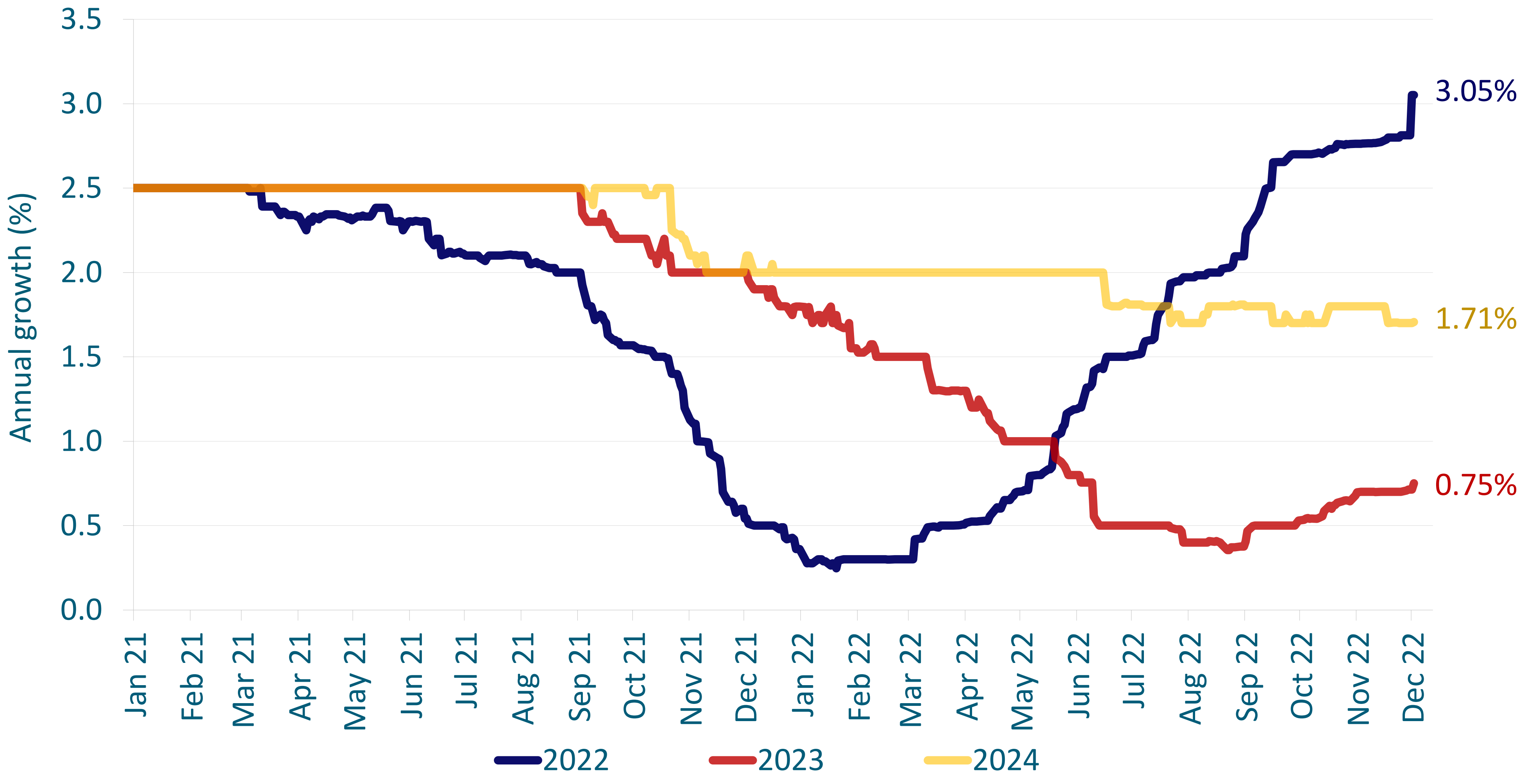
GDP – Demand

Quarterly change % (s.a.)

	2021				2022			
	I	II	III	IV	I	II	III	III[1/]
GDP at market prices	1.1	-0.3	0.4	0.9	1.3	1.0	0.4	4.5
Household consumption	0.4	-0.9	2.0	0.5	0.9	2.1	1.0	3.5
Government consumption	0.3	1.8	1.4	0.8	-0.3	-0.9	1.3	1.8
Investment	7.5	-4.3	-0.8	1.1	-2.4	3.8	2.8	20.2
Exports	3.8	10.3	-9.3	0.2	7.5	-2.8	3.6	8.0
Imports	10.4	-1.4	-6.2	0.5	-3.7	8.7	5.8	9.6

1/ change from 2019Q4.

GDP – Market expectations (Focus)



Focus: expectations up to December 2nd

Box – The 2022 and 2023 GDP projections

Gross Domestic Product

growth %

	2021	2022[1/]		2023[1/]	
		Sep IR	Dec IR	Sep IR	Dec IR
GDP at market prices	**5.0**	**2.7**	**2.9**	**1.0**	**1.0**
Taxes on products	6.2	1.1	2.1	0.2	0.4
Value added at basic prices	4.8	2.9	3.0	1.1	1.1
Supply					
Agriculture and livestock	0.3	0.0	-2.0	7.5	7.0
Industry	4.8	2.4	1.9	0.4	0.0
Services	5.2	3.4	4.1	0.6	0.9
Demand					
Household consumption	3.7	3.9	4.2	0.7	1.2
Government consumption	3.5	0.7	1.6	1.0	1.1
Gross fixed capital formation	16.5	-0.4	0.7	-0.5	0.3
Exports	5.9	1.5	4.0	3.0	2.8
Imports	12.0	-2.5	0.0	0.5	0.7
Net trade contribution (p.p.)	-0.9	0.8	0.8	0.5	0.4

Source: IBGE and BCB

1/ Estimates.

2022

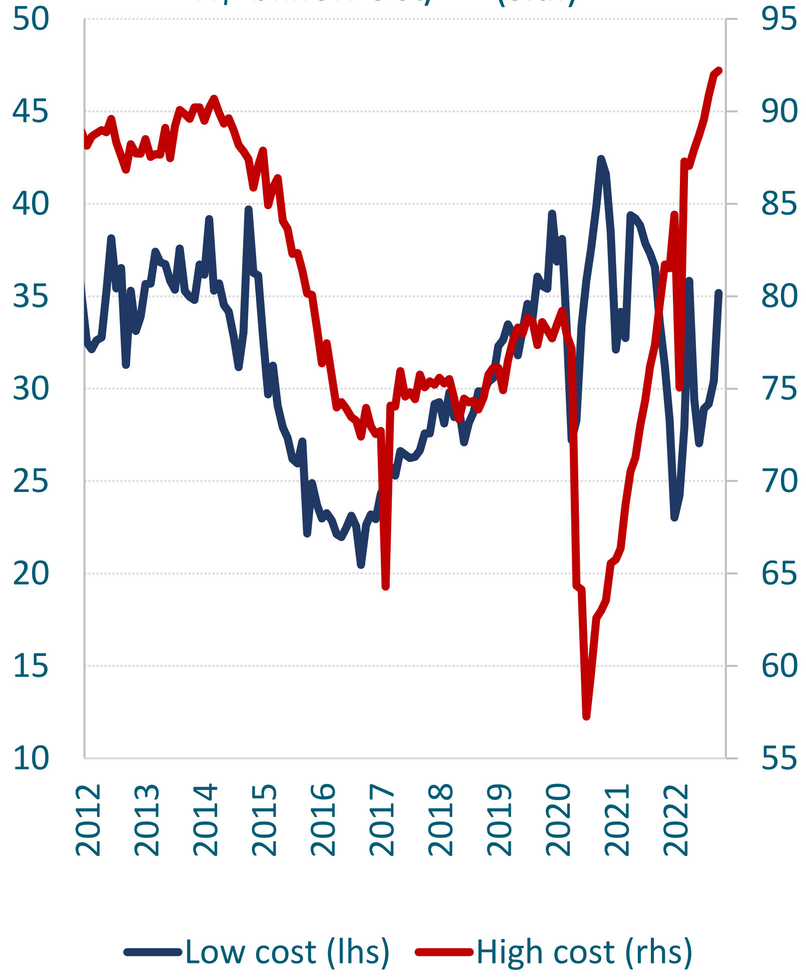
- **GDP projection was revised from 2.7% to 2.9%, influenced by the time series revision and by the results of the 3rd quarter,** which resulted in an increase in the statistical load for 2022 and a reduction for 2023.
  - **In terms of supply**, forecasts were revised down for agriculture and livestock and also industry, but they have been revised up for services.
  - **In domestic demand**, the rise in **household consumption** stands out with a less pronounced deceleration than forecast in the 3rd quarter.

2023

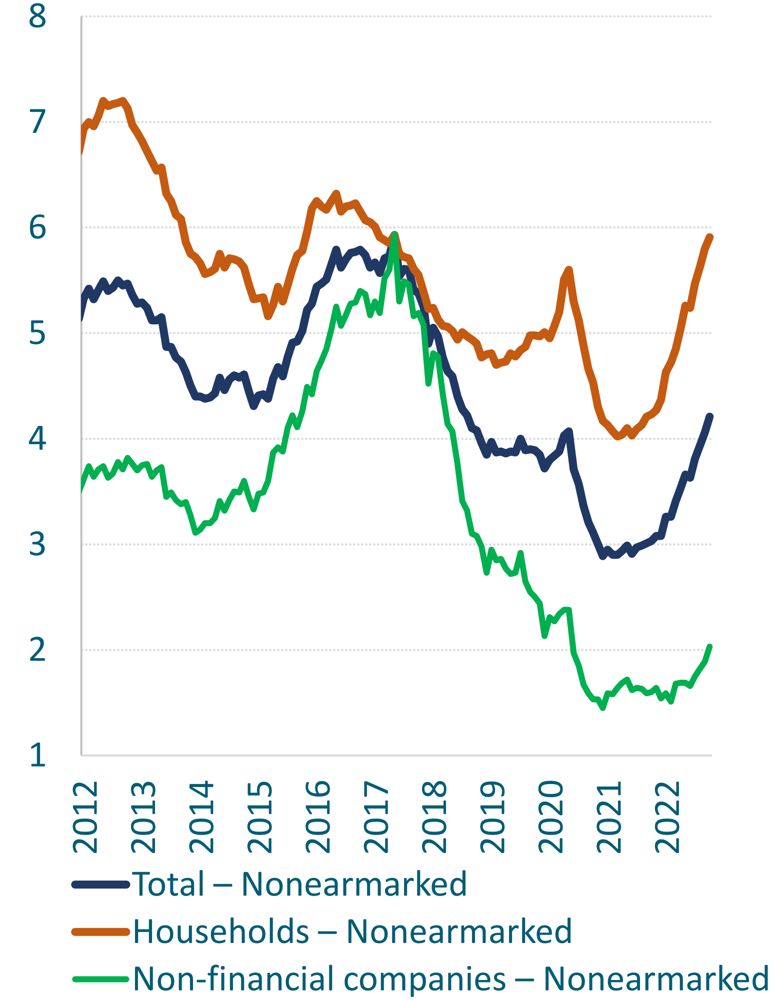
- For 2023, **the forecast remained at 1.0%**, influenced by the expected global slowdown and the cumulative impacts of domestic monetary policy.
- **The uncertainty surrounding the forecasts is higher than usual** due to external (monetary policy, Ukraine, and China) and domestic factors (fiscal framework and stimulus in 2023).

Credit

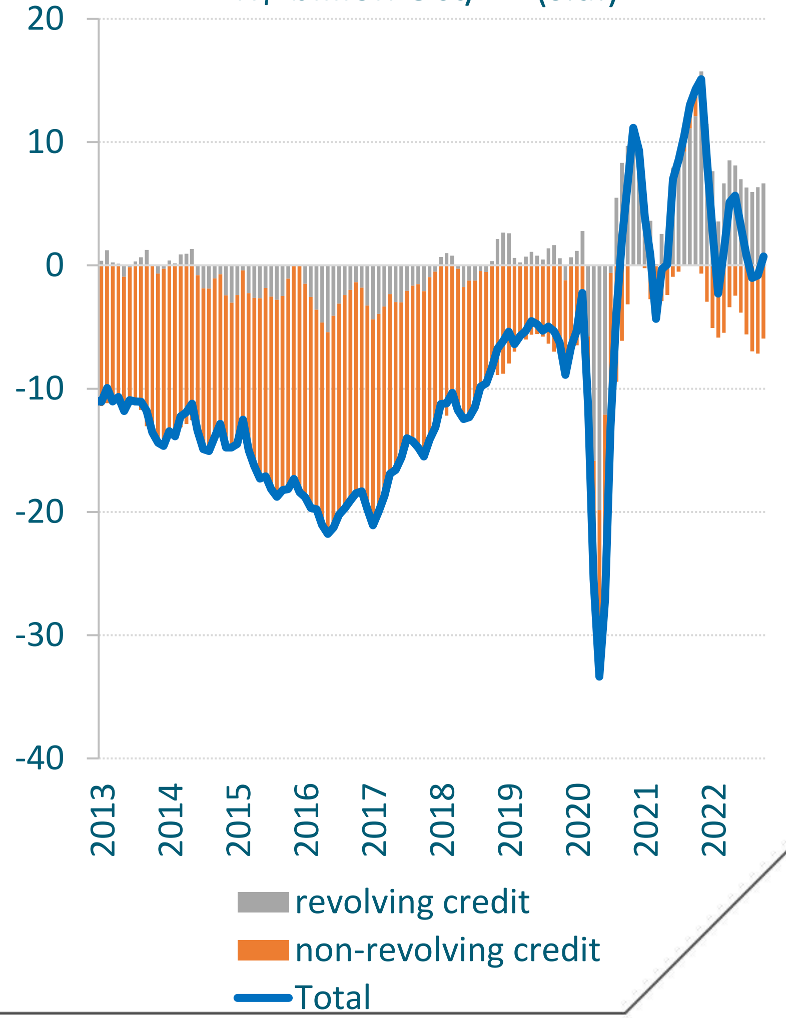
New loans – Nonearmarked credit
R$ billion Oct/22 (s.a.)1/



Delinquency rate – Nonearmarked credit
%



Financial flow2/
R$ billion Oct/22 (s.a.)



1/ Low cost: payroll-deducted credit, vehicles financing, goods financing and leasing
High cost: revolving and financing credit card credit, overdraft, personal credit (except payroll-deducted)
2/ 3-month moving average nonearmarked credit for households

Box – Projection for credit growth in 2022 and 2023

- Growth projections increased marginally for 2022 and remained stable for 2023.
- The revision incorporates expectations of higher growth in earmarked credit, especially in 2022 (larger new loans of rural credit, resilience of housing finance, and Pronampe and Peac contracts above expected before), and lower growth in nonearmarked credit, in line with expected impacts from monetary tightening.
- The projections for 2023, both for the nonearmarked and earmarked credit, indicate a slowdown in the outstanding credit compared to 2022.

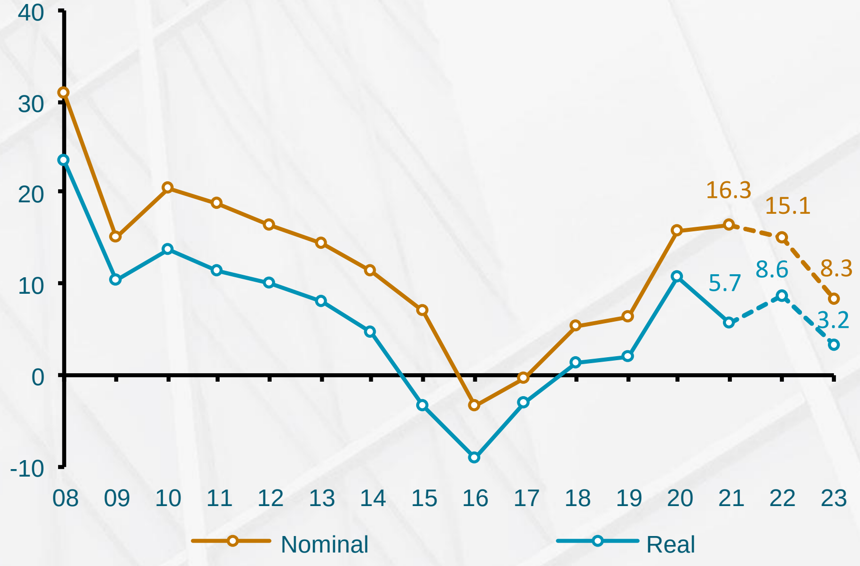
Credit outstanding

12-month change %

	2021	Oct 2022	Proj. 2022		Proj. 2023	
			Previous	Current	Previous	Current
Total	**16.3**	**15.8**	**14.2**	**15.1**	**8.2**	**8.3**
Non-earmarked	**20.4**	**17.6**	**17.2**	**16.3**	**9.6**	**8.6**
Households	23.0	20.9	19.0	19.0	10.0	9.0
Companies	17.4	13.5	15.0	13.0	9.0	8.0
Earmarked	**10.9**	**13.2**	**9.7**	**13.4**	**6.0**	**8.0**
Households	18.5	18.2	13.0	17.0	7.0	9.0
Companies	-0.3	4.9	4.0	7.0	4.0	6.0
Total Households	**21.0**	**19.7**	**16.4**	**18.1**	**8.7**	**9.0**
Total Companies	**10.5**	**10.4**	**11.2**	**10.9**	**7.4**	**7.3**

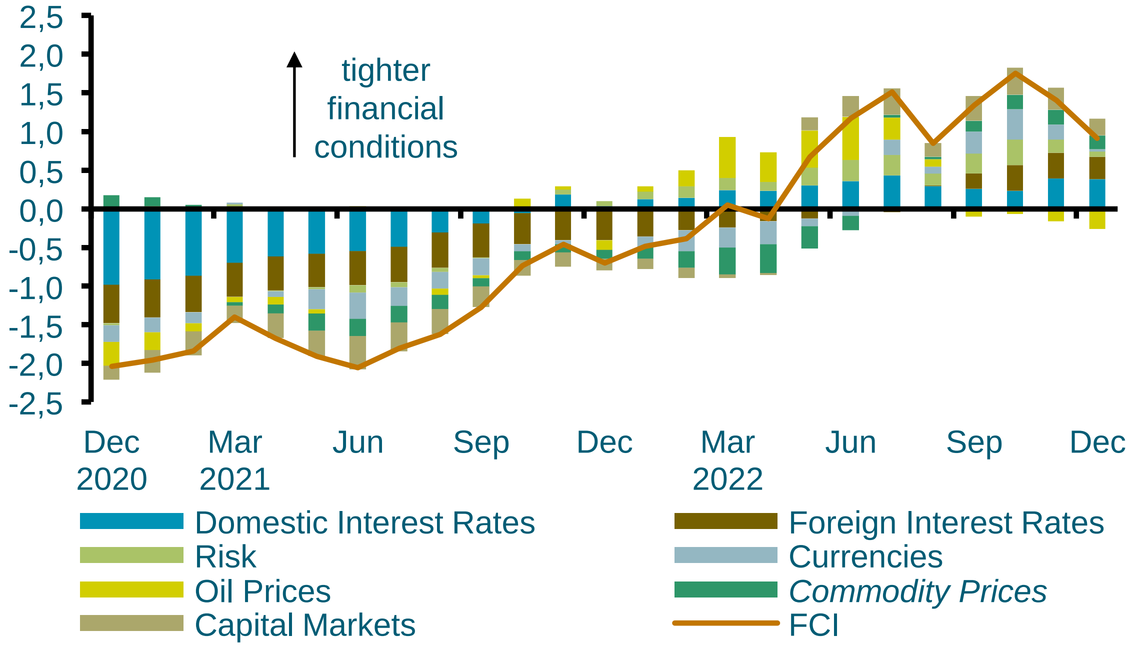
Total credit balance

12-month change (%)



Financial conditions

Financial Conditions Index
Standard deviations from the mean and contributions



Note: The higher the value of the index, the more restrictive the financial conditions. Values refer to monthly averages. Dec/2022 value refers to the average until the 2nd.

The main factors for tighter financial conditions in October 2022 were:

- rising future interest rates in the US and other advanced countries;
- appreciation of the dollar at the international level; and
- increase in country risk.

The main factors for easing financial conditions in November and early December were: [1/]

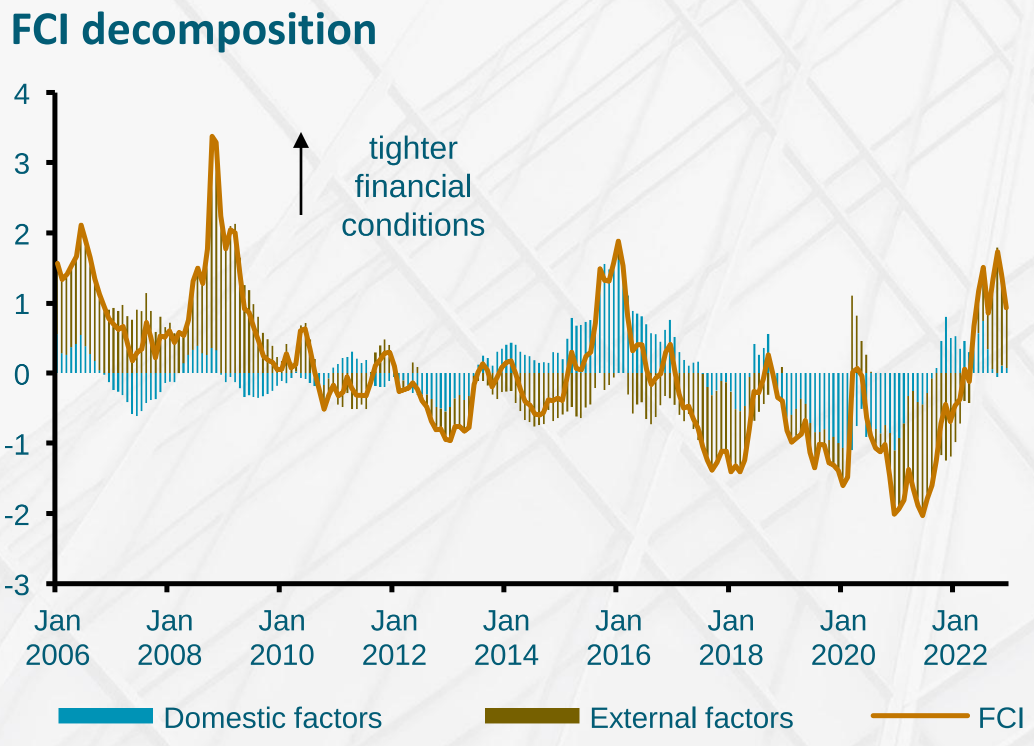
- reduction in oil prices;
- increase in the price of metal commodities;
- depreciation of the dollar at the international level;
- appreciation in the stock markets of advanced and emerging countries; and
- reduction of the VIX and of the country risk.

In the opposite direction, they acted, to a lesser extent:

- the rise in future interest rates in Brazil; and
- a drop in the domestic stock market.

[1/] Average values for December (up to December 2nd) in relation to October 2022.

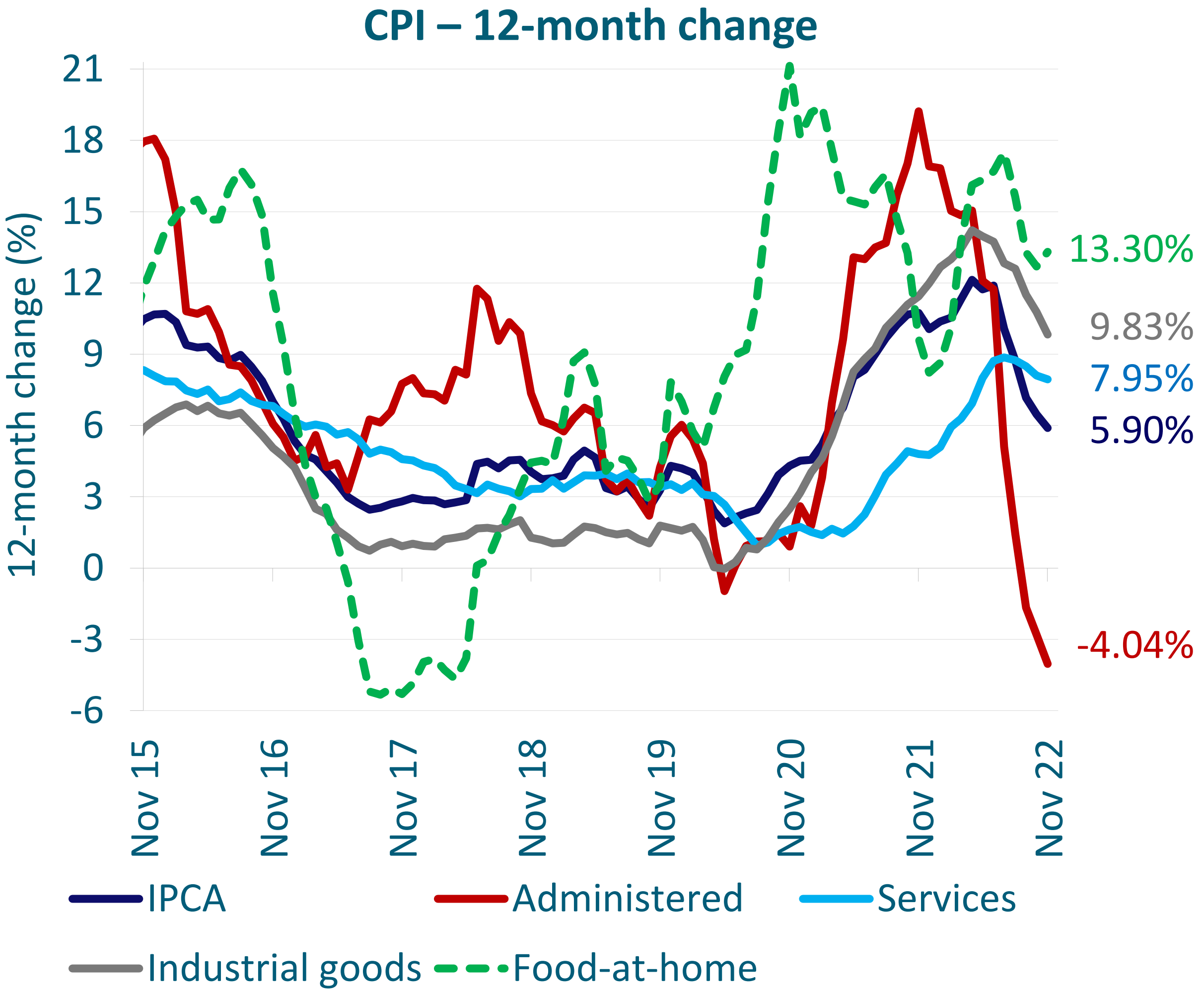
Box – FCI decomposition into domestic and external factors

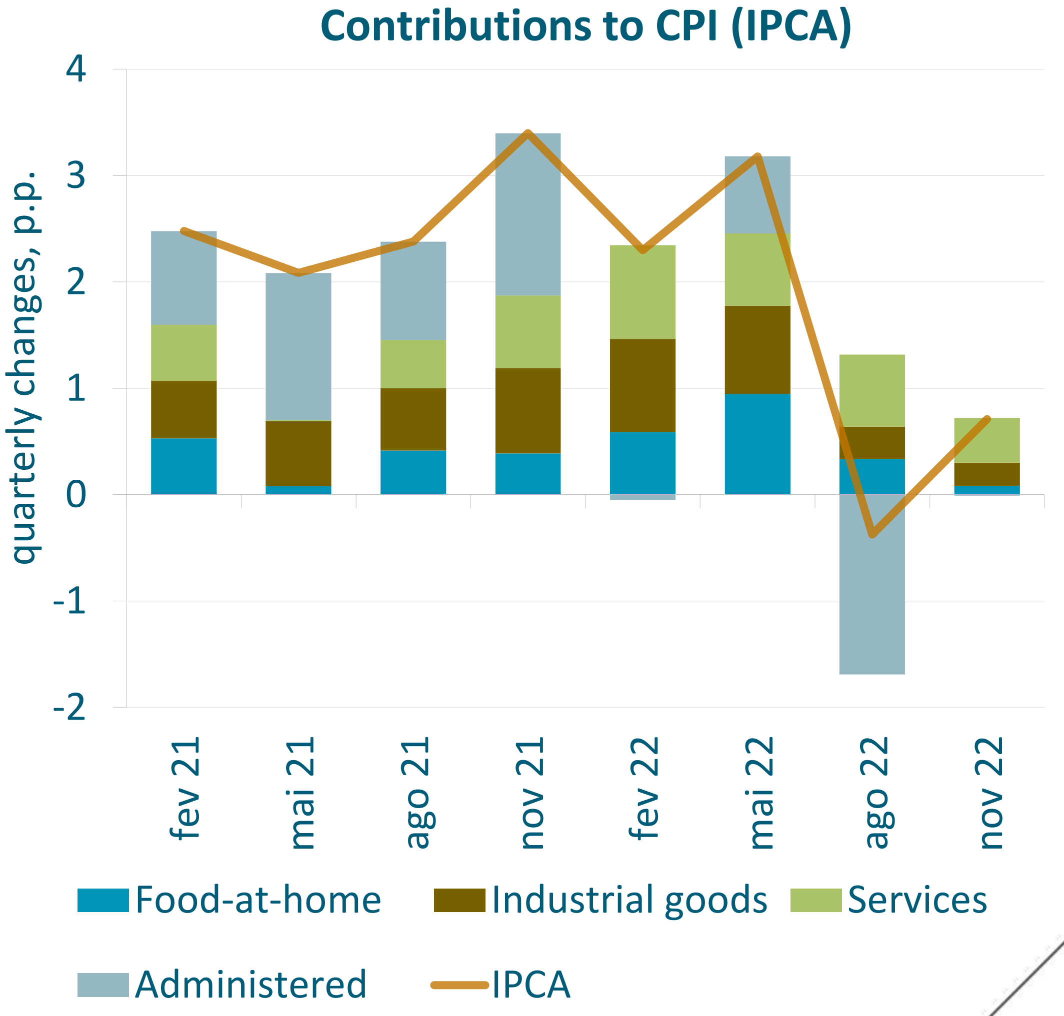


- The tightening of financial conditions in 2008 and 2009 mainly reflects external factors, stemming from the outbreak of the global financial crisis;
- The worsening of financial conditions in 2015 and in early 2016 reflects domestic factors, which are related to the political scenario in the period.
- In early 2020, with the outbreak of the Covid-19 pandemic, the restrictive role of both external and domestic conditions becomes clear, followed by less restrictive conditions that resulted from the extraordinary stimuli implemented domestically and worldwide.
- Considering the more recent period, it becomes evident the difference in the timing of the monetary tightening cycles, which took place earlier in Brazil than in advanced economies.

Inflation

CPI components

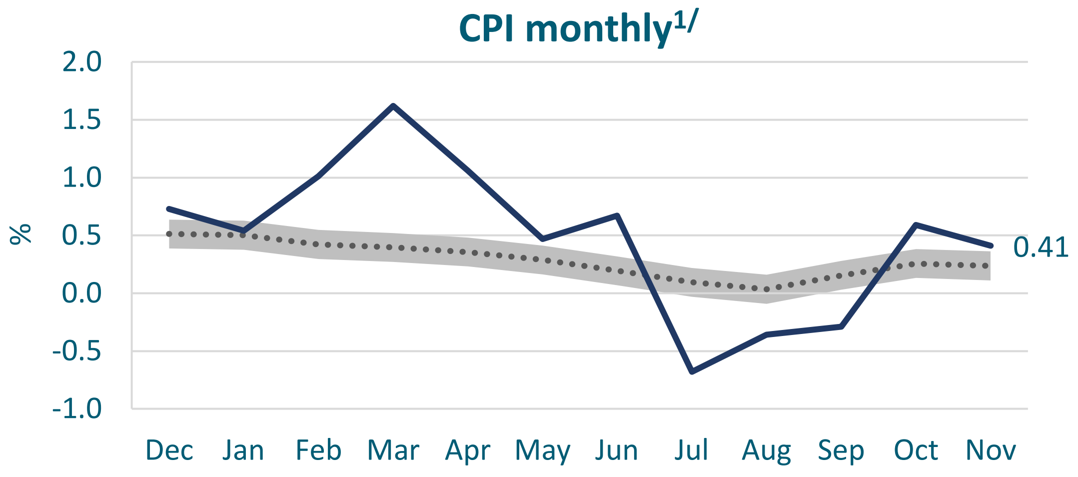


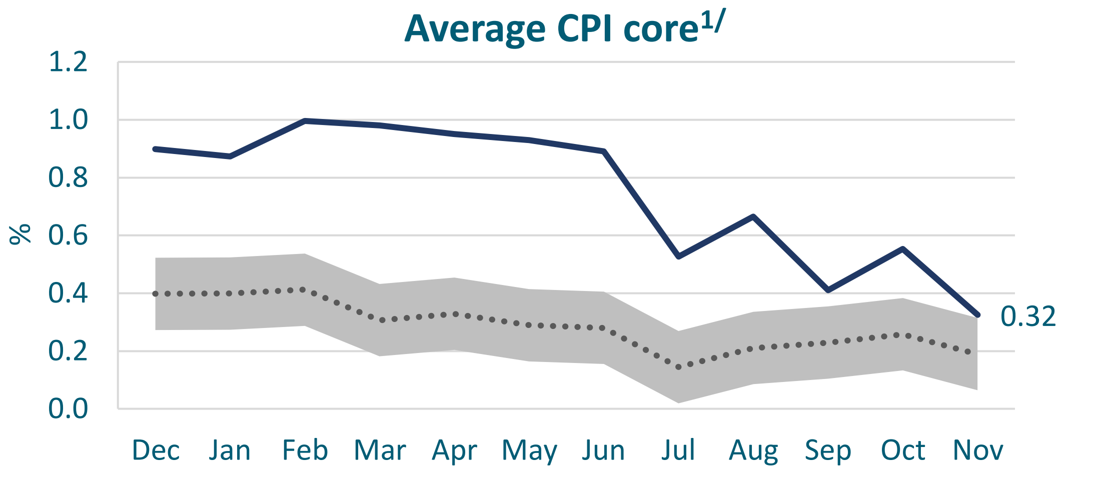


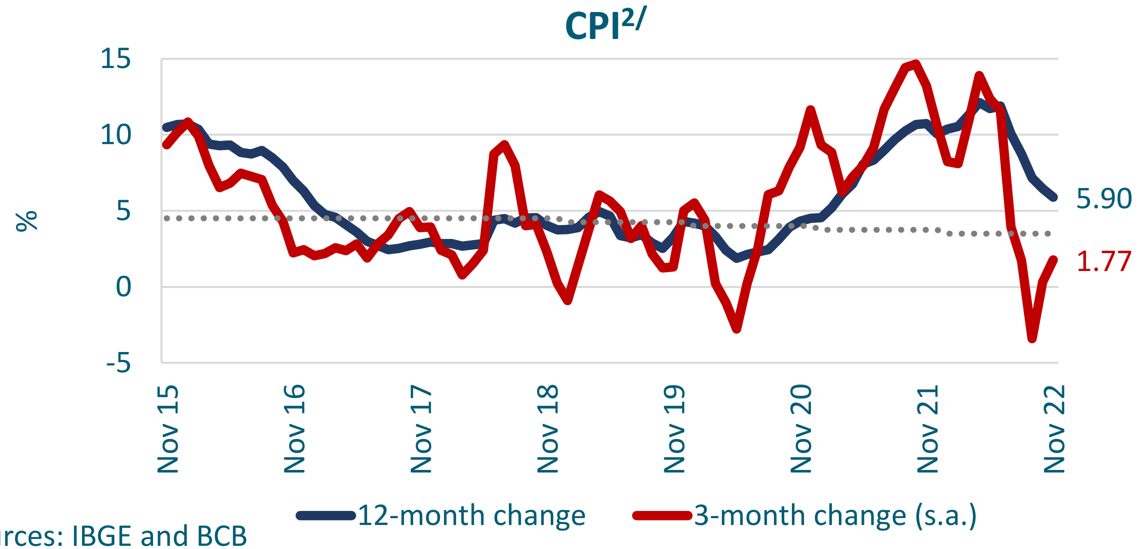
Sources: IBGE and BCB

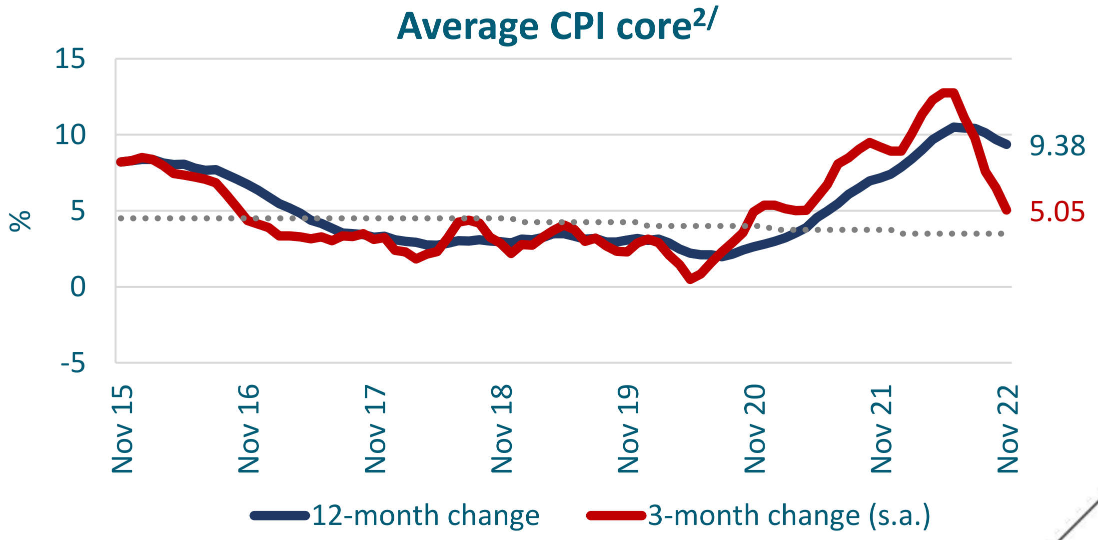
IPCA was published on December 9th (after the Inflation Report cutoff date)

CPI and core inflation









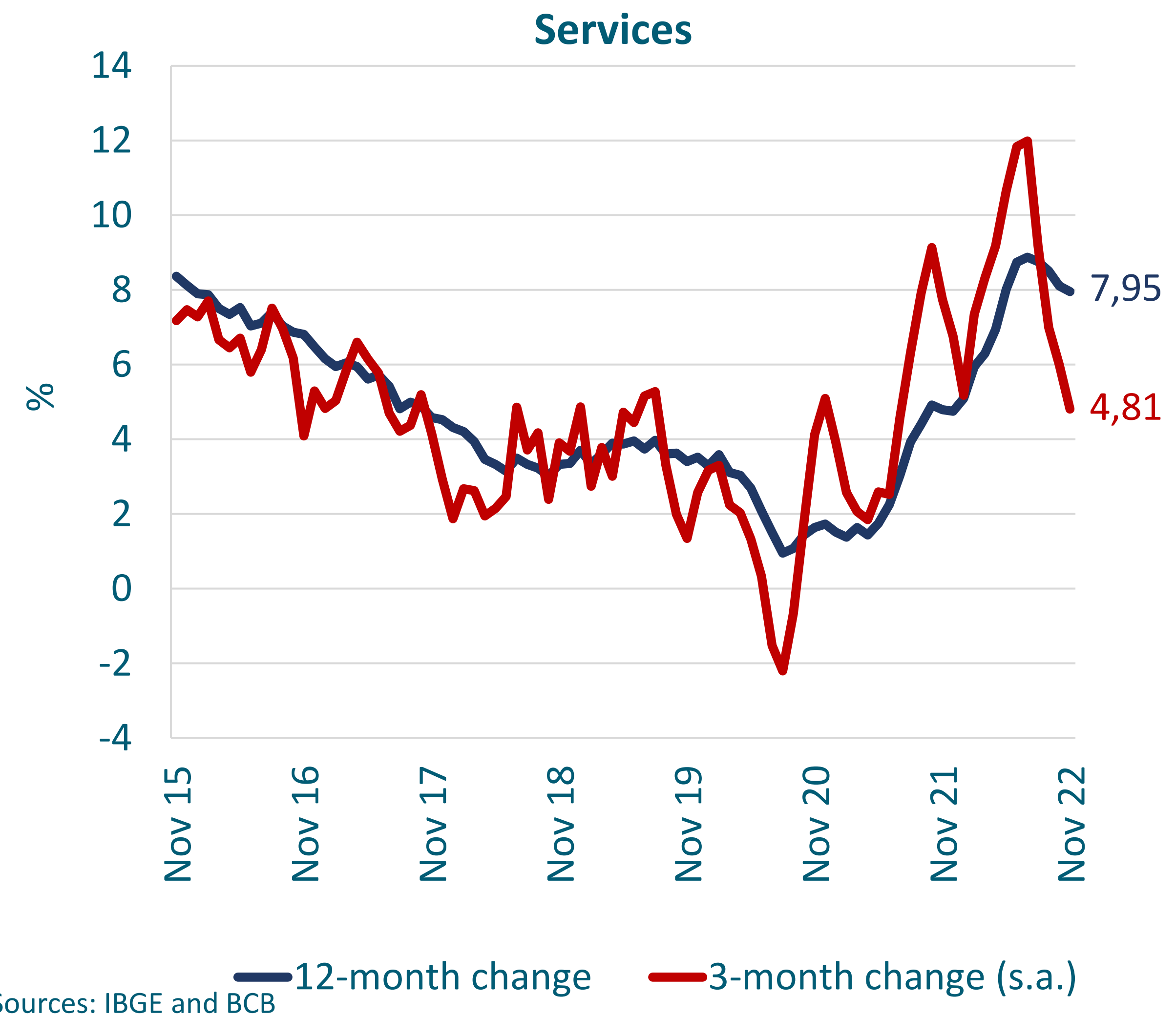
Sources: IBGE and BCB

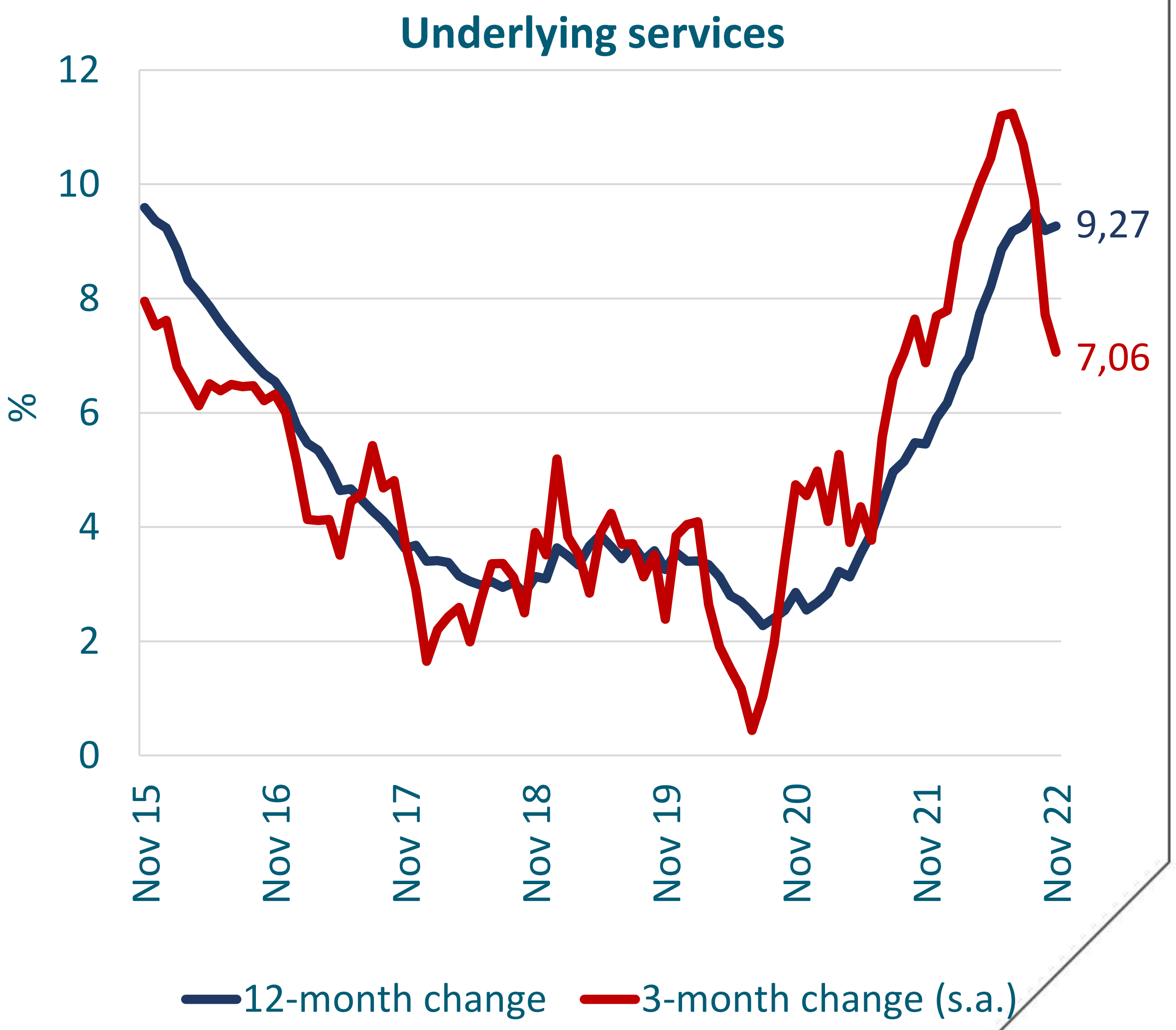
IPCA was published on December 9th (after the Inflation Report cutoff date)

1/ Seasonally adjusted inflation target range (in gray).

2/ IPCA 12-month accumulated and 3-month accumulated annualized seasonally adjusted

Services prices





Sources: IBGE and BCB

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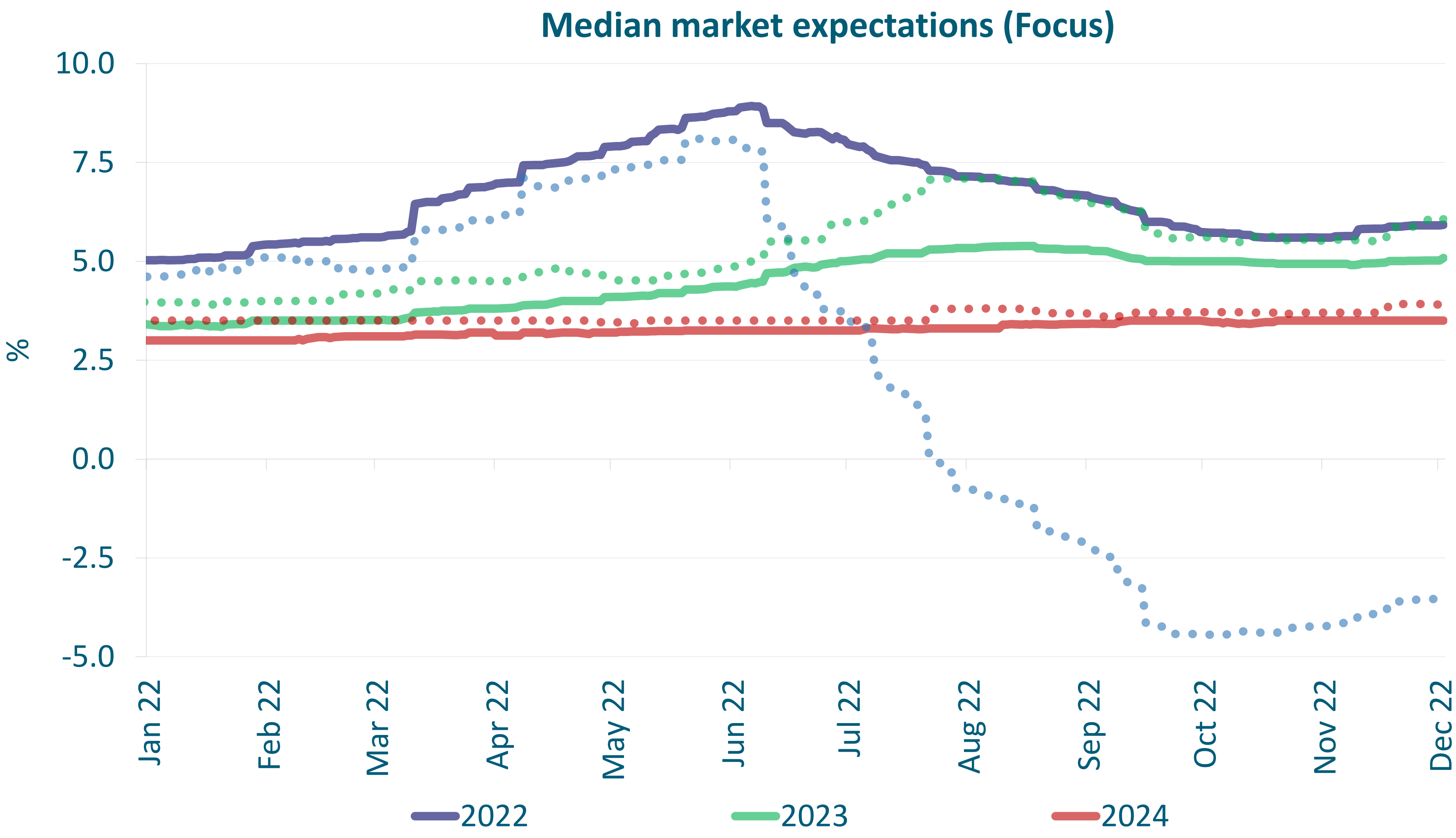
Inflation expectations



	IPCA	Adm.
2022	5.92%	-3.59%
2023	5.08%	6.07%
2024	3.50%	4.00%

Source: BCB (Focus)

Dotted lines refer to expectations for administered prices. Data up to December 2nd

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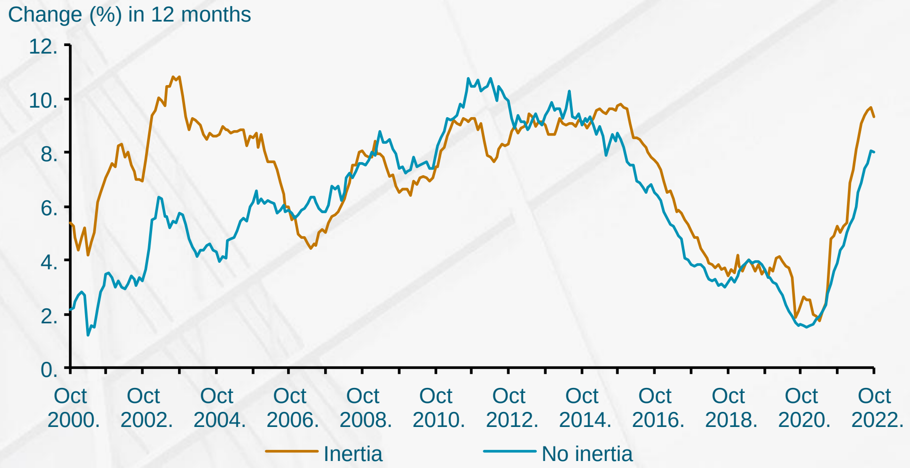
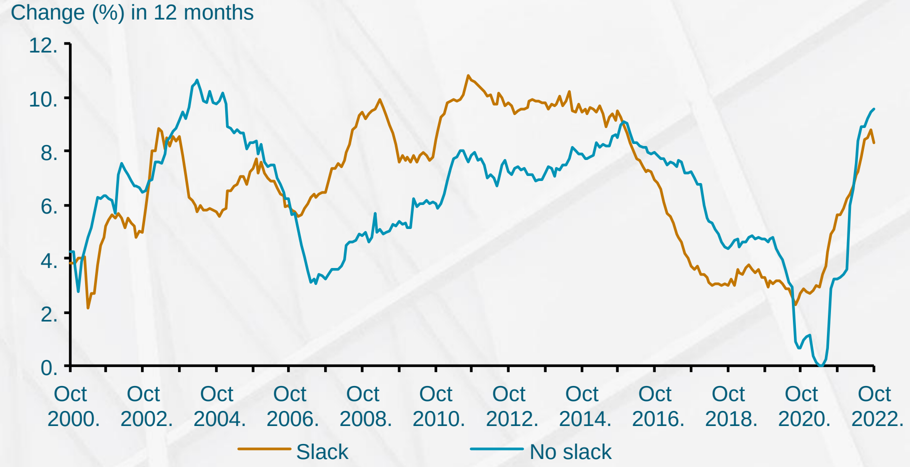
Box – Analysis of services inflation considering slack and inertia

- The box assesses recent developments in services inflation from the perspective of the influence of inflationary inertia and the degree of slack in the economy.
- This is achieved by classifying components of the services inflation according to their sensitiveness to these factors.
- Results show that, recently, the variation in services more sensitive to the inertia has been larger than the others, suggesting that the inertia factor was relevant to the inflation increase in the period.
- The variation in services more sensitive to the degree of slack has recently been lower than the others, which suggests that the degree of slack contributed to moderate inflationary pressures in the period.
- This result can be interpreted as an indirect evidence that, at least until recently, the economy was operating with some degree of slack.

Services inflation, segmented by the sensitiveness to inertia

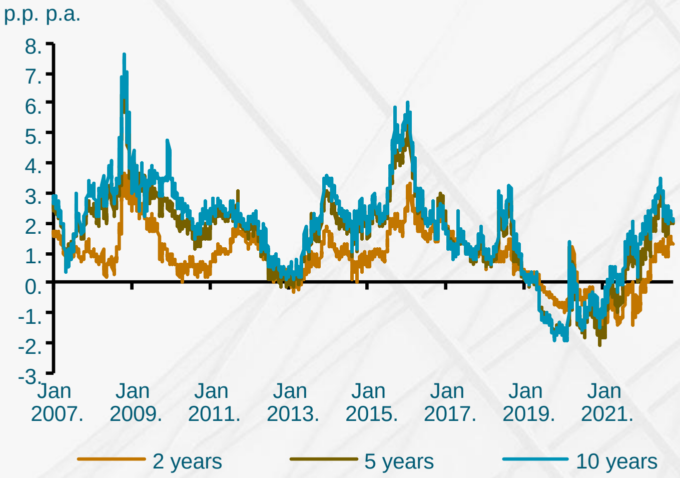


Services inflation, segmented by sensitiveness to slack



Risk premium in Brazilian nominal interest rates

Nominal interest rate premium



10-year nominal interest rate and estimated expectation component

- Nominal interest rate decomposition into two components: cumulative expectation of short-term forward interest rates and term premium.
- The first component is the long-term interest rate that would prevail if investors were risk neutral.
- The second is a compensation to the investor for having invested in a long-term security instead of having invested consecutively in short-term securities.
- Methodology described in Adrian, Crump and Moench (2013) to estimate term premium, with ordinary least squares being applied sequentially in three regressions
- Results according to the theory (Figure 1): the 10-year is the highest in almost the entire sample, while the 2-year is the lowest; the risk premium is almost always positive; and the risk premium increases during uncertainty periods.
- The expectation component is much less volatile than the spot rate: the 10-year interest rate change is mainly due to significant changes in risk premium (Figure 2).
- Crisis of 2008: increase in the 10-year rate was almost entirely due to the increase in the risk premium and not to the increased interest expectation.

Conditional projections

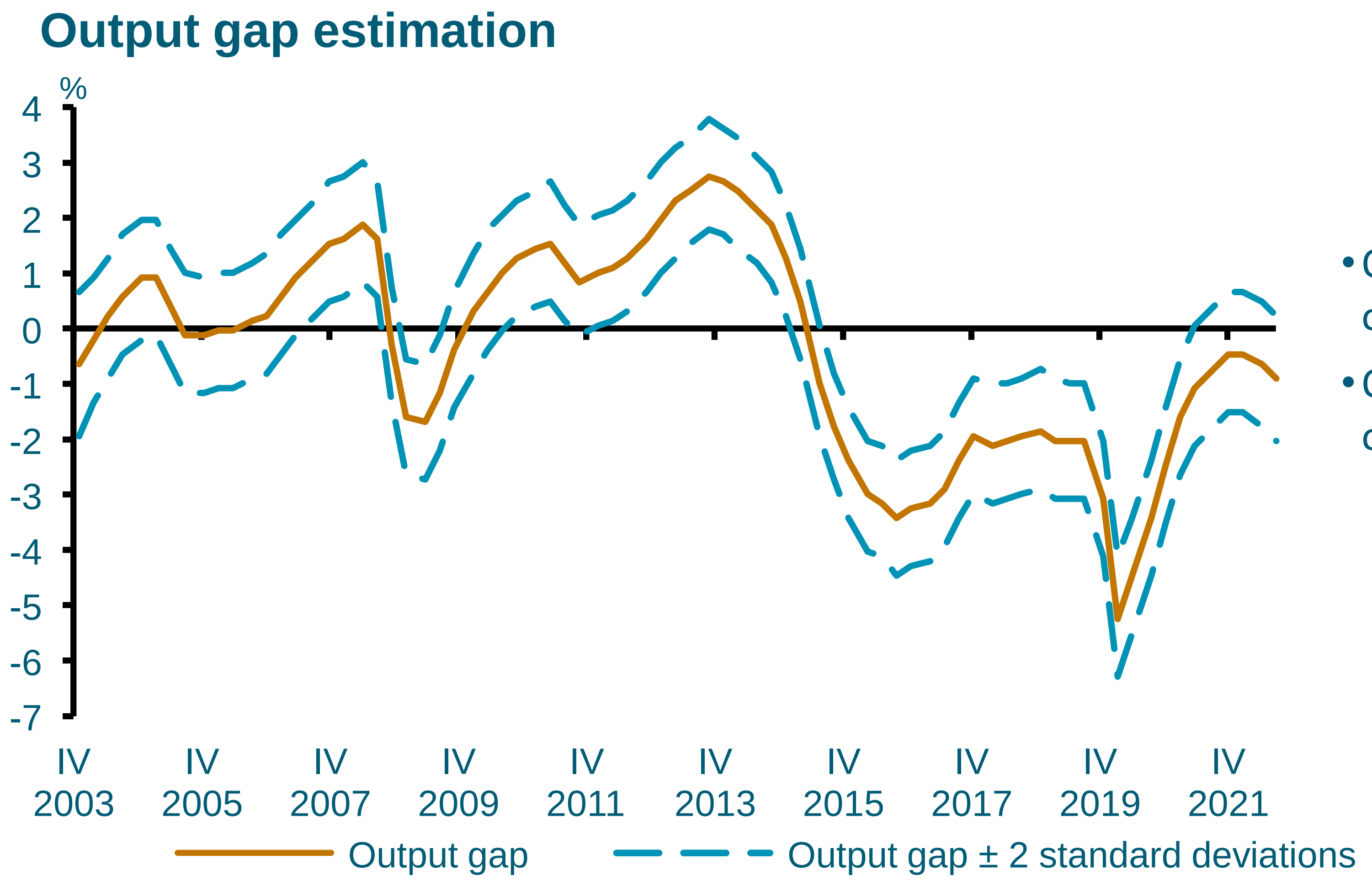
Conditional inflation projections

Assumptions in the baseline scenario

- Interest rate trajectory from the Focus survey: Selic rate would end 2022 at 13.75% p.a., it would drop to 11.75% in 2023 and then to 8.5% in 2024.
- Exchange rate starts from USDBRL 5.25[1/] and follows the purchasing power parity (PPP).
- Oil prices roughly follow the futures curve for the next six months, and then increase by 2% per year thereafter.
- The tariff flag is taken as "green" in December 2022 and "yellow" in December 2023, 2024 and 2025.
- Real neutral interest rate of 4.0% p.a.
- Return of federal fuel taxation in 2023.
- The Committee believes that the uncertainty surrounding its assumptions and projections is currently higher than usual.

1/ Obtained by the usual procedure of rounding the average quotation of the USDBRL exchange rate observed in the five working days ending on the last day of the week prior to the Copom meeting.

Output gap



Note: from 2003Q4 to 2022Q4

- Output gap in the 4th quarter of 2022 estimated at -1.1%.
- Output gap on the 4th quarter of 2023 projected at -1.8%.

Short-term reference scenario

IPCA – Inflationary surprise

Change %

	2022				
	Sep	Oct	Nov	Quarter	12 months
Copom scenario[1/]	-0.21	0.36	0.39	0.54	5.72
Actual IPCA	-0.29	0.59	0.41	0.71	5.90
Surprise (p.p.)	-0.08	0.23	0.02	0.17	0.18

Source: IBGE and BCB

1/ Scenario at June 2022 Inflation Report cutoff date.

IPCA – Short-term projections

Change %

	2022					
	Nov	Dec	Jan	Feb	Quarter	12 months Up to Feb
Copom scenario[1/]	0.54	0.70	0.82	0.88	2.42	6.16

Source: IBGE and BCB

1/ Scenario at cutoff date.

Surprises

- The main contributions to the upside inflation surprise in the quarter were electricity (related to the non-removal of items from its ICMS tax base in some states) and fresh food (related to stronger than expected rains in the period).
- Service inflation was significantly lower than expected, especially in the underlying part.
- The composition of the surprise suggests a less unfavorable picture than indicated by its magnitude.

Projection

- The scenario considers the reversal of tax measures effective until the end of the year, and the maintenance of permanent measures, according to the legislation in force. In particular, it is considered that there will be a reversal of the cut in federal taxes on fuels, and that the removal of items from the calculation base of the ICMS tax on electricity will be completed in early 2023.
- The scenario contemplates a gradual deceleration of industrial and services inflation, but the average of the core inflation measures should still remain above the level compatible with the upper limit of the interval around the inflation target.

Conditional inflation projections

Inflation projections – Selic from Focus and PPP exchange rate

IPCA change in four quarters

%

Y	Q	Target	September IR	December IR	Difference (p.p.)
2022	IV	3.50	5.8	6.0	0.2
2023	I		4.9	5.0	0.1
2023	II		3.7	3.9	0.2
2023	III		5.5	5.9	0.4
2023	IV	3.25	4.6	5.0	0.4
2024	I		3.5	3.6	0.1
2024	II		3.1	3.3	0.2
2024	III		3.0	3.1	0.1
2024	IV	3.00	2.8	3.0	0.2
2025	I		2.8	2.9	0.1
2025	II		2.8	2.9	0.1
2025	III		2.8	2.9	0.1
2025	IV	3.00	2.8	2.8	0.0

Final comments – Projections

- In the reference scenario, Copom’s inflation projections stand at 6.0% for 2022, 5.0% for 2023, and 3.0% for 2024.

- On the six-quarter-ahead horizon, which refers to the second quarter of 2024, the 12-month inflation projection stands at 3.3%.

- The Committee judges that the uncertainty in its assumptions and projections is higher than usual.

Final comments – Balance of risks

Among the upside risks:

- a greater persistence of global inflationary pressures;
- the heightened uncertainty about the country's future fiscal framework and additional fiscal stimuli that support aggregate demand, partially incorporated in inflation expectations and asset prices; and
- an output gap tighter than the one currently adopted by the Committee in its reference scenario, especially in the labor market.

Among the downside risks:

- an additional reduction in the prices of international commodities measured in local currency;
- a greater-than-projected deceleration of global economic activity; and
- the continuity of tax cuts assumed to be reversed in 2023.

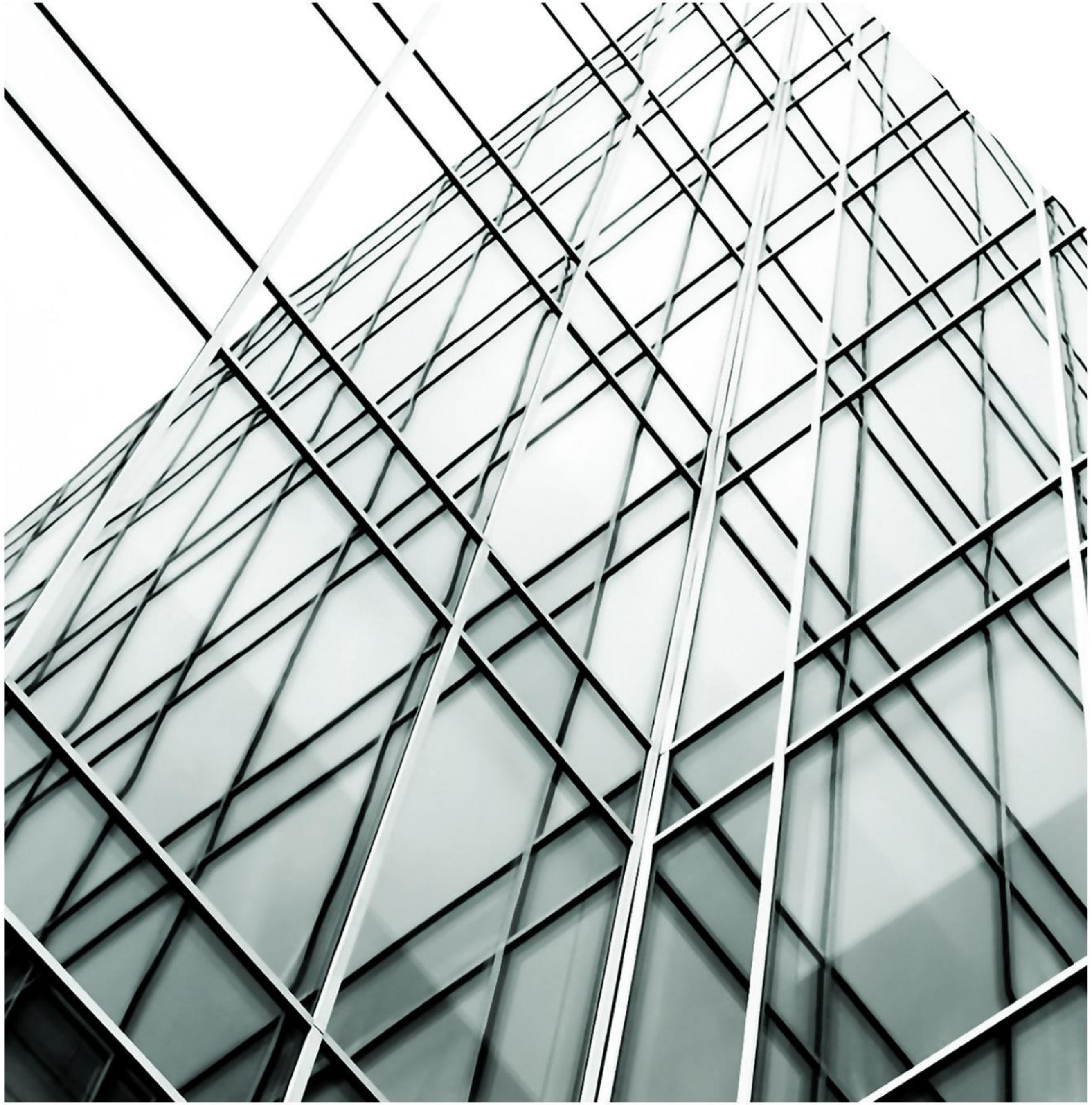
The current scenario, particularly uncertain on the fiscal side, requires serenity when evaluating risks. The Committee will closely monitor future developments in fiscal policy and, in particular, its effects on asset prices and inflation expectations, with potential impacts on the dynamics of future inflation.

Inflation Report

December 15th, 2022

Diogo Guillen

BANCO CENTRAL
DO BRASIL



Conduct of Monetary Policy

Conduct of Monetary Policy – 1

- In its 251st meeting (December 6th and 7th), considering the assessed scenarios, the balance of risks, and the broad array of available information, the Copom decided to maintain the Selic rate at 13.75% p.a.
- The Committee judges that this decision reflects the uncertainty around its scenarios for prospective inflation, an even higher-than-usual variance in the balance of risks, and is consistent with the strategy for inflation convergence to a level around its target throughout the relevant horizon for monetary policy, which includes 2023 and 2024. Without compromising its fundamental objective of ensuring price stability, this decision also implies smoothing of economic fluctuations and fosters full employment.

Conduct of Monetary Policy – 2

- The Committee will remain vigilant, assessing if the strategy of maintaining the Selic rate for a sufficiently long period will be enough to ensure the convergence of inflation.
- The Committee emphasizes that it will persist until the disinflationary process consolidates and inflation expectations anchor around its targets.
- The Committee reinforces that future monetary policy steps can be adjusted and will not hesitate to resume the tightening cycle if the disinflationary process does not proceed as expected.