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# Inflation Report

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# Inflation Report

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## Statistical conventions

- ... data not available.
- nil or non-existence of the event considered.
- 0 ou 0.0 less than half the final digit shown on the right.
- \* preliminary data.

Hyphen between years indicates the years covered, including the first and the last year.

A bar (/) between years (1970/1975) indicates the average of the years covered, including the first and the last year or even crop or agreement year, when mentioned in the text.

Occasional discrepancies between constituent figures and totals as well as percentage changes are due to rounding.

There are no references to sources in tables and figures originated in the Banco Central do Brasil.

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# Principles for the Conduct of Monetary Policy in Brazil

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## Mission and objectives

The Banco Central do Brasil (BCB) has as mission to ensure the stability of the currency's purchasing power and a solid and efficient financial system. The compliance with the task of ensuring price stability is achieved by means of the inflation targeting framework, with inflation targets set by the National Monetary Council.

The experience, both domestic and international, shows that the best contribution of monetary policy to sustainable economic growth, low unemployment and improvement in people's living conditions is to keep inflation low, stable and predictable.

The economic literature indicates that high and volatile inflation rates generate distortions that lead to increased risks and negatively affect investment. These distortions shorten the planning horizons of households, companies and governments and erode business confidence. High inflation rates subtract the purchasing power of wages and transfers, with negative repercussions on household's confidence and consumption. Moreover, they produce inefficient price dispersion and reduce the informational value from prices that contributes to the efficient allocation of resources in the economy.

High and volatile inflation also has regressive distributive effects. The less favored groups of the population, which generally have more restricted access to instruments to protect them from the loss of the currency's purchasing power, benefit the most from price stability.

In short, high inflation rates reduce potential economic growth, affect job creation and income, and worsen income distribution.

## Implementation

Monetary policy impacts the economy with long, variable, and uncertain lags, usually estimated to extend up to two years. As a result, there is substantial uncertainty associated with inflation projections in the relevant horizon for the conduct of monetary policy, which arises naturally from the incidence of favorable and unfavorable shocks to the economy over time. It is thus expected that, even under appropriate policy, realized

inflation will fluctuate around target. The Monetary Policy Committee (Copom) should seek to conduct monetary policy so that inflation projections point to inflation converging to the target. Therefore, it is natural that monetary policy is carried out in a forward-looking way.

The inflation targeting framework in Brazil is flexible. The horizon that the BCB sees as appropriate for the return of inflation to the target depends on both the nature of the shocks that affect the economy and their persistence.

The BCB believes that a clear and transparent communication is essential for monetary policy to achieve its objectives efficiently. Thus, the BCB regularly publishes evaluations of the economic factors that determine the inflation trajectory, as well as the potential risks to this trajectory. The Copom Statements and Minutes, and the Inflation Report are key vehicles in communicating these assessments.

## Inflation Report

The inflation projections are presented in scenarios that are conditional on assumptions about some economic variables. Traditionally, the assumptions refer to the paths for the exchange and Selic rates throughout the projection horizon. In addition to the baseline scenario, alternative scenarios may also be presented. It is important to stress that the scenarios presented in the Inflation Report are part of the quantitative tools used to guide Copom's monetary policy decisions and that their assumptions do not constitute and should not be seen as the Committee's forecasts for the future behavior of those variables.

The conditional inflation projections incorporate probability intervals that highlight the associated degree of uncertainty. Inflation projections depend not only on assumptions about the interest rate and the exchange rate, but also on a set of assumptions about the behavior of other variables.

Copom uses a wide range of models and scenarios, with conditioning assumptions associated with them, to guide its monetary policy decisions. By reporting some of these scenarios, the Committee seeks to enhance the transparency of monetary policy decisions, contributing to its effectiveness in controlling inflation, which is its primary objective.



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## Executive summary

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Regarding the global outlook, the environment has deteriorated significantly. The conflict between Russia and Ukraine has led to a strong tightening in financial conditions and higher uncertainty surrounding the global economic outlook. In particular, the supply shock resulting from the conflict has the potential of increasing inflationary pressures, which had already been on the rise both in emerging and advanced economies.

Turning to the Brazilian economy, GDP growth in 2021Q4 came in higher than expected. Although monthly indicators show a decline in activity in January, a recovery is expected for February and March as the pandemic continues to subside. The GDP surprise observed in 2021Q4 and the result expected for 2022Q1 favor the growth projection for 2022. Additionally, a favorable outlook is maintained for some specific sectors, such as agriculture and livestock, and the economic activities that are still in the process of recovery after the negative impacts of the pandemic.

Conversely, available information suggest that the shortage of inputs is still a limiting factor for manufacturing, and that the recomposition of inventories is not expected to contribute significantly to the sector demand in 2022. High fiscal risk and the process of monetary tightening underway still impact current financial conditions and, consequently, the current and future economic activity. The current high level of domestic economic uncertainty acts in the same direction. The increases in the prices of commodities and imported goods – especially with the escalation of the conflict between Russia and Ukraine – although mitigated by the recent BRL appreciation, may be understood as a new supply shock on the domestic economy, with an upward impact on inflation and a negative effect on the short-term economic activity.

In this context, the projection for GDP growth in 2022 was maintained at 1.0%.

Consumer inflation remains high, with increases spread among several components, and continues to be more persistent than anticipated. In the quarter ended in February, the National Extended Consumer Price Index (IPCA) change was 0.83 p.p. above the level expected by the Monetary Policy Committee (Copom) in its December reference scenario. A significant share of the inflationary surprise in the quarter regards more volatile components, especially fuel and food prices. But items associated with core inflation also surprised on the upside. The various measures of underlying inflation are still above the range compatible with meeting the inflation target.

Inflation expectations for the IPCA in the Focus survey are around 6.4% and 3.7%, respectively.

Regarding conditional projections for inflation, in the reference scenario, with interest rate path extracted from the Focus survey and exchange rate starting at USD/BRL 5.05 and evolving according to the purchasing power parity (PPP), the Copom's inflation projections stand around 7.1% for 2022 and 3.4% for 2023. This scenario assumes a path for the Selic rate that rises to 12.75% p.a. in 2022 and declines to 8.75% p.a. during 2023.

Given the recent volatility and the impact on its inflation projections due to the usual assumption for the oil price in USD, the Committee has also decided to adopt, at this moment, an alternative scenario. This scenario, considered of higher probability, assumes that oil prices follow approximately the futures market curve until the end of 2022, ending the year at USD 100/barrel, and then start increasing 2% p.a. in January 2023. In this scenario, Copom's inflation projections stand at 6.3% for 2022 and 3.1% for 2023.

The projections presented use data available up to the 245th Copom Meeting, held on March 15-16, 2022. As for the conditioning factors used in projections, especially those from the Focus survey, the cut-off date is March 11, 2022, unless otherwise stated.

In its most recent (245th) meeting, Copom unanimously decided to increase the Selic rate by 1.00 percentage point to 11.75% 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 convergence of inflation to its target throughout the relevant horizon for monetary

policy, which includes 2022 and, mainly, 2023. Without compromising its fundamental objective of ensuring price stability, this decision also implies smoothing of economic fluctuations and fosters full employment.

The Committee considers that, given its inflation projections and the risk of a deanchoring of long-term expectations, it is appropriate to continue advancing in the process of monetary tightening significantly into an even more restrictive territory.

The Committee's actions aim at curbing the second-round effects of the current supply shock in several commodities, which appear in inflation in a lagged manner. The current projections indicate that the interest rate cycle in its scenarios is sufficient for inflation convergence to levels around the target over the relevant horizon. The Copom judges that the moment requires serenity to assess the size and duration of the current shocks. If those shocks prove to be more persistent or larger than anticipated, the Committee will be ready to adjust the size of the monetary tightening cycle. The Committee emphasizes that it will persist in its strategy until the disinflation process and the expectation anchoring around its targets consolidate.

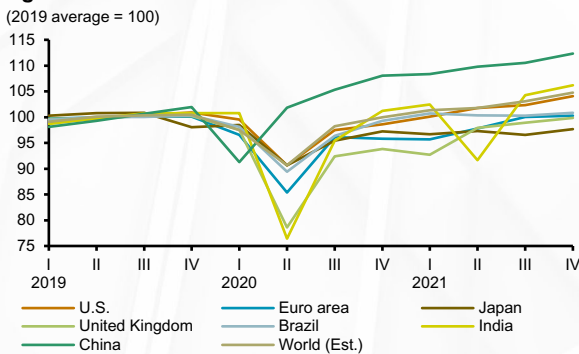
For the next meeting, the Committee foresees another adjustment of the same magnitude. Copom emphasizes that the future steps of the monetary policy could be adjusted to ensure the convergence of inflation towards its targets and will depend on the evolution of economic activity, on the balance of risks, and on inflation expectations and projections for the relevant horizon for monetary policy.



This chapter of the Inflation Report (IR) analyzes the recent evolution of the economic outlook, considering the international and domestic scenarios, as well as the prospects for the country's economy in the coming quarters. The assessment of the international scenario addresses the main advanced and emerging economies, emphasizing aspects that tend to influence the Brazilian economy, especially inflation and activity indicators.

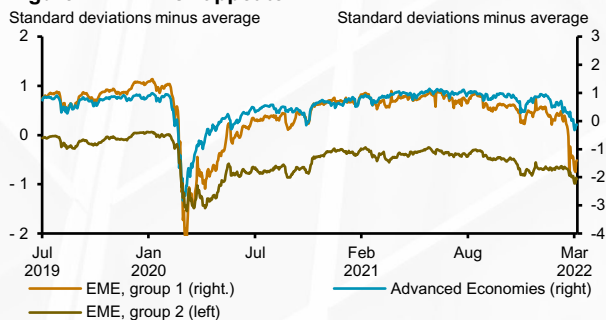
The analysis of the domestic outlook comprises the major drivers of economic activity, considering both the evolution of national accounts and the most frequent and timely sectoral indicators. Central aspects related to the movements in the labor market, the evolution of credit markets, and the performance of the country's public and external accounts are also assessed. The final section of this chapter analyzes the behavior of inflation and market expectations, taking into account the trajectories of key price indicators.

**Figure 1.1.1 – GDP<sup>1</sup>**



Sources: Bloomberg and BCB  
1/ Constant prices, seasonally adjusted.

**Figure 1.1.2 – Risk appetite**



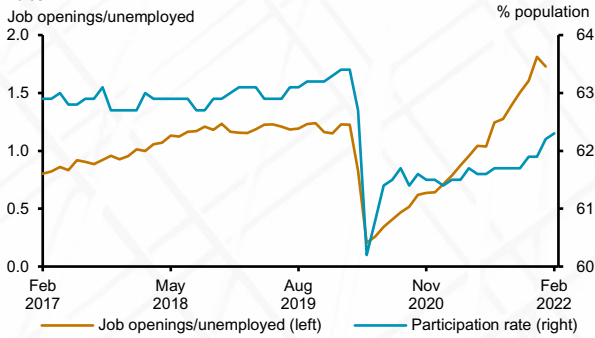
Group 1: Chile, Indonesia, Malaysia and Russia; Group 2: South Africa, Brazil, Colombia, India, Mexico and Turkey. Concerning the methodology, see box in the Dec/2020 Inflation Report.  
Sources: Bloomberg; Fed St. Louis; Refinitiv; BCB

## 1.1 External scenario

By the end of February, the global economy continued on a recovery trend, albeit uneven across regions, countries, and activity sectors. Although more transmissible, the new Covid-19 Omicron variant, discovered in November 2021, has impacted economies by less than originally anticipated. Nevertheless, the evolution of the Covid-19 pandemic remains a relevant risk factor in the prospective scenario for the world economy. The emergence of new variants, the effectiveness of immunization programs, mobility restriction measures, and social distancing remain as key determinants to global growth and inflation.

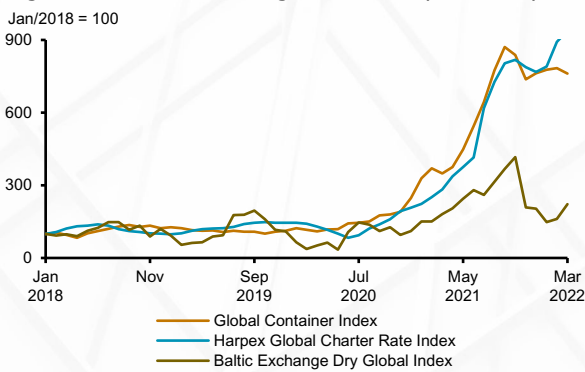
The geopolitical tension between Russia and Ukraine has escalated in recent weeks, leading several countries to impose economic and financial sanctions against Russia. While it is challenging to anticipate

**Figure 1.1.3 – U.S. – Job openings and participation rate**



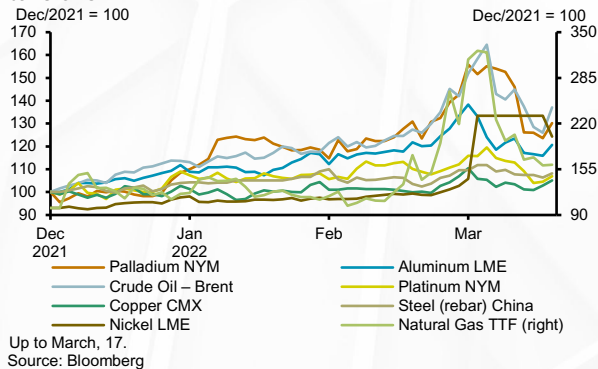
upcoming developments, the armed conflict has increased global risk aversion, raising the premia embedded in financial asset prices. The conflict should severely affect the Russian economy and its major trading partners. This scenario adds pressure to commodity prices for which Russia and Ukraine are relevant global suppliers, such as wheat, corn, oil, natural gas, metals, and fertilizers, among others.

**Figure 1.1.4 – Maritime freight indicators (2019-2021)<sup>1</sup>**



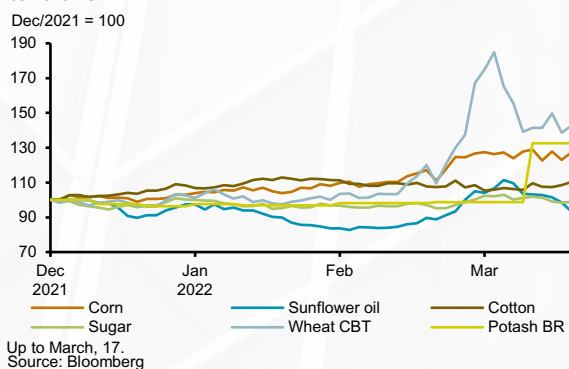
The U.S. economy remains on a consistent recovery path. Consumption and investment spending growth has been uneven, still affected by the Covid-19 Omicron variant, the end of income transfer programs, the effects of inflation, and rising long-term interest rates, which put pressure on financing conditions for households and non-financial companies. The labor market continues to strengthen, especially in the services sector. The number of employed people has increased steadily, with the unemployment rate reaching 3.8% in February 2022. The participation rate, although recovering somewhat, remains below the pre-Covid period, reflecting to some extent workers' caution to return to the labor market and the accelerated pace of early retirements during the Covid crisis. Increased wage pressure and difficulties facing some sectors to fill job vacancies are a result of the rise in the pace of job openings combined with a subdued labor supply. The tightness in labor markets may lead to future increases in consumer prices.

**Figure 1.1.5 – Commodities related to geopolitical tensions**



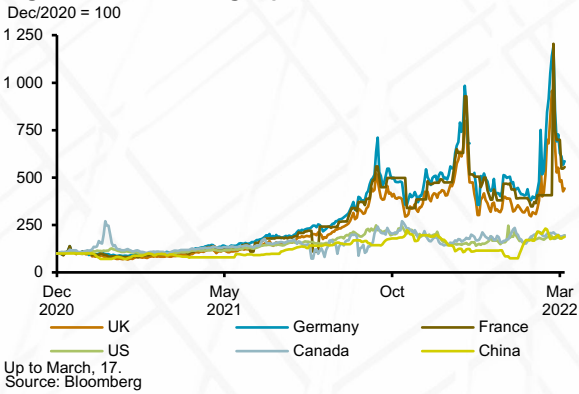
In the euro area, activity data were generally positive until the beginning of the Russia-Ukraine conflict. The recovery throughout 2021 and the first two months of 2022 was boosted by the reopening of the services sector, the recovery of consumers' confidence, the rise in gross capital formation, and continued fiscal stimulus. Some economies were affected in 2021Q4 by mobility restriction measures to contain the spread of Covid-19, but this effect was temporary. Although following an overall positive performance, manufacturing continues to be affected by the shortage of materials, equipment, and skilled labor in some sectors, especially those more technology-intensive.

**Figure 1.1.6 – Commodities related to geopolitical tensions**



In China, economic activity continued to decelerate in 2021Q4, reflecting a combination of factors. The restrictions associated with a new wave of Covid-19 infections amid the 'zero-covid strategy' have weakened private consumption further. Other factors include measures for deleveraging the real estate sector, leading to sales declines and tighter financing conditions for developers, shortage of energy

**Figure 1.1.7 – Natural gas prices**



**Table 1.1.1 – Commodity prices related to geopolitical tensions**

Product	% growth
Nickel	162.9
Paladium	-6.4
Natural gas	477.7
Brent oil	67.3
Copper	14.2
Alluminium	53.8
Steel – China	4.3
Platinum NYM	-14.5
Potash BR	233.3
Corn	37.1
Wheat	70.9
Sunflower oil	17.2
Sugar	17.7
Cotton	52.1

Source: Bloomberg  
Up to March, 17.

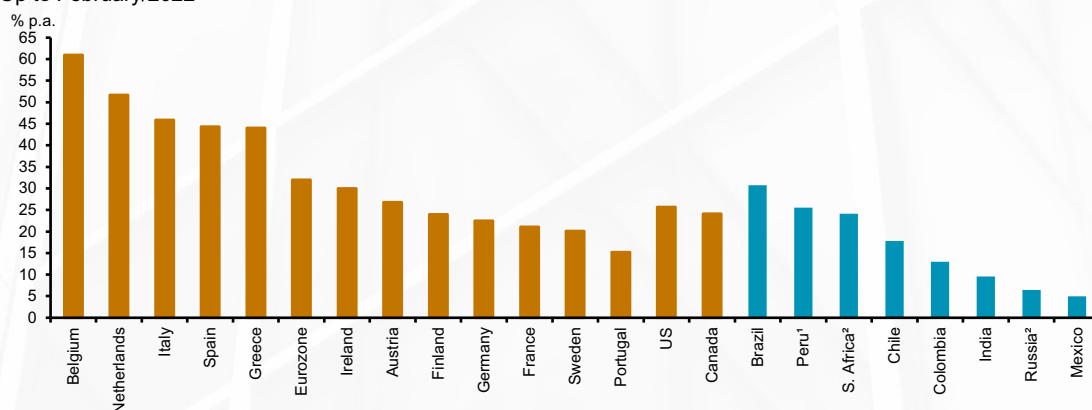
supply, with selective interruptions of activities in compliance with emission reduction targets, and regulatory tightening in some segments, such as big-techs. Nevertheless, China’s GDP grew 8.1% in 2021, the fastest since 2011. For 2022, the government set the growth target at around 5.5%. In the first two months of this year, activity data surprised on the upside, possibly reflecting the fiscal stimulus implemented in this period. Throughout the year, additional fiscal stimuli should continue supporting economic activity.

Despite some signs of improvement, global supply chains remain under pressure as output in some sectors struggles to respond promptly to increased demand in this post-pandemic period. As a consequence of the Omicron variant, more contagious than previous ones, labor supply declined in several countries in late 2021 and the first weeks of 2022, making it even more difficult to normalize supply chains. The escalation of the Russia-Ukraine war coupled with the sanctions adopted against Russia tend to disrupt trade flows and shipping and air freight in the region, with possible relevant global effects.

Energy prices remain under high pressure, showing extremely high volatility, a situation worsened by the Russia-Ukraine conflict. In the natural gas market, prices rose sharply due to risks of supply imbalances, especially in European countries. The possibility of sanctions against Russia natural gas exports should keep pressure on prices as long as the supply from other sources is not enough to meet demand around the world. This issue is worse in Europe, in view of the region’s greater dependence on Russian supply. In the oil market, factors directly related to market fundamentals, such as the supply gap resulting from

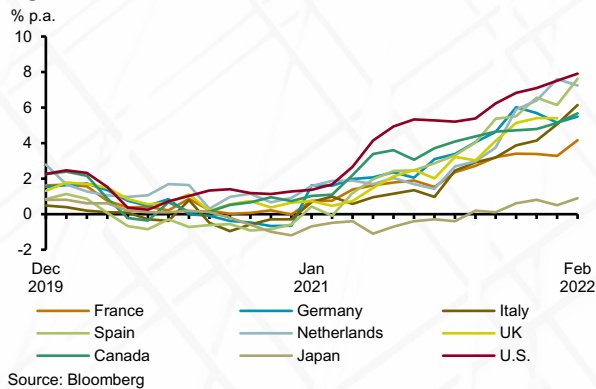
**Figure 1.1.8 – CPI energy**

Up to February/2022

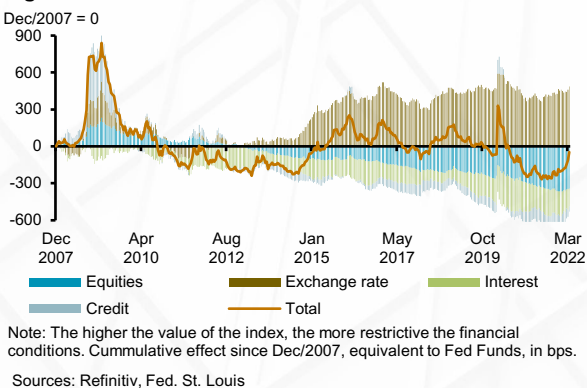


Sources: Bloomberg, Refinitiv, central banks, statistical institutes  
1/ December/2021.  
2/ January/2022.

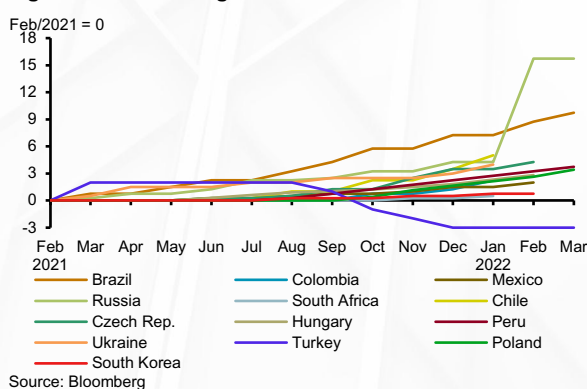
**Figure 1.1.9 – CPI – Advanced economies**



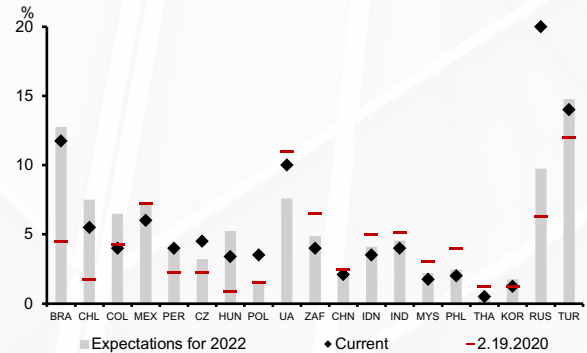
**Figure 1.1.10 – U.S.: financial conditions**



**Figure 1.1.11 – Change in interest rates since Feb/2021**



**Figure 1.1.12 – Policy interest rates**



production cuts by OPEC+ countries, low U.S. supply, low inventories, and the recovery of global demand, which is already above pre-pandemic levels, keep pressure on prices. Additional pressure also comes from the global inflationary environment and, more recently, from the unfolding of the Russia-Ukraine conflict. In coal markets, prices have been under pressure from interruptions in the Australian and Indonesian supply, and reductions, albeit temporary, in the production of China and India, which are major global consumers of this commodity. On top of these factors, prices have been increasing due to the growing use of coal for electricity generation, as a result of, among other factors, the mismatches in the supply of natural gas arising from the Russia-Ukraine war. Besides energy, some agricultural commodities such as wheat, corn, and fertilizers have been affected by geopolitical tensions, as Russia and Ukraine are relevant global exporters.

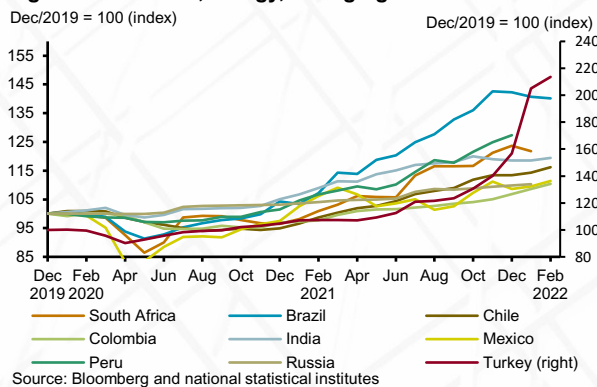
Inflation continues to rise in advanced economies, reaching levels not seen for decades in almost all countries. In the U.S., inflation reached 6.1%<sup>1</sup> in January, well above the 2% target, and the largest print since February 1982. In the euro area, according to preliminary estimates, the Harmonized Index of Consumer Prices (HICP) reached 5.8% in February, the peak since the monetary union. The persistence of bottlenecks in supply chains, the continuing effects associated with the reopening of the economy, and the increase in commodity prices (especially energy), worsened by the conflict in Eastern Europe, should contribute to global inflation remaining high in the short- and medium-term. Elevated and persistent inflationary pressures is a risk to the prospective scenario of monetary policy in advanced economies in general, amid increased geopolitical uncertainty and, particularly in Europe, with risks of abrupt deceleration of economic activity.

In several advanced economies, central banks have signaled the acceleration of the process of monetary policy normalization as of early 2022. The Federal Reserve is expected to proceed with the monetary tightening cycle begun in March and signaled that it will start to reduce its asset holdings this year. Median expectations of Fomc participants, released in the March meeting, indicate a cumulative hike of 175 bps in 2022 and 275 bps until end-2023.

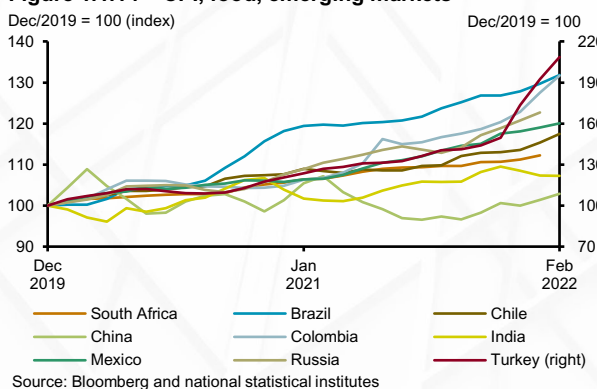
The economic recovery of emerging economies

1/ According to the Personal Consumption Expenditures price index, the metric used by the Federal Reserve to measure the fulfilment of its inflation target.

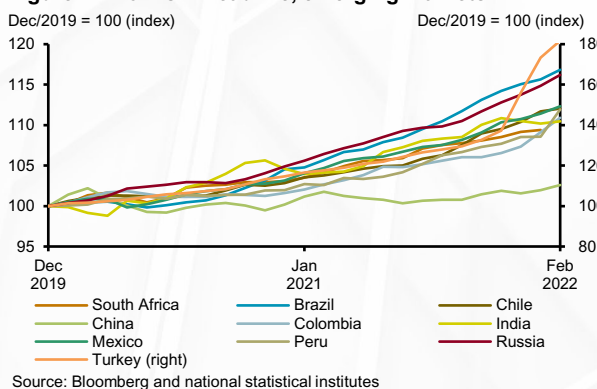
**Figure 1.1.13 – CPI, energy, emerging markets**



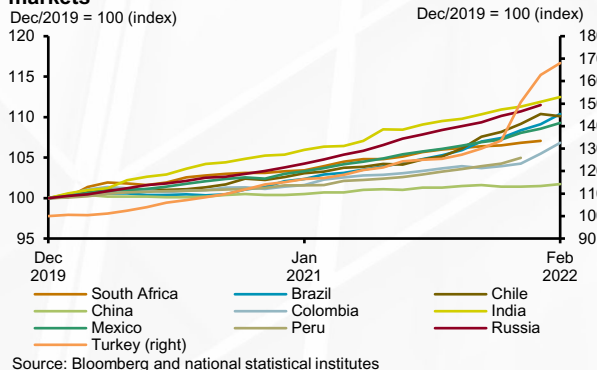
**Figure 1.1.14 – CPI, food, emerging markets**



**Figure 1.1.15 – CPI headline, emerging markets**



**Figure 1.1.16 – CPI, ex food and energy, emerging markets**



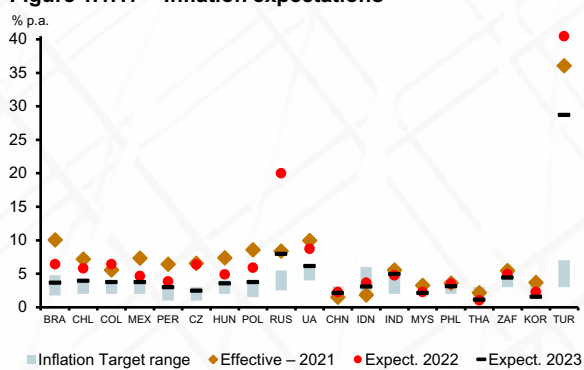
follows distinct regional and intra-regional paths, which might change in response to geopolitical tensions in Eastern Europe. European emerging economies should be more severely hit than those in Latin America, in view of their stronger economic ties with the countries in conflict. Higher commodity prices might, on the other hand, benefit commodity-producing economies and negatively hit importers. Nevertheless, emerging economies remain generally more vulnerable to changes in global financial conditions, which, since the end of 2021, have been tighter and remain subject to high uncertainty.

Consumer inflation in these countries should remain under pressure due to higher commodity prices, increased international transportation costs, and disruptions in global supply chains. The gradual easing of mobility restrictions and the opening of some services should also adversely contribute to headline and core inflation. Expectations for inflation and for policy rates in 2022 continue to increase in major Latin American economies. In Eastern European emerging economies, the inflation scenario has become more challenging and highly uncertain, with the possibility of a strong inflation upsurge over the next quarters.

In short, since the December 2021 IR, the recovery of the global economy continued, although subject to discontinuities and high volatility, with great heterogeneity across sectors and regions. Consumer inflation in emerging and advanced economies continue to reflect pressures from commodity prices, bottlenecks in supply chains, the realignment of relative prices, and the normalization of activity in sectors most affected by the pandemic. As a result, inflation expectations have increased, especially in short- and medium-term horizons. Some central banks have responded to the deteriorating inflation scenario by raising interest rates and adjusting unconventional accommodative monetary policies.

The external outlook continues to depict a high degree of uncertainty. Despite the lower-than-expected economic impact of the Omicron variant, the rising of geopolitical tensions in Eastern Europe adds an important risk factor to the prospective scenario of global activity, financial stability, and especially inflation. With high inflation persistence and ongoing normalization of monetary conditions in major advanced countries, mainly in the U.S., another relevant risk associated with the international scenario is the sharp tightening of global monetary

**Figure 1.1.17 – Inflation expectations**



Source: Bloomberg and central banks' surveys

**Table 1.2.1 – Gross Domestic Product**

Quarter/previous quarter

Seasonally adjusted

Itemization	% change							
	2020				2021			
	I	II	III	IV	I	II	III	IV
GDP at market prices	-2.2	-8.9	7.8	3.0	1.4	-0.3	-0.1	0.5
Agric. and livestock	1.0	1.9	0.9	-1.9	4.3	-2.8	-7.4	5.8
Industry	-1.8	-11.2	14.1	1.4	0.9	-0.8	-0.1	-1.2
Services	-1.7	-8.9	6.3	3.0	0.8	0.6	1.2	0.5
Household consumption	-2.2	-10.3	7.2	2.9	0.5	-0.2	1.0	0.7
Government consumption	0.1	-8.0	3.4	1.5	-0.2	1.1	1.1	0.8
Investment	3.4	-14.6	10.6	15.9	7.5	-3.8	-0.6	0.4
Exports	-3.5	1.7	-1.1	-1.4	3.3	13.7	-9.8	-2.4
Imports	-2.3	-10.5	-6.5	18.2	9.6	-0.9	-5.1	0.5
GDP – alternative seasonal adjustment	-1.4	-10.2	8.3	3.3	0.9	-0.5	0.3	0.9

Source: IBGE and BCB

**Table 1.2.2 – Gross Domestic Product**

Annual change

Itemization	% change				
	2017	2018	2019	2020	2021
GDP at market prices	1.3	1.8	1.2	-3.9	4.6
Agric. and livestock	14.2	1.3	0.4	3.8	-0.2
Industry	-0.5	0.7	-0.7	-3.4	4.5
Services	0.8	2.1	1.5	-4.3	4.7
Household consumption	2.0	2.4	2.6	-5.4	3.6
Government consumption	-0.7	0.8	-0.5	-4.5	2.0
Investment	-2.6	5.2	4.0	-0.5	17.2
Exports	4.9	4.1	-2.6	-1.8	5.8
Imports	6.7	7.7	1.3	-9.8	12.4

Source: IBGE

conditions and the materialization of tail-risk scenarios of global financial assets repricing. If such outlook materializes, appetite for riskier assets could decline, especially for those countries with larger fiscal fragilities and less favorable economic growth prospects. This scenario could result in a challenging environment for emerging economies.

## 1.2 Domestic outlook

### Economic activity

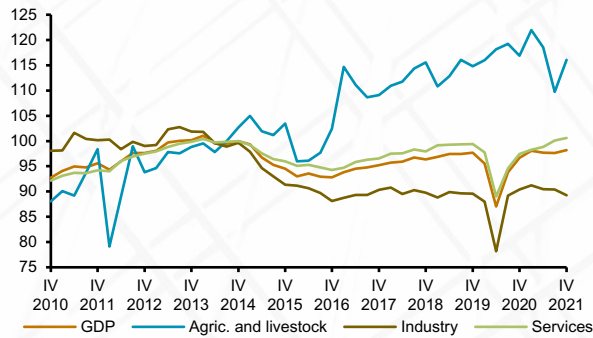
In 2021, the Brazilian economy grew 4.6%, following the 2020's decline of 3.9%. Considering the cut-off date of the December 2021 IR, the 2021 GDP growth rate was higher than the BCB's projection of 4.4% and lower than the Focus survey median of 4.7%. A relevant share of the annual growth reflected the 3.6% statistical carry-over from the end of 2020. Under the prism of the value added, the annual expansion resulted from similar growth rates in the industry and services, following declines in 2020, and a modest decrease in agriculture and livestock. All final demand components dropped in 2020 and expanded in 2021. Gross fixed capital formation (GFCF) and imports rose strongly in 2021, even if the effect of operations under the Repetro framework are disregarded. As for the growth of exports in 2021, it mainly reflected the expansion of foreign sales of manufactured goods and services.

GDP rose 0.5% in 2021Q4 over 2021Q3, when it had decreased 0.1%. Following the substantial growth of 1.4% in 2021Q1, influenced by the performance of the agriculture and livestock sector, and the decline of 0.3% in 2021Q2, reflecting the worsening of the sanitary crisis in March and April, economic activity expanded 0.5% in the second half of the year. Thus, GDP level in 2021Q4 was 0.5% above the pre-pandemic level and 2.8% below the historic peak occurred in 2014Q1.

Across the main sectors, the GDP expansion in 2021Q4 resulted from the decline of industry and increases in services and agriculture and livestock. In agriculture and livestock, the 5.8% growth represented a partial recovery of the accumulated decline of 10.0% in the previous two quarters, when the peak of climate impacts was observed, particularly on the corn, sugarcane, and coffee harvests. The expansion of services was widespread across the sector's activities

**Figure 1.2.1 – Gross Domestic Product – Supply**

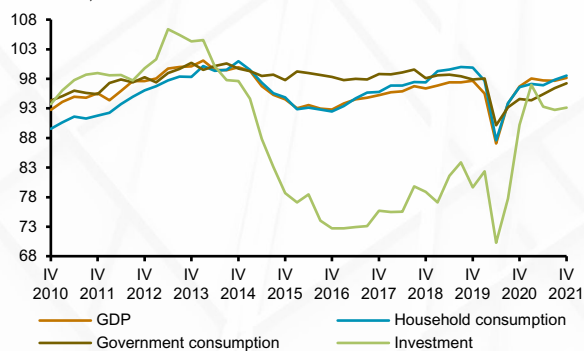
2014 = 100, s.a.



Source: IBGE

**Figure 1.2.2 – Gross Domestic Product – Demand**

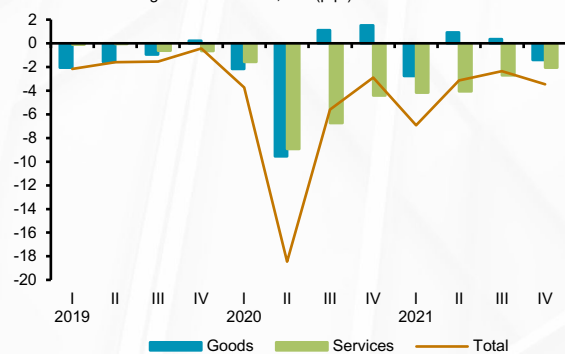
2014 = 100, s.a.



Source: IBGE

**Figure 1.2.3 – Household consumption indicator**

Contribution to change from Feb/2020, s.a. (p.p.)



(only two out of seven decreased), highlighting information services; transportation, storage and mail; and other services. Due to the 0.5% growth in the quarter, the sixth consecutive, the services sector is 1.2% above the pre-pandemic level. “Other services” and services rendered by the government<sup>2</sup>, which were among the hardest hit by the pandemic, are still below the 2019Q4 level, -1.4% and -1.7%, respectively. In the industrial sector, which dropped 1.2% in 2021Q4 and returned to a level below the pre-pandemic period, -0.4%, the decline was widespread across activities. The exception was the construction sector, which rose 1.5% in the quarter and is 8.4% above the 2019Q4 level.

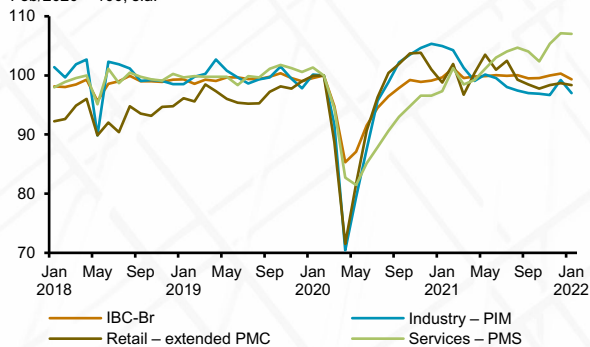
In the final demand side, government consumption expanded again, although is still 0.7% below the 2019Q4 level. Household consumption also expanded in the quarter and is 1.3% below the pre-pandemic level. A proxy calculated with data from the Monthly Trade Survey (PMC) and the Monthly Survey on Services (PMS)<sup>3</sup> suggests that, as in the previous quarter, the consumption of services expanded and the consumption of goods declined. GFCF rose 0.4% in the quarter and is 16.9% above the pre-pandemic level. A further discussion about this component, that had a remarkable performance, is carried out in a box of this IR.<sup>4</sup>

Following expansions of 0.5% in November and 0.3% in December, when a positive variation was observed in monthly indicators of industrial output, retail sales, and services, the BCB Economic Activity Index - Brazil (IBC-Br) dropped in January (-1.0%). A relevant share of the December’s growth and the January’s decline was associated with the industrial output performance, strongly impacted by the automotive sector in particular.<sup>5</sup> Despite the significant increase of Covid-19 cases and deaths in January and February, a risk that was mentioned in the December 2021 IR, the economic impact seemed limited. Compared with other acute phases of the sanitary crisis, a substantial response in mobility was not observed.<sup>6</sup> In this scenario, despite the widespread decline

2/ “Other services” encompass activities such as lodging and food services and artistic and cultural activities. Services rendered by the government refer to public administration, public education and public health.  
 3/ See box “Consumption of goods and services during the pandemic” of the September 2021 IR.  
 4/ See box “Recent evolution of Gross Fixed Capital Formation”.  
 5/ The expansion in the production of vehicles in December and the decline in January reflects the change in the vacation calendar for several automotive industrial groups from December to January. The January’s output decline, still according to Anfavea, was also influenced by the increased rate of absenteeism in the beginning of the year due to workers’ contamination by the Covid-19 Omicron variant.  
 6/ Results in the box “Pandemic intensity and economic activity”, of the June 2021 IR, suggest that the negative relationship between pandemic and economic activity is explained by the worsening of mobility indicators.

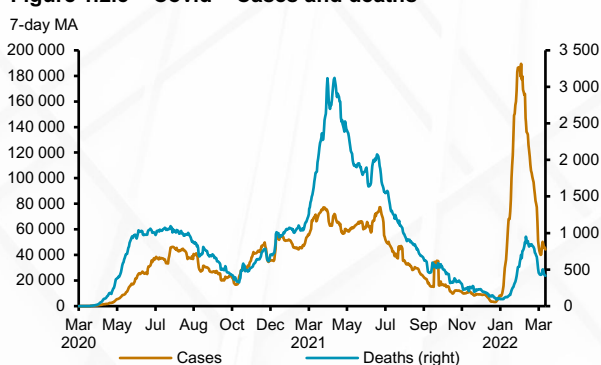
**Figure 1.2.4 – Activity indices**

Feb/2020 = 100, s.a.



Sources: IBGE and BCB

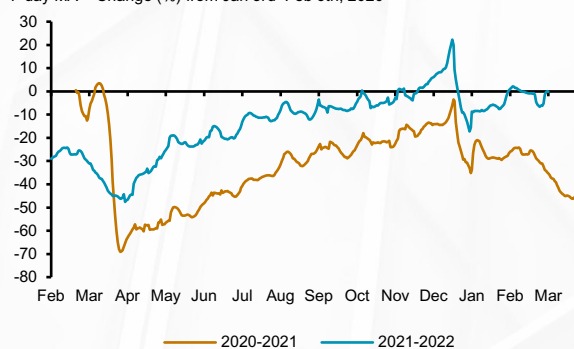
**Figure 1.2.5 – Covid – Cases and deaths**



Source: Brazilian Ministry of Health

**Figure 1.2.6 – Google mobility – Retail and recreation**

7-day MA – Change (%) from Jan 3rd–Feb 6th, 2020



Source: Google

of businessmen and consumers' confidence in the month, retail sales and the volume of services kept relatively stable in January. More timely coincident indicators<sup>7</sup> give mixed signals for the economic performance in February and in early March.

As detailed in a box of this IR, the projected GDP growth for 2022 was kept at 1.0%. It is noteworthy that the uncertainty involving this projection is higher than usual, particularly due to the quick changes in the global scenario with the worsening of geopolitical tensions.

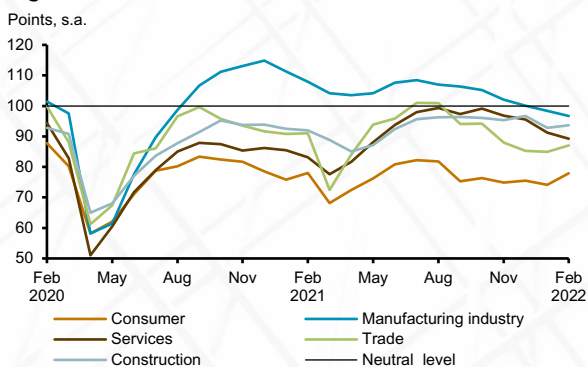
The positive surprise in the GDP for 2021Q4 raised the statistical carry-over for 2022. It suggests – especially when analyzing the evolution of the GDP with the alternative seasonal adjustment – that activity was in an acceleration process throughout the second half of 2022.<sup>8</sup> In addition, some specific sectors continue presenting favorable perspectives. Despite the recent deterioration of agricultural projections, agriculture and livestock should continue contributing favorably to GDP growth in 2022. Furthermore, economic activities hardest hit by the pandemic are still operating at levels reasonably below those of the end of 2019, suggesting that there is still room for recovery as the sanitary risk associated with the Omicron variant of the Covid-19 dissipates and the remaining process of economic normalization proceeds, including the transition of consumption towards services.

Conversely, until January, the share of entrepreneurs from manufacturing which mentioned the shortage of inputs as a limiting factor for the output growth was still high. Thus, the expectation of substantial positive effects from the normalization, even if gradual, of the global chain of industrial inputs, is postponed. Moreover, qualitative data from industrial surveys indicated that the sector's inventories are closer to the neutral or adequate levels than they were at the end of 2020, when the perception of insufficient inventories was predominant. Consequently, the recomposition of inventories is not expected to contribute significantly to the sector's expansion in 2022.

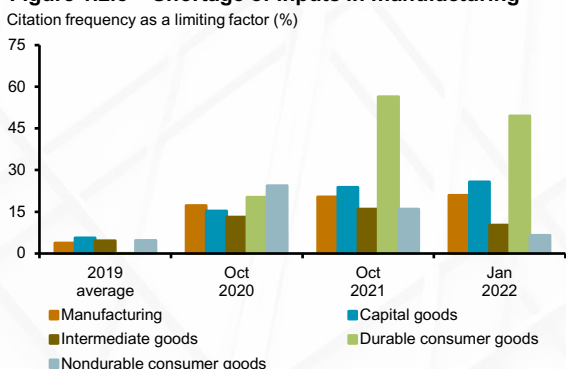
7/ Among monitored indicators are: confidence indexes, mobility indexes, sales of vehicles, production of vehicles, circulation of heavy vehicles in toll roads, corrugated cardboard shipments, debit cart expenses.

8/ In the alternative adjustment, which minimizes the influence of the pandemic period on the estimation of seasonal and calendar factors, changes for 2021Q1, 2021Q2, 2021Q3 and 2021Q4 are 0.9%, -0.5%, 0.3%, and 0.9%, respectively, as shown in Table 1. Therefore, a more robust economic expansion would have taken place in the second half of 2021, producing a higher statistical carry-over for 2022 (0.7% in the alternative seasonal adjustment against 0.3% in the conventional). Further details about this alternative specification for the seasonal adjustment may be found in the box "Effects of the pandemic on the seasonal adjustment of economic indicators" of the June 2021 IR.

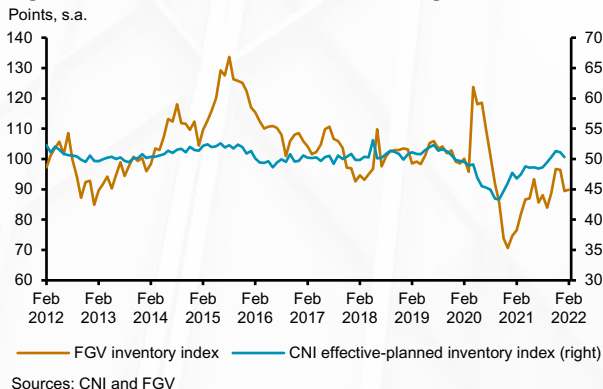
**Figure 1.2.7 – Confidence index**



**Figure 1.2.8 – Shortage of inputs in manufacturing**



**Figure 1.2.9 – Inventories in manufacturing**



High fiscal risk and the process of monetary tightening underway, stronger than in the December 2021 IR, still impact current financial conditions and, consequently, the current and future economic activity. The current high level of domestic economic uncertainty acts in the same direction.

Moreover, since the December 2021 IR, increases in prices of commodities<sup>9</sup> – intensified with the escalation of the conflict between Russia and Ukraine and its possible consequences – and imported goods, although mitigated by the recent BRL appreciation, may be understood as a new supply shock on the domestic economy, with an upward impact on inflation and a downward effect on the economic activity. A box of this IR analyses the impact of supply shocks, by means of the effect of the variation of household’s purchase power through prices, on short-term consumption. On the other hand, higher commodity prices may increase the income of sectors producing these goods, as agriculture and livestock and mineral extractive industry, and encourage supply expansion, particularly in the medium term.

Regarding risks around this projection, since the December 2021 IR, the possibility of restrictions to economic activity due to limitations in the supply of electricity reduced once more with the improved water scenario in the Southeast/Central-West. On the other hand, the current drought in the southern part of the country, which already impacted the summer harvest of grains, is a risk for other crops, particularly the second-crop of corn, which has positive perspectives so far. Despite the apparently more limited direct economic effects of the peak of infections associated Omicron variant of the coronavirus, the risks continue to be closely monitored, but now in a context of high percentage of the Brazilian population vaccinated. The worsening of the health crisis in other countries may delay the normalization of global production and logistics chains and, therefore, the recovery of industrial production.

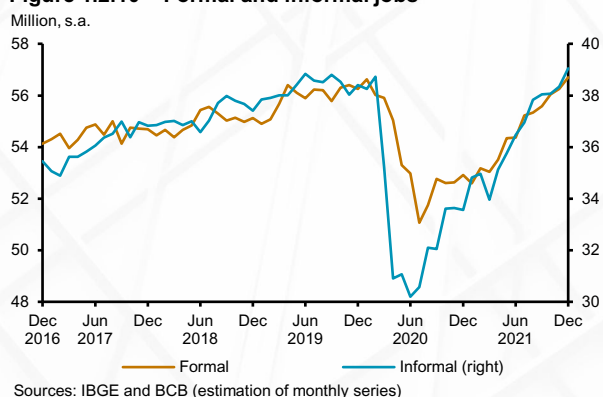
Finally, the risk of a substantial increase in international geopolitical tensions following the eruption of the Russia-Ukraine conflict stands out. The limited trade-flow between Brazil and the countries directly involved in the conflict suggests reduced impact through this channel.<sup>10</sup> However,

9/ Commodity prices and their impacts on the domestic inflation are further discussed in the Prices section of this chapter.

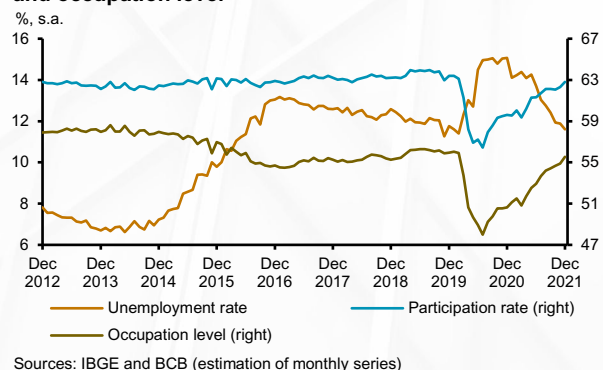
10/ Brazilian exports of goods to Russia, Ukraine, and Belarus represented 0.7% of the country’s exports in 2021, while imports from these countries accounted for 2.9% of total imports, according to Secex data.

despite this relatively modest trade flow, Brazilian imports of fertilizers, especially from Russia, are significant. In 2021, 23% of imports of fertilizers came from that country. Thus, permanent disruptions in the supply of these goods could have negative implications for the sowing over the coming quarters. In addition to already observed impacts on several commodity prices, other developments might unfold: new price increases in case of escalation or prolongation of the conflict; a further delay in the normalization of global production and logistical chains; increased risk-aversion in global financial markets impacting international and local financial conditions; and, consequently, a higher than currently expected deceleration of the world economy.

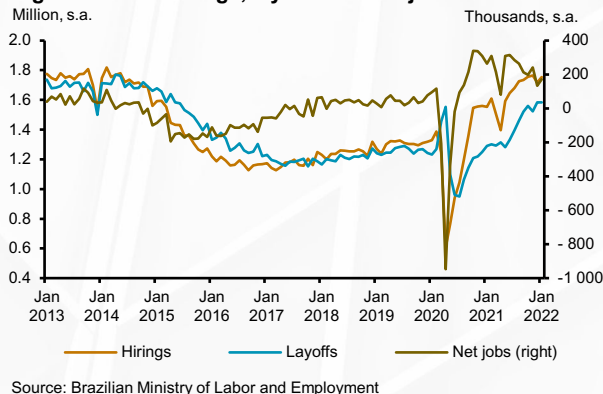
**Figure 1.2.10 – Formal and informal jobs**



**Figure 1.2.11 – Unemployment rate, participation rate and occupation level**



**Figure 1.2.12 – Hirings, layoffs and net jobs**



## Labor market

The recovery of the labor market continued in 2021Q4, when the unemployment rate declined with expansion of the workforce and employed population, according to data from the IBGE's Continuous Household Sample Survey (Continuous PNAD). It is noteworthy that the recovery of the employed population has been widespread, with advances in the formal and especially in the informal segments, which registered a sharper contraction in 2020 and a brief recovery interruption in 2021 due to the worsening of the health crisis between February and April.

The labor market recovery has lagged the production and consumption indicators. Whereas the GDP neared pre-pandemic levels in 2021Q1, the same was only observed for the unemployment rate in 2021Q4: in the "monthly" seasonally adjusted metrics, unemployment reached 11.6% in December, close to the level of the months before the pandemic, and 11.8% in the 2021Q4 average.<sup>12</sup>

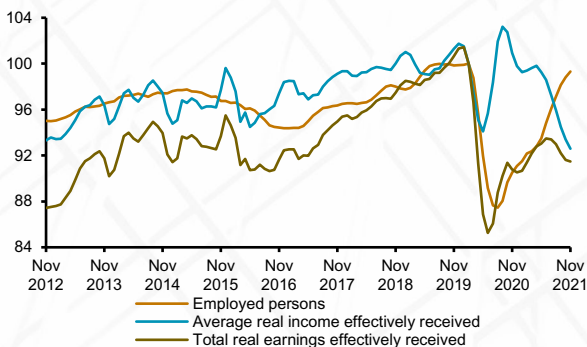
However, using as reference the evolution of the workforce and employed population in relation to the working-age population, it can be observed that the labor market is still not at a level equivalent to that of the pre-pandemic period. The participation rate (ratio between the workforce and the working-age population) and the employment level (ratio between the employed population and the working-age

11/ See box "Estimate for 'monthly' Continuous PNAD data" of the June 2020 IR.

12/ However, the stock of private sector formal jobs according to Caged data seasonally adjusted by the BCB was already close to the pre-pandemic level in early 2021. The discrepancy between Continuous PNAD and New Caged has been discussed in previous IRs.

**Figure 1.2.13 – Employed persons and labor income**

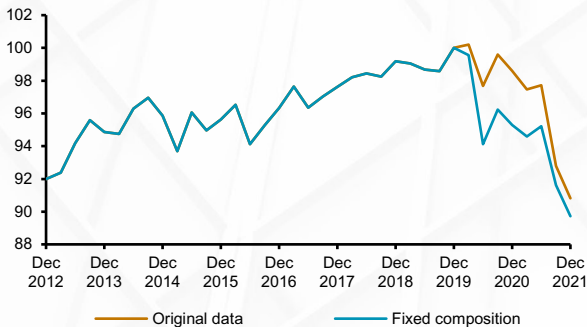
Feb 2020 = 100, 3MMA, s.a.



Source: IBGE

**Figure 1.2.14 – Average real labor income**

2019Q4 = 100, s.a.



Sources: IBGE and BCB

**Figure 1.2.15 – Households gross disposable national income**

Real HGDNI restricted

BRL billion of 2021Q4, 3MMA, s.a.



Sources: IBGE and BCB

population) reached, respectively, 62.4% and 55.0% in 2021Q4, still below the average values in 2019Q4, 63.4% and 56.0%, respectively.<sup>13</sup>

Data from the Novo Caged, which encompasses formal workers, corroborate the continued labor market recovery, widespread across economic activities, in 2021Q4 and January 2022. However, in recent months, net formal job openings have decreased, as hirings slowdown and layoffs increase. This accommodating trend of formal employment is also observed in Continuous PNAD data from 2021Q3 to 2021Q4. A complementary analysis of the recent evolution of the formal labor market based on alternative indicators, several of them mentioned in previous IRs, is presented in a box of this IR.

The real average income (either effective or habitual), measured by the Continuous PNAD, is still below the pre-pandemic level and declined throughout the second half of 2021, a period characterized by high inflation and inflationary surprises, partially associated with supply shocks. The change in the composition of employed population, with the persistence of employment increase in those jobs with lower relative income, following an opposite movement observed in 2020, also explains part of this trajectory.<sup>14</sup> However, even the series of real income maintaining the employed population composition among economic activities before the pandemic shows a decline throughout the second half and also in comparison with the same period of 2020. As for workers in the private formal market, collective bargaining agreements (CCT) also indicated a reduction of real wages in this period, although to a lesser extent than Continuous PNAD data.<sup>15</sup>

In this context of recovery of employed population toward the end of 2019 levels and strong decline of average real income, overall labor earnings remain at a depressed level, nearly 10% below the pre-pandemic level, and decreased throughout the second half of 2021, according to Continuous PNAD data.<sup>16</sup> As the labor income is the main component of household income, there was also a decline in the monthly estimate of the Household Gross

13/ It is particularly notable that the participation rate immediately before the outbreak of the pandemic was above its historical average, 62.4% considering data since 2012, when the Continuous PNAD started, but the employment level was close to its historical average, 55.8%, even though below the values observed in its peak from 2012 to mid-2014, around 58%.

14/ See box "Effect of the composition of the employed population on the labor income" of the September 2021 IR.

15/ See box "Labor market situation according to alternative indicators" of this IR.

16/ Some variables presented in box "Labor market situation according to alternative indicators" indicate that overall earnings in the formal labor market segment may be better than suggested by the Continuous PNAD.

Disposable National Income (HGDNI).<sup>17</sup> Additionally, this income measure is influenced by the reduction of government extraordinary transfers to households between 2020 and 2021 and by changes in the payment schedules of income transfers such as the Christmas bonus to pensioners and retirees of the General Social Security Regime (anticipated to the first half of 2021) and the wage bonus (postponed to 2022). These changes in HGDNI components with strong seasonality increased the decline of this variable over the last months of 2021.

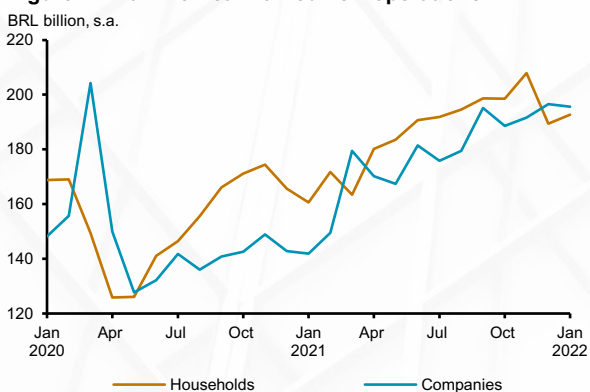
## Credit

In 2021, there was again a strong credit expansion, but, unlike in 2020, it was driven by the household segment. New household operations recorded the highest annual variation in the time series started in 2011 (22.7%), in a context of recovery in economic activity and consumption and improvement in the labor market. Credit operations in the corporate segment grew at a slower pace (13.4%), concentrated in the non-earmarked segment, given the significant decrease in new earmarked transactions in the wake of the end of the emergency programs.

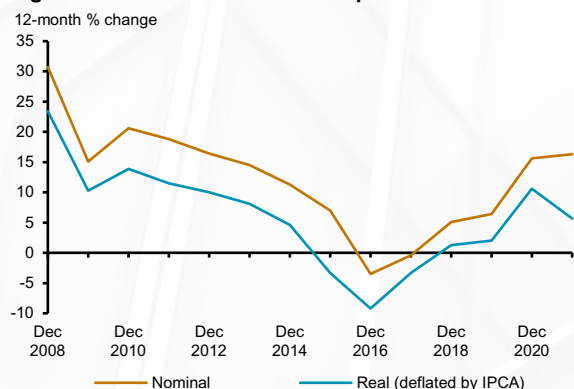
With the growth of credit concessions, the credit balance increased 16.3% in 2021, above the variation recorded in 2020 (15.6%), when several emergency credit programs were implemented. This growth was widespread across all segments, except for the earmarked corporate credit. Expansion was significant even in real terms (5.7%) – below 2020 (10.6%), but still the highest variation since 2013. In this context, by the end of 2021, SFN credit operations as a percentage of GDP equaled the highest value of the time series (53.9%), recorded in December 2015. Relative to the previous peak, household credit operations gained share (58%, compared with 47% in 2015). Conversely, the share of corporate financing, particularly those originating from the BNDES, decreased sharply.

Recent data have pointed to an accommodation in household loans, with a worsening in their composition. Regarding non-earmarked loans, there was contraction in the lower cost credit types, particularly in payroll-deducted loans and vehicle financing. In the opposite direction, an increase in concessions of emergency credit lines, with higher

**Figure 1.2.16 – Non-earmarked new operations**



**Figure 1.2.17 – Balance of credit operations**



17/ See box “Monthly estimate of Household Gross Disposable National Income” of the December 2021 IR.

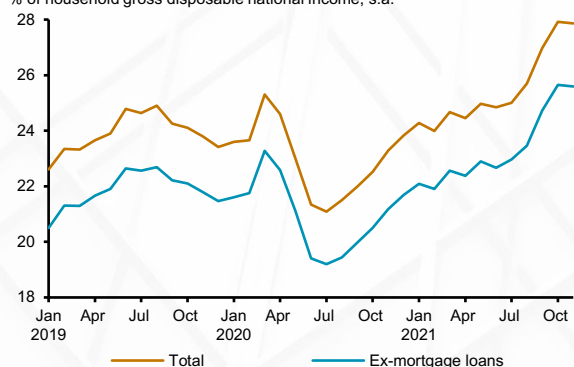
**Figure 1.2.18 – Households non-earmarked new operations**

BRL billion, s.a.



**Figure 1.2.19 – Household debt service ratio**

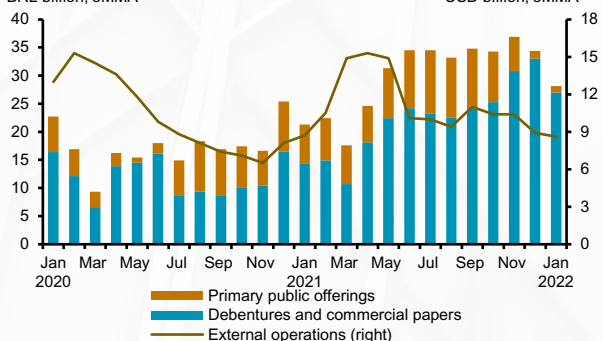
% of household gross disposable national income, s.a.



**Figure 1.2.20 – Non-banking corporate financing**

BRL billion, 3MMA

USD billion, 3MMA



Source: BCB and Anbima

cost, such as revolving credit card and overdraft facility, was observed since mid-2021. The flow of new operations to households in the earmarked credit market remained relatively stable, still at a high level, in the quarter ended in January.

The household income commitment to debt services has been increasing since August 2020. The deterioration in credit composition, already mentioned, coupled with the income decrease explain this movement. As discussed on the labor market section, the negative variation on the average income more than offset the improvement in occupation, according to data from the Continuous PNAD. The delinquency rate of households, in turn, is still at a historically low level, despite gradual increase in recent months, noticeably on revolving credit card, overdraft facility, and payroll-deducted credit for the private sector’s workers.<sup>18</sup>

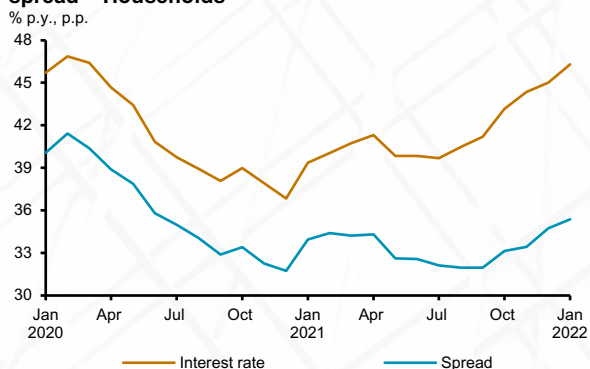
Corporate loans increased in recent months, driven by the non-earmarked segment, reaching, in real terms, the same level observed in early 2015. Highlights are short-term credit operations such as discount of receivables, overdraft facility, and guaranteed accounts. Regarding the earmarked segment, the flow of new operations to companies decreased in the quarter, the reduction of BNDES operations being the highlight.

In the same period, non-banking financing to companies decelerated. With stock prices still below the maximum levels observed in mid-2021, plans of going public through primary public offerings were postponed. Regarding the private debt market, in November, there was the highest monthly issuance of debentures in the time series, followed by a drop in the following two months. This movement may reflect the challenging global context in the turn of last year – due to the worsening of the Covid-19 pandemic with the Omicron variant, persistent global inflation, and expectation of faster monetary tightening in the U.S. – and possibly an anticipation of the debt issuance as a result of expectations of greater domestic volatility in the election year.

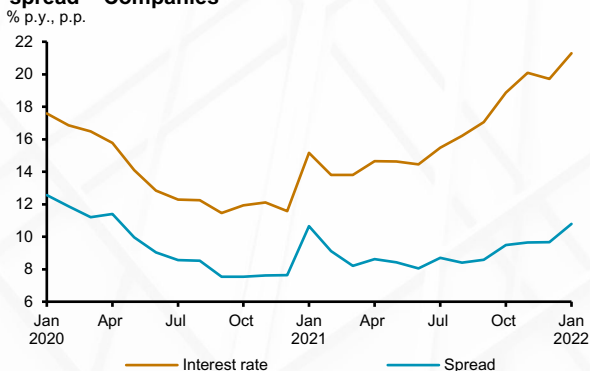
Finally, the perception by financial agents that the monetary policy will be more restrictive has increased the pace of interest rate increases in the banking credit market over the last six months, especially of

18/ The delinquency rate of household operations reached 3.2% of the credit balance in January 2022 (3.7% in February 2020), recording an increase of 0.3 p.p. in the quarter (revolving credit card, 2.7 p.p.; overdraft facility, 1.2 p.p.; and payroll-deducted credit to private sector’s workers, 0.8 p.p.).

**Figure 1.2.21 – Non-earmarked interest rates and spread – Households**



**Figure 1.2.22 – Non-earmarked interest rates and spread – Companies**



**Table 1.2.3 – Public Sector Borrowing Requirements – Primary balance**

Accumulated in the year

Itemization	BRL billion		
	2019	2020	2021
Central Government	89	745	36
o/w Federal Government	-125	486	-212
o/w INSS	213	259	247
Regional governments	-15	-39	-98
State-owned companies	-12	-4	-3
<b>Total</b>	<b>62</b>	<b>703</b>	<b>-65</b>

Positive values represent deficit and negative values represent surplus.

loans in the non-earmarked segment. Spreads have risen modestly in this period, but are still below the pre-pandemic level, especially on household credit operations. Part of the explanation for the lower spread in this segment was the change in the composition of non-payroll-deducted personal credit, which now has a greater share of more secure credit lines, such as anticipation of FGTS withdrawals and credit operations requiring financial investments as collateral.<sup>19</sup>

In general, banking credit balance keeps showing a robust growth, especially in the non-earmarked credit lines. However, credit granting shows a gradual change in the credit profile contracted by households, with a greater presence of emergency credit lines, at the same time as signs of increased delinquency rates are observed. Corporate credit, in turn, has been concentrated on short-term credit lines, with emphasis on discount of receivables. In this scenario, the projection for the SFN credit balance in 2022, detailed in a box of this IR, was revised from 9.4% to 8.9%.

## Fiscal

Since the December 2021 IR, fiscal data continue to surprise positively. The primary deficit of the central government in 2021 (BRL 36 billion) was substantially lower than anticipated by analysts (BRL 93 billion) in the December Pre-Copom Questionnaire (PCQ). The January's primary result represented a new positive surprise – a surplus of BRL 76 billion, compared with a projection of BRL 43 billion in the Prisma Fiscal available at the December 2021 IR period. Likewise, the projections for the fiscal deficit in 2022 were also reduced.<sup>20</sup> Despite improved results and short-term better projections, the perception of the fiscal outlook continued to deteriorate, possibly reflecting the risks in the central scenario.<sup>21</sup>

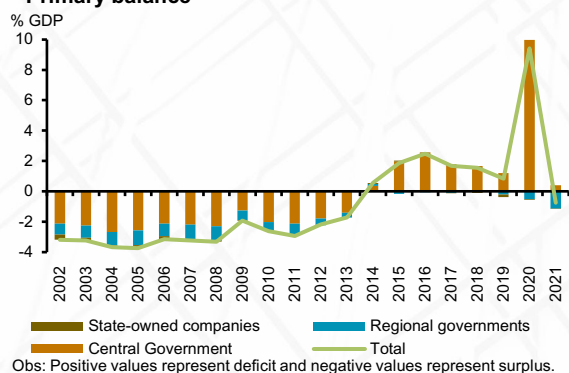
The central government deficit in 2021 was the lowest since 2014 in real terms. Among the factors

19/ The average interest rate for new credit grants in operations with non-earmarked resources reached 35.3% p.a. in January 2022 with variation of 2.9 p.p. in the quarter (3.1 p.p. in the household segment and 2.4 p.p. in the corporate segment). The spread observed in the new credit grants in operations with non-earmarked resources reached 24.6% p.a., with variation of 1.9 p.p. in the quarter and -4.3 p.p. relative to February 2020 (in the household segment the drop was 6.1 p.p.).

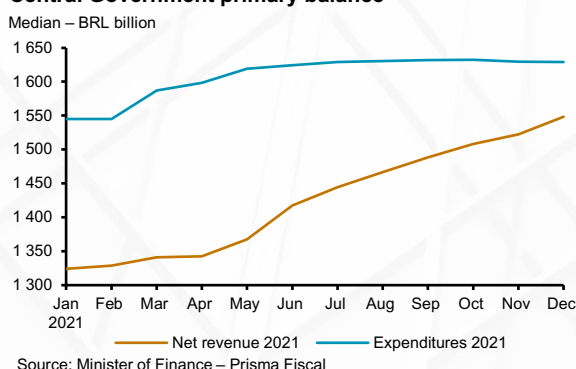
20/ The Prisma Fiscal median – a BRL 98 billion deficit in November – decreased to BRL 74 billion deficit in February. In the PCQ, the deficit projection dropped from BRL 103 billion in the December edition to BRL 67 billion in the March edition.

21/ In the February PCQ, 69% of respondents indicated that the fiscal outlook had worsened since the December Copom meeting, considering both the central scenario and the risks involved. In the March edition, 50% of respondents indicated deterioration, and 28%, no relevant change since the February meeting.

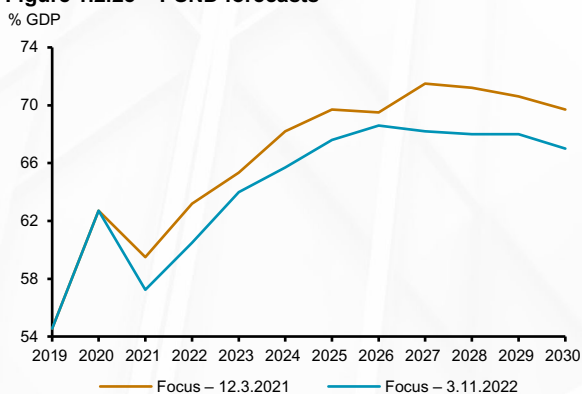
**Figure 1.2.23 – Public Sector Borrowing Requirements – Primary balance**



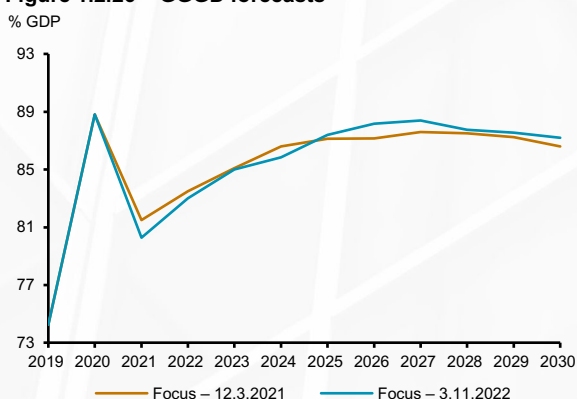
**Figure 1.2.24 – Evolution of forecasts for the 2021 Central Government primary balance**



**Figure 1.2.25 – PSND forecasts**



**Figure 1.2.26 – GGGD forecasts**



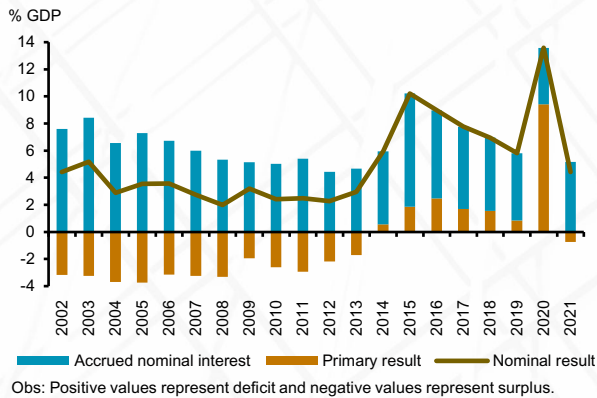
that explain this result are: i) the economic activity rebound; ii) the inflationary dynamics, together with the limitations for government spending by the fiscal expenditure cap; iii) the reduction of expenses to fight Covid-19; and iv) the increase in the price of commodities in BRL. Economic activity rebound and the acceleration of inflation throughout 2021 fueled nominal revenues, while expenses subject to the fiscal expenditure cap were limited to a low growth (2.1%) – corresponding to the IPCA variation accumulated until June 2020. Primary expenses to fight Covid-19 fell from BRL 521 billion, in the first year of the pandemic, to BRL 121 billion in 2021, helping to reduce total expenses. Finally, an unusual combination of high international commodity prices and depreciation of the BRL boosted federal revenue with royalties and dividends paid by mining companies to the federal government.

These factors, for the most part, also affected the primary result of regional entities, which recorded a surplus of BRL 98 billion in 2021 – the best result since 2002 in real terms. As with the central government, there was a combined effect of revenue increase and cap for spending, in line with the limitations imposed by LC 173/2020. Thus, the consolidated public sector registered a primary surplus of BRL 65 billion, the first since 2013.

In line with the good primary results, there was a positive surprise regarding market projections for public debt. The General Government Gross Debt (GGGD) ended 2021 at 80.3% of GDP, 1.2 p.p. below the Focus projections in the cut-off date of the December 2021 IR. The surprise was even greater for the Public Sector Net Debt (PSND), 2.2 p.p.. Despite these recent surprises, long-term projections produced by the Focus survey continue to indicate a high public debt scenario on an upward path over the coming years.

In 2022, the expansion of revenues collection is expected to decelerate. The federal revenue growth may decrease with the expected deceleration in prices, while expenses subject to the fiscal expenditure cap may increase by up to 10.2% – the accumulated inflation up to the end of 2021. Economic activity may also decelerate this year, contributing to a slowdown in federal revenues. For regional governments, public spending is expected to rebound, considering the cash accumulation in the last two years and the end of the limitations determined by LC 173/2020. Conversely, the recent

**Figure 1.2.27 – Nominal, primary and interest results**



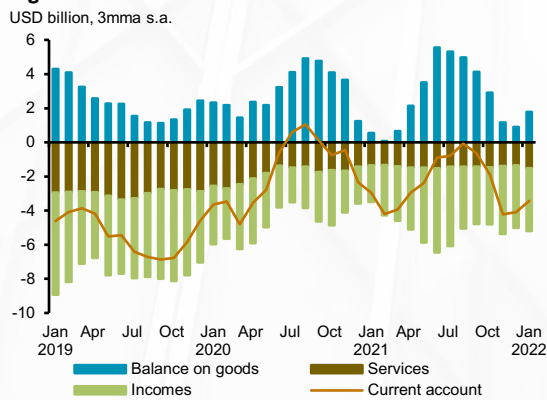
increase in commodity prices may positively impact federal revenues.

Besides the primary result, the perspective of a stronger monetary tightening and higher risk premia should lead to a new increase in interest expenses in 2022. In 2021, interest expenses reached 5.2% of GDP, returning to the level immediately before the pandemic, an increase of 1.7 p.p. comparing with the trough reached in June 2021.

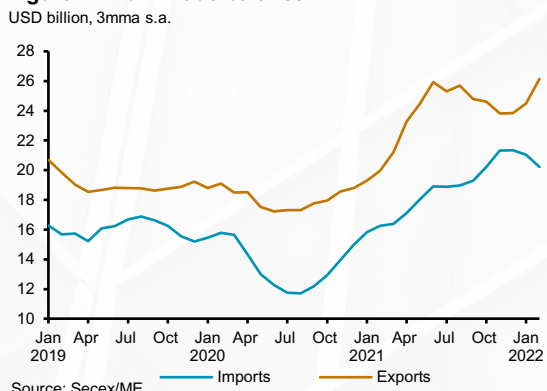
Two fiscal risks stand out. In the short-term, additional fiscal measures to hold the pass-through of international fuel prices to domestic prices may have a significant effect in the 2022's primary result. Likewise, the relevance of the electoral debate for the perception of fiscal risks in the longer term should grow throughout the year, particularly with regard to maintaining the current fiscal framework.<sup>22</sup>

Thus, despite the more favorable public accounts data in the short-term, uncertainty about the future of the fiscal framework remains. Moreover, the weakening of efforts in favor of structural reforms may result in higher risk premia, increased risk of deanchoring of inflation expectations, and, consequently, higher structural interest rates.

**Figure 1.2.28 – Current account**



**Figure 1.2.29 – Trade balance**



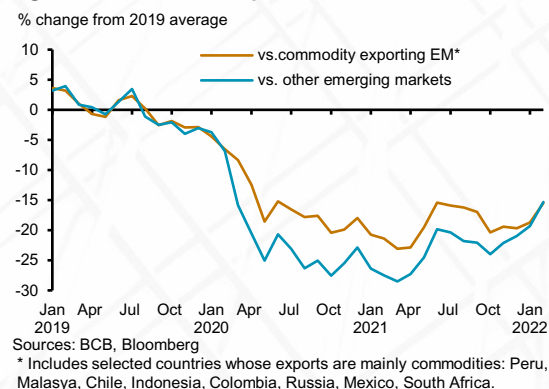
## External

External accounts have evolved relatively in line with expectations since the December 2021 IR. The current account deficit reached USD 28 billion in 2021 – compared with a projection of BRL 30 billion –, reflecting historical records in exports and imports and the lowest deficit in the services account since 2018. Updated projections, present in a box of this IR, indicate a favorable scenario for external accounts in 2022, with a substantially positive trade balance and services and income deficits still at levels lower than in 2019.

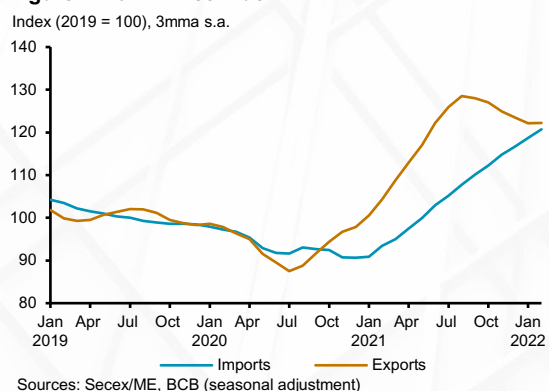
Throughout 2021, the current account balance, which registered decreasing deficits until mid-2021, and an opposite movement in the subsequent months, reflected the trade balance performance. In the first half of the year, exports were driven by the flow of the main harvests and the strong growth in prices. Throughout the second half of 2021, the exported

22/ Several analysts expressed this opinion at the 86<sup>th</sup> cycle of meetings of the BCB's Deputy Governor for Economic Policy with economists that participate in the Market Expectations Survey, which took place by video call on February 17-18, 2022.

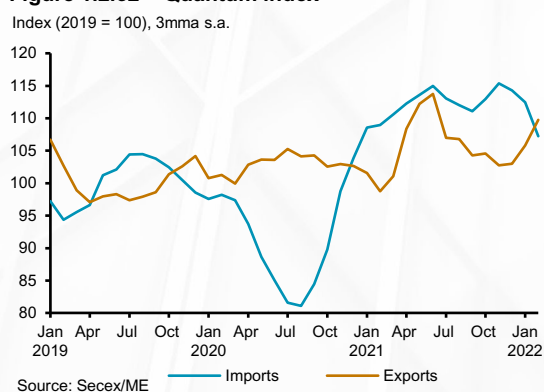
**Figure 1.2.30 – Relative performance of the BRL**



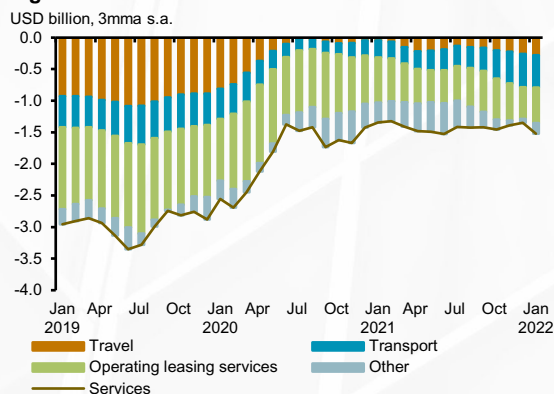
**Figure 1.2.31 – Price index**



**Figure 1.2.32 – Quantum index**



**Figure 1.2.33 – Services**



quantum declined, returning to levels close to those of 2020, while prices remained high. Imports, in turn, grew steadily in 2021, despite the BRL depreciation and bottlenecks in global production chains. The sharp increase in international fuel prices, the internalization of oil rigs under Repetro, mostly in the first half of the year,<sup>23</sup> and the strong pace of imports of intermediate goods contributed to this result. Increased purchases of intermediate goods derive from rises in both prices and quantum – decoupling from local activity indicators, a subject further discussed in a box of this IR.

The trade balance improved in early 2022, influenced by the rise in the exported quantum, especially of primary goods, and signs of slowdown under imports, although still registering high volumes and prices. In 2022, one observes an exchange rate appreciation in line with increased commodity prices. Since the cut-off date of the previous IR, however, the BRL appreciation stands out even when compared with the currencies of other commodity-exporting emerging countries.

In the services account, international travel expenses improved slightly throughout 2021, but are still well below pre-pandemic levels. The deficit on operating leasing services continued to retreat, in line with internalizations of oil rigs under Repetro. In the primary income account, the deficit on the earnings account intensified, consistent with the recovery of the Brazilian economy and the higher profitability of companies resident in Brazil with equity owned by foreigners. Interest expenses, in turn, ended 2021 at a level lower than that of 2020, due to improved global financial conditions and a more depreciated average exchange rate, which reduces, in USD, interest expenses on securities expressed in BRL.

In the financial account, the inflow of direct investment liabilities reached USD 46 billion in 2021, USD 9 billion above 2020, with a strong recovery of reinvested earnings. This result was below the December 2021 IR forecast (USD 52 billion), mainly due to higher remittances of earnings in December, the month in which this flow is seasonally concentrated. At the beginning of 2022, however, a recovery in net inflows of direct investment liabilities can already be observed: USD 5 billion in January and an estimate of USD 10 billion in February.<sup>24</sup>

23/ The internalizations of oil rigs under the Special Customs Regime for Goods Destined to the Research and Mining Activities of Oil and Natural Gas (Repetro) framework totaled USD 10 billion in 2021Q1 and USD 3 billion in 2021Q2.

24/ February's estimate is available at the [External sector statistics Press Release](#) released on February 23.

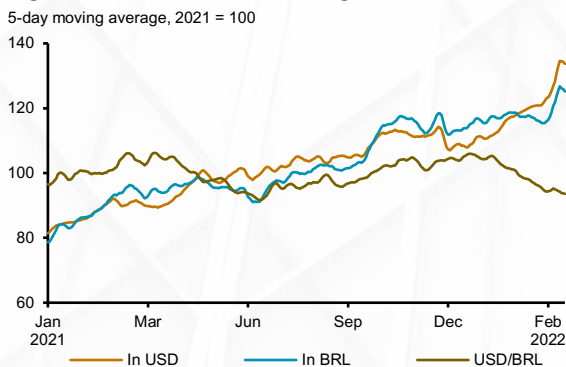
**Figure 1.2.34 – Main financial liabilities**  
USD billion, 3mma s.a.



Portfolio investments in 2021 were in line with the December 2021 IR projection, USD 21 billion, the first positive result since 2015. This result is due to the flows towards securities issued in the country, which reached the highest level since 2014, in a context of increasing interest rate differential between Brazil and major developed economies. In the opposite direction, there was an outflow of investments in funds and equities of Brazilian companies, particularly in the second half of the year. In early 2022, incorporating partial data until February 18, there was a reversal in this flow, with relevant inflow of foreign investments in funds and equities of Brazilian companies.

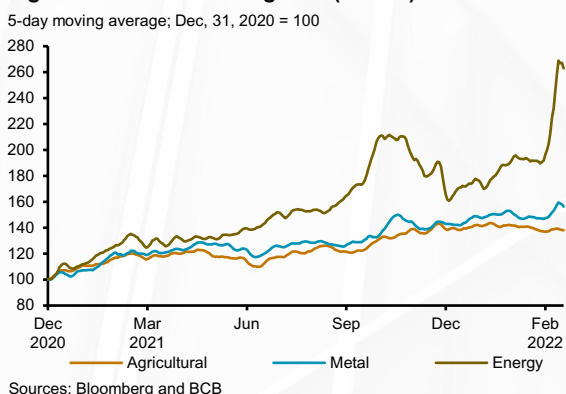
## Prices

**Figure 1.2.35 – IC-Br and exchange rate**



Inflation remains under pressure. The most recent data suggests that its underlying component remains high and that the evolution of commodity prices represents a new source of pressure. These factors have led to a new deterioration in inflation expectations for 2022, despite the relevant appreciation of the BRL since the previous IR, the improvement in the water scenario, and the general reduction in the rates of the Tax on Industrialized Products (IPI).

**Figure 1.2.36 – IC-Br categories (in BRL)**



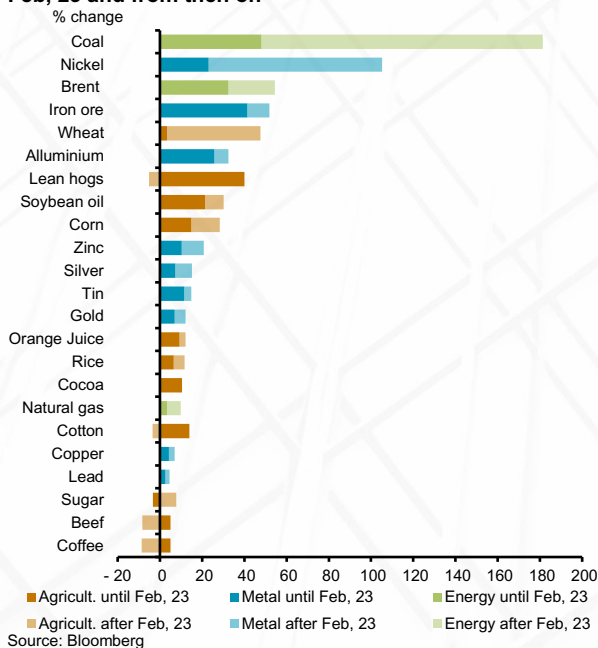
After the substantial drop in the weeks prior to the December 2021 IR, with the emergence of the Omicron variant, commodity prices increased strongly. From the cut-off date of the last report up until February 23, there was a 13.9% advance in the IC-Br,<sup>25</sup> when measured in USD, spread across several commodities, in general reflecting strong global demand and tight supply, with low inventories. Supply tightening factors vary from case to case, but among them are crop shortfalls due to climate disruptions, energy transition, and geopolitical issues. With the conflict in Ukraine beginning in February, commodity prices gained new momentum and rose another 9.5%, up to the cut-off date of this report, according to IC-Br. In this second movement, the highlights are coal, oil<sup>26</sup>, wheat, corn, and aluminum, commodities most directly affected by the conflict.

The rise in commodities prices occurred in parallel with the 10.3% BRL appreciation. Although only

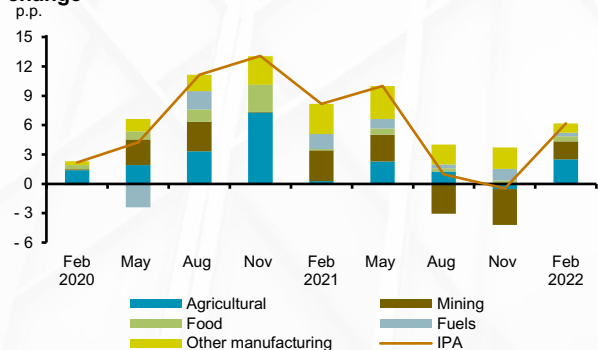
25/ The IC-Br and exchange rate variations discussed in this section always refer to the five-day moving average between the respective dates.

26/ See box “Pass-through of oil prices in BRL to inflation and risk measurement” of this IR.

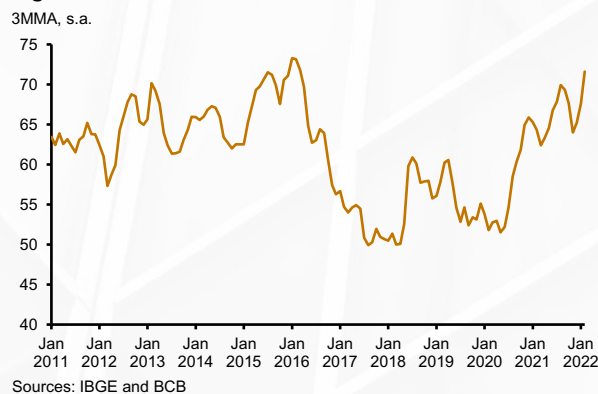
**Figure 1.2.37 – Variations from the cutoff date until Feb, 23 and from then on**



**Figure 1.2.38 – Contributions to quarterly IPA-DI change**



**Figure 1.2.39 – Diffusion index – IPCA**



partially, the appreciation contributed to mitigate the relevant rise in these prices in local currency (11.9%, according to the IC-Br in BRL). This joint movement of rise of commodities prices and appreciation of the domestic currency is historically usual, but did not happen over most of the last two years, either in Brazil or in other commodities-exporting emerging economies.

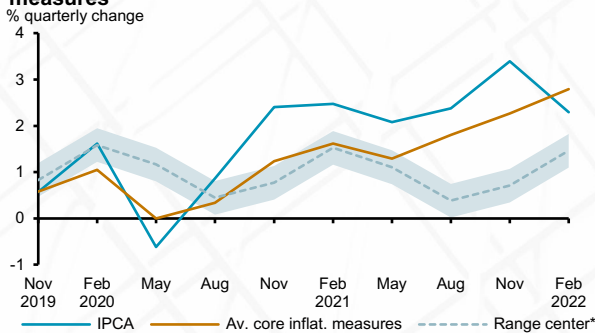
After a quarter of slight decrease, producer prices rose significantly again. The IPA-DI rose 6.17% in the quarter ended in February, after dropping 0.46% in the quarter ended in November. The decrease observed in the previous quarter reflected the drop in iron ore, soybeans, cattle, and corn prices, which has since reversed, in line with the commodities scenario discussed above.

In the manufacturing sector, producer prices still presented a substantial increase (2.84%), albeit lower than in the previous quarter. The increase in fuel prices was lower, reflecting the time lags in the pass-through of international prices to domestic producer prices.<sup>27</sup> In the food industry the opposite occurred with an increase in prices of vegetable oils and fats, linked to the prices of soybeans and dairy products. In the other segments of the manufacturing sector, typically less volatile, the quarterly increase also slowed down (from 5.70% to 2.27%). Noteworthy is the drop in prices of chemical and metallurgical products. However, the strong increase in international fertilizer and iron ore prices suggests the possibility of a reversal of this movement. Overall, the dynamics of producer prices both in the agricultural and manufacturing sectors still seems consistent with a persistent pressure on industrial goods to the consumer.

The pressure on consumer prices continued in the quarter ended in February. Measured by the Extended Consumer Price Index (IPCA), the headline inflation slowed down from 3.40% in November 2021 to 2.30% in February 2022, but remains at a level incompatible with meeting the inflation target. The increases are widespread and the index composition was unfavorable, with relevant hikes in prices more associated with the underlying inflation process. The average of the inflation cores was 2.79% in the quarter, above that observed in the quarter ended in November 2021 (2.27%). Considering the quarterly moving average and seasonally adjusted annualized

27/ The strong drop in oil prices in the weeks prior to the cut-off date of the December 2021 IR had not yet affected domestic producer prices. The same is now true, in part, for the recent rise in oil prices.

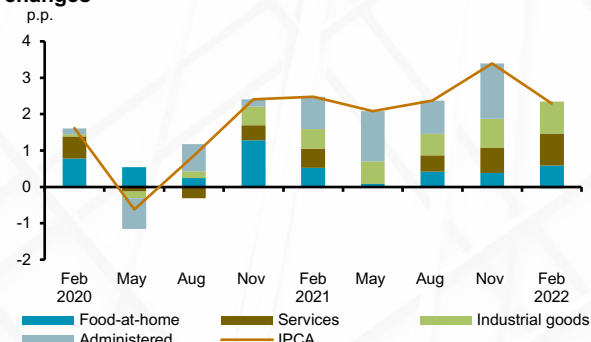
**Figure 1.2.40 – IPCA and average of core inflation measures**



\* IPCA's seasonal range, adjusted for target.

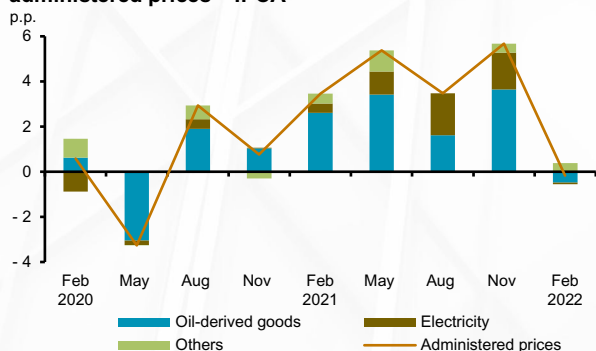
Sources: IBGE and BCB

**Figure 1.2.41 – Contributions to IPCA quarterly changes**



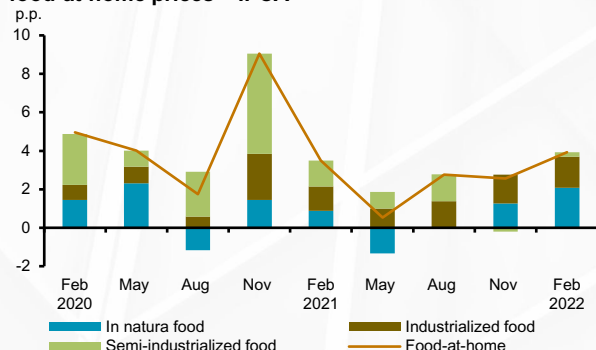
Sources: IBGE and BCB

**Figure 1.2.42 – Contributions to quarterly changes in administered prices – IPCA**



Sources: IBGE and BCB

**Figure 1.2.43 – Contributions to quarterly changes in food-at-home prices – IPCA**



Sources: IBGE and BCB

rate, the changes in the IPCA and in the cores' average are respectively 7.49% and 9.85%, and the diffusion index – which measures the percentage of sub-items with a positive variation in the month – stands at 71.60%, a historically high level.

A large part of the slowdown of the IPCA variation in the quarter ended in February regards behavior of fuel prices – known to be volatile. The ethanol price dropped 10.47% and gasoline was 2.26% cheaper. The ethanol price decrease occurs in an atypical period, considering the sugar cane cycle, and is associated with a demand below the sector's expectations. The consumer price of gasoline was pulled down by the ethanol that is blended into it and does not yet reflect the recent substantial increase in the oil price.

With the decrease in gasoline prices, administered prices – down 0.18% in the quarter ended in February – had a negligible contribution to inflation in the period. There was also a drop in household electricity, influenced by lower ICMS tax rates in Rio Grande do Sul, and a sharper drop in health insurance, with the end of the impact of the adjustment that had been granted in January 2021.<sup>28</sup> Urban bus fares, many of which are usually adjusted at the beginning of the year, did not rise as much as they were expected to, given the pressure on costs in the segment. In the opposite direction, the highlight is the increase in the vehicles registration and license plate fees, which reflects the impact of the rise in vehicle prices on the value of the Motor Vehicle Ownership Tax (IPVA).<sup>29</sup>

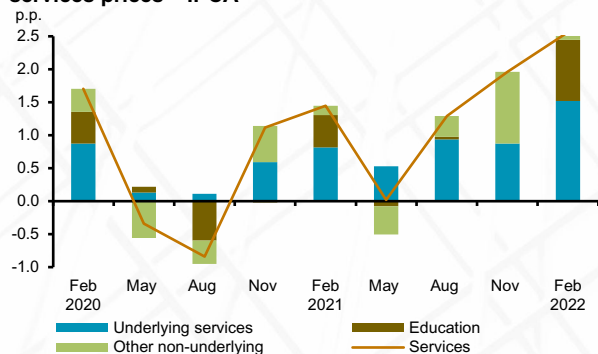
Food prices rose significantly in the quarter (3.93%). The seasonal behavior of prices and the adverse climate effects made an important contribution, especially on in natura food prices, which rose 14.89%. There was also a significant rise in the price of flour, baked goods, oils, and beverages, components of the food group with less volatile prices. The price of beef went up again, but without fully following the increase in the cattle price.

Service prices rose 2.56%, at a faster pace than previously observed. There was a significant advance in services underlying inflation (from 1.47% to 2.57%), partly reflecting the inertial behavior of inflation, as seen by a higher increase in residential

28/ The adjustment for individual health plans in 2020 was postponed and only occurred in January 2021 (8.41%). In the IPCA calculation, the corresponding monthly rate was incorporated along the twelve months up to December 2021. Therefore, the monthly portion of the 8.19% adjustment remains, referring to the 2021 adjustment.

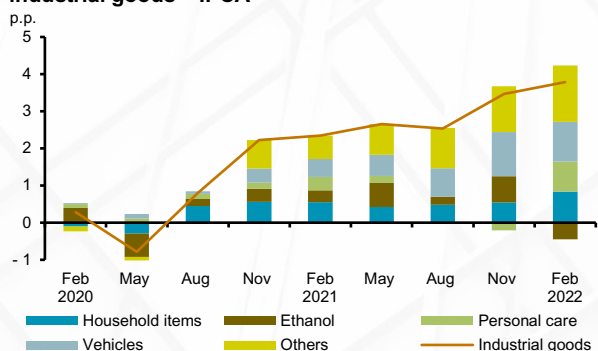
29/ According to the IPCA methodology, the increase, which in 2022 should be approximately 22%, will be divided equally along the months. Also because of this specific issue, the release of the January IPCA had a relevant repercussion on projections for the year.

**Figure 1.2.44 – Contributions to quarterly changes in services prices – IPCA**



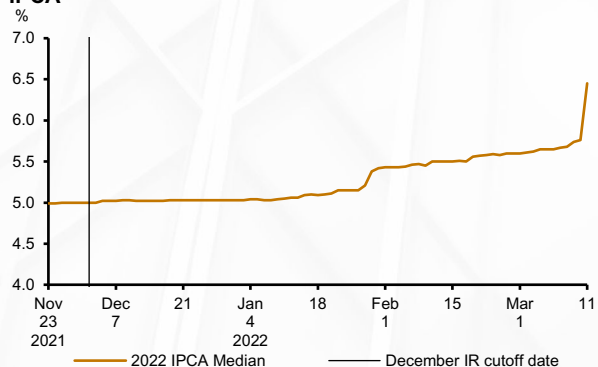
Sources: IBGE and BCB

**Figure 1.2.45 – Contributions to quarterly changes in industrial goods – IPCA**



Sources: IBGE and BCB

**Figure 1.2.46 – Median market expectations (Focus) – 2022 IPCA**



**Table 1.2.4 – Breakdown of the revision on the 2022 Focus survey**

	Weights	Focus expectations (% p.a.)		
		Dec 3	Mar 11	Contr. to " (p.p.)
<b>IPCA</b>	<b>100</b>	<b>5.02</b>	<b>6.45</b>	<b>1.43</b>
IPCA (by aggregation)	100	4.95	6.38	1.43
Food-at-home	15.0	4.74	8.12	0.51
Industrial goods	23.3	5.11	6.67	0.36
Services	34.4	5.45	6.05	0.21
Administered prices	27.3	4.29	5.61	0.36
Market prices (by aggreg.)	72.7	5.20	6.67	1.07

30/ In the November IPCA, it was possible to notice the effects of discounts associated with the Black Friday, especially on personal care items. In the coming months those discounts were partially reversed.

31/ See Figure 1.2.3 in the economic activity section of this IR.

32/ Most products had a 25% reduction in their rates. Some vehicles had an 18.5% reduction, and only tobacco products had no reduction.

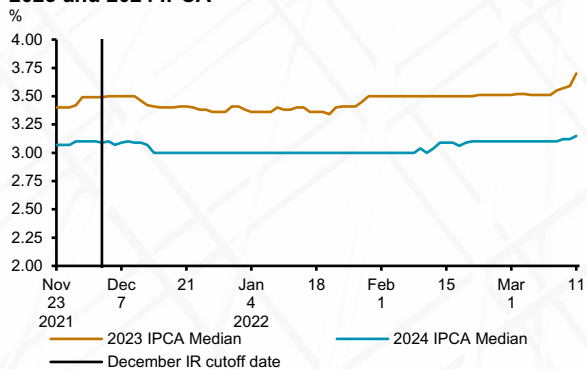
rents. The rise in the underlying services inflation also seems partly associated with a pressure on goods prices: the significant increase in insurance and vehicle repairs, for example, can be linked to the higher price of automobiles and to the cost of spare parts. Among the non-underlying components of services inflation, it is worth mentioning the adjustment of school tuition, which is usually accounted for in February. The adjustment was significant, but fell short of past inflation, even after the relative containment of tuition in previous years due to the effects of the pandemic. Finally, volatile prices such as app based rides and airfares, which have a relevant and negative seasonal component in this period, contributed to services inflation not being higher in the quarter.

The prices of industrial goods continued to rise persistently. There was a 3.78% rise in this segment, despite the significant drop in the ethanol price. Part of this increase stems from the effect of the end of promotional discounts that took place in November<sup>30</sup>, but one can still see the widespread inflationary pressure, which encompasses household items, clothing, vehicles, and personal hygiene items, among others. This widespread increase happens in an environment of rising costs in the sector, with an almost uninterrupted increase in commodity prices in BRL since mid-2020 and continued mentions of inputs shortage as a limiting factor to the growth of industrial production in early 2022, despite the slowdown in the household consumption of goods.<sup>31</sup>

On February 25, the federal government reduced the rates of the Tax on Industrialized Products (IPI) for almost all products.<sup>32</sup> In 2021, the federal revenue with the tax, ex-tobacco, corresponded to 1.42% of household consumption, so that the reduction of 25% in most rates may have a maximum impact of -0.35 p.p. on the deflator of household consumption, if there is a complete pass-through along the production chains to the consumer.

In this context, the median of expectations for inflation in 2022 rose from 5.02% to 6.45%, moving away from the upper limit of the tolerance interval around the inflation target. An assessment of the analysts' disaggregated projections reveals that the increase in expectations for 2022 reflects a more adverse outlook for food and industrial goods, but

**Figure 1.2.47 – Median market expectations (Focus) – 2023 and 2024 IPCA**



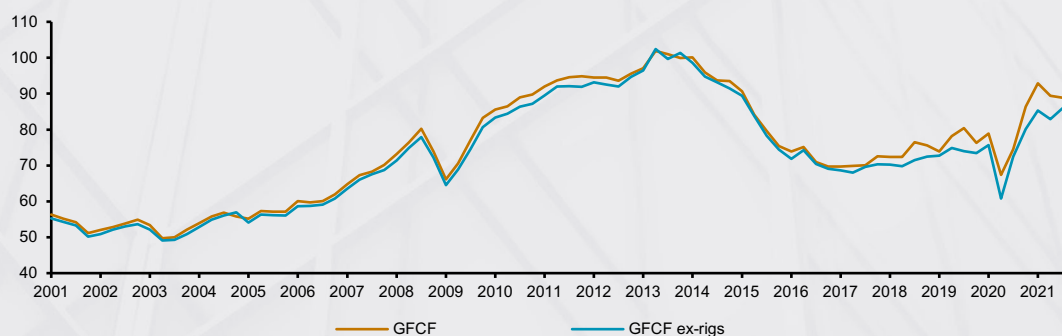
projections for services and administered prices have also increased (Table 1.2.4). Expectations for the following years remained above the inflation targets for the respective calendar years. The median of expectations for 2023 rose from 3.50% to 3.70%, while expectations for 2024 rose slightly from 3.10% to 3.15%.

## Recent evolution of Gross Fixed Capital Formation

Gross Fixed Capital Formation (GFCF), after declining nearly 30% during the 2014-2016 recession, recovered gradually until the beginning of 2020. With the outbreak of the Covid-19 pandemic, GFCF dropped sharply in 2020Q2 and recovered strongly as of 2020Q3. The growth rate of this component was higher than the initial expectations of the BCB and of economic analysts in 2020, partially favored by the volume of imports of oil rigs that do not cross the borders. Even discounting the effect of these imports, GFCF reached, in early 2021, a level more than 15% above the 2019 average (Figure 1).<sup>1</sup> Since then, the adjusted series has shown a relative stability, although still above the growth trend observed in the pre-pandemic period.<sup>2</sup>

**Figure 1 – Gross fixed capital formation**

2013 = 100, s.a.



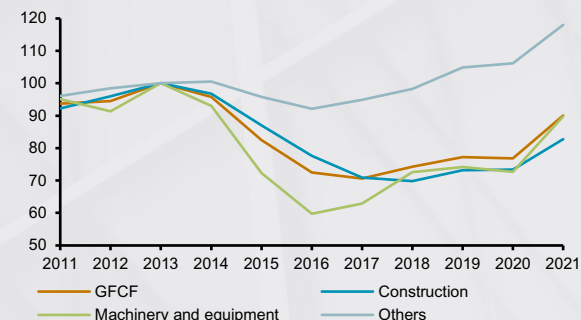
Source: IBGE and BCB

Figure 2 shows the annual volume evolution of the GFCF in terms of three major components, based on preliminary data published in the Quarterly National Accounts including 2021. Construction and machinery and equipment account for the largest GFCF share – 44% and 41% of the 2019's value, respectively. The component "Others" essentially corresponds to investments in intellectual property goods – 13% of the GFCF value in 2019. The figure illustrates the favorable overall investment performance throughout both pandemic years. In 2020, when the economy declined 3.9%, the three GFCF components recorded annual changes close to stability. In 2021, all components showed high positive variations, well above the GDP growth rate.

Figure 2 also point to differences among the three indicators. The component more closely related to investments in intellectual property goods showed a relatively small decline in the 2014-2015 recessive period and has been growing at high rates since 2017. This performance is possibly associated with structural investment trends in the digitalization of the economy. Regarding construction investment,

**Figure 2 – Annual evolution of gross fixed capital formation**

2013 = 100

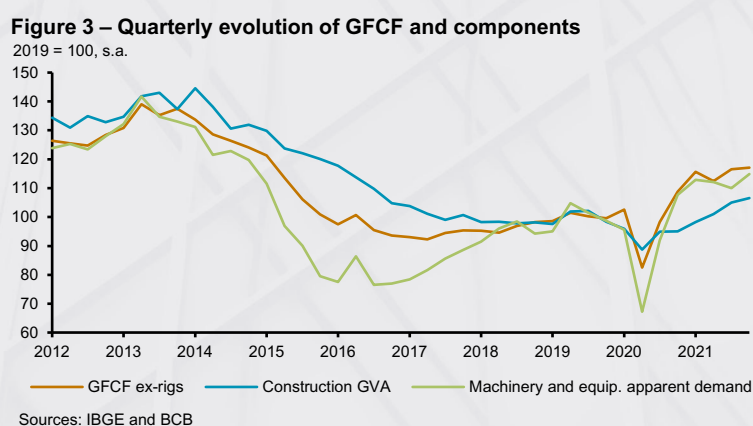


Source: IBGE

- 1/ It should be highlighted that part of the expansion observed in 2020, especially in 2020Q4, reflected the increased imports of equipment for the oil and gas industry, notably under the Repetro framework. However, even discounting the effect of these imports on the GFCF, a fast recovery is still evident, extending until 2021Q1. GFCF ex-rigs calculation excluded imports and exports of goods that do not cross the borders under the Repetro framework, in addition to NCMs 89051000, 89051000, and 89052000.
- 2/ This box updates a box with an identical title of the September 2019 Inflation Report.

Figure 2 shows the prolonged downturn of this component until 2018, even after the end of the 2014-2016 recession.

Historically, the quarterly evolution of construction investments during the pandemic might be roughly inferred from the gross value added (VAB) of the civil construction sector (Figure 3).<sup>3</sup> With the adoption of social distancing measures in mid-March 2020 and the consequent total or partial halt of construction work, the sector showed relevant declines in the first half of the year. Since then, the sector has recovered consistently. In addition to the sector's resumption with its inclusion in the category of essential activities in May 2020<sup>4</sup>, several factors seem to have contributed to the performance of civil construction: high volume of income transfers to the more vulnerable households, allowing part of these resources to be used for self-construction, as corroborated by Monthly Trade Survey (PMC) data; real estate financing interest rates at low levels; and the demand for better and larger properties, associated with home-office work. Indicators referring to the sector's confidence level, the volume of real estate loans, and of new property sales support this evaluation of the real estate market.



**Table 1 – GFCF and components**

Itemization	% change				
	Contraction 2013 II - 2016 IV	Expansion 2017 I - 2019 IV	Contraction 2020 I - 2020 II	Expansion 2020 III - 2021 IV	Pandemic 2020 I - 2021 IV
GFCF	-28.2	9.5	-11.8	32.5	16.9
GFCF ex-rigs	-28.4	6.4	-17.2	41.9	17.5
Construction GVA	-22.2	-6.1	-9.8	20.1	8.4
Machinery and equip. apparent demand	-41.7	28.2	-31.9	70.9	16.4

Sources: IBGE and BCB

The quarterly evolution of investments in machinery and equipment can be measured by an apparent demand indicator of capital goods (Figure 3). This indicator is calculated based on the apparent demand for machinery and equipment in 2015, the year of the last available input-output matrix (IOM), updated by indicators of industrial output and of imports and exports of capital goods. Since the calculation is performed at the level of IOM products, it is possible to build apparent demand indicators for several categories of capital goods. It is also possible to exclude, approximately, the accounting effect of imports that do not

3/ It is worth noting that, particularly in 2020 and 2021, variations in construction investment are larger than the sector's VAB variations (0.3% and 12.8%, compared with -6.3% and 9.7%). Gross fixed capital formation of construction goods in a given period is related to the value produced in this sector, while the VAB of the civil construction activity is the difference between the value produced by the activity, considering all goods produced, and the intermediate consumption. However, historically, the civil construction sector's VAB has represented a good proxy for construction investment. To a great extent, this stems from the fact that most of the goods classified as construction are produced by the civil construction activity.

4/ Decree 10,342, of May 2020.

cross the borders under the Repetro framework<sup>5</sup>, which registered high volumes in the 2019-2021 period and influenced the time series of investments.

Table 2 shows a strong contraction in the first half of 2020 for most categories of machinery and equipment, especially for “automobiles, pickup trucks, and utility vehicles”, and “trucks and buses”, in view of the closure of most factories in March and April 2020. Machinery and equipment for “construction and mineral extraction”, “computer and electronic devices”, and “electricity” registered relatively lower declines. Conversely, the apparent demand for agricultural machinery and equipment increased slightly in the period, despite the strong economic activity decline.

**Table 2 – Capital goods apparent demand**

Itemization	Weight	% change			
		Expansion 2017 I - 2019 IV	Contraction 2020 I - 2020 II	Expansion 2020 III - 2021 IV	Pandemic 2020 I - 2021 IV
Total	100.0	28.2	-31.9	70.9	16.4
Industrial	26.1	34.8	-26.2	62.4	19.7
Computers and electronic devices	19.3	30.9	-11.9	29.1	13.8
Trucks and buses	14.4	137.9	-51.8	167.5	29.0
Automobiles, pickup trucks, and utility vehicles	13.5	17.3	-78.2	252.8	-23.2
Agricultural	6.6	-17.9	0.6	83.2	84.2
Electricity	5.6	-0.5	-11.1	18.7	5.5
Construction and mineral extraction	3.1	116.4	-14.6	117.3	85.7
Others	11.4	-4.7	-37.5	33.8	-16.4

The period following the first half of 2020 registered strong increases in all categories, especially those that had registered stronger declines in the beginning of the pandemic. As a result of these contractionary and expansionary movements, the apparent demand by machinery and equipment was, at the end of 2021, 16% higher than before the pandemic, reflecting expansions in most categories.<sup>6</sup> One exception is the segment “automobiles, pickup trucks, and utility vehicles”, more strongly affected by the lack of inputs in a scenario of imbalances in global production chains. The largest expansions since 2019Q4 occurred in “agricultural capital goods” and “capital goods for the construction and mineral extraction”, in line with the favorable scenario for agriculture and livestock, construction, and extractive industry.

One also observes that the growth in the absorption of capital goods compared with the period immediately before the pandemic was not concentrated only in machinery for the commodity and construction-related sectors, with relevant contributions also from investments channeled to cargo transportation and manufacturing (Table 3).

**Table 3 – Capital goods apparent demand**

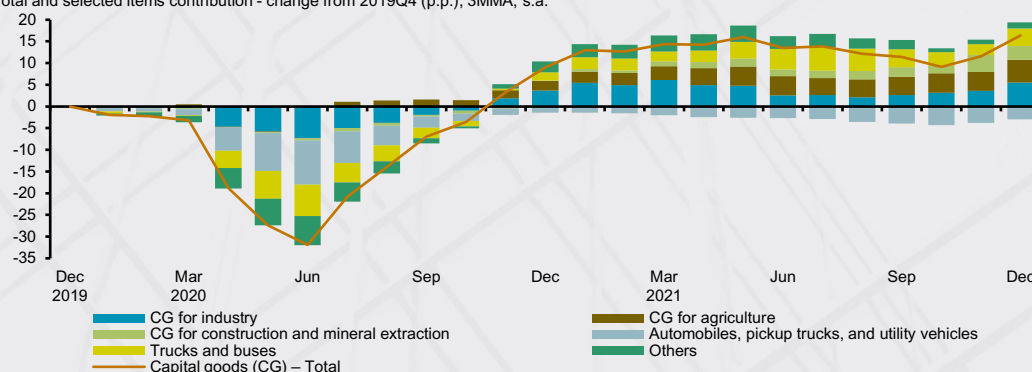
Itemization	Weight	Contribution (p.p.)			
		Expansion 2017 I - 2019 IV	Contraction 2020 I - 2020 II	Expansion 2020 III - 2021 IV	Pandemic 2020 I - 2021 IV
Total	100.0	28.2	-31.9	70.9	16.4
Industrial	26.1	9.2	-7.3	18.8	5.5
Computers and electronic devices	19.3	6.0	-2.3	7.4	2.7
Trucks and buses	14.4	10.4	-7.3	16.6	4.1
Automobiles, pickup trucks, and utility vehi	13.5	2.5	-10.2	10.5	-3.0
Agricultural	6.6	-1.7	0.0	7.7	5.3
Electricity	5.6	0.0	-0.6	1.4	0.3
Construction and mineral extraction	3.1	2.5	-0.5	5.4	3.1
Others	11.4	-0.6	-3.7	3.1	-1.6

5/ Volume indexes of imports and exports of “other transportation equipment”, which includes oil rigs, were not considered, being replaced by the index of the national output volume.

6/ The item “others” encompasses home appliances, furniture, sundry industrial goods, and other transportation equipment.

**Figure 4 – Capital goods apparent demand**

Total and selected items contribution - change from 2019Q4 (p.p.), 3MMA, s.a.



Prospectively, more restrictive financial conditions may slow down the expansion of investments. Higher uncertainty regarding the world and the domestic economy, in a scenario of conflict in Eastern Europe and increased geopolitical tensions, the persistence of problems in some supply chains, and high prices of inputs may represent additional limitations. Furthermore, FGV industrial survey data show a decline in confidence among manufacturing entrepreneurs, possibly affecting their willingness to purchase machinery and equipment.

In turn, entrepreneurs' confidence in the sector of capital goods remains above the neutral level and CNI surveys indicate that the investment intentions of entrepreneurs of industry and construction are still above the recent historical average and 2019's average level. Likewise, high commodity prices continue to favor investments in the agricultural and mining sectors. Increased government investments – especially of subnational bodies, in a scenario of some cash surplus of these governments – coupled with infrastructure investments associated with concessions and other cooperation initiatives between the public and private sectors, less conditioned by the short-term scenario, are also expected to favor GFCF in 2022.<sup>7</sup>

**Figure 5 – FGV Manufacturing Industry Survey**

Industry Confidence Index

Points, s.a.



Source: FGV

**Figure 6 – Investment intention**

Diffusion index (0 to 100 points)



Source: CNI – Construction and Industrial Survey

Obs.: The index ranges from 0 to 100. The higher the index, the greater the industry's propensity to invest.

7/ On this subject, see the note "Investimentos contratados via parcerias público-privadas viabilizam crescimento do PIB", of February 23, 2022, of the Secretary of Economic Policy from the Ministry of Economy.

## Supply shocks, prices, and consumption

Successive supply shocks hit the Brazilian economy in 2021. The shortage of rainfall affected electricity and food production, increasing domestic prices. In addition, there were increases in the international prices of energy commodities and shortages of some industrial inputs on a global scale, which can be characterized as supply shocks from the point of view of the domestic economy. From a global perspective, these two phenomena are the result of both increased demand, in a scenario of expansionary policies to mitigate the effects of the pandemic, and supply constraints, arising from the unfolding of the health crisis and limitations to output expansion in the short-term. Price hikes associated with these supply shocks can have negative impacts on household consumption, through the decrease in their real purchasing power and the substitution for more affordable products.

In this context, this box assesses the effect of supply shocks on household consumption in Brazil. Specifically, it refers to the estimation of consumption response to changes in purchasing power originated from movements in the prices of fuel, electricity, and food-at-home.<sup>1</sup> Embedded in this analysis is the assumption that price changes in these items are associated with supply shocks.

To obtain this estimate, monthly models were used associating changes in consumption to changes in household purchasing power (derived from price variations of the items listed above). The strategy is similar to that adopted by Edelstein and Kilian (2007) and Hamilton (2009), who sought to estimate the impact on consumption of oil price shocks.

The purchasing power variation in the period  $t$ ,  $y_{1,t}$ , was constructed by adding the contributions of the selected items to the IPCA variation,

$$y_{1,t} = \sum_{s \in S} peso_{s,t} (\log(preço_{s,t}) - \log(preço_{s,t-1})),$$

where  $S$  is the set of selected items,  $preço_{s,t}$  is the index number in the IPCA of the item  $s$  in the period  $t$  and  $peso_{s,t}$  is its weight in the IPCA.<sup>2</sup> The variation in household consumption in  $t$ ,  $y_{2,t}$ ,

$$y_{2,t} = \log(consumo_t) - \log(consumo_{t-1}),$$

is measured by proxies of actual consumption using data from the Monthly Trade Survey (PMC). Besides the total consumption of goods, the partition between “non-durable” and “semi-durable and durable goods” was also analyzed.<sup>3</sup> The first group includes supermarkets, gas station, and pharmacy segments. Other segments are included in the second group.

Figure 1 compares six-month accumulated changes in purchasing power and consumption of goods. From 2003 to 2021, there is a negative albeit weak correlation between these two variables (-0.21), when the full sample is considered. If the sample is limited to the period before the pandemic, the correlation is -0.43.

1/ The shock resulting from the shortage of industrial inputs was not included in the exercise given the impossibility of finding in the IPCA an item directly linked to it and whose historical price variation stems mainly from supply shocks.

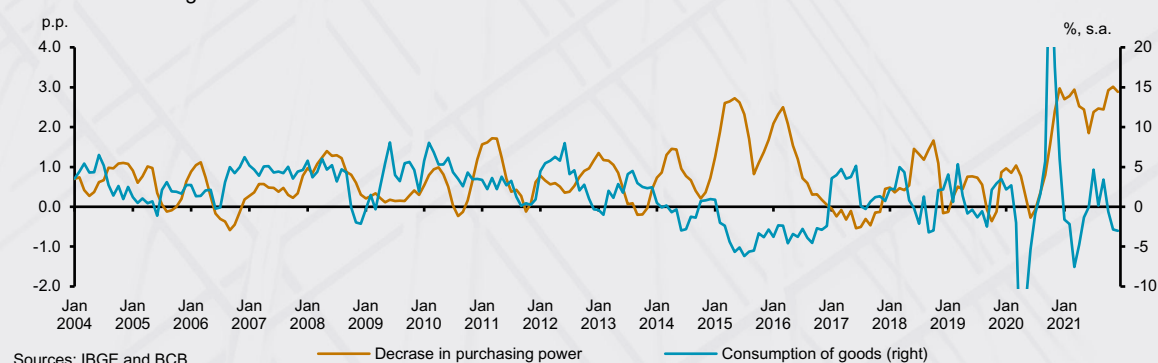
2/ The choice for the weight of the items in the IPCA is due to the unavailability of timely estimates for the weights of items in household consumption.

3/ Further details on measures of consumption of goods obtained from the PMC data are available in the box “Consumption of goods and services during the pandemic” of the September 2021 IR.

Additionally, it is possible to observe a drop in the consumption of goods in the second half of 2021, a period when the effect of the supply shocks mentioned at the beginning of this box on prices is higher.

**Figure 1 – Price shocks and consumption**

Accumulated change in six months



Sources: IBGE and BCB

— Decrease in purchasing power — Consumption of goods (right)

To test this relationship more accurately, a bivariate vector autoregressive model (VAR) of order  $K$  in the monthly frequency was estimated for each of the consumption measures, with control variables for the economic cycle,  $W_t$ , as exogenous,

$$\begin{bmatrix} y_{1,t} \\ y_{2,t} \end{bmatrix} = A + \sum_{k=1}^K B_k \begin{bmatrix} y_{1,t-k} \\ y_{2,t-k} \end{bmatrix} + \sum_{j=0}^J C_j W_{t-j} + \begin{bmatrix} u_{1,t} \\ u_{2,t} \end{bmatrix},$$

where  $u_t = [u_{1,t} \ u_{2,t}]'$  is the error vector and  $A$ ,  $B_k$  and  $C_j$  are matrices of coefficients to be estimated.<sup>4</sup> The identification strategy was Cholesky decomposition, with the change in purchasing power ordered as the most exogenous variable. The estimation sample runs from 2003 to December 2019, so that the estimated coefficients are not affected by the additional volatility stemming from the Covid-19 pandemic.

Figure 2 presents a measure of consumption elasticity, after a given number of months, to changes in the purchasing power. The measure is the ratio between two impulse response functions (IRF). The numerator equals the cumulative response of the change in consumption to a purchasing power shock. The denominator is the cumulative response of the purchasing power measure. Both FRI's refer to the same initial purchasing power shock. Table 1 presents the value of this cumulative elasticity after six months, when most of the consumption response has already occurred (Figure 2).

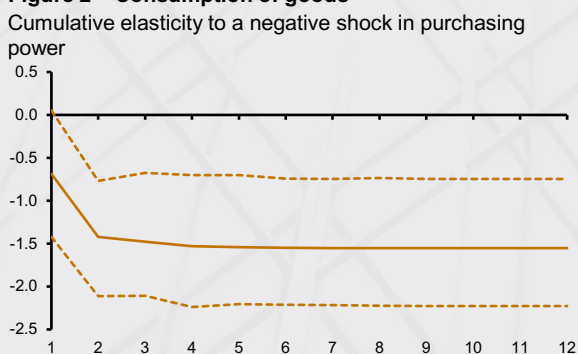
The response of the volume of consumed goods to supply shocks proved to be both statistically and economically significant, stabilizing quickly around -1.5. That is, a negative supply shock (defined here as increases in fuel, electricity, and food-at-home prices) that reduces household purchasing power by 1 p.p. would reduce the volume of goods consumed by 1.5 p.p.<sup>5</sup> and this decrease would occur quickly, in just a few months.

4/ For each consumption measure, the VAR order was chosen automatically according to the Akaike's criterion. The chosen orders were, respectively, 1, 1, and 3 for the models with total consumption of goods, non-durable goods, and semi-durable and durable goods. Two control variables were used for the economic cycle: the Emerging Markets Bond Index Plus (EMBI+) spread for Brazil and the average interest rate for new household non-earmarked credit operations in the total personal credit type (available at the BCB's Time Series Management System under code 20748). The first advantage of these two measures is that their long sample allows the model estimation since 2003, when the consumption proxy became available. The Brazil risk measure captures oscillations in fiscal risk and in local and global financial conditions, variables typically associated with economic fluctuations in emerging countries. The choice of the interest rate for new credit grants has two additional motivations. This variable is directly influenced by monetary policy and is affected by other changes in the credit market. The latter can play a particularly important role in the demand for durable goods, such as automobiles. The two control variables show a trend throughout the sample, as well as the Selic rate and the estimated neutral real interest rate present in the box "Revision of the small-scale aggregate model" of the December 2021 IR. Thus, the model used the cyclical components, obtained by HP filter, of these variables.

5/ Edelstein & Kilian (2007) and Hamilton (2009) discuss the role of consumer confidence and multiplier effects for achieving an elasticity greater than one.

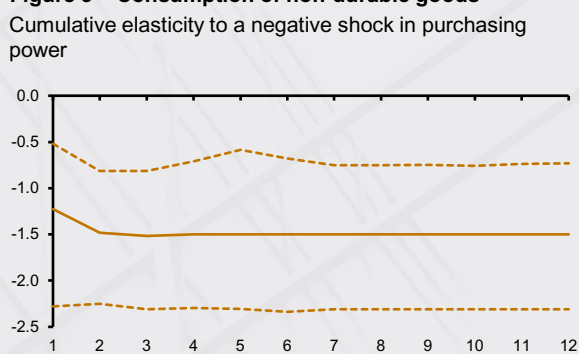
Moreover, results suggest that the greater household response does not necessarily come from reducing consumption of items with increased price, which are classified as non-durable goods, but from reducing more strongly the consumption of less essential items, such as “semi-durable and durable goods” (elasticity of -2.9).<sup>6,7</sup> A similar effect was found by Edelstein & Kilian (2007) and Hamilton (2009) when estimating the response to oil price shocks in the U. S.

**Figure 2 – Consumption of goods**



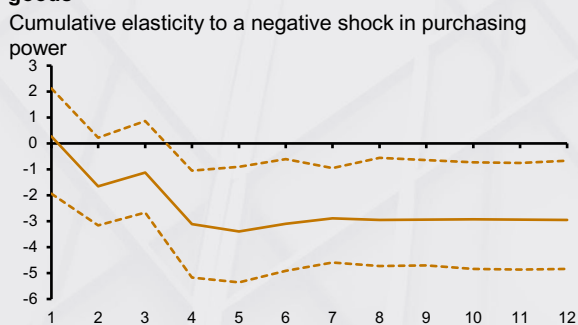
Obs: Dashed lines indicate the 95% confidence interval. Horizon in months.

**Figure 3 – Consumption of non-durable goods**



Obs: Dashed lines indicate the 95% confidence interval. Horizon in months.

**Figure 4 – Consumption of durable and semi-durable goods**



Obs: Dashed lines indicate the 95% confidence interval. Horizon in months.

**Table 1 – Elasticity to a negative shock in purchasing power**

Cumulative elasticity in the period

Itemization	Months		
	3	6	9
Goods	-1.5	-1.5	-1.6
Non-durable goods	-1.5	-1.5	-1.5
Durable and semi-durable goods	-1.1	-3.1	-2.9

In summary, the effects of supply shocks on household consumption are rapid, significant, and larger for less essential items. The dissipation of the 2021 electricity price shock, due to the increase in the level of the reservoirs of the hydroelectric plants and the expected end of the collection of the additional tariff resulting from the water shortage flag, can be a positive factor for consumption in 2022. In turn, the recent substantial increase in commodity prices in BRL – especially oil and grains, associated with the conflict in Eastern Europe and climate conditions in the south of South America, including Brazil – can contribute negatively to household consumption throughout the year.

## References

Edelstein, Paul & Kilian, Lutz. 2007. Retail Energy Prices and Consumer Expenditures. Working paper. University of Michigan.

Hamilton, James. 2009. Causes and Consequences of the Oil Shock of 2007-08. Brookings Papers on Economic Activity.

6/ The elasticity of goods is not necessarily a convex combination of the elasticities of the components of their partition, since the models are estimated independently for the total and for its subgroups.

7/ The results proved robust to a number of alternative specifications, such as: setting higher orders for the VAR; using the exogenous variables in difference, with lags; using the Financial Conditions Index (FCI) calculated by the BCB as an exogenous variable (in this case, with a shorter sample due to the index's availability period). In all cases the effect of the price shock on consumption proved to be at least as important as in the baseline exercise.

## Revision of the 2022 GDP projection

This box presents the revision of BCB's GDP growth projections for 2022. Under higher-than-usual uncertainty, mainly due to the rapid change in the global scenario with the beginning of the Russia-Ukraine war, a 1.0% increase is projected for the GDP in 2022, the same forecast released in the previous Inflation Report (Table 1).

The positive surprise in the GDP for 2021Q4 raises the statistical carry-over for 2022. It suggests – especially when analyzing the evolution of the GDP with the alternative seasonal adjustment<sup>1</sup> – that activity was in an acceleration process throughout the second half of 2021. In general, the IBC-Br and other monthly indicators show a reduction in January, partly explained by the increase in infections associated with the Omicron variant of the coronavirus during the month.<sup>2</sup> With the pandemic improving rapidly since then, the decline is expected to be reversed in February and March and the level of activity in 2022Q1 should be above the foreseen in the December 2021 IR. This positive result expected for 2022Q1 also favors the growth projection for the year. Additionally, a favorable outlook is maintained for some specific sectors, such as agriculture and livestock, and economic activities that are still in the process of recovery after the negative impacts of the pandemic.

Conversely, the share of entrepreneurs from manufacturing which mention the shortage of raw materials as a limiting factor for the output growth is still high. Moreover, qualitative data from entrepreneurial surveys indicated that the sector's inventories are closer to neutral or adequate levels than at the end of 2020, when the perception of insufficient inventories was predominant. Consequently, the recomposition of inventories is not expected to contribute significantly to the sector's expansion in 2022.

High fiscal risk and the process of monetary tightening underway continue impacting current financial conditions and, consequently, current and future economic activity. The current high level of domestic economic uncertainty acts in the same direction.

Increases in prices of commodities since the December 2021 IR – intensified with the escalation of the conflict between Russia and Ukraine and their possible effects – and of imported goods, although mitigated by the recent BRL appreciation, may be understood as a new supply shock on the domestic economy, with an upward impact on inflation and a downward effect on the short-term economic activity.<sup>3</sup> In turn, higher commodity prices may increase the income of sectors that produce these goods, such as the mineral extractive industry and agriculture and livestock. They may also encourage an expansion of supply, particularly in the medium term.

Regarding risks surrounding the baseline scenario, the possibility of restrictions to economic activity due to limitations in the supply of electricity reduced once more with the improved water scenario in the Southeast/

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1/ With alternative seasonal adjustment, which minimizes the influence of the pandemic period on the estimation of seasonal and calendar factors, the changes from 2021Q1 until 2021Q4 are: 0.9%, -0.5%, 0.3% e 0.9%. Therefore, a more robust economic expansion would have taken place in the second half of 2021, producing a higher statistical carry-over for 2022 (0.7% in the alternative seasonal adjustment against 0.3% in the conventional). Further details about this alternative specification for the seasonal adjustment may be found in the box "Effects of the pandemic on the seasonal adjustment of economic indicators" of the June 2021 IR.

2/ The performance of the economy in late 2021 and early 2022 is discussed in more detail in the Economic Activity section of this report.

3/ The box "Supply shocks, prices and consumption" in this Report analyzes the short-term impact of supply shocks on consumption, through its effects on the household purchasing power via price changes.

Central-West. Pandemic-related risks continue to be monitored, now in the context of a high percentage of vaccinated people among the Brazilian population. The worsening of the health crisis in other countries may delay the normalization of global production and logistics chains. New fiscal actions to support household consumption may give a moderate additional boost to this component. However, measures that worsen the expected debt trajectories or negatively affect asset prices and raise risk premia may impair the expected growth.

Finally, the risk of a substantial increase in international geopolitical tensions following the eruption of the Russia-Ukraine war stands out. The limited trade-flow between Brazil and the countries directly involved in the conflict<sup>4</sup> suggests reduced impact through this channel. However, despite this relatively modest trade-flow, Brazilian imports of fertilizers, especially from Russia, are significant. In 2021, 23% of imports of fertilizers came from that country. Thus, permanent disruptions in the supply of these goods could have negative implications for the sowing over the coming quarters. In addition to the already observed impacts on several commodity prices, other developments might unfold: new price increases in case of escalation or prolongation of the conflict; a further delay in the normalization of global production and logistical chains; increased risk-aversion in global financial markets impacting international and local financial conditions; and, consequently, a higher than currently expected deceleration of the world economy.

In terms of production, the stability in the GDP projection in relation to that published in the previous IR reflects a decline in the forecast for agriculture and livestock and increases in the forecasts for manufacturing and services.

The projection for the growth of agriculture and livestock dropped from 5.0% to 2.0% since the previous IR, influenced mainly by a worsening in the forecasts for the summer harvest of grains, particularly soybeans, due to shortage of rain in the southern states of the country and in the south of Mato Grosso do Sul.<sup>5</sup> The volume of rainfall has not yet normalized in these regions, which is a risk to the agricultural production, particularly for the second-crop of corn, which so far has positive forecasts.

In the industrial sector, the decline forecasted was reduced from -1.3% to -0.3%, with a worsening in the projection for the extractive industry – reflecting updates in the forecasts of the main producers – and an improvement in the forecasts for the other activities. The positive surprise in 2021Q4, particularly in construction and in public utilities<sup>6</sup>, has increased the statistical carry-over of the sector. However, tighter financial conditions, higher input prices, and increased uncertainty, largely associated with the crisis in Eastern Europe, may hinder growth throughout the year.

The projection for the services sector in 2022 increased from 1.3% to 1.4%. Despite the relative stability in the aggregate forecast for the sector, there were relevant changes in the components. On the one hand, we highlight the improved forecasts for information services and transportation, storage, and mail, activities that showed significant growth in 2021Q4. On the other hand, the main revision occurred in the forecast for real estate services, a segment that lost momentum in the second half of 2021. The forecast for trade, which has a positive correlation with industrial performance, was slightly reduced.

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4/ Brazilian goods exports to Russia, Ukraine, and Belarus represented 0.7% of the country's exports in 2021, while imports from these countries accounted for 2.9% of total imports, according to Secex data.

5/ The IBGE forecast for the 2022 grain crop available at the cut-off date of the last IR indicated a production of 270.7 million tons, which would represent an increase of 6.9% over the 2021 production, reflecting, in particular, the expectation of stability in soybean production (0.2%) and a significant increase in corn production (20.6%). However, in the Systematic Survey of Agricultural Production (LSPA) of February, the IBGE reduced the forecast for the 2022 grain harvest to 261.6 million tons (increase of 3.3% over 2021), reflecting mainly the change in the forecast for the soybean harvest, which went from stable compared to the previous year, to a drop of 8.8%, due to lack of rainfall in important producing regions.

6/ Part of the surprise in production and distribution of electricity, gas and water is explained by the lower than expected participation of thermoelectric plants in total electricity generation, due to the improvement in the water scenario in the Southeast/Central-West.

As for the domestic components of aggregate demand, the forecast for the change in household consumption kept stable at 1.1%, due to the higher statistical carry-over resulting from a surprise in 2021Q4, offset by expectations of a consumption slowdown throughout the year, amidst a scenario of tightening financial conditions and higher inflation. There was a marginal adjustment in the forecast for government consumption, which was revised from 2.4% to 2.3%.<sup>7</sup> Finally, the projection for a decline in gross fixed capital formation (GFCF) changed from -3.0% to -1.5%.<sup>8</sup> The better-than-expected result in the 2021Q4, the continued business confidence in the capital goods and construction sectors at relatively high levels, and the prospect of increased public investments contribute to the improvement in the projection. In the opposite direction are the worsening financial conditions and increased uncertainties regarding the world and domestic economies.<sup>9</sup>

Exports and imports of goods and services in 2022 are expected to vary respectively 2.0% and -2.0% versus projections of 2.5% and -1.5%, presented in the previous IR. The decline in the forecast for exports reflects the downward revisions in the forecasts for agriculture and livestock and for the extractive industry. The drop in the projection for imports is associated with the increase in the price of imported items and the expectation of a reduction in the decoupling between the evolution of economic activity and imports, particularly of intermediate goods, which occurred in 2021<sup>10</sup>. Considering the new forecasts for the components of aggregate demand, the contributions of domestic demand and the external sector to the evolution of the GDP in 2022 are estimated at 0.2 p.p. and 0.8 p.p., respectively.

**Table 1 – Gross Domestic Product**

Accumulated in the year

Itemization	2021	% growth	
		2022 <sup>1</sup>	
		Previous	Current
Agriculture and livestock	-0.2	5.0	2.0
Industry	4.5	-1.3	-0.3
Mining	3.0	2.5	1.8
Manufacturing	4.5	-3.1	-2.6
Construction	9.7	0.1	3.3
Public utilities	-0.1	-2.2	1.1
Services	4.7	1.3	1.4
Trade	5.5	-2.6	-2.4
Transportation and storage	11.4	2.9	3.3
Communications	12.3	1.1	6.1
Financial and related services	0.7	-0.5	-0.8
Other services	7.6	4.3	4.3
Real estate services	2.2	1.0	0.2
Public admin., health and education	1.5	2.4	2.3
Value added at basic prices	4.3	1.1	1.1
Taxes on products	6.4	0.2	0.0
<b>GDP at market prices</b>	<b>4.6</b>	<b>1.0</b>	<b>1.0</b>
Household consumption	3.6	1.1	1.1
Government consumption	2.0	2.4	2.3
Gross fixed capital formation	17.2	-3.0	-1.5
Exports	5.8	2.5	2.0
Imports	12.4	-1.5	-2.0

Source: IBGE

1/ Estimated.

7/ Expected increases in government spending – especially by the subnational entities, in a scenario of some cash flow slack in these governments – should have limited impact on government consumption.

8/ This projection considers that the high volumes, observed in 2020 and 2021, of imports that do not cross the borders under the Repetro framework will not be repeated in 2022 (Repetro stands for Special Customs Regime for Goods for the Exploration and Mining of Oil and Natural Gas).

9/ The box “Recent Evolution of Gross Fixed Capital Formation” in this IR presents the evolution of GFCF, especially in the post-pandemic period, and discusses prospects for investment in the coming quarters.

10/ See box “Dynamics of imports in 2021 and decoupling of economic activity” in this IR.

## Labor market situation according to alternative indicators

The analysis of the labor market has become more complex in the last two years. Besides the interference of the economic shock associated with the pandemic, the main sources of data on the subject, the Continuous Household Sample Survey (Continuous PNAD), of the Brazilian Institute of Geography and Statistics (IBGE), and the New General Registry of Employed and Unemployed Persons (Novo Caged), of the Ministry of Labor and Social Security (MTP), have undergone important methodological changes in the period. Recent revisions in these sources have allowed some convergence of their results, but discrepancies remain.<sup>1</sup> In this context, this box briefly introduces and discusses some alternative indicators that complement the assessment of the formal labor market.

Among the alternative indicators of layoff (job loss) or formal employment level are data on unemployment insurance claims, Employment Compensation Fund (FGTS) withdrawal authorizations due to layoffs, FGTS accounts with contribution, and indicators calculated by Banco Itaú and the Brazilian National Confederation of Industry (CNI).

Data on unemployment insurance claims are released fortnightly by the MTP, with sectoral openings, and help in the evaluation of formal job layoffs (Figure 1). However, they tend to follow the layoffs with some delay, since the laid-off workers have up to 120 days to claim the benefit. Furthermore, not all those laid-off workers claim unemployment insurance, possibly because they recognize that they do not meet the legal requirements.<sup>2</sup> This explains, in part, why unemployment insurance claims remain stable, while Caged layoffs grow.

**Figure 1 – Unemployment insurance claims**



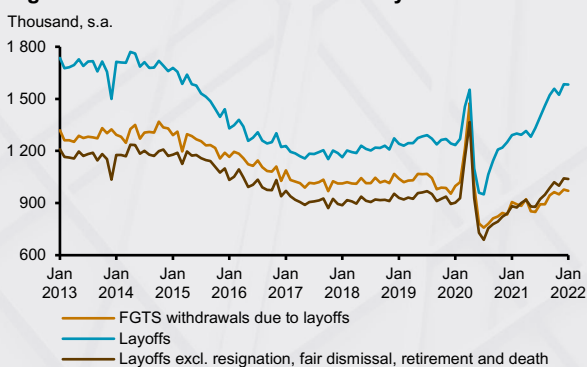
The number of FGTS accounts with withdrawal authorizations due to layoffs<sup>3</sup> is strongly correlated with Caged layoffs (after excluding resignation, fair dismissal, retirements, and deaths). The FGTS data confirm the upward trend in layoffs in recent months, in line with the gradual extinction of temporary employment guaranties for workers who signed agreements under PEMER/BEm.<sup>4</sup> However, contrary to the Novo Caged

- 1/ On this subject, see the labor market section of previous BCB's inflation reports, in particular the March and December 2021 issues.
- 2/ Unemployment insurance rules were changed by MP 665/2014 and Law 13,134/2015.
- 3/ Data on authorization for withdrawals of FGTS funds due to contract termination were provided by the Caixa Econômica Federal (CEF). They include household workers, a category not covered by Caged statistics. For those opting for the withdrawal-anniversary modality, the withdrawal permissions referring to the dismissal fine are considered.
- 4/ Emergency Employment and Income Maintenance Program.

series, withdrawal authorizations are still below the pre-pandemic level (Figure 2). As discussed in the March 2021 IR, this is an indication contrary to the hypothesis that the layoffs measured by Novo Caged underestimate the actual number of layoffs. In any case, both the Caged data and the alternative indicator point to an increase in layoffs since the first half of 2020, in line with the joint recovery in the turnover rate in the labor market and in the economy. All variables, however, remain below their respective maximum levels observed in 2013 and 2014.

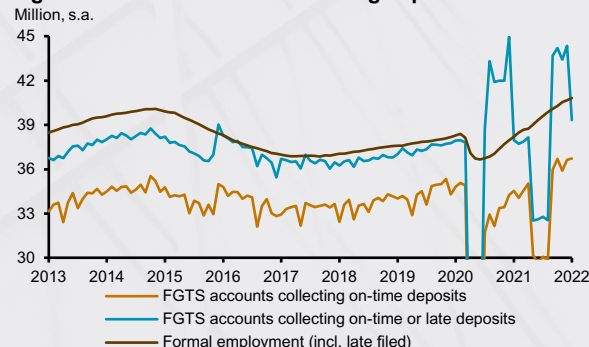
The number of FGTS accounts that receive monthly payments<sup>5</sup> is a proxy for the stock of active formal workers. Although episodes of deferred payments make it difficult to interpret the data<sup>6</sup>, the number of accounts with monthly payments on time for January 2022 already exceeds the pre-pandemic level, endorsing the recovery in formal jobs indicated by Novo Caged (Figure 3).

**Figure 2 – FGTS withdrawals due to layoffs**



Sources: CEF and MTP

**Figure 3 – FGTS accounts collecting deposits**



Sources: CEF and MTP. FGTS accounts atypical fluctuations from the second quarter of 2020 onwards are related to granted collection deferrals.

The IDAT-Employment, a proprietary indicator calculated by Banco Itaú, estimates the YoY variation in the formal employment stock based on payrolls of client companies processed by the bank.<sup>7</sup> The indicator's behavior is closer to the results of the Novo Caged, pointing out that the level of formal employment is significantly above that observed before the pandemic. In 2021Q4, the IDAT-Employment exceeded by 3.7% that recorded in the same period of 2019, while the stock of jobs in the Novo Caged indicated a variation of 6.5% and the registered employees in the Continuous PNAD, -1.0%. (Figure 4)

Employment in manufacturing industry<sup>8</sup>, released by the Brazilian National Confederation of Industry (CNI), showed behavior close to that of the Novo Caged, with moderate decline during the most acute phase of the pandemic, followed by rapid recovery. However, currently the indicator reflects an intermediate situation between those suggested by the Continuous PNAD and by Novo Caged for the sector (in the comparison between 2021Q4 and 2019Q4, variations of 3.7% in the CNI index, 6.9% in the Novo Caged's stock of formal

5/ Data provided by CEF. Include FGTS accounts of household workers, which are not covered in the Caged statistics. The generation of FGTS payment forms, as well as the information on hirings and layoffs from the Novo Caged, is in the process of migration to the System of Digital Bookkeeping of Fiscal/Tax, Social Security and Labor Obligations (eSocial).

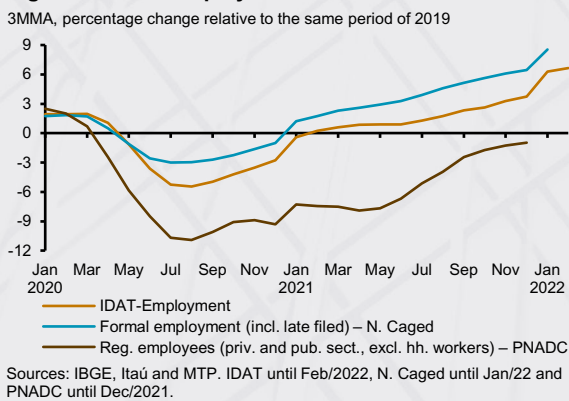
6/ The FGTS payments due from April to June 2020 were extended to July to December 2020, and those due from May to August 2021, to September to December 2021.

7/ Further details on IDAT-Employment and IDAT-Wage (to be mentioned) are available at "Macro Visão" reports of [May 6, 2021](#) and [May 13, 2021](#). The IDAT-Employment may underestimate the evolution of formal employment during the pandemic, because it does not include part of the employment ties maintained with the PEMER – specifically, in the case of suspended contracts and without compensatory payment by the company, a situation possible in companies with gross revenue of less than BRL 4.8 million in 2019.

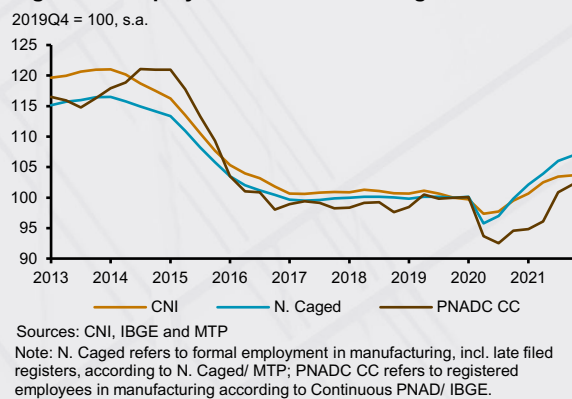
8/ According to the [methodology of the CNI's industrial indicators \(Portuguese only\)](#), this is the total number of people employed directly paid by the companies surveyed, with or without an employment relation, with an open-ended or temporary labor contract, linked or not to the production process. People who are temporarily absent (vacation, leave, etc.) are included, provided they are away from active service for a maximum of 30 days. Conversely, members of administrative, management, or fiscal councils who have not developed any other activity in the company, interns, freelancers, and people who work inside the companies surveyed but are paid by other companies are excluded.

jobs, and 2.2% in the Continuous PNAD's formal employed population – in manufacturing industry data). More recently, the CNI employment index indicates slowdown in job creation (Figure 5).

**Figure 4 – IDAT-Employment**



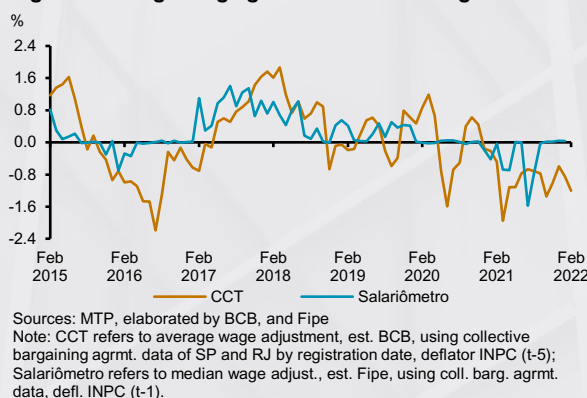
**Figure 5 – Employment in manufacturing**



The alternative indicators for the labor income here analyzed are wage adjustments obtained in salary negotiations and indicators computed by Banco Itaú and CNI.

Regarding formal employees who kept their jobs, data from collective bargaining agreements (CCT)<sup>9</sup> indicate that salary increases did not completely compensate inflation losses. Average real wage adjustments were negative throughout 2021 and in early 2022 (Figure 6). According to these data and under a sectoral perspective, service and commerce workers had higher than average losses in 2021. The share of collective bargaining agreements negotiated with wage adjustments lower than inflation also shows difficulties in salary recomposition. In 2021, 59% of the agreements were below the INPC (National Consumer Price Index), a percentage lower only than the one observed in 2016 (Table 1). The number of negotiations with phased adjustments also increased substantially last year.<sup>10</sup> Data consolidated by *Fundação Instituto de Pesquisas Econômicas (Fipe)* in its *Salariômetro* (Salarymeter) based on collective bargaining<sup>11</sup>, including conventions and agreements in the five geographic regions, also indicate difficulties for salary recomposition, but with

**Figure 6 – Bargaining agreements – Real wage**



9/ It reflects the simple average of nominal adjustments of the collective bargaining agreements in São Paulo and Rio de Janeiro by registration date criterion in the Collective Labor Negotiations System (Mediador), of the MTP. The agreements considered are those for which it was possible to adequately capture the percentage of adjustment agreed upon. Usually, there is a delay between the negotiation and the registration in the system. Exercises suggest that, based on the date of registration, the agreed wage adjustments present a higher correlation with the accumulated INPC in 12 months measured five months earlier. If the effective date is considered, the highest correlation is with the INPC of the previous month. The effective date criterion has the disadvantage of low representativeness in recent months. The two metrics show similar results for 2021, but the effective date criterion points to real losses also in 2020, in the magnitude of 0.5%.

10/ When the settlement amount for this installment is not identified, these conventions are purged for the calculation of the statistics.

11/ Data from collective bargaining agreements, whether processed by the BCB or Fipe, are not weighted by the number of workers affected, since this information is not made available in the documents registered in the Mediator system.

**Table 1 – Collective bargaining agreements**  
Wage adjustment compared to inflation (INPC t-5)

Year	Quant.	Share %		
		below	equal	above
2009	961	19.4	10.6	70.0
2010	1 356	8.0	2.8	89.2
2011	1 358	7.7	5.4	86.9
2012	1 428	6.4	3.1	90.5
2013	1 535	12.7	3.6	83.6
2014	1 532	3.0	2.0	95.0
2015	1 364	29.3	7.9	62.8
2016	1 516	64.8	12.1	23.0
2017	1 139	33.1	10.0	56.9
2018	1 199	17.2	10.1	72.7
2019	1 358	33.0	12.8	54.2
2020	771	32.2	9.5	58.4
2021	1 038	59.0	8.3	32.8

Source: MTP, elaborated by BCB

SP and RJ (since 2012) data, by registration date. The agreements considered are those for which it was possible to adequately capture the percentage of adjustment agreed upon. Absolute difference to inflation less than or equal to 0,1 p.p. are discarded to the below/ above classification.

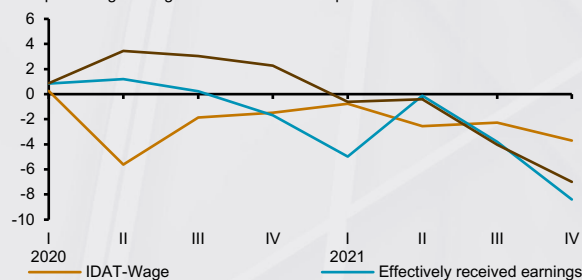
improvement since September. According to Fipe, approximately 50% of the adjustments were below the INPC in 2021 (26% in 2020).

The IDAT-Wage uses the same basic data as the IDAT-Employment to estimate the YoY change of the nominal average salary of formal workers. Notwithstanding oscillations associated with the effects of PEMER, the indicator also suggests that the average wage had real losses since the beginning of the pandemic.<sup>12</sup> The indicator accumulates a real reduction of 3.7% in 2021Q4 compared with 2019Q4 (Figure 7). In the same period, the real usually received earnings and the real effectively received earnings in the main job of registered employees fell by 7.0% and 8.4%, according to the Continuous PNAD. Therefore, the IDAT-Wage suggests a less intense drop in real income.

The real average income of employees in the manufacturing industry<sup>13</sup>, released by CNI, shows a downward trend since 2018, intensified in recent months due to rising inflation. Currently, the indicator is considerably below the level of 2019, in line with the Continuous PNAD (Figure 8).

**Figure 7 – IDAT-Wage**

Real percentage change relative to the same quarter of 2019

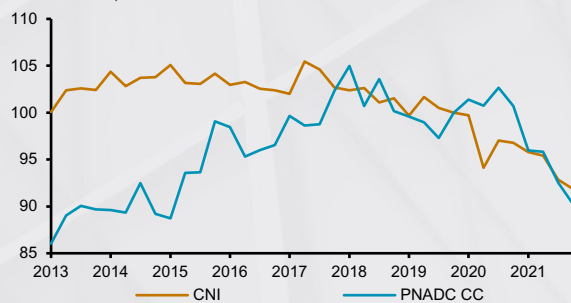


Sources: IBGE and Itau, elaborated by BCB

Note: The IDAT drop in 2020 is influenced by government programs (PEMER/BErn); average effectively and usually received labor earnings refers to registered workers, according to Continuous PNAD; deflator IPCA.

**Figure 8 – Average real earnings in manufacturing**

2019Q4 = 100, s.a.



Sources: CNI and IBGE

Note: PNADC CC refers to the average effectively received labor earnings of registered workers in manufacturing (deflator IPCA).

12/ The numerator of the indicator should have decreased during the validity of PEMER due to the reduction in payrolls of companies that adopted contract suspension or reduction of working hours and wages under the program. The denominator of the indicator, number of paid employees, should have decreased proportionately less, since those with reduced working hours still received partial salaries and companies with gross revenues exceeding BRL 4.8 million in 2019 remained required to pay monthly compensatory aid in the amount of 30% of the salary for suspended employees.

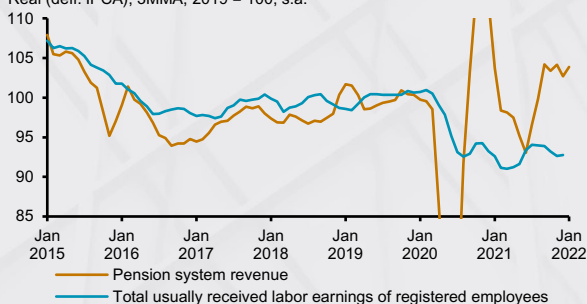
13/ Further information on CNI's industrial indicators [methodology](#) (Portuguese only).

One factor that could be impacting negatively the real average income data in the continuous PNAD is the recently more accentuated recovery of jobs in the informal sector, which traditionally have lower average remuneration. Estimates based on micro data from the Continuous PNAD indicate that changes in the composition of the employed population have contributed to the reduction in average income in the recent period. However, even adjusting for the composition in relevant variables, the real average income has retreated recently, as presented in the labor market section of chapter 1 of this report.<sup>14</sup> The original series of effective income according to Continuous PNAD declined by 7.0% and the composition-adjusted series declined by 5.8% in the second half of 2021, suggesting that the composition effect played a limited role in the recent decline observed in the series.

Social security collection information<sup>15</sup> is indicative of the formal labor overall earnings. Deflated social security revenue shows a level slightly above that observed in 2019, suggesting moderate growth in the real overall earnings, approximately 10% higher than that indicated by the Continuous PNAD (Figure 9).

**Figure 9 – Pension system revenue**

Real (defl. IPCA), 3MMA, 2019 = 100, s.a.



Sources: IBGE and STN. Note: Pension system revenue atypical fluctuations from the second quarter of 2020 onwards are related to granted collection deferrals. Total labor earnings according to Continuous PNAD until Dec/2021.

In summary, the alternative labor market indicators discussed in this box<sup>16</sup> indicate that the employed population in the formal segment is at an intermediate level between those indicated by the Continuous PNAD and by Novo Caged. Nevertheless, they corroborate the interpretation that formal employment has already surpassed the pre-pandemic level and shows signs of a recently slowdown. Moreover, the information regarding income indicates incomplete wage recomposition, despite high nominal adjustments, and a limited composition effect on real average income. The indicators for income and occupation, seen together, and the social security collection suggest that the overall earnings in the formal segment may be higher than that presented by the data from Continuous PNAD.

14/ For details on this topic, see the box “Effect of the composition of the employed population on the labor income” of the September 2021 Inflation Report.

15/ Atypical oscillations in this series starting in 2020Q2 are associated with the deferral of contribution collections.

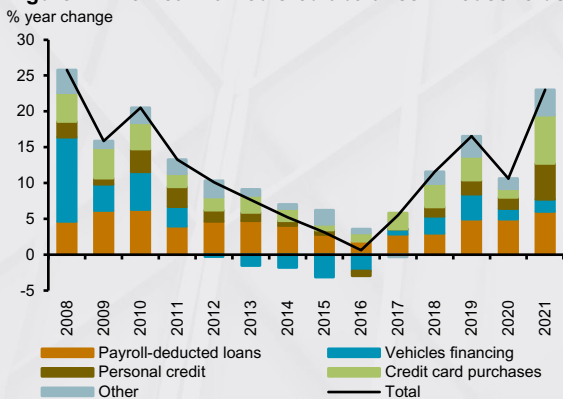
16/ Among the labor market indicators, it is also worth mentioning the Annual Report of Social Information (RAIS) of the MTP, whose data for 2021 will only be available in late 2022. RAIS includes formal workers in the private and public sectors, except household workers, and, like Novo Caged, is in transition to capture information by eSocial. According to this source, total active formal employment positions – including occupations in the private and public sectors – reached 46.2 million in December 2020, -1% from 2019 (-2.5% for statutory; -0.7% for workers under the Brazilian Consolidation of Labor Laws and others). Average real income in December also registered a 1% drop, but with great variability among the different weekly contractual hours and among activities (remuneration actually received in December, excluding Christmas bonuses). Considering only contracts of 41 to 44 hours per week, which should mitigate the interference of the PEMER/BEm, the real average income decreased 2.4%.

# Projection for credit growth in 2022

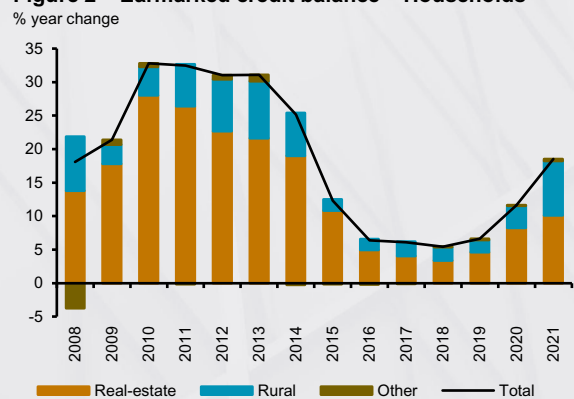
This box presents the revision of projections on the balance of credit operations within the National Financial System (SFN) in 2022. New projections incorporate credit information released since the December 2021 IR, as well as the recent evolution of the economic environment.

Credit market data released since the December 2021 IR surprised positively, with an expansion of the credit balance in 2021 higher than in 2020. Unlike in 2020, the 2021's result reflected the dynamics of credit to households, both in the non-earmarked and earmarked segments, especially credit card and non-payroll-deducted personal credit, in addition to strong expansion of rural and real estate financing. The corporate credit balance decelerated compared to 2020, when it recorded the largest expansion since 2008. In the non-earmarked segment, it is noteworthy the resumption of discount of trade bills, anticipation of credit card invoices, and vehicles financing. The balance of earmarked operations, in turn, closed the year relatively stable, as a result of the end of most emergency credit programs.

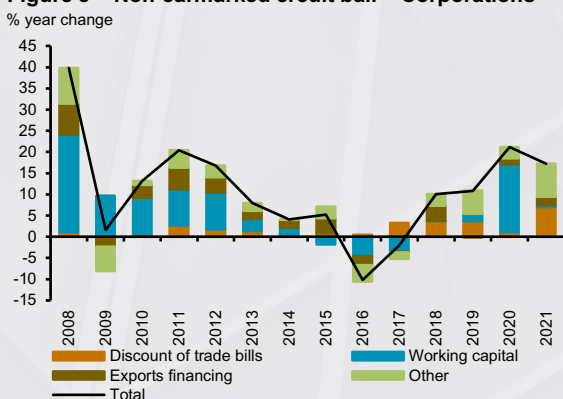
**Figure 1 – Non-earmarked credit balance – Households**



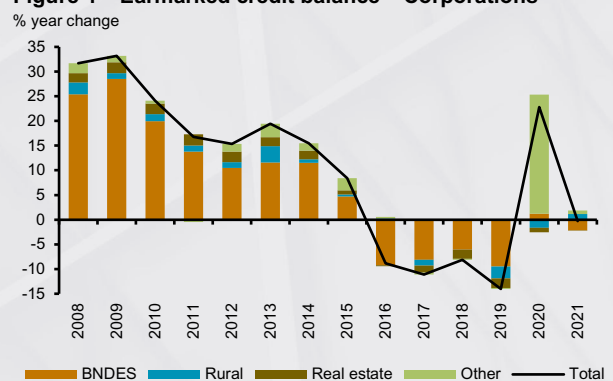
**Figure 2 – Earmarked credit balance – Households**



**Figure 3 – Non-earmarked credit bal. – Corporations**



**Figure 4 – Earmarked credit balance – Corporations**



For 2022, the projected credit balance growth was reduced from 9.4% to 8.9%, indicating the slowdown in the growth pace over 2021, in line with the expected deceleration of economic activity and the monetary tightening cycle. As for household loans, the growth projection in the non-earmarked segment was kept at 13.0%, whereas, in the earmarked segment, it was reduced from 10.0% to 9.0%, reflecting lower expectations for real estate and rural credit operations. As for corporate loans, the projected balance growth rose from

12.0% to 13.0% in the non-earmarked segment, incorporating a less favorable scenario of funding in the capital market and foreign operations, in a context of high domestic and international uncertainty. Finally, the growth projection in the earmarked segment was reduced from -4.0% to -8.0%. The new projection no longer incorporates new credit granting under the Pronampe, considering the non-provisioning of resources for new operations up to the cut-off date of this IR. The potential approval of these resources or new credit programs directed to companies would naturally lead to revisions in the projections.

**Table 1 – Credit balance**

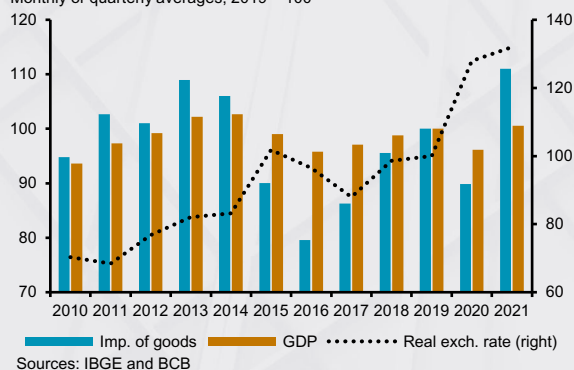
	Occurred			12-month variation	
	2020	2021	Jan 2022	Proj. 2022	
				Previous	Current
Total	15.6	16.3	16.4	9.4	8.9
Non-earmarked	15.4	20.3	20.4	12.5	13.0
Households	10.7	23.0	23.8	13.0	13.0
Corporations	21.2	17.3	16.5	12.0	13.0
Earmarked	15.9	10.9	10.9	4.8	2.8
Households	11.7	18.5	18.6	10.0	9.0
Corporations	22.8	-0.3	-0.7	-4.0	-8.0
Total Households	11.1	21.0	21.5	11.7	11.2
Total Corporations	21.8	10.5	9.8	6.3	5.7

# Dynamics of imports in 2021 and decoupling of economic activity

In 2021, Brazilian imports of goods rose significantly above the GDP. This decoupling occurred despite the historically depreciated real exchange rate level, logistical problems in international trade, and interruptions in the supply of some goods due to difficulties in world inputs supply chains to meet the global demand. When compared with 2019, before the Covid-19 pandemic, the volume of imports of goods and the GDP grew 11.0% and 0.5%, respectively, whereas the real exchange rate depreciated 32.0% (Figure 1).

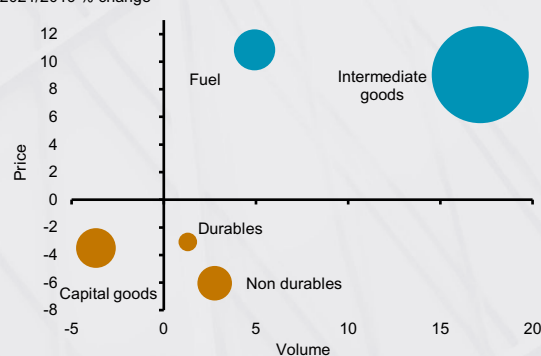
**Figure 1 – GDP, imports of goods and real exch. rate**

Monthly or quarterly averages, 2019 = 100



**Figure 2 – Imports by category**

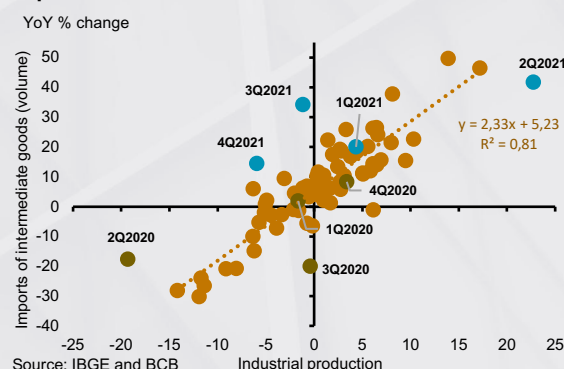
2021/2019 % change



In addition to increased imports of fuels, reflecting the high demand in a scenario of energy crisis due to water scarcity, it is noteworthy the volume of imports of intermediate goods in the period. Corresponding to 66.0% of the Brazilian imports in 2021, the imported volume<sup>1</sup> of this category increased 17.2% in 2020 against 2019, the largest expansion among classifications of great economic categories (CGEC) under this comparison basis (Figure 2).

A substantial share of imported intermediate goods (BI) is used as input for the Brazilian industry, a relationship highlighted by the strong correlation shown in Figure 3, which considers interannual quarterly variations of BI imports (volume) and national output (measured by the IBGE's Monthly Industrial Survey). Also under this comparison basis, in which cyclical movements are more strongly correlated, the largest deviations from the time series were observed in the post-pandemic period. At first (2020Q2), industrial output fell proportionally more than indicated by the time series relationship with BI imports. Output recovered in 2020Q3 and returned to a level closer

**Figure 3 – Correlation between industrial prod. and BI imports**



1/ All data used in this box referring to the imported volume, including sub-categories, refer to the quantum index elaborated by the BCB, based on data from Secex/ME following the methodology of the Foreign Trade Center of Studies Foundation (Funcex).

to the time series pattern at late 2020 and early 2021. In the second half of 2021, however, the imported volume of BI rose sharply, whereas industrial output declined.

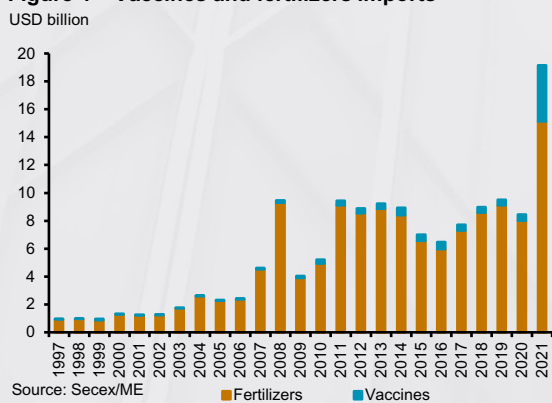
## Fertilizers and vaccines

Imports classified as intermediate goods are a heterogeneous group, not entirely used as inputs for industrial production. Two categories in particular with little relevance as industrial inputs especially impacted by the pandemic help to explain the trajectory of BI imports in the period: fertilizers and vaccines.

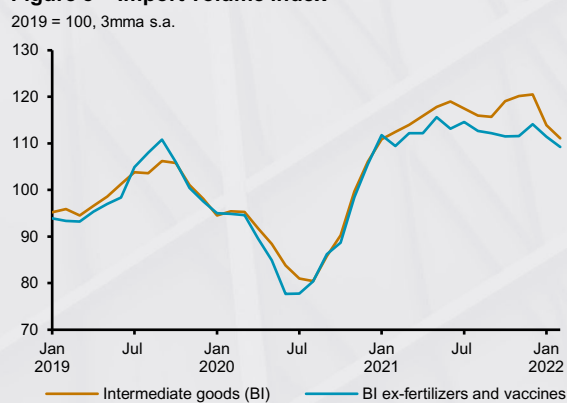
In 2021, the value of imported fertilizers and vaccines reached the peak of the time series (Figure 4). The strong expansion of vaccines purchases is directly associated with the efforts to control the Covid-19 pandemic. As for the growth in the imported volume of fertilizers, it reflects the favorable prospective scenario for the production of agricultural commodities and the precautionary formation of inventories, in face of difficulties for increasing supply and uncertainties about the continuity of supply by leading countries<sup>2</sup>. The expansion of the imported value of fertilizers also reflects the scenario of high international prices, influenced by a sharp increase in natural gas prices, an important input in the manufacturing of fertilizers, especially nitrogenous ones.

Figure 5 compares the original series of the imported volumes of BI with a series excluding from this group vaccines and fertilizers<sup>3</sup>. A substantial share of the growth of BI imports in 2021Q2 is explained by these goods. However, this growth is not enough to explain the decoupling between BI imports and the national industrial output.<sup>4</sup>

**Figure 4 – Vaccines and fertilizers imports**



**Figure 5 – Import volume index**



## Imports of inputs and industrial output

As previously discussed, some goods classified as imported intermediate goods may not be properly used as inputs for the local industry. Thus, an alternative measure of the volume of imported intermediate goods, an index based on the 2015 Input Output Matrix (IOM) was calculated. This index tends to select and give

2/ Further information (Portuguese only) at [boletim logístico da Conab](#).

3/ In this calculation the following Mercosur Common Nomenclature (NCM) were excluded: 30022029, 30022019, 31021010, 31021090, 31022100, 31022910, 31022990, 31023000, 31024000, 31026000, 31027000, 31028000, 31029000, 31031010, 31031020, 31031030, 31031100, 31031900, 31032000, 31039011, 31039019, 31039090, and 31041000.

4/ The replication of Figure 3 with the new series (not shown in this box) continues to indicate relevant decouplings between imports and industrial output when the series relative to BI imports ex-fertilizers and vaccines are used.

broader relevance to those goods mostly used as inputs by the manufacturing industry.<sup>5</sup> It is presented in Figure 6, jointly with the manufacturing industry indexes and the imported volume of BI. The trajectory of the index of imported inputs was close to the trajectory of BI imports during most of the time series. Excluding two recessive periods, both increase steadily, whereas the domestic industrial output keeps relatively stable, which might characterize a long-term structural process of increased participation of imported goods in the Brazilian economy. Recently, however, imported inputs grew abruptly, detaching from the time series of BI imports and, even further, from the industrial output. Therefore, under this perspective, the decoupling under investigations is even higher.

The identification of typical inputs in each industrial segment allows, in addition, to proceed with a sectoral analysis. The production of automotive vehicles, one of the sectors more integrated with the global production chains and sensitive to the supply of semiconductors, presents a trajectory closer to the index of the sector's imported inputs in most of the time series (Figure 7). However, recently, a behavior similar to that registered in the aggregated series is detected, indicating strong expansion on the imports of inputs, despite the depressed production level and interruptions due the shortage of electronic components.

**Figure 6 – Manufacturing and imports**

2019 = 100, 3mma s.a.



Source: IBGE and BCB

**Figure 7 – Motor vehicles**

2019 = 100, 3mma s.a.



Source: IBGE and BCB

## Conclusion

This box analyzed the substantial decoupling between imports of goods and economic activity observed in 2021, influenced by the sharp growth of BI imports. Even comparing with industrial output, which demands imported inputs typically classified as BI, the decoupling observed in the post-pandemic period was record. It cannot be explained by the large volume of imports of fertilizers and vaccines in the year, which are more closely related to other determinants. The decoupling also persists when alternative aggregations are used for establishing a relationship between imports and industrial activity.

Two hypotheses are assumed for rationalizing this evidence. First, it is likely that the high demand and the favorable industrial output level observed at late 2020 and early 2021 have benefited optimistic projections for the production in the year and thus increased the requests of imported inputs. This hypothesis is corroborated by positive expectations in the industry in that period, according to industrial surveys. Second, it is plausible that agents' behavior changed due to increased uncertainty in global production

5/ Based on the relationship between NCMs and goods, an index for the imported volume of each IOM good was built, given by the sum of net weight of each NCM (alternative ways for aggregating NCMs, as weighted by the previous year's value, implied results qualitatively similar). Subsequently, for each industrial activity described in the IOM, an index was calculated for the volume of imported inputs based on the weighting of indexes of imported volume of each good by its participation in the total value of imported inputs of the relative industrial activity. Finally, the final index of the volume of imported inputs of the manufacturing industry was calculated by aggregating the indexes of imported inputs of several industrial activities, weighting each one by the participation of the industrial activity in the total value of imported inputs of the manufacturing industry in 2015.

and logistical chains, which led to interruptions in the supply of inputs, especially electronic components. Such an increased uncertainty regarding the duration, amount, and price of imported inputs might have generated a precautionary increase in imported volumes, so as to avoid a likely shortage of inputs ahead. Both hypotheses are mutually reinforced and indicate a slowdown of the imported volume in 2022 in view of the current scenario with a reduced level of consumption of goods, less optimistic industrial businessmen's confidence levels, and less imbalanced indicators of industrial inventories.

## Projections for the external accounts in 2022

**Table 1 – Projections for the external accounts**

Itemization	USD billion			
	2021	2022	2022 Forecast	
	Year	Jan	Previous	Current
Current account	-28	-8	-21	5
Balance on goods	36	-2	52	83
Exports	284	20	276	328
Imports	248	21	225	245
Services	-17	-1	-26	-26
of which: Travel	-2	0	-7	-7
of which: Operating leasing services	-7	-1	-8	-8
Primary income	-50	-5	-50	-56
of which: Interests	-21	-3	-26	-26
of which: Dividends	-30	-2	-24	-30
Investment – liabilities	106	10	66	66
DI liabilities	46	5	55	55
Portfolio investments	21	5	11	11
Other investments <sup>1</sup>	38	0	0	0

<sup>1/</sup> Includes loans, commercial credits, deposits and other investments.

The projections for the external accounts in 2022 were significantly revised in relation to the December 2021 IR. The revision especially incorporates the recent rise in international commodity prices, resulting in an increase in the trade balance and a forecasted surplus for current transactions in the year.

The strong increase in the projection for exports reflects the expected high international prices, with emphasis on increased prices of oil and oil-derived products, more directly impacted by the sanctions imposed to Russia in response to the war in Ukraine. Grain prices have also risen in the face of uncertainty about the impact of the conflict on exports from the countries involved, as well as on international fertilizer prices. On the other hand, lower growth is expected in the quantum exported, with the negative impact of weather issues on the soybean harvest in the Southern region of Brazil and with lower expectations for the local extractive industry production.

The expected value of imports was also affected by expected higher international prices, especially fuels and fertilizers. The quantum imported, however, should decline more in line with the deceleration of domestic activity – in particular, of the manufacturing industry.<sup>1</sup>

In the services account, the projection of a deficit below the pre-pandemic levels was maintained, as a result of the slow resumption of international tourism, affecting the travel and passenger transportation accounts. The projection for net expenses on operating leasing services was also maintained, close to the level observed in 2021 and significantly lower than in previous years. In this case, the change of level reflects the imports observed in the latest years, under Repetro, of oil rigs and equipment which were already operating in Brazil, and which were previously remunerated with rent payments.

In the primary income account, the increase in the international prices of commodities should reflect positively on the profitability of exporting companies and, coupled with the more appreciated exchange rate level, lead to larger income expenses. Despite higher international interest rates and the BRL appreciation since the previous IR, the projection for the interest account deficit was maintained in view of the results of the early months of 2022.

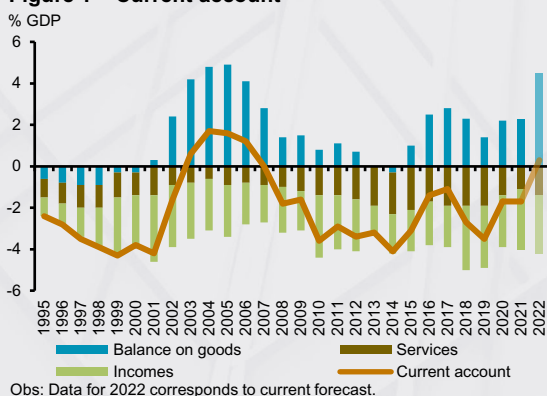
Projected direct investment liabilities inflows remained at USD 55 billion, representing a relative stability as a proportion of GDP (2.9% in 2021 and 3.0% in 2022). Despite the high remittance of earnings to other countries at the end of 2021, which negatively impacted reinvestments within direct investment liabilities,

<sup>1/</sup> Further information in the box "Dynamics of imports in the 2021 and decoupling of economic activity", of this IR.

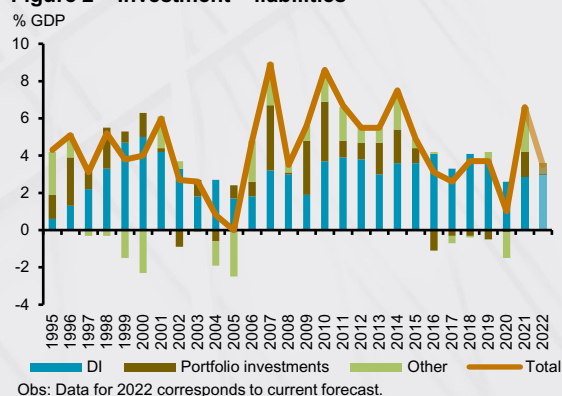
significant inflows have been observed in early 2022. The evolution of the privatization and concessions agenda, the need for investments in the energy and telecommunications sector, and the advance of tech companies during the pandemic may contribute to equity flows, whose share in direct investment liabilities is expected to increase. Projected net inflows for portfolio investments were maintained, as favorable results in the first months of the year are counterbalanced by expected faster monetary normalization in advanced economies and lower risk appetite because of the increased geopolitical tensions.

In general, updated projections reinforce the favorable scenario for the external accounts. The current account is expected to register the first surplus since 2007, reflecting a significantly favorable trade balance – the largest value in USD of the time series – and the low level of services and income deficits. Direct investment liabilities, in turn, should continue to show relevant volumes.

**Figure 1 – Current account**



**Figure 2 – Investment – liabilities**



## Pass-through of oil price in BRL to inflation and risk measurement

Changes in oil prices have great influence on inflation in Brazil, mainly through the price of gasoline, the fuel with the greatest weight in the household consumption basket. In 2021, in particular, fuels contributed with one third of the 10.06% rise in the IPCA. Besides, since the December 2021 Inflation Report (IR), recent and significant fluctuations in oil prices have played a relevant role in the evolution of the BCB's inflation projection for 2022. This box shows that the oil price in BRL impact on inflation is significant and should increase in 2022, representing a substantial source of uncertainty for inflation in the year.<sup>1</sup>

### The degree of pass-through of oil price in BRL to consumer prices

The first step to better understand the impact of oil price changes on inflation and its short-term projection is to assess their direct impacts. This measure is given by the percentage of the pass-through of oil price in BRL to prices at the pump. In 2021, the price of Brent oil in BRL and the gasoline price to the final consumer rose 65% and 47% respectively. Such changes give a first indication of the variable in question. Although other factors affect the gasoline price (such as the ethanol price), which can confound the analysis and hinder the identification of the degree of pass-through, the increase in oil prices was so significant in the period concerned that it tends to dominate the other effects. Thus, a simple division of the increase in gasoline prices to consumer by the increase in oil prices in BRL serves as a reasonable approximation of the degree of pass-through.<sup>2</sup>

Table 1 presents simple estimates of the degree of pass-through, considering only variations observed in 2021. Estimates are presented not only with the oil price in BRL as the denominator, but also the gasoline price at the refinery (which varies similarly to the international price) and the price of the blend between pure gasoline and ethanol. As there are lags in the pass-through and since the oil price decreased significantly at the end of the year, calculations in which the gasoline price variation in the year is divided by the YoY variation of the conditioning factors in November are also presented. The exercise suggests that the degree of pass-through may be greater than 50%.<sup>3</sup>

The degree of pass-through obtained in this simplified exercise is corroborated by a more

**Table 1 – Simple estimate of the pass-through from given drivers to consumers gasoline prices**

	YoY change (%)	Pass-through (consumer gasoline / driver)
<b>Consumer gasoline prices (Dec 2021)</b>	<b>47</b>	
<b>Drivers (Dec 2021)</b>		
Brent in BRL	65	73%
Gasoline A at the oil refinery	79	60%
Gasoline A + ethanol mix	73	65%
<b>Drivers (Nov 2021)</b>		
Brent in BRL	95	50%
Gasoline A at the oil refinery	93	51%
Gasoline A + ethanol mix	88	54%

Sources: IBGE, Cepea, Bloomberg and BCB

1/ Recent boxes that explore the topic are “Measuring inflation risks related to energy prices”, of the September 2019 IR, and “International prices pass-through to gasoline”, of the June 2020 IR.

2/ If  $y = \beta x + \epsilon$  and  $x \gg \epsilon$ , then  $\beta \approx \frac{y}{x}$ .

3/ The ethanol price – an important component in gasoline costs to the consumer – also rose sharply in 2021 (60%), partly as an endogenous response to oil price, but also because a shortfall in the sugarcane crop occurred. The relevance of this exogenous factor suggests that the true degree of pass-through is lower than that presented in this first exercise.

detailed analysis, which uses the cost structure of price to the consumer to calibrate a theoretical pass-through coefficient. The appendix presents the calculations that support the calibration. Results are presented in Table 2.<sup>4</sup> The upper part of the table shows each component share in the gasoline price. The bottom part shows the estimated degree of pass-through considering different hypotheses for the reaction of the ethanol price.

**Table 2 – Structure of consumers' gasoline prices and pass-through from oil price in BRL**

	Dec, 2020	Dec, 2021	Diff. (p.p.)
<b>Breakdown of consumer gasoline prices</b>			
Gasoline at the oil refinery	28.6%	34.4%	5.9
Wholesale pure ethanol	14.5%	15.7%	1.1
Federal taxes	15.3%	10.3%	-5.0
Local government taxes	28.1%	27.0%	-1.1
Distribution and sales margins	13.5%	12.6%	-0.9
<b>Pass-through considering alternative hypotheses for the ethanol response</b>			
H1: Constant ethanol price	39.8%	47.2%	7.4
H2: Constant ethanol/gasoline price ratio for consumers <sup>1</sup>	54.4%	66.1%	11.7

<sup>1/</sup> Considering the change in hydrated ethanol at the pump equals 75% of the change in pure ethanol.

Using the December 2020 weights, which are the appropriate basis for computing the following year's pass-through, the degree of pass-through is calculated at 39.8% when the ethanol price is considered exogenous and at 54.4% when it is considered endogenous so as to keep the ratio between the ethanol and the gasoline at the pump prices constant. The real degree of pass-through could be an intermediate value between those obtained under these two assumptions.<sup>5</sup>

Using the December 2021 weights, the degree of pass-through for 2022 is calculated at 47.2% when the ethanol price is considered exogenous and at 66.1% when it is considered endogenous – increases of 7.4 p.p. and 11.7 p.p., respectively, when compared with the respective calibrations of the degree of pass-through for 2021.

Therefore, the gasoline price in 2022 is expected to be even more sensitive to the oil price. The greater sensitivity reveals that the gasoline price at the refinery – the most sensitive component to oil price – is now more important in the cost structure than before. The cost of ethanol has also gained relevance and contributes to the higher degree of pass-through, when considering ethanol endogenous. Federal taxes, which are not sensitive to oil price, had their participation in the cost structure significantly reduced.

The influence of oil prices in BRL on consumer inflation will be greater not only because of the greater pass-through, but also because the gasoline weight in the consumer basket has grown significantly, from 4.9% to 6.6%. As shown in Table 3, if in 2021 a 10% increase in the oil price in BRL had an impact of 0.20 to 0.27 p.p. on the IPCA, in 2022 this impact should be between 0.31 and 0.43 p.p.

4/ The pricing structure was calculated by the BCB based on several information. The numbers are similar to those calculated and released by the Ministry of Mines and Energy (MME), in the Oil Products Market Report. The December 2021 MME report was not available when this box was written.

5/ The simplified exercise presented earlier suggests a degree of pass-through closer to the upper limit, but it is noteworthy that the exercise is valid precisely under the assumption that greatest share of the rise in ethanol price is endogenous to the oil price shock.

**Table 3 – Impact on IPCA of a 10% hike in oil prices in BRL, through gasoline prices**

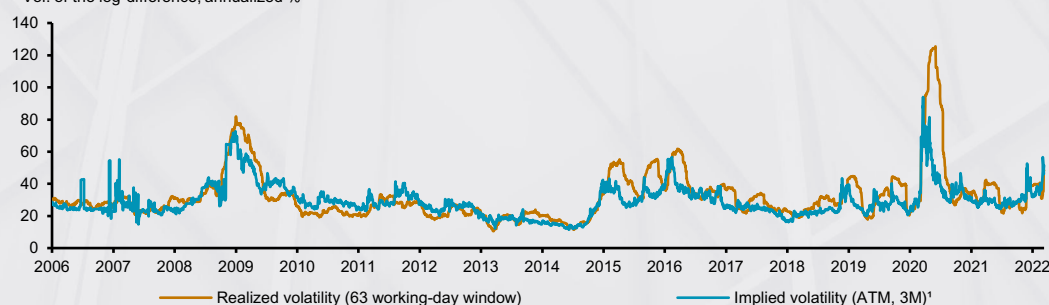
	In 2021	In 2022	Diff. (%)
<b>Gasoline weight in IPCA (%)</b>	4.9	6.6	33.7
<b>Pass-through from oil/exchange rate to gasoline (%)</b>			
H1: Constant ethanol price	39.8	47.2	18.7
H2: Constant ethanol/gasoline price ratio for consumers	54.4	66.1	21.4
<b>Impact on administered prices of a 10% hike in oil prices in BRL</b>			
H1: Constant ethanol price	1.02	1.29	26.1
H2: Constant ethanol/gasoline price ratio for consumers	1.40	1.80	29.1
<b>Impact on IPCA of the 10% hike in oil prices in BRL</b>			
H1: Constant ethanol price	0.20	0.31	58.7
H2: Constant ethanol/gasoline price ratio for consumers	0.27	0.43	62.4

## Volatility and inflation risks measurement

Oil price is volatile. Recently, the oil price volatility in BRL<sup>6</sup> has been higher than usual, even though the level is substantially lower than that observed in times of greater market stress (Figure 1). Volatility was 40% in the weeks leading up to the war in Ukraine – already above the average of about 30% since 2006 – and has now risen to 50%.

**Figure 1 – Brent volatility, in BRL**

Vol. of the log-difference, annualized %



Source: Bloomberg

1/ The implied volatility of oil prices in BRL combines implied volatilities of oil and of the BRL, considering the correlation between their daily returns is -0.5.

It is possible to calculate probability intervals for inflation that arise from the volatility of oil price in BRL, using as parameters the volatility and the degrees of pass-through discussed earlier.<sup>7</sup> The result is shown in Table 4.

Even considering an interval with a reduced probability mass of only 50%, oil price is expected to vary between -24% and +31% in one year.<sup>8</sup> Considering such an interval and the assumption that the ethanol price is endogenous, the uncertainty around a projected scenario would be from -3,8 p.p. to +4,9 p.p. for the variation of administered prices. In turn, the equivalent uncertainty would be from -1,0 p.p. to +1,3 p.p., for the IPCA. Considering a wider forecast interval, with a 95% probability, the interval around a central scenario for the IPCA would go from -2.1 p.p. to +4.0 p.p.

6/ The oil price volatility in BRL results from the oil price volatility in USD and the exchange rate volatility. As the assets show a moderately negative correlation (close to -0.5), the oil price volatility in BRL is at a similar level as the oil price in USD volatility.

7/ This exercise used a figure of 40% for the volatility, which is close to the value observed before the start of the war in Ukraine.

8/ The absence of symmetry is due to fact that the variation measured in logarithmic difference was transformed in percent variation.

**Table 4 – Probability ranges around a central scenario, considering volatility of oil prices in BRL<sup>1</sup> and direct channel via gasoline**

			95%		
			50%		
			Central		
<b>Brent prices in BRL (p.p.)</b>	-48.2	-23.6	0.0	31.0	93.1
<b>Exogenous ethanol (47.2% pass-through)</b>					
On gasoline (p.p.)	-22.7	-11.2	0.0	14.6	43.9
On administered prices (p.p.)	-5.5	-2.7	0.0	3.5	10.6
On IPCA (p.p.)	-1.5	-0.7	0.0	1.0	2.9
<b>Endogenous ethanol (66.1% pass-through)</b>					
On gasoline (p.p.)	-31.9	-15.6	0.0	20.5	61.5
On administered prices (p.p.)	-7.7	-3.8	0.0	4.9	14.8
On IPCA (p.p.)	-2.1	-1.0	0.0	1.3	4.0

Note: Absence of symmetry is due to the conversion from logarithmic difference to percentage change.

1/ Considering annualized volatility of  $\text{dlog}(\text{brent}) = 40\%$ .

It is worth noting that the intervals presented consider only the impact of oil prices in BRL through the gasoline price, disregarding their direct effect on other fuels and the indirect effects on other prices in the economy.<sup>9</sup>

As highlighted in this box, the high oil price volatility, especially in the current context of increasing international geopolitical risk, and the rise in the degree of its pass-through to the gasoline price to final consumers yield substantial uncertainty and volatility for inflation projections, especially in the short term. The current environment of high uncertainty and volatility demands serenity for the evaluation of the long-term impacts of the current shock and their secondary impacts on inflation over the relevant horizon. At this horizon, the effects of monetary policy are greater, as opposed to the short term, when the effects of commodity shocks are more intensely felt.<sup>10</sup>

## Appendix

Consider the following breakdown of the gasoline price at the pump in (BRL/liter):

$$\underbrace{Y}_{\text{Price at the pump}} = \underbrace{R}_{\text{Refinery}} + \underbrace{A}_{\text{Anhydrous ethanol}} + \underbrace{F}_{\text{Federal taxes}} + \underbrace{E}_{\text{State taxes}} + \underbrace{M}_{\text{Margin}}$$

Considering percentage changes (represented by the respective lower case letters), one can write:

$$y = \gamma_R r + \gamma_A a + \gamma_F f + \gamma_E e + \gamma_M m$$

in which  $\gamma_i$  represents the percentage contribution of the component  $i \in \{R, A, F, E, M\}$  to the price (i.e.,  $\gamma_i = i/Y$ ).

Let  $x$  be the percentage change in oil price in BRL. Consider the following assumptions, which are fairly good approximations of how the various components react to oil price shocks:

9/ If considering the effect on all fuels (household and vehicles), making assumptions about the degree of pass-through for the whole group is necessary. Considering elasticity equal to that of gasoline, the probability intervals would be 43% wider, given the weights proportion (9.4% for fuels and 6.6% for gasoline).

10/ For a discussion of the lags of the impacts of commodity price shocks and monetary policy on inflation, see the “Commodity shocks and monetary policy” section of the box “Review of the small aggregate model” of the December 2021 IR.

- $\frac{\partial r}{\partial x} = 1$ , which represents the proximity between the evolution of the international oil price and the evolution of the domestic gasoline price at the refinery;
- $\frac{\partial f}{\partial x} = 0$ , which represents federal taxes fixed *ad rem*;
- $\frac{\partial e}{\partial x} = \frac{\partial y}{\partial x}$ , which represents that the ICMS, a federal units' tax, has its rate applied on the fuel final price;<sup>11</sup>
- $\frac{\partial m}{\partial x} = 0$ , simplifying assumption that the fuel distribution and resale margin is not affected by oil price in BRL.

With these assumptions, we obtain the following expression for the degree of pass-through of oil prices in BRL to gasoline prices for consumers, still as a function of how the anhydrous ethanol price reacts to oil price shocks:

$$\frac{\partial y}{\partial x} = \frac{\left(\gamma_R + \gamma_A \frac{\partial a}{\partial x}\right)}{(1 - \gamma_E)}$$

For full calibration of the degree of pass-through, it is necessary to make an assumption for the response of the anhydrous ethanol price. The exercise presented in this box considers two very different assumptions to obtain a reasonable interval for the degree of pass-through:

**H1 – Anhydrous ethanol price is independent of oil price.** The assumption can be expressed as  $\frac{\partial a}{\partial x} = 0$ . In this case, the degree of pass-through is given by:

$$\frac{\partial y}{\partial x} = \frac{\gamma_R}{1 - \gamma_E}$$

**H2 – Anhydrous ethanol price varies such that the hydrous ethanol/gasoline price ratio at the pump is constant.** Let be  $h$  the variation of the hydrous ethanol price at the pump. The assumption can be expressed as  $\frac{\partial h}{\partial x} = \frac{\partial y}{\partial x}$ . It is necessary to calibrate the relationship between the hydrous ethanol price at the pump and the anhydrous ethanol wholesale price. Consider that such relationship is given by  $\frac{\partial h}{\partial a} = \kappa$ . The parameter  $\kappa$  can be calibrated using the ethanol cost structure, and a figure of 75% is reasonable. Then  $\frac{\partial a}{\partial x} = \left(\frac{\partial h}{\partial a}\right)^{-1} \left(\frac{\partial h}{\partial x}\right) = \kappa^{-1} \frac{\partial y}{\partial x}$ . In this case, the degree of pass-through is given by:

$$\frac{\partial y}{\partial x} = \frac{\gamma_R}{1 - \gamma_E - (\gamma_A/\kappa)}$$

11/ This assumption reflects the incidence of ICMS before the approval of the Complementary Law 192/2022. This new Law states that the ICMS rate becomes *ad rem*, as are the rates for federal taxes on fuels. The change will be regulated by the Federal Units and the Federal District. After the change comes into effect, the assumption  $\partial e/\partial x = \partial y/\partial x$  for the short-term response of Federal Units' taxes should be replaced by  $\partial e/\partial x = 0$ , which in practice reduces the sensitivity of the final price of gasoline to changes in the oil price in BRL. However, the tax rate may be changed with defined periodicity and the medium-term elasticity may be the same as the one presented in this box.

This chapter analyzes the inflation outlook up to 2024, therefore covering all years for which the National Monetary Council (CMN) sets inflation targets.

Inflation projections presented herein represent the Copom's view. Projections are generated using a set of models and available information, combined with judgment.

Inflation projections are conditional on a set of variables. In particular, the scenarios use as conditioning factors the trajectories of the Selic rate from the BCB's Focus survey and the exchange rate based on the purchasing power parity (PPP) theory.<sup>33</sup>

The projections depend not only on assumptions about the interest and exchange rates, but also on a set of assumptions about the behavior of other exogenous variables. Projections are presented together with probability intervals that highlight the degree of uncertainty involved.

In this Inflation Report (IR), projections use data available up to the 245<sup>th</sup> Copom Meeting, held on March 15-16, 2022. As for the conditioning factors used in projections, especially those from the Focus survey, the cut-off date is March 11, 2022, unless otherwise stated.

## 2.1 Revisions and short-term projections

After a downward surprise in November,<sup>34</sup> consumer inflation, measured by the IPCA, surprised upwards again in the quarter ended in February, standing 0.83 p.p. above the level expected by Copom in

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33/ For further details, see box "Exchange rate path in BCB projections and the purchasing power parity", of the September 2020 IR.

34/ November IPCA was released after the cut-off date of the December 2021 IR, and thus was not included in the set of information for the elaboration of projections presented in that IR.

**Table 2.1.1 – Inflation surprise**

	% change					
	2021		2022		Quarterly up to Feb.	12-month up to Feb.
	Nov	Dec	Jan	Feb		
Copom scenario <sup>1</sup>	1.18	0.65	0.15	0.66	1.47	9.90
Actual IPCA	0.95	0.73	0.54	1.01	2.30	10.54
Surprise	-0.23	0.08	0.39	0.35	0.83	0.64

Sources: IBGE and BCB

<sup>1/</sup> Scenario at the December 2021 Inflation Report cut-off date.

the December reference scenario (Table 2.1.1). Inflationary pressure was also higher than anticipated by market analysts, although at a lower degree.<sup>35</sup>

A relevant share of inflationary pressure in the quarter is related to the evolution of oil prices, which fell sharply in the weeks before the cut-off date of the December 2021 IR and rebounded strongly afterwards. Vehicle fuels contributed to almost half of the inflationary surprise in the quarter. A relevant surprise was also registered in industrial goods prices. This is not only a compensation for the November's downward surprise associated with promotional discounts, since the surprise, in absolute value, exceeded that observed in November and also widespread. The increase in food prices was also higher than expected, reflecting the effect of extreme weather adversities on the prices of fresh food and higher pressure on the prices of coffee, oils and fats, and baked goods, which are affected by commodity prices. The increase in services prices came in line with expectations, although with a distinct composition, with greater pressure on core components. Finally, administered prices ex-fuels registered lower variation, particularly urban bus fares and residential electricity. Nevertheless, the increase in the sub item "license plates and licenses" was higher than expected, with a relevant impact on the 2022 projection, since January's monthly change is repeated throughout the year.

**Table 2.1.2 – Short-term projection**

	% change					
	2022				Quarterly	12-month up to May.
	Mar	Apr	May			
Copom scenario <sup>1</sup>	1.02	1.21	-0.14	2.10	10.56	

Source: IBGE and BCB

<sup>1/</sup> Scenario at cut-off date.

In the Copom's scenario that assumes a downward oil price trajectory throughout 2022 (see Section 2.2), short-term projections consider inflation of 1.02% in March, 1.21% in April, and -0.14% in May (Table 2.1.2). If confirmed, the inflation of 2.10% in the quarter will imply stability in the 12-month inflation (10.54% in February and 10.56% in May).

The major pressure on consumer inflation in the next quarter should come from fuel prices, reflecting the recent increase of oil price. Adjustments in the prices of pharmaceutical goods, which are heavily influenced by past inflation, should also give an important contribution. The contribution of administered prices for inflation in the quarter would be even greater if it was not expected in May the end of water scarcity flag and the transition to the yellow flag. Impacts from the war between Russia and Ukraine are also expected on market prices. Food prices are expected to register relevant increase due to this shock and

35/ The median inflation for the period between December 2020 until February 2021 projected by the Focus participants on December 3, 2021 was 1.97%. The percentiles 10 and 90 of the distribution were 1.67% and 2.38%, respectively.

the persistence of the effects of extreme weather adversities. Industrial goods prices should continue to register relevant increases, despite the reduction in IPI rates, considering the persistence of pressures on the supply chains and commodity prices, which were even further worsened by the conflict. Services inflation is expected to decline in the quarter with the end of the adjustment of school fees but to remain at a high level, especially the core component, which follows a smoother trajectory and is more influenced by inflationary inertia. The various measures of core inflation are above the range compatible with meeting the inflation target in the period.

In turn, the scenario in which oil price follows a steadily growth trajectory at a rate of 2% p.a., inflation projections are 1.02%, 1.21%, and -0.09% for March, April, and May, respectively.

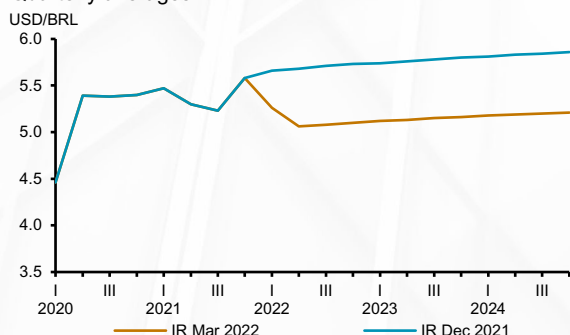
## 2.2 Conditional projections

### Conditioning factors

The inflation scenarios considered are built using several conditioning factors. The exchange rate starts at USD/BRL 5.05<sup>36</sup>, lower than the value of USD/BRL 5.65 of the December 2021 IR, and follows a path according to the PPP<sup>37</sup> (Figure 2.2.1). Averages for the last quarters of 2022, 2023, and 2024 are USD/BRL 5.10, USD/BRL 5.16, USD/BRL 5.21, respectively.

Regarding the Selic rate, the median of the expectations taken from the Focus survey of March 11, 2022, pointed to an increase from 10.75% p.a. to 11.75% p.a. in the March meeting, to 12.50% p.a. in the May meeting, and 12.75% p.a. in the June meeting, remaining at this level until the first 2023 meeting, when it starts a downward path (Figure 2.2.2). In this trajectory, the Selic rate for the end of 2023, 2024, and 2025 is 8.75%, 7.50% and 7.00% p.a., respectively.<sup>38</sup> When compared with the survey used in the previous Report, conducted on December 3,

**Figure 2.2.1 – Exchange rate assumptions for projections – PPP trajectory**  
Quarterly averages

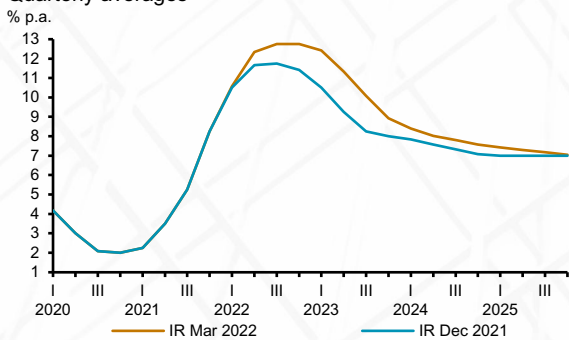


36/ Value obtained according to the usual procedure of rounding the average USD/BRL exchange rate observed on the five business days ending on the last day of the week before the Copom meeting.

37/ Considering the easiness in the formulation of projections and the simplicity of communication, the assumed inflation differential is the difference between the Brazilian inflation target for each year and the long-term external inflation, considered as 2% p.a., in line with the inflation target of most developed countries.

38/ As described in the box “Revision of the small-scale aggregate model” of the December 2021 IR, the Selic rate used in the IS curve refers to the Selic rate path one year ahead. Therefore, the interest rate over 2024 also depends on the Selic path over 2025. The construction of the Selic rate path in this scenario includes interpolation for the months in which the survey does not collect the respective data, using as reference the value of each year’s end.

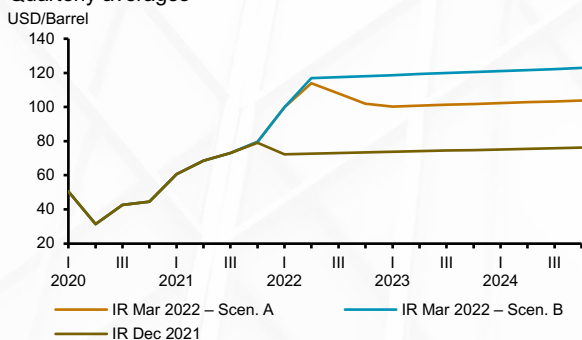
**Figure 2.2.2 – Selic rate target assumptions for projections – Focus survey expectations**  
Quarterly averages



2021, the Selic rate curve is higher throughout the entire projection horizon.

The considered scenarios also have assumptions for several other conditioning factors. The current level of economic uncertainty is expected to decrease over time. On the fiscal side, the 12-month central government primary balance, corrected by the economic cycle and outliers, after the sharp deterioration and recovery throughout 2020 and 2021 due to the Covid-19 pandemic, remains relatively stable over the entire projection horizon. The neutral real interest rate assumed in the projections is 3.5% p.a.<sup>39</sup> The scenarios also incorporate the *La Niña* phenomenon in the projections. In terms of electricity tariff flags for the end of 2022, the yellow flag is used. The yellow flag is also used for the end of 2023 and 2024, which means to assume a flag considered neutral from the perspective of inflation projections in those years.

**Figure 2.2.3 – Brent oil price**  
Quarterly averages



Sources: Bloomberg and BCB

Regarding the oil price used in projections, the reference scenario adopts the usual assumption of values around the oil price average in the week before the Copom meeting and a 2% change per year afterwards. Thus, in the reference scenario, the price per barrel starts from values around USD 118 in March and rises to around USD 121 by the end of 2023, i.e., extrapolating, for the entire relevant monetary policy horizon the oil price resulting from a particularly unusual global situation. In the latest Copom meeting (see Minutes of the 245<sup>th</sup> Meeting) the Committee noted that the current environment of high uncertainty and volatility demands serenity for the evaluation of the long-term impacts of the current shock, and therefore, decided to compare this assumption with the prices of oil future contracts negotiated in international markets as well as with projections from the energy sector's agencies. The Committee observed that both converged to a price per barrel below USD 100 by the end of 2022. Copom then concluded that it would be appropriate to keep the usual assumption in the reference scenario, but to assume as more likely a scenario with an alternative assumption for the path of oil prices until the end of 2022. As of 2023, the Committee decided to stick to its more conservative assumption, which considers the oil prices increasing at 2% p.a. The Committee considers that the disclosure of an alternative scenario is particularly useful and informative in a highly uncertain environment. In this Chapter,

39/ For an estimation of the neutral real interest rate, see box "Revision of the small-scale aggregate model", of the December 2021 IR.

the alternative scenario, regarded as of higher probability, is called “Scenario A”, while the reference scenario is called “Scenario B” (Figure 2.2.3).

The projections also depend on considerations about the evolution of necessary reforms and adjustments in the economy. Their effects on projections are captured through asset prices, the level of uncertainty, expectations from the Focus survey, and their effect on the economy’s structural interest rate. Besides these channels, the fiscal policy influences inflation conditional projections by affecting the aggregate demand.

## Determinants of inflation

Inflation in 2021 was strongly affected by: i. a sharp rise in the prices of tradable goods in local currency, especially commodity prices; ii. water scarcity electricity flag; and iii. imbalances between demand and supply of inputs and bottlenecks in global production chains.<sup>40</sup>

In 2022, due to a favorable rainfall regime, electricity is expected to be a disinflationary factor. On the other hand, commodity prices climbed again, mainly due to the conflict between Russia and Ukraine, especially oil prices. Considering the Brent-type oil in the week before Copom meetings, oil price, in the March meeting, rose 38.0% when compared with the February meeting and 74.5% against the December meeting (December 2021 IR). According to the same criterion, the IC-Br in USD grew 13.7% and 24.7%, respectively. Conversely, the domestic currency appreciated 7.8% and 11.5%, only partially counterbalancing the expansion of commodity prices. On the other hand, bottlenecks in global production chains have pressured inflation indexes and tend to worsen due to the conflict between Russia and Ukraine.

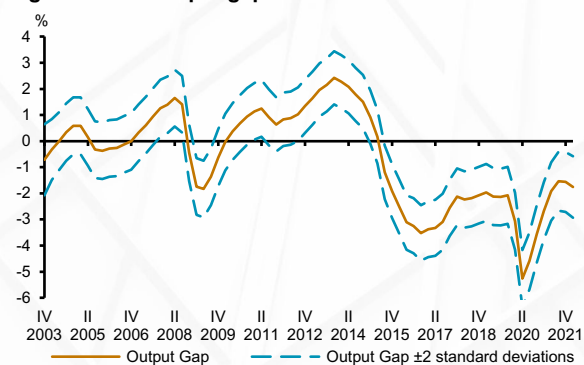
The output gap, an unobservable variable whose measurement is subject to high uncertainty, is measured by the BCB using different methodologies. This IR presents the estimated output gap according to a methodology based on a Bayesian model estimation.<sup>41</sup> In this estimation, output gap is an unobservable variable, whose trajectory incorporates

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40/ See the Open Letter to the BCB Governor and to the Ministry of Economy and President of the CMN on January 11, 2022 (available at <https://www.bcb.gov.br/en/monetarypolicy/historicalpath>) and the box “Breakdown of 2021 inflation”, of this IR.

41/ See the box “Revision of the small-scale aggregate model”, of the December 2021 Inflation Report.

**Figure 2.2.4 – Output gap estimates**



Note: Figure data: 2003Q4–2022Q1.

information from four economic activity variables, referring to the output in the economy and the slack of production factors. Specifically, the estimation uses the GDP, the Nuci (calculated by the Getulio Vargas Foundation – FGV), the unemployment rate (measured by the IBGE), and the stock of formal jobs measured by the General Registry of Employed and Unemployed Persons (Caged – Ministry of Labor and Social Security).<sup>42</sup> It is noteworthy that the model adds economic structure to the estimation of the output gap trajectory by considering its relationship with market prices inflation, via the Phillips curve, and the IS curve itself.

Using this methodology, the estimated output gap interrupted the narrowing trajectory that was being observed after reaching a trough in 2020Q2 because of the pandemic (Figure 2.2.4). After reaching -1.5% in 2021Q3, the estimated gap for 2021Q4 and 2022Q1 reached -1.6% and -1.8%, respectively.<sup>43</sup> On the other hand, these estimates indicate a narrower output gap than in the previous Report, mainly reflecting the better-than-expected GDP and unemployment rate trajectories.

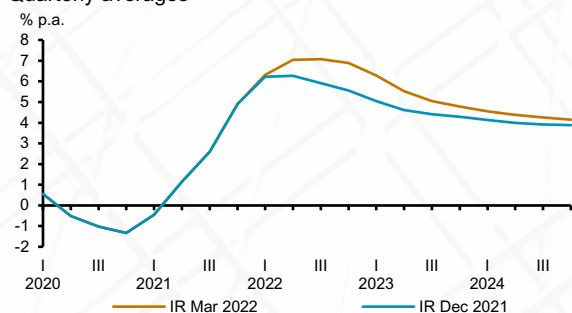
The GDP, after reaching pre-pandemic levels in 2021Q1, declined in 2021Q2, remained relatively stable in 2021Q3, and rose 0.5% in 2021Q4, when compared with the previous quarter, seasonally adjusted. Labor market indicators are still evolving positively. The unemployment rate continued on the downward trajectory begun in early 2021, reaching at the end of 2021 levels similar to the pre-pandemic period. Similarly, net job openings measured by Caged remained positive. Nuci has oscillated around levels similar to those of the second half of 2021 and above the pre-pandemic period. The projected output gap continues on a widening movement throughout 2022, reaching -2.3% in 2022Q4, and resuming its narrowing trajectory afterwards. The main factor explaining this trajectory is the Selic rate path (total increase of 8.75 p.p. since the March 2021 meeting until the February 2022 meeting) and its future trajectory taken from the Focus survey, which continues to increase until June 2022 and then begins to decline in early 2023.

Considering the four-quarter-ahead Selic rate discounting inflation expectations, both variables extracted from the Focus survey and measured in terms of quarterly averages, a new rise is observed

42/ Seasonally adjusted series are used.

43/ For 2022Q1, projections of these activity variables were used when data were not available.

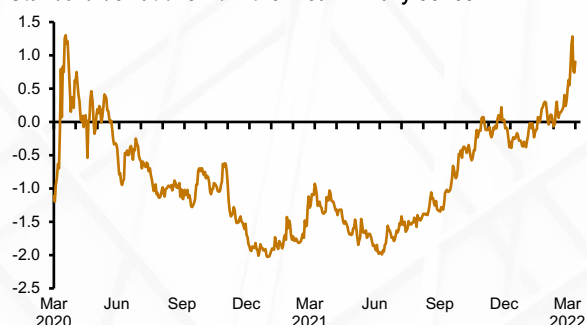
**Figure 2.2.5 – Four-quarter-ahead real Selic rate**  
Quarterly averages



Note: Real Selic rate calculated as the four-quarter-ahead Selic rate, discounted from inflation expectations for the same period, both variables extracted from the Focus survey.

again over the entire projection horizon (Figure 2.2.5). This behavior reflects the sharper growth in the nominal Selic rate path when compared with the increase in inflation expectations. In other words, the shift in the nominal yield curve from the Focus survey (Figure 2.2.2) also meant a rise in the real interest rate. According to this metric, after reaching the trough of -1.3% in 2020Q4, the real interest rate starts a quick upward trajectory, reaching the peak of 7.1% in 2022Q3. Afterwards, it declines to 4.8% at the end of 2023 and 4.2% at the end of 2024, still above the assumed neutral rate of 3.5% p.a.

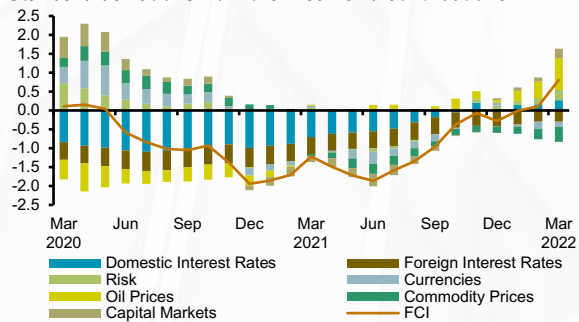
**Figure 2.2.6 – Financial Conditions Index**  
Standard deviations from the mean – Daily series



Note: The higher the value of the index, the more restrictive the financial conditions. Figure data: 3.3.2020–3.11.2022.

Economic uncertainty levels in the economy have negatively affected the output gap. At the end of 2021 and early 2022, the uncertainty was affected by the new wave of the Covid-19 pandemic, with the upsurge of the Omicron variant, but with preponderantly short-term effects due to the reversal of the number of contagions already in 2022Q1. The high inflation and issues associated with the end of monetary stimuli in advanced countries arouse as uncertainty factors. More recently, the scenario was mostly reflecting the conflict between Russia and Ukraine. The behavior of uncertainty will also depend on the assessment of the trajectory of fiscal variables, such as the government spending, the primary balance, and the public debt.

**Figure 2.2.7 – 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. Mar/2022 value refers to the average until the Mar. 11.

Financial conditions, after a slight easing in December 2021, became more restrictive in the subsequent months, especially after the start of the conflict between Russia and Ukraine, as reflected in the Financial Conditions Index (FCI), calculated by the BCB (Figures 2.2.6 and 2.2.7).<sup>44</sup> Main factors underlying more restrictive financial conditions were the strong rise in the oil price, the fall in stock exchanges around the world, the increase in the Chicago Board Options Exchange Volatility Index (VIX), the rise in future interest rates in Brazil, in the U.S., and in other advanced countries, and the USD appreciation at the international level. In the opposite direction acted the BRL appreciation, the rise of agricultural and metal commodity prices, and the increase in the Brazilian stock market. It should be emphasized that the FCI reflects a series of elements and should not be interpreted as an indicator of monetary stimulus or tightening. Moreover, the relationship of this indicator with inflation is ambiguous, as some of its components, such as those related to the risk

44/ By construction, the FCI is a dimensionless measure, with a zero mean and unit variance in the sample considered since January 2006. For a description of the methodology used in the calculation of the FCI, see box “Financial Conditions Indicator”, of the March 2020 IR.

premium and the exchange rate, are in general positively related to inflation and negatively related to activity. Therefore, tighter financial conditions point to lower future economic activity, but may imply either higher or lower inflation, depending on which factors are inducing its movement.

Inflation expectations collected by the Focus survey increased significantly. Compared with the previous Report, median expectations rose from 5.02% to 6.45% for 2022, from 3.50% to 3.70% for 2023, and from 3.10% to 3.15% for 2024.

## Inflation projections

Projections in this IR represent the Copom's view and result from the combination of the following elements: i. experts' projections for market prices in shorter horizons and for administered prices up to a certain horizon; ii. use of macroeconomic models, satellite models, and specific models for administered price items; iii. use of certain trajectories for the conditioning variables; and iv. assessment on the state and prospects of the economy.

In the Scenario A projection, assuming a downward trajectory for oil price in 2022, Selic rate from the Focus survey, and the exchange rate following the PPP, four-quarter inflation peaks at 10.6% in 2022Q1, dropping to 6.3% at the end of the year, above the upper limit of the tolerance band (5.00%) of the inflation target (3.50%). Projected inflation falls to 3.1% in 2023 and 2.3% in 2024, against inflation targets of 3.25% and 3.00%, respectively (Tables 2.2.1 and 2.2.2 and Figure 2.2.8).

Projection according to the Scenario B, in turn, using the usual assumptions for the oil price trajectory, Selic rate from the Focus survey, and exchange rate following the PPP, four-quarter inflation rate reaches 10.06% in the first two quarters of the years, falling to 7.1% at the end of the year, also above the upper limit of the tolerance band (5.00%) of the inflation target (3.50%). Projected inflation falls to 3.4% in 2023 and 2.4% in 2024, against inflation targets of 3.25% and 3.00%, respectively (Tables 2.2.1).

In terms of the estimated probabilities that inflation exceeds the limits of the tolerance band (Table 2.2.3), it is noteworthy the increased probability of inflation exceeding the upper limit in 2022, which rose from

**Table 2.2.1 – Inflation projections – Scenarios with Selic rate from Focus survey and PPP exchange rate**

Year-on-year IPCA inflation

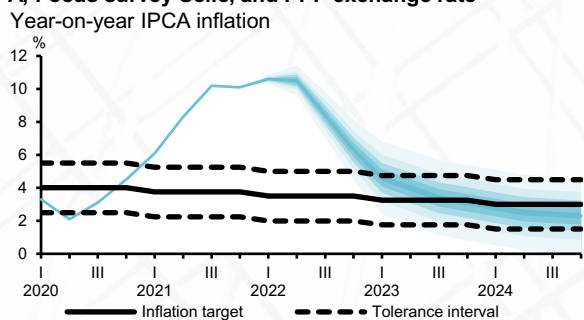
Year	Qtr	Target	December IR	March IR		Difference (p.p.)	
				Scen. A	Scen. B	Scen. A	Scen. B
				%			
2022	I		9.3	10.6	10.6	1.3	1.3
2022	II		8.2	10.5	10.6	2.3	2.4
2022	III		6.4	8.4	8.8	2.0	2.4
2022	IV	3.50	4.7	6.3	7.1	1.6	2.4
2023	I		4.5	4.6	5.6	0.1	1.1
2023	II		4.4	4.0	4.9	-0.4	0.5
2023	III		3.5	3.4	4.1	-0.1	0.6
2023	IV	3.25	3.2	3.1	3.4	-0.1	0.2
2024	I		2.9	2.8	3.1	-0.1	0.2
2024	II		2.7	2.5	2.7	-0.2	0.0
2024	III		2.6	2.4	2.5	-0.2	-0.1
2024	IV	3.00	2.6	2.3	2.4	-0.3	-0.2

**Table 2.2.2 – Inflation projection and probability intervals – Scen. A, Focus survey Selic, and PPP exchange rate**

Year-on-year IPCA inflation

Year	Qtr	Probability Intervals (%)						
		50%	30%	10%	Central	10%	30%	50%
2022	I	10.5	10.5	10.6	10.6	10.6	10.7	10.7
2022	II	10.1	10.3	10.4	10.5	10.6	10.7	10.9
2022	III	7.8	8.1	8.3	8.4	8.5	8.7	9.0
2022	IV	5.6	5.9	6.2	6.3	6.4	6.7	7.1
2023	I	3.7	4.1	4.4	4.6	4.8	5.1	5.5
2023	II	3.1	3.5	3.8	4.0	4.2	4.5	4.9
2023	III	2.5	2.9	3.2	3.4	3.6	3.9	4.3
2023	IV	2.2	2.6	2.9	3.1	3.3	3.6	4.0
2024	I	1.9	2.3	2.6	2.8	3.0	3.3	3.7
2024	II	1.6	2.0	2.3	2.5	2.7	3.0	3.4
2024	III	1.5	1.9	2.2	2.4	2.6	2.9	3.3
2024	IV	1.4	1.8	2.1	2.3	2.5	2.8	3.2

**Figure 2.2.8 – Inflation projection and fan chart – Scen. A, Focus survey Selic, and PPP exchange rate**



Note: The lines of the inflation target and the tolerance interval refer only to the calendar year, but, for better visualization, they are presented for all quarters.

**Table 2.2.3 – Estimated probabilities of inflation surpassing the target's tolerance interval – Scenario A**

Year	Lower limit	Probability of surpassing the lower limit	Upper limit	Probability of surpassing the upper limit
2022	2.00	0	5.00	88
2023	1.75	17	4.75	12
2024	1.50	28	4.50	6

Note: Numbers rounded to the nearest integer value.

around 41% in the previous Report to nearly 88% in the Scenario A and 97% in the Scenario B.

When compared with the December 2021 IR, inflation projections, in Scenario A, rose in 2022 and fell for 2023 and 2024, whereas, in Scenario B, rose for 2022 and 2023 and declined for 2024 (Table 2.2.1). Specifically for 2022, it stands out the actual inflation, which was 0.74 p.p. greater than the forecast for the period of January and February, and the increase in the short-term inflation projection (see Section 2.1), which propagates over the horizon via inflationary inertia. In the short-term, it should be highlighted the impact of the strong rise in the oil price. On the opposite direction, it should be mentioned the Selic rate trajectory still exceeding the value considered as neutral.

Key factors leading to the revision of inflation projections are listed below.

Main upward factors:

- recent higher-than-expected actual inflation;
- revision of short-term projections;
- strong rise of oil prices;
- propagation of current pressures via inflationary inertia;
- higher inflation expectations in the Focus survey;
- stronger-than-expected economic activity indicators.

Main downward factors:

- higher trajectory of the Selic rate in the Focus survey, which represented a rise in the assumed real rate;
- exchange rate appreciation;
- change in the electricity tariff flag considered for the end of 2022, from red level 2 to yellow;
- decline of economic uncertainty, measured by the FGV's Brazilian Economy Uncertainty Index (III-Br), registering values below those assumed in the projections; and
- in the case of Scenario A, assumption of a downward oil price trajectory throughout 2022.

When comparing with inflation projections of the Copom February (244<sup>th</sup>) meeting, in Scenario A it was observed an increase of 0.9 p.p. for 2022 and decline of 0.1 p.p. for 2023 and, in Scenario B, increases of 1.7 p.p. and 0.2 p.p. for 2022 and 2023, respectively (see Minutes of the 244<sup>th</sup> meeting). The main factors were basically the same pointed out in the comparison with the projections of the previous Report.

**Table 2.2.4 – Inflation projections of market and administered prices – Scen. with Focus survey Selic and PPP exchange rate**

Year-on-year IPCA inflation

Year	IPCA		Market prices		Administered prices		%
	Scen. A	Scen. B	Scen. A	Scen. B	Scen. A	Scen. B	
	2022	6.3	7.1	6.2	6.3	6.6	
2023	3.1	3.4	2.3	2.5	5.2	5.9	
2024	2.3	2.4	2.0	2.0	3.1	3.3	

When market and administered prices are considered (Table 2.2.4), one observes that projections of both groups rose for 2022, comparing with the previous Report projections. For 2022, the highlights as inflationary items are fuels, license plates and licenses, and pharmaceutical goods, and as a disinflationary item, residential electricity, due to the considered tariff flag. Conversely, market prices inflation will reduce over time as inertial effects are dissipated and the effects of the path of the real interest rate above the neutral rate start to prevail.

Copom’s projections involve various risks. Copom, at its 245<sup>th</sup> meeting, highlighted the following risks:

- On the one hand, a possible reversion, even if partial, of the increase in the price of international commodities measured in local currency would produce a lower-than-projected inflation in its scenarios, and
- On the other hand, fiscal policies that imply additional impulses to aggregate demand or deteriorate the future fiscal path may have a negative impact on prices of important financial assets as well as pressure the country’s risk premia. In spite of the more favorable public accounts data, the Committee assesses that the uncertainties regarding the fiscal framework maintain elevated the risk of deanchoring of inflation expectations but considers that this risk is being partially incorporated in the inflation expectations and asset prices used in its models. The Committee maintains the assessment of an upward asymmetry in the balance of risks.

An upward risk that is also worth mentioning is the market perception of a more accelerated normalization of monetary policy in the U.S., which might affect the price of domestic assets. It should also be mentioned the possibility of more persistent pressures from industrial and agricultural prices than previously considered, as an effect of the conflict between Russia and Ukraine.

Finally, high uncertainties regarding the oil price trajectory should be highlighted, as they play a significant role in inflation projections.

## 2.3 Monetary policy conduct and balance of risks

Regarding the global outlook, the environment has deteriorated significantly. The conflict between Russia and Ukraine has led to a strong tightening in financial conditions and higher uncertainty surrounding the global economic outlook. In particular, the supply shock resulting from the conflict has the potential of increasing inflationary pressures, which had already been rising both in emerging and advanced economies.

Turning to the Brazilian economy, GDP growth in 2021Q4 came in higher than expected.

Consumer inflation continued to surprise negatively. These surprises occurred both in the more volatile components and the items associated with core inflation.

The various measures of core inflation are above the range compatible with meeting the inflation target.

Inflation expectations for 2022 and 2023 collected by the Focus survey are around 6.4% and 3.7%, respectively.

In its most recent meeting (245<sup>th</sup> meeting), Copom unanimously decided to increase the Selic rate by 1.00 percentage point, to 11.75% 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 convergence of inflation to its target throughout the relevant horizon for monetary policy, which includes 2022 and, mainly, 2023. Without compromising its fundamental objective of ensuring price stability, this decision also implies smoothing of economic fluctuations and fosters full employment.

At that time, the Committee communicated that its inflation scenarios encompass risk factors in both directions. On the one hand, a possible reversion, even if partial, of the increase in the price of international commodities measured in local currency would produce a lower-than-projected inflation in its scenarios. On the other hand, fiscal policies that imply additional impulses to aggregate demand or deteriorate the future fiscal path may have a negative impact on prices of important financial assets as well

as pressure the country's risk premia. In spite of the more favorable public accounts data, the Committee assesses that the uncertainties regarding the fiscal framework maintain elevated the risk of deanchoring of inflation expectations but considers that this risk is being partially incorporated in the inflation expectations and asset prices used in its models. The Committee maintains the assessment of an upward asymmetry in the balance of risks.

The Committee considers that, given its inflation projections and the risk of a deanchoring of long-term expectations, it is appropriate to continue advancing in the process of monetary tightening significantly into an even more restrictive territory.

The Committee's actions aim at curbing the second-round effects of the current supply shock in several commodities, which appear in inflation in a lagged manner. The current projections indicate that the interest rate cycle in its scenarios is sufficient for inflation convergence to levels around the target over the relevant horizon. The Copom judges that the moment requires serenity to assess the size and duration of the current shocks. If those shocks prove to be more persistent or larger than anticipated, the Committee will be ready to adjust the size of the monetary tightening cycle. The Committee emphasizes that it will persist in its strategy until the disinflation process and the expectation anchoring around its targets consolidate.

For the next meeting, the Committee foresees another adjustment of the same magnitude. Copom emphasizes that the future steps of the monetary policy could be adjusted to ensure the convergence of inflation towards its targets and will depend on the evolution of economic activity, on the balance of risks, and on inflation expectations and projections for the relevant horizon for monetary policy.

## Breakdown of 2021 inflation

This box presents an estimate for the 2021 inflation breakdown, measured by the National Extended Consumer Price Index (IPCA), as a deviation from the target set by the National Monetary Council (CMN).<sup>1</sup> The objective is to measure the contribution of the main determinants of inflation, based on semi-structural models of the Banco Central do Brasil (BCB).<sup>2</sup>

Inflation deviation from the target is broken down into six components: i) inertia from the previous year (deviation of the previous year's inflation from the target);<sup>3</sup> ii) expectations (difference between Focus survey's inflation expectations and the inflation target); iii) imported inflation (difference from the target); iv) output gap; v) electricity tariff flags;<sup>4</sup> and vi) other factors.<sup>5</sup> It is worth mentioning that these estimates are approximations based on models and, therefore, are subject to the uncertainties inherent to the modeling and estimation process.

The estimation of components is based on a scenario in which all conditioning factors are neutral, i.e., do not generate impacts that lead inflation to deviate from the target.<sup>6</sup> As these neutral conditioning factors are replaced by the values effectively observed, we obtain the contribution of each factor for the deviation of inflation from the target.

Inflation in 2021 was 10.06%, 5.54 percentage points (p.p.) above that observed in 2020, 4.52% (Figure 1 and Table 1). Market prices inflation rose from 5.18% in 2020 to 7.70% in 2021, whereas administered prices inflation increased from 2.61% to 16.90%. Inflation in 2021 was 6.31 p.p. above the inflation target of 3.75%, set by the CMN, and 4.81 p.p. above the upper limit of the tolerance band of 5.25%.

The main results of the inflation's breakdown are the following (Figure 2):

- i. The inertia from the previous year (as deviation from the target) contributed with 1.21 p.p. to the deviation of inflation from the target, mainly reflecting inflation acceleration in 2020Q4;<sup>7</sup>
- ii. Inflation expectations (as deviation from the target) contributed with 0.25 p.p. to the deviation of inflation from the target. 12-month ahead inflation expectations (smoothed) from the Focus survey were below the target in early 2021, but followed an upward trajectory throughout the year, standing above the target as of March 2021 (Figure 3). Inflation expectations for 2021 followed a similar path.

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1/ The breakdown of 2021 inflation was presented earlier in the Open Letter from the BCB Governor to the Minister of Economy and President of the National Monetary Council (CMN), on January 11, 2022. Inflation breakdown based on projection models has been presented annually in the Inflation Reports (IRs). See, for example, the box "Breakdown of 2020 inflation" of the March 2021 IR. Details on methodological procedures are available in the box "2017 inflation decomposition", of the March 2018 IR, and in Cusinato et. al (2016).

2/ See boxes "Revision of the small-scale aggregate model", of the December 2021 IR, and "Revision of the medium-term projection models for administered prices" of the September 2017 IR.

3/ The component "inertia from the previous year" includes the effects from all factors affecting inflation up to December 2020.

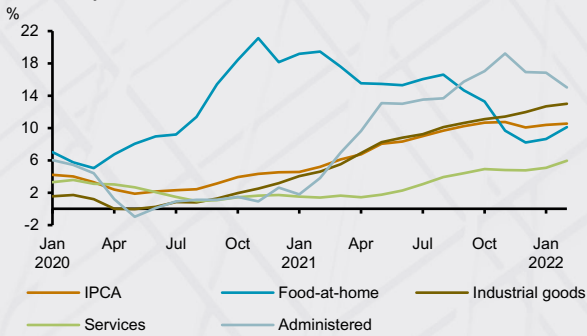
4/ In this IR, we chose to individualize the effect of electricity tariff flags as one of the breakdown's component due to its importance for inflation in 2021. In previous reports, the effect of electricity flags was included in "Other factors".

5/ The item "Other factors" includes factors not considered in the previous items, such as, for instance, specific factors conditioning administered price models as well as the model's residual term.

6/ In the case of seasonal variables, neutral conditioning factors also include a seasonal component.

7/ See box "Breakdown of 2020 inflation", of the March 2021 IR.

**Figure 1 – Inflation: IPCA and components**  
Year-on-year inflation



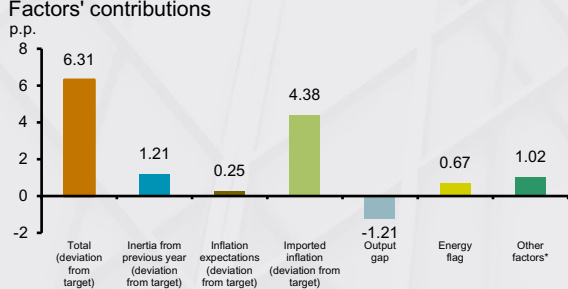
Sources: IBGE and BCB

**Table 1 – Selected components of IPCA**

Selected components and items	Change (%)	Contribution to IPCA change (p.p)
Administered prices	16.90	4.34
Gasoline	47.49	2.33
Bottled gas	36.99	0.41
Household electricity	21.21	0.98
Market prices	7.70	5.72
Food-at-home	8.23	1.25
Industrial goods	12.00	2.75
Automotive vehicles (new or used)	15.74	0.76
Electrical home appliances	12.11	0.21
Ethanol	62.24	0.41
Services	4.75	1.72
Consumer Inflation (IPCA)	10.06	10.06

Sources: IBGE and BCB

**Figure 2 – Contributions to the deviation of inflation from target in 2021**  
Factors' contributions



\* Contribution to the inflation as deviation from the target after excluding the following factors: inertia associated with the portion of the previous year's inflation that deviated from target; expectations as a deviation from target; imported inflation as a deviation from target; and electricity under the flag system.

**Figure 3 – 12-month-ahead inflation expectations (smoothed) – Focus survey**



- iii. Imported inflation (as deviation from the target) was the main contributor to the inflation deviation from the target (contribution of 4.38 p.p.).<sup>8</sup> The main underlying factor was changes in commodity prices measured by the Commodities Index – Brazil (IC-Br) in USD and oil price, with respective contributions of 0.71 p.p. and 2.95 p.p. to the inflation deviation.<sup>9</sup> Both the IC-Br and the oil price, after declining in 2020Q1, increased in the subsequent periods (Figures 4 and 5). The exchange rate, in turn, oscillated throughout the year, depreciating in 2021Q1, 2021Q3 and 2021Q4, and appreciating in 2021Q2 (Figure 6). Considering the entire year, the exchange rate variation contributed with 0.44 p.p. to the deviation of inflation from the target<sup>10</sup>;
- iv. The output gap was the factor responsible for the main negative contribution for the inflation deviation from the target (-1.21 p.p.). The output gap is a unobservable variable, whose measurement, subject to high uncertainty, is carried out by the BCB through different methodologies. Using the

8/ External price contributions were constructed assuming deviations in relation to 2.0% p.a. for commodity price changes in USD, consistent with long-term external inflation at the same level, and 1.75% p.a. for the exchange rate, given by the difference between the inflation target and the long-term external inflation considered, consistent with long-term modeling conditions of the Phillips curve for market prices.

9/ The contribution of the oil price only refers to its estimated effects on fuels of administered prices (and its pass-through via the used model), whereas the IC-Br contribution is calculated by using its impact on the equation of market prices in the model. Since it includes oil among its components, a share of the estimated IC-Br contribution also refers to the oil price.

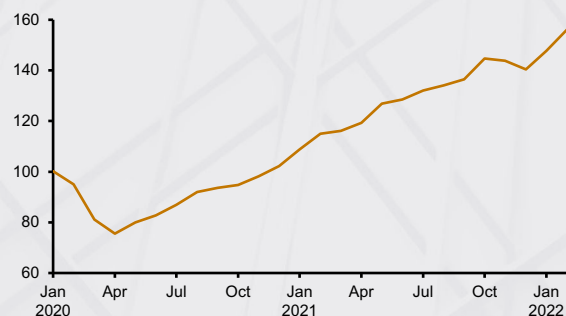
10/ The contribution of imported inflation also includes the contribution of the price of anhydrous ethanol.

methodology based on a Bayesian model estimation<sup>11</sup>, the output gap, after a significant widening in 2020Q2 due to the outbreak of the Covid-19 pandemic, started a narrowing trajectory in the subsequent periods. The year 2021 was marked by the progress of the vaccination campaign and the normalization process of economic activity that began in the second quarter of 2020. However, the narrowing of the output gap decelerated throughout 2021, as the gap reached, in 2021Q4, a value slightly wider than in 2021Q3 (Figure 7). This process mainly reflected the natural loss of intensity of the economic activity normalization process that started in the second half of 2020 and the monetary tightening that started in 2021Q1;

**Figure 4 – IC-Br (index in US\$)**

Monthly average

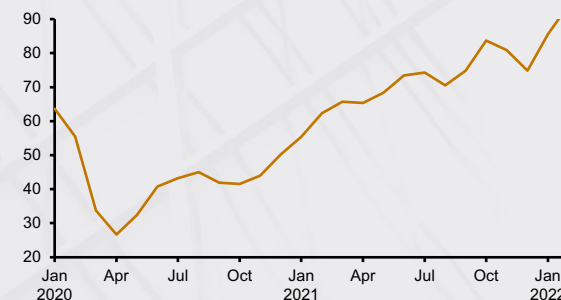
Dec/2019 = 100



**Figure 5 – Brent oil price**

Monthly average

USD/Barrel

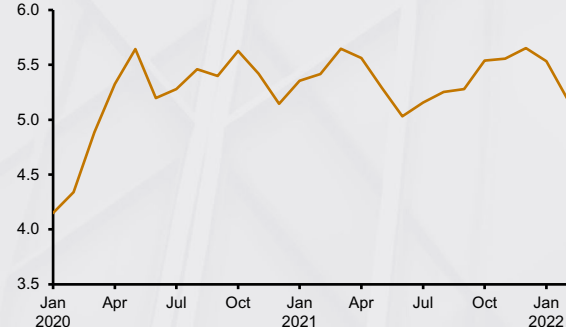


Sources: Bloomberg and BCB

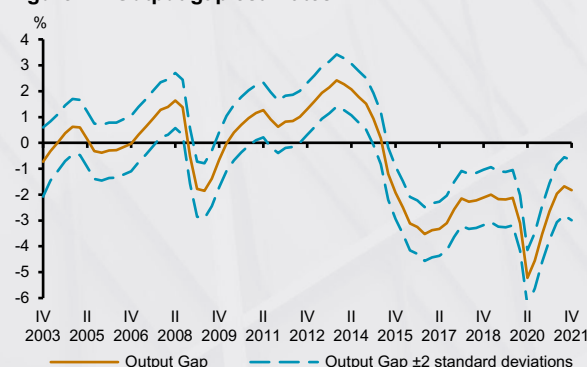
**Figure 6 – Nominal exchange rate**

Monthly average

USD/BRL



**Figure 7 – Output gap estimates**



Note: Figure data: 2003Q4–2021Q4. The output gap presented in the figure is the output gap estimated for the Open Letter, thus, it might have some differences to the one presented in Chapter 2, since it uses a different information set.

- v. Electricity tariff flags contributed with 0.67 p.p. to the inflation deviation from the target<sup>12</sup>, reflecting the poor rainfall regime that led to the activation of thermoelectric power plants and other energy sources with higher costs. Following the adoption of the yellow flag between January and April, the red flag level 1 was activated in May (Table 2). Between June and August, the red flag level 2 was adopted, with higher values as of July. In September, the water scarcity flag was created and activated, resulting in an increase of 49.6% over the previous flag, and of 5.8% over the previous month's electricity tariff; and
- vi. Finally, the other factors contributed with 1.02 p.p. to the inflation deviation from the target in 2021. Some specific conditioning factors of administered price models<sup>13</sup> contributed to this component, such as the X and Y factors of the model of medicine prices (contribution of 0.13 p.p.), the Assistance

11/ The contribution of the output gap is constructed using the output gap path obtained by applying, on the data sample, the Kalman filter calibrated with parameters of the Bayesian estimation of the model.

12/ As a neutral conditioning factor for the electricity tariff flags, the green flag was assumed for the entire relevant horizon.

13/ For details about these models, see the box "Revision of the medium-term projection models for administered prices" of the September 2017 IR.

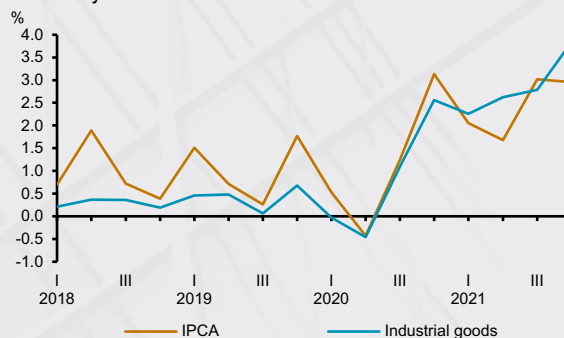
Expenses Value Index (IVDA) of private health plans (0.08 p.), and the General Price Index – Market (IGP-M), which is used as an index for some administered price items (0.34 p.p.).<sup>14</sup> It is noteworthy that a sharp upward trend of industrial goods prices started as of the end of 2020, leading to an inflation of 12.00% in 2021 (Figure 8), reflecting logistical issues and imbalances between global supply and demand. Using a small-scale disaggregated model that includes a specific equation for industrial goods prices inflation<sup>15</sup>, one finds that industrial price shocks contributed with 1.77 p.p. to IPCA inflation in 2021.<sup>16</sup>

**Table 2 – Energy flag**

Year	Month	Energy flag	Value (R\$/100kWh)
2020	Dec	Red 2	6.24
2021	Jan	Yellow	1.34
	Feb	Yellow	1.34
	Mar	Yellow	1.34
	Apr	Yellow	1.34
	May	Red 1	4.17
	Jun	Red 2	6.24
	Jul	Red 2	9.49
	Aug	Red 2	9.49
	Sep	Water Scarcity	14.20
	Oct	Water Scarcity	14.20
	Nov	Water Scarcity	14.20
	Dec	Water Scarcity	14.20
2022	Jan	Water Scarcity	14.20
	Feb	Water Scarcity	14.20

Sources: Aneel and BCB

**Figure 8 – Inflation: IPCA and industrial goods**  
Quarterly inflation



Sources: IBGE and BCB

Summing up, this box presented the estimations of the breakdown of the deviations of the inflation rate from the target in 2021. According to this breakdown, the main factor was the imported inflation, resulting from a strong increase of commodity prices. Also contributed to inflation deviation, the inertia from the previous year, the electricity tariff flags, and other factors, largely related to imbalances between demand and supply in global production chains. The output gap contributed in the opposite direction.

## References

CUSINATO, R. T., FIGUEIREDO, F. M. R., MACHADO, V. G., MELLO, E. P. G. and PEREZ, L. P. (2016). “*Decomposição de Inflação: revisão da metodologia e resultados para 2012 a 2014*”, Banco Central do Brasil, *Trabalhos para Discussão n° 440*.

14/ As neutral conditioning factors are assumed the factors X and Y equal to zero and IVDA and IGP-M variations equal to the inflation target. IGP-M contribution does not include impacts on market prices, such as residential rent.

15/ See the box “New small-scale disaggregate model”, of the March 2021 IR for the disaggregated model.

16/ The shocks represent the entire unexplained part of the Phillips curve for industrial goods prices. Therefore, they do not capture the impact of production bottlenecks only. However, considering broad evidence about the impact of these bottlenecks, they can be considered the main factor.

# Appendix

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## **Banco Central do Brasil Management Monetary Policy Committee (Copom)**

# Banco Central do Brasil Management

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Board of Governors

**Roberto Oliveira Campos Neto**  
Governor

**Bruno Serra Fernandes**  
Deputy Governor for Monetary Policy

**Carolina de Assis Barros**  
Deputy Governor for Administration

**Fernanda Magalhães Rumenos Guardado**  
Deputy Governor for International Affairs and  
Corporate Risk Management  
Deputy Governor for Economic Policy

**Maurício Costa de Moura**  
Deputy Governor for Institutional Relations and  
Citizenship

**Otávio Ribeiro Damaso**  
Deputy Governor for Regulation  
Deputy Governor for Licensing and Resolution

**Paulo Sérgio Neves de Souza**  
Deputy Governor for Supervision

# Members of the Monetary Policy Committee (Copom)

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## Members

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**Roberto Oliveira Campos Neto**

Deputy Governor

**Bruno Serra Fernandes**

Deputy Governor

**Carolina de Assis Barros**

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**Fernanda Magalhães Rumenos Guardado**

Deputy Governor

**Maurício Costa de Moura**

Deputy Governor

**Otávio Ribeiro Damaso**

Deputy Governor

**Paulo Sérgio Neves de Souza**

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**Rogério Antônio Lucca**

Department of Economics – Depec

**Ricardo Sabbadini**

Department of Foreign Reserves – Depin

**Alan da Silva Andrade Mendes**

International Affairs Department – Derin

**Fabia Aparecida de Carvalho**

Open Market Operations Department – Demab

**André de Oliveira Amante**

Research Department – Depep

**André Minella**

# Acronyms

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<b>12MMA</b>	12-months moving average
<b>3MMA</b>	3-month moving average
<b>b.p.</b>	Basis points
<b>BCB</b>	Banco Central do Brasil
<b>BEm</b>	Emergency Employment and Income Maintenance Aid
<b>BI</b>	Intermediate Goods
<b>BNDES</b>	Brazilian Development Bank
<b>Caged</b>	General Registry of Employed and Unemployed Persons
<b>CCT</b>	Collective Bargaining
<b>CEF</b>	Federal Savings Bank
<b>CGCE</b>	Classification of great economic categories
<b>CMN</b>	National Monetary Council
<b>CNI</b>	National Confederation of Industry
<b>Conab</b>	National Supply Company
<b>Continuous PNAD</b>	Continuous National Household Sample Survey
<b>Copom</b>	Monetary Policy Committee
<b>Covid-19</b>	Coronavirus disease 2019
<b>Depec</b>	Department of Economics
<b>Depep</b>	Research Department
<b>Derin</b>	International Affairs Department
<b>DI liabilities</b>	Direct investment liabilities
<b>DSTAT</b>	Department of Statistics
<b>Embi+</b>	Emerging Markets Bond Index Plus
<b>eSocial</b>	System of Digital Bookkeeping of Fiscal, Social Security, and Labor Obligations
<b>FGTS</b>	Employment Compensation Fund
<b>FGV</b>	Getulio Vargas Foundation
<b>Fipe</b>	Institute of Economic Research Foundation
<b>Funcex</b>	Foreign Trade Studies Center Foundation
<b>GAV</b>	Gross Added Value
<b>GDP</b>	Gross Domestic Product
<b>GFCF</b>	Gross fixed capital formation
<b>GGGD</b>	Gross General Government Debt
<b>HGDNI</b>	Household gross disposable national income
<b>HICP</b>	Harmonized Consumer Price Index
<b>IBC-Br</b>	Central Bank Economic Activity Index – Brazil
<b>IBGE</b>	Brazilian Institute of Geography and Statistics
<b>IC-Br</b>	Commodities Index – Brazil
<b>ICF</b>	Household Consumption Intention
<b>ICMS</b>	Tax on the Circulation of Merchandises and Services
<b>IDAT-Emprego</b>	IDAT-Employment
<b>IDAT-Salário</b>	IDAT-Wage

<b>IGP-M</b>	General Price Index – Market
<b>IIE-Br</b>	Economic Uncertainty Index
<b>INPC</b>	National Consumer Price Index
<b>IPA-DI</b>	Producer Price Index – Domestic Supply
<b>IPCA</b>	Extended National Consumer Price Index
<b>IPI</b>	Industrialized Products Tax
<b>IPVA</b>	Tax on Automotive Vehicle Ownership
<b>IR</b>	Inflation Report
<b>IRF</b>	Impulse Response Function
<b>IVDA</b>	Assistance Expenses Value Index
<b>LC</b>	Complementary Law
<b>LSPA</b>	Systematic Survey of Agricultural Production
<b>ME</b>	Ministry of Economy
<b>Mediator</b>	Labor Collective Bargaining System
<b>MIP</b>	Input-Output Matrix
<b>MME</b>	Ministry of Mines and Energy
<b>MP</b>	Provisional Measure
<b>MTP</b>	Ministry of Labor and Social Security
<b>NCM</b>	Common Mercosur Nomenclature
<b>New Caged</b>	New General Registry of Employed and Unemployed Persons
<b>Nuci</b>	Industry Installed Capacity Usage Level
<b>OPEC+</b>	Organization of the Petroleum Exporting Countries Plus
<b>p.a.</b>	Per annum
<b>p.p.</b>	Percentage points
<b>PCE</b>	Personal Consumption Expenditures Price Index
<b>PEMER</b>	Emergency Employment and Income Maintenance Program
<b>PIM</b>	Monthly Industrial Survey
<b>PMC</b>	Monthly Retail Trade Survey
<b>PMS</b>	Monthly Survey of Services
<b>PPP</b>	Purchasing Power Parity
<b>PSND</b>	Public Sector Net Debt
<b>Rais</b>	Annual Report of Social Information
<b>Repetro</b>	Special Customs Regime for the Export and Import of Goods used for Research and Mining Activities on Oil and Natural Gas Deposits
<b>s.a.</b>	Seasonally adjusted data
<b>Secex</b>	Foreign Trade Secretariat
<b>Selic</b>	Special System for Clearance and Custody
<b>SFN</b>	National Financial System
<b>SPE</b>	Specific Purpose Society
<b>U.S.</b>	United States of America
<b>VAR</b>	Autoregressive Vector
<b>VIX</b>	Chicago Board Options Exchange Volatility Index