Recent evolution of food prices in Brazil

Food price changes have been of great relevance for the Brazilian inflation dynamics over the last years. From 2020 to 2022, the cumulative price increase in the food-at-home group was more than twice the headline Extended National Consumer Price Index (IPCA) change (Table 1). In 2023, in turn, food prices have been declining. These movements are explained by global factors, closely related to the Covid-19 pandemic but also by specific Brazilian factors. This box revises the evolution of food prices in the period and comments on the risks derived from the current *El Niño* weather phenomenon.

Table 1 – IPCA, household food inflation, and IC-Br
QoQ (%)

	Weight	2019	2020	2021	2022	2023 (up to Aug)	Accum. 20-22
IPCA	**100.0**	**4.3**	**4.5**	**10.1**	**5.8**	**3.2**	**21.7**
Food-at-home	15.5	7.8	18.2	8.2	13.2	-1.8	44.8
Cereals, leguminous, and oilseeds	0.9	12.9	60.4	-13.6	8.7	2.7	50.6
Flour, starches, and pasta	0.5	-1.5	7.3	10.6	22.7	1.9	45.7
Tubers, roots, and legumes	0.8	-15.2	46.7	4.8	40.2	-15.0	115.3
Sugar and sweets	0.8	2.8	11.1	18.4	10.8	5.3	45.7
Vegetables and greens	0.2	2.9	21.2	7.7	13.6	12.0	48.2
Fruits	1.1	7.3	25.4	3.4	24.0	1.5	60.7
Meat	2.6	32.4	18.0	8.5	1.8	-9.7	30.3
Fish	0.2	1.7	6.4	3.3	3.1	3.1	13.3
Processed meat and fish	0.7	5.2	15.9	9.3	4.5	-0.2	32.4
Poultry and eggs	1.3	13.8	14.5	23.6	7.9	-6.3	52.6
Milk and dairy products	2.0	1.9	16.8	5.7	22.1	3.1	50.8
Bread and bakery products	1.8	0.8	5.0	7.7	20.6	3.1	36.3
Oils and fats	0.4	4.9	61.8	8.3	7.5	-17.4	88.3
Beverages and infusions	1.7	-0.5	5.2	14.1	11.5	2.4	33.8
Canned and preserved foods	0.2	2.3	13.3	7.9	14.8	3.4	40.4
Salt and seasonings	0.4	8.3	7.0	8.2	14.3	4.9	32.3
International prices							
Exchange rate (USD/BRL)		5.7	25.3	9.8	-7.2	-5.2	27.6
Commodities Index (IC-Br) (USD)		0.3	2.3	37.3	6.1	-5.7	49.0
IC-BR Agricultural (USD)		3.5	2.2	32.3	3.9	8.1	40.5
IC-BR Energy (USD)		-7.1	-16.6	58.4	35.7	-34.9	79.2

Note: The changes refer to the average price in December compared with the average price in December of the previous year. For 2023, they refer to the change between December 2022 and August 2023.The weights refer to August 2023.

2020: Covid-19 pandemic and the BRL depreciation

In 2020, food prices increased by 18.2%, considerably above inflation (4.5%), both measured by the IPCA (Table 1). Overall, the evolution of prices over the year was largely influenced by the initial impact of the Covid-19 pandemic and by the quick activity and commodity prices recovery in the subsequent months.

Early 2020 was characterized by the decline in meat prices, partially offsetting the strong increase observed in late 2019.[1] As of March, the pandemic effects were preponderant in the evolution of food prices. At first, the

1/ The rise was associated with the expansion of beef exports to China, which was facing the impacts of the African Swine Fever (ASF). Further details in the box Meat prices shock of the March 2020 IR.

health crisis led to declines in international commodity prices (Figures 1 and 2) and, in Brazil, exchange rate depreciation (Figure 3). Still in March, the median assessment of economic analysts was that the pandemic shock would be disinflationary in the country.

Figure 1 – IC-Br in USD

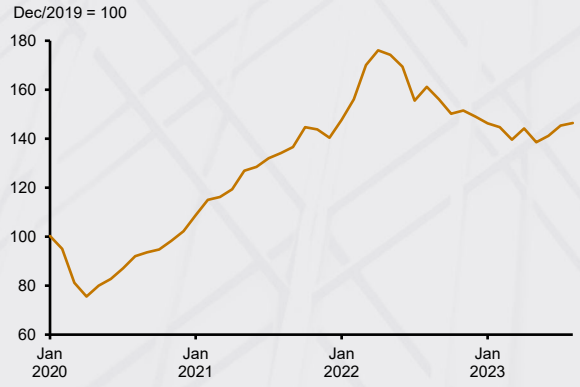
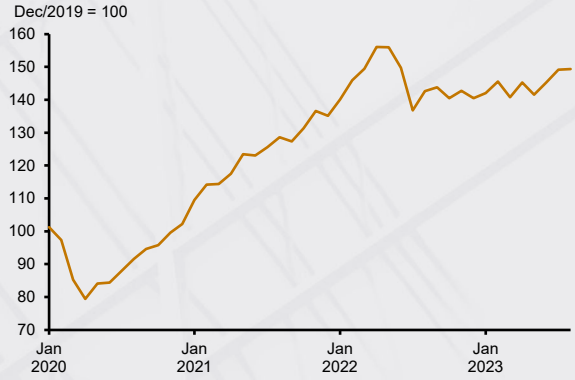
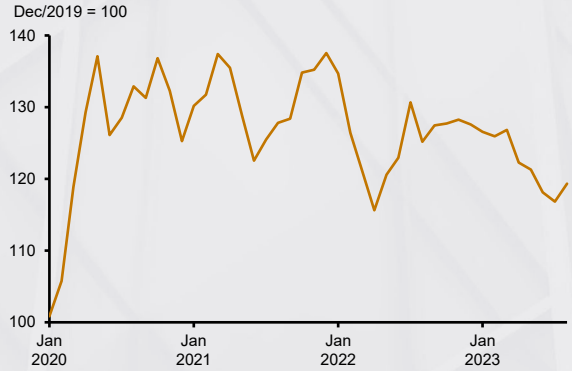


Figure 2 – IC-Br Agricultural in USD



The pandemic and social distancing measures have led to a large shift in household demand. In general, expenses on services, which are more dependent on personal contact, decreased, while expenses on goods increased. Regarding food, food-at-home consumption increased to the detriment of the consumption in restaurants and snack bars. This additional food-at-home consumption was sustained by higher income transfers, which focused on assisting workers affected by the economic shutdown.

Figure 3 – Exchange rate USD/BRL



In 2020Q2, initial pressures on food wholesale and retail prices were already observed, reflecting the exchange rate depreciation, the increased demand, and logistical issues caused by the pandemic. In this period, main rises occurred in fresh food, rice, and beans.

The recovery of economic activity and international prices was fast. In late 2020, agricultural commodity prices in USD had already returned to the pre-pandemic level. The agricultural IC-Br in BRL closed the year 28% above the level of late 2019, with the persistence of the exchange rate depreciation. Producer prices in Brazil reacted to this rise over the entire second half of the year and presented historically high premia in relation to the international price for some products.

The acceleration of consumer prices in the second half of the year reflected widespread increases. Strong increases were observed, in 2020, in the subgroups of oil and fats (62%), cereals, leguminous, and oilseeds (60%).[2]

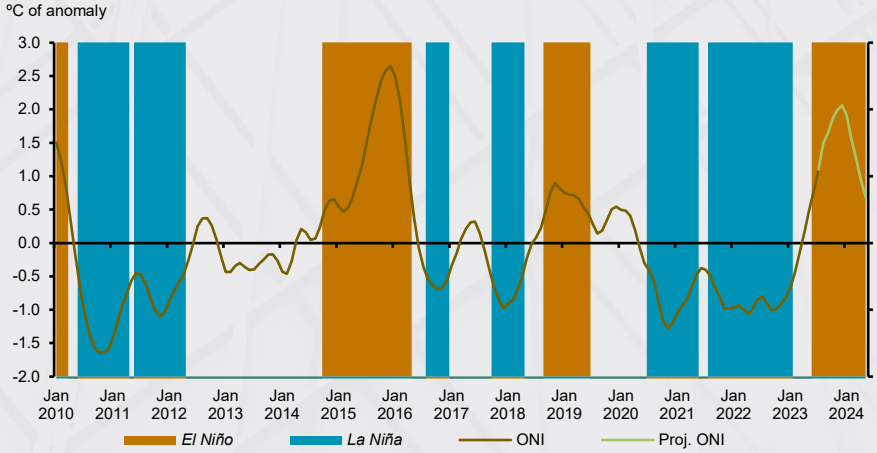
The exchange rate depreciation was crucial to the food inflation increase in 2020, given the sensitiveness

2/ The subgroup cereals, leguminous, and oilseeds essentially comprises rice, with greater weight, and beans.

of this segment to exchange rate variations.[3] BRL stood out as one of the currencies which depreciated the most in the year (25.3%), going from USD/BRL 4.11 in January to USD/BRL 5.15 in December, and reaching rates above USD/BRL 5.50 in several moments of the period. In particular, the negative correlation between the exchange rate and commodity prices, that characterized the pre-pandemic period, was not observed.

Concerning the weather, the end of 2020 was marked by the formation of the weather phenomenon *La Niña*, which persisted almost uninterrupted until early 2023 (Figure 4). In the December 2020 IR the risks stemming from this climate anomaly were already mentioned, with negative revisions for the 2021 harvests and rises on the prices of international agricultural commodities.

Figure 4 - Oceanic *Niño* Index (ONI), *El Niño* and *La Niña*



The ONI projection follows the average of dynamic models available on the International Research Institute for Climate and Society (IRI) website, as of the projections made on August 18th, 2023.

Sources: NOAA and IRI

2021: *La Niña*, water shortage, and the increase of commodity prices

In 2021, food prices continued to increase strongly (8.2%), although below the IPCA change (10.1%). In view of the previous year's rise, much above inflation, relative food prices persisted at a high level.

The rise of commodity prices since mid-2020 continued to pressure food prices and prices in general in 2021. In the year, as in 2020, the usual negative correlation between commodity prices and the exchange rate was not observed. The IC-Br rose 37% in USD and 51% in BRL, reflecting further BRL depreciation. In the agricultural segment, the increases were 32% in USD and 45% in BRL.

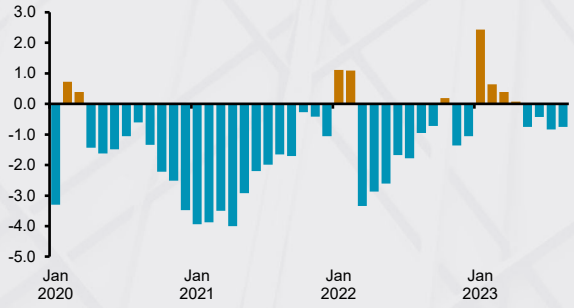
The widespread rise of commodity prices resulted from the persistence of global factors observed since mid-2020. The demand continued to be favored by monetary and fiscal stimuli and by the shift of consumption baskets towards goods, while, on the supply side, bottlenecks in global supply chains prevailed, in a context of limited economic reopening and new Covid-19 waves.

Costs of agricultural production and food transportation rose sharply in 2021. Among energy commodities, prices of diesel and natural gas increased. Prices of fertilizers also rose strongly, due to both the rise of input prices, including natural gas, and economic sanctions against Belarus, a major exporter of these products.

3/ The estimated pass-through of exchange rate variations to consumer prices is higher for food than for the other segments of market prices. See, for instance, Figure 2c of the box New small-scale disaggregated model, of the March 2021 IR. According to the box Breakdown of 2020 inflation of the March 2021 IR, the exchange rate variation contributed with 1.98 p.p. to the inflation deviation from the target in 2020.

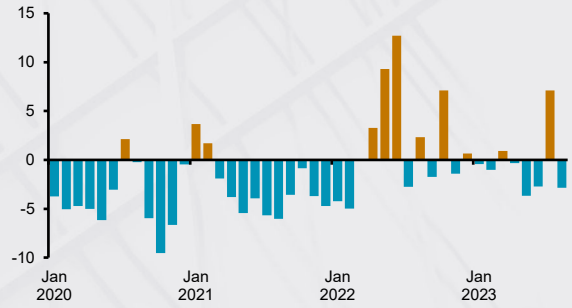
Domestically, despite the record soybean harvest in early 2021, some crops scheduled to be harvested in the remainder of the year were heavily affected by the less favorable weather. Under the influence of *La Niña*, Brazil faced a severe water shortage (Figures 5a and 5b),[4] which negatively impacted crops such as sugar cane and second-crop corn.[5] Lower-than-expected rainfall at first benefited the prices of fresh food, which are sensitive to excessive rainfall. However, the persistence of dry conditions in the subsequent months and the occurrence of frosts damaged the production, leading to new price increases in this segment. Although with a lesser influence on the 2021 harvest, the drought and the atypical cold weather also damaged the development of coffee plantations, contributing to the failure in the coffee harvest of the subsequent year.

Figure 5a – ANE in the Southeast and Central-West
Monthly deviation from the typical pattern
% of the annual long-term historical average



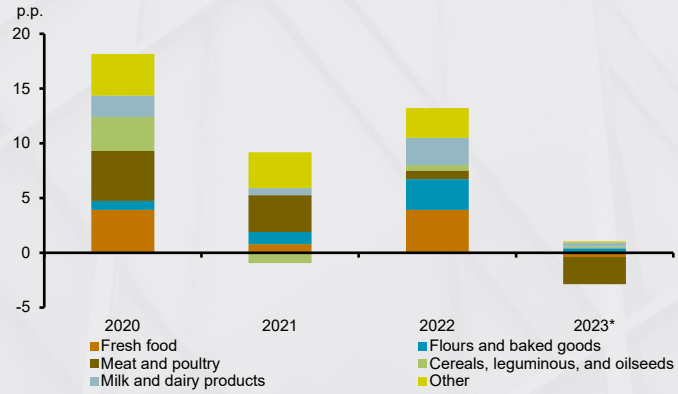
Source: ONS, BCB's elaboration

Figure 5b – ANE in the Southern region
Monthly deviation from the typical pattern
% of the annual long-term historical average



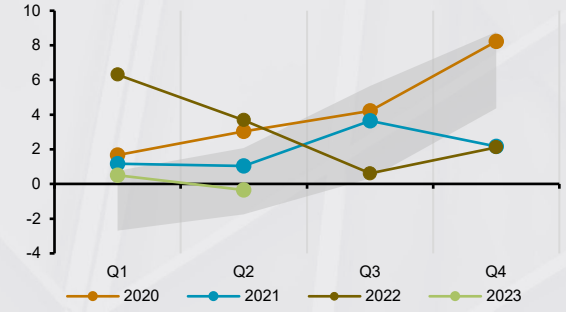
Source: ONS, BCB's elaboration

Figure 6 – Contributions to food inflation in the IPCA



Source: IBGE, BCB's elaboration
* In the eight months up to August

Figure 7a – Food-at-home
Quarterly IPCA variation (%)



Obs.: The interquartile band in gray uses data from 2000 to 2019.
Sources: IBGE and BCB

Figure 7b – Fresh Food
Quarterly IPCA variation (%)

Note: Includes tubers, roots and legumes, fruits, vegetables, and eggs.

4/ The Affluent Natural Energy (ANE) is a measure related to the stream flow of rivers into hydroelectric power plants in each subsystem of the Interconnected National System (SIN) of energy. In this box, ANE figures are used as approximative indicators for the aggregate rainfall in the regions.

5/ Between the January and December editions of the IBGE's Systematic Agricultural Survey (LSPA), estimates for second-crop corn and sugar cane were revised by -20% and -9%, respectively.

Figure 7c – Cereals, leguminous, and oilseeds

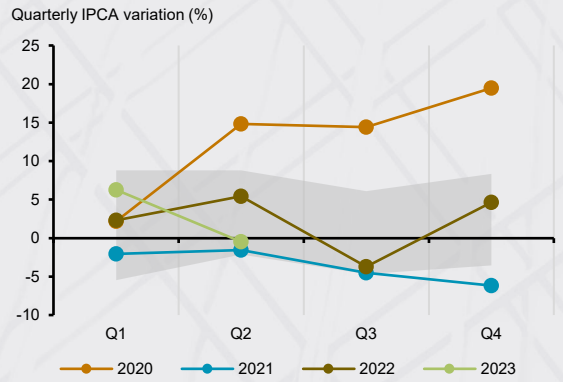


Figure 7d – Milk and dairy products

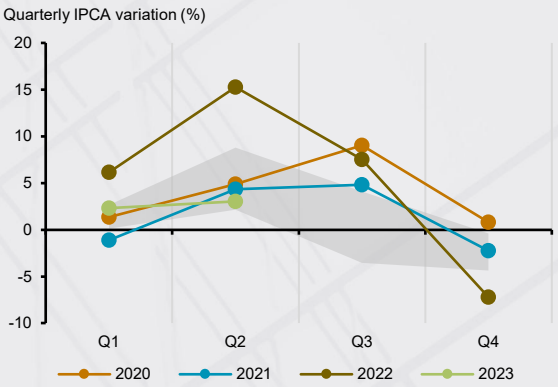


Figure 7e – Meat and poultry

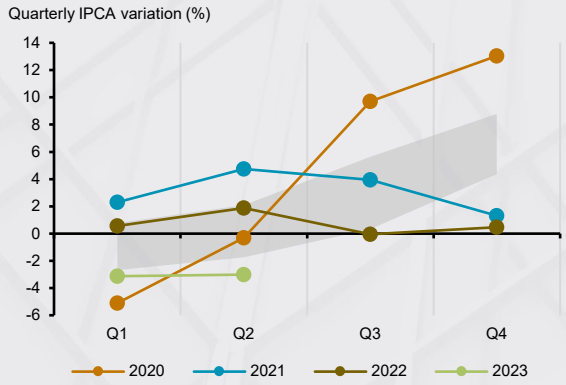
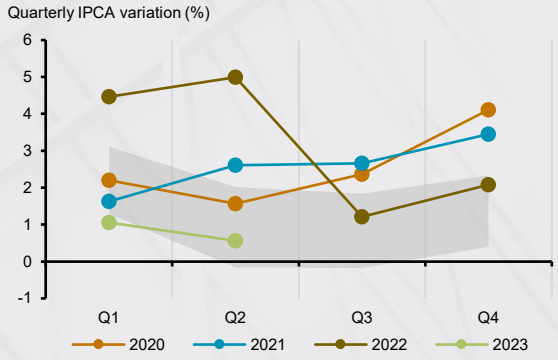


Figure 7f – Other food items



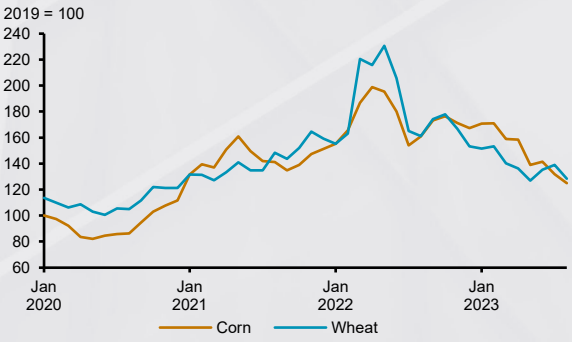
Note: Includes food items not listed in figures 7a-7e.

2022: Ukraine war and the slowdown of prices in the second half of the year

In 2022, food price increases were stronger in the first half of the year, slowing down in the second half, a trend in general like other IPCA segments. In the entire year, food-at-home prices grew 13.2%, while the headline IPCA change, benefited by tax cut measures, was much lower (5.8%).

In early 2022, international prices of agricultural commodities rose quickly and sharply with the outbreak of the war in Ukraine. Prices of corn and wheat (Figure 8) – products largely exported by Ukraine and Russia – and soybean oil have been particularly affected, as these countries are exporters of substitute products (including sunflower oil). Some countries started to limit their agricultural exports due to concerns with their food safety, which also contributed to the rise in international prices.

Figure 8 – International corn and wheat prices (in USD)



Source: Bloomberg, chained series of 2nd futures contracts

Following the initial period of uncertainties about the conflict, the prospect of normalization of grain exports from Russia and Ukraine led to declines in international prices of grains. In the subsequent months and in 2023, however, the relevant risks for the continuity of the flow of grains from the region persisted, impacting prices.

Although the agricultural IC-Br increased only 3.9% in the entire 2022, it reached, in April, a monthly peak 15% above the level of late 2021. The exchange rate resumed its usual negative correlation with commodity prices, which had not been observed in the previous two years. The BRL appreciated until April but with the fall in commodity prices it started to depreciate, partially offsetting changes in USD prices.

Throughout 2022, the weather – still under the influence of *La Niña* – continued to pressure food prices. From 2021 to 2022, the water scenario improved, with rainfall levels closer to the usual in the Southeast/Central-West region of the Interconnected National System. However, there was a rainfall shortage in the Southern states of Brazil and in the south of Mato Grosso do Sul, which led to a partial failure of the soybean crop in early 2022. The drought also contributed to restrict milk supply, already under pressure due to rising production costs, and to reduce the productivity of coffee crops. In 2022Q4, heavy and early rainfalls – considering the seasonal pattern – led to a strong rise in fresh food prices.

The evolution of consumer food prices basically reflected the evolution of agricultural commodity prices. After strong price changes in 2022Q1 – associated with weather effects on the supply of fresh food – food-at-home price increases were widespread in 2022Q2. The sharp rise in bakery products, flours, and oils can be at least partly associated with the immediate effects of the war in Ukraine. As of 2022Q3, consumer prices slowed down as commodity prices and the sector's input costs declined.

The downward movement in beef and milk prices in the second half of 2022 also reflected specific factors, which extended to 2023. As for milk, the decline of input prices was accompanied by a sharp increase in the imports of dairy products from Mercosur. As for beef, a stronger cycle of fed cattle supply began, with increased slaughter of females.

2023: Exchange rate appreciation and declining domestic prices of grains and fed cattle

The price evolution observed in 2023 partly extends the favorable trends observed in the second half of 2022, with a widespread improvement among the components of the IPCA food-at-home group.

In early 2023, failures in the crops of grains occurred in the Southern Brazilian region and in Argentina due to the drought associated with *La Niña*. Even with these failures, which are more localized, Brazil is expected to harvest record crops of soybeans and corn in 2023, with an estimated grain harvest increase of 19% compared with 2022.[6] Logistical issues related to the transport of grains have led to historically low premia for domestic prices. The exchange rate appreciation has also contributed to a strong decline in domestic prices of grains, especially corn.

Although the pass-through to final prices is not automatic, the drop in domestic prices of grains affects animal feed costs and benefits the supply of chicken and pork, as well as milk and eggs. Other factors that also contribute to the favorable prospect for the supply of livestock products are the high availability of fed cattle for slaughter – a function of the sector's specific cycle – and the high level of dairy imports. From the demand side, the temporary suspension of beef exports to China in the first half of 2023[7] and lower export prices compared with 2022 also contributed to lower domestic prices.

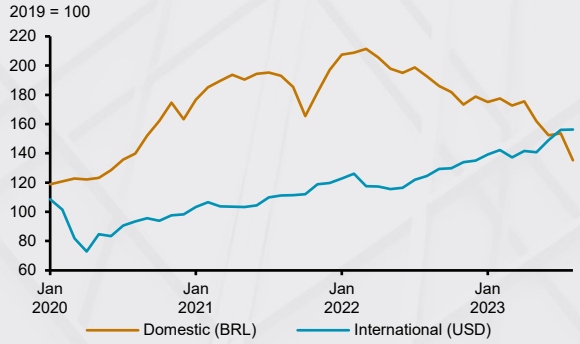
6/ Estimate based on the LSPA from the IBGE. An equivalent Conab estimate indicates expansion of 18.4% in the harvest of grains.

7/ Brazilian beef exports to China were suspended for one month, due to an atypical case of bovine spongiform encephalopathy, commonly called "mad cow disease", in Pará.

Aggregate agricultural commodity prices in the IC-Br have risen slightly in 2023 in USD, a movement that contrasts with the evolution observed in domestic prices. In addition to the exchange rate appreciation and the low premia for domestic prices of some products, the difference can be explained by the upward trend of specific commodities, such as orange juice, and, specially, by the price spread of fed cattle in Brazil and in the US. While the price of fed cattle in Brazil continued to fall strongly in 2023, the equivalent price in the US – which makes up the IC-Br – follows an upward trend (Figure 9).

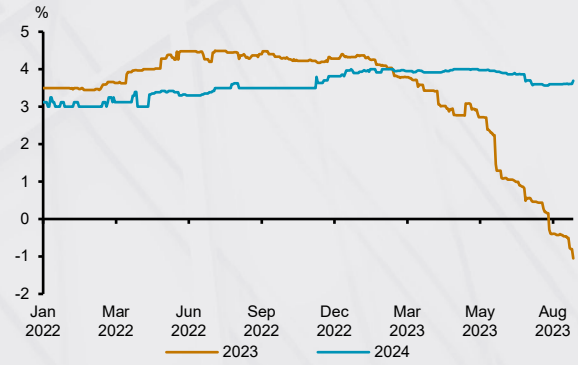
In the year, in addition to the fall in the price of grains and proteins in Brazil, it is noteworthy a strong decline in the price of fertilizers and the exchange rate appreciation, with more widespread impacts across products. At the Aggregate level, food prices to consumers have shown a negative change (-1.82% in 2023 until August, -0.62% in 12 months), largely contributing to the wider disinflation movement. Expectations extracted from the Focus survey for food inflation in the year have followed these movements, falling sharply since early 2023 (Figure 10).

Figure 9 – Cattle prices



Source: Bloomberg, chained series of 2nd futures contracts (international) and spot prices (domestic)

Figure 10 – Focus' median expectations for food inflation in 2023 and 2024



From the weather perspective, *La Niña* weakened in early 2023, with the transition of the Oceanic *Niño* Index (ONI)[8] to a neutral level, which contributed to the normalization of rainfall in southern Brazil and in Argentina and improved prospects for the US grain production. In the subsequent months, the formation of the *El Niño* phenomenon was confirmed, and it is expected to reach a high intensity by the end of 2023.

Outlook for the next months and 2024

The increase in food prices in Brazil from 2020 to 2022 reflects domestic and global factors, such as those derived from the Covid-19 pandemic. The more favorable trend since the second half of 2022 is also due to several factors, including the decline in commodity prices, the BRL appreciation, and the high domestic supply of fed cattle.

In the next months, the BCB's reference scenario incorporates a reversal of the downward price trend, mainly due to the limited impact of *El Niño*. There is significant uncertainty regarding the magnitude and timing of these impacts, which in the short term tend to manifest themselves in higher prices for fresh products, sensitive to higher temperatures and stronger and irregular rainfall. Besides the expected effect on fresh foods, the recent increases in the international prices of sugar and rice may be partially related to the weather phenomenon, with a rainfall shortage in Southeast Asia.

In particular, regarding rice, increased international prices add an upside risk for domestic prices of the grain, which still has reduced domestic availability. In addition to the drop in the harvest in early 2023, reflecting the droughts in the Southern region of Brazil associated with *La Niña*, rice exports have been robust in 2023.

8/ This index reflects the temperature anomalies in the Pacific Ocean defining the occurrence of *El Niño* and *La Niña*.

This risk to domestic prices, stronger in the late final months of the year, is mitigated by the prospect of more abundant rainfall in the Brazilian Southern region with the transition to *El Niño* and a larger harvest of the grain in the first half of 2024.[9]

For 2024, estimates from the Brazilian agricultural sector indicate a smaller expansion in the total cultivated area, due to lower profitability, suggesting less room for additional declines in grain prices. In the livestock sector, despite reports indicating that the cycle of higher fed cattle supply will continue until 2024, Conab recently projected relative stability in slaughters and moderate price increases when compared with 2023. In the poultry sector, the bird flu with high pathogenicity persists as a risk for the sector both from the point of view of supply and potential impacts on the Brazilian exports.

At a global level, there is evidence of a negative impact of *El Niño* on the productivity of corn, rice, and wheat crops, although it might benefit the productivity of soybeans. A more-extreme-than-anticipated event could have stronger impacts. The Pre-Copom Questionnaire (PCQ)[10] for the Copom September meeting included a question about the impact of an *El Niño* of similar magnitude to that of 2014/2015. The median answers indicate a significant potential effect of 0.85 p.p. on the IPCA accumulated from 2023 to 2024. Of this potential effect, the median indicates that 0.20 p.p. is incorporated into the current analysts' projections.

Table 2 – Impacts on the IPCA in the event of an *El Niño* similar to the one of 2014/2015
Potential impacts and impacts incorporated into projections - PCQ 25th Percentile, 75th Percentile, and Median

	2023			2024			Accumulated 23-24		
	p25	Med	p75	p25	Med	p75	p25	Med	p75
Potential	0.10	0.20	0.38	0.30	0.58	1.08	0.50	0.85	1.50
Incorporated	0.00	0.00	0.10	0.00	0.10	0.28	0.00	0.20	0.38

Participants' answers to the PCQ question: "What is the potential impact on inflation in case *El Niño* has a similar intensity to the 2014/2015 event? How much of this impact is incorporated into your projection?"

9/ See, for instance, Conab statistics and projections for the 2022/2023 and 2023/2024 harvests in the report (Portuguese only) Perspectivas para a Agropecuária - V.11 2023-2024.

10/ Further information about the Pre-Copom Questionnaire is available at https://www.bcb.gov.br/controleinflacao/precopom (Portuguese only).