

October 2022

MONETARY POLICY **REPORT**

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the technical staff to the
Board of Directors for its
meeting on 28 October 2022.

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Office of the Deputy Technical Governor

Hernando Vargas
Deputy Technical Governor

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Forecasting Section

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Consultant and Researchers associated with the Macro-Economic Models Department

Alexander Guarín
Head

Juan Camilo Méndez
Anderson Grajales

(*) Leonardo Morales, Lead Economist at the Office for Monetary Policy and Economic Information; Eliana González, head of the Statistics Section; Deicy Cristiano, Julián Cárdenas, Isleny Carranza, and Ramón Hernández, analysts at the Statistics Section; Steven Zapata, David López, and Manuela Quintero, analysts at the Public Sector Section; and student interns Pablo Montealegre, Miguel Angel Cely, Juan Camilo Gomez, Maria Valentina Castañeda, David Esteban Puerta, Johanna Barbosa, Loana Beltrán, and Edison Albeiro Fino also participated in this report.

Edited in Bogotá D.C., Colombia

Suggestions and comments: +57 (1) 343 1011 / atencionalciudadano@banrep.gov.co



Monetary Policy in Colombia

Banco de la República (the Central Bank of Colombia) is required by the Constitution to maintain the purchasing power of Colombia's currency in coordination with general economic policy¹. In order to fulfill this mandate, *Banco de la República's* Board of Directors (hereafter BDBR) has adopted a flexible inflation-targeting scheme, by which monetary policy actions (MP) seek to lead inflation to a specific target and achieve maximum levels of sustainable output and employment.

The flexibility of this scheme allows the BDBR to maintain an adequate balance between reaching its inflation target and smoothing output and employment fluctuations around their sustainable growth paths. The BDBR has set a 3.0% inflation target based on annual change in the consumer price index (CPI). In the short term, inflation may be affected by factors outside of monetary policy control, such as changes in food prices due to climate-related phenomena. To factor in this reality, the BDBR has also set a ± 1 percentage point range outside its inflation target (i.e., 3.0 ± 1 pp). This range does not represent a monetary policy target, but rather reflects the fact that inflation can fluctuate around the target and will not always be equal to 3.0%.

The main instrument the BDBR uses to control inflation is the policy interest rate (overnight repo rate, or benchmark interest rate). Given that monetary policy actions take time to fully affect the economy and inflation², the BDBR assesses the inflation forecast and inflation expectations vis-à-vis the inflation target, as well as the current situation and outlook of the economy, in order to determine their value.

The BDBR meets once a month, producing monetary policy decisions in eight of its meetings (January, March, April, June, July, September, October, and December). In principle, no such decisions are made in the BDBR's four remaining meetings (February, May, August, and November)³. At the end of the meetings in which monetary policy decisions are produced, a press release is published, and a press conference is held by the Governor of the Central Bank and the Minister of Finance. The minutes of the meeting describing the positions that led the BDBR to its decision are published on the following business day. Additionally, the Monetary Policy Report (MPR)⁴, produced by the Central Bank's technical staff, is published in January, April, July, and October, together with the minutes. On the Wednesday of the week following the Board meeting, the Governor clarifies concerns about the minutes, and the Bank's Deputy Technical Governor presents the MPR. This dissemination scheme⁵ seeks to deliver relevant and up-to-date information to contribute to better decision-making by the agents of the economy.

1 Political Constitution of Colombia (1991), Article 373 and Decision C-481/99 of the Constitutional Court.

2 For further details, see M. Jalil and L. Mahadeva (2010). "Transmission Mechanisms of Monetary Policy in Colombia", *Universidad Externado de Colombia, School of Finance, Government, and International Relations*, ed. 1, vol. 1, no. 69, October.

3 A Board Member may request an extraordinary meeting at any time to make MP decisions.

4 Formerly known as the Inflation Report.

5 The current communication scheme was approved by the BDBR in its August 2019 meeting.

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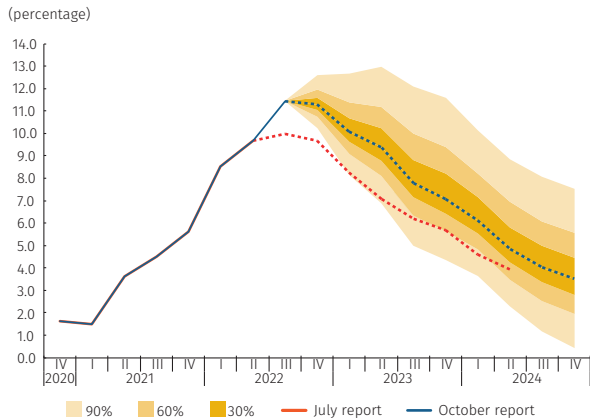
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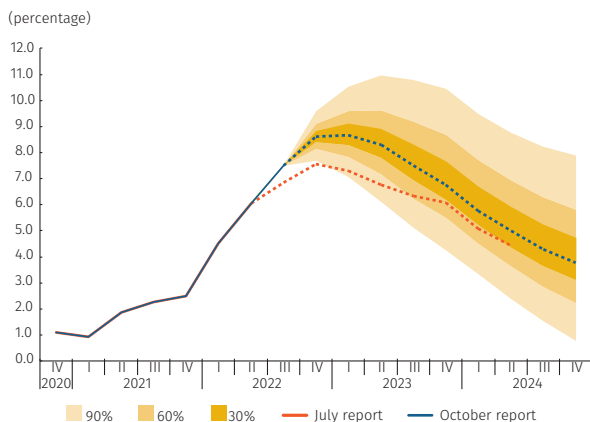
1. Summary

Graph 1.1
Consumer Price Index^{a/, b/}
(annual change, end of period)



a/ This graph displays the forecast probability distribution and its probable trajectory on a nine-quarter time horizon. Density characterizes the prospective balance of risks with areas of 30%, 60%, and 90% probability surrounding the central forecast (mode) through a combination of densities from the Patacon and the 4GM monetary policy models.
b/ Probability distribution applies to the forecast exercise from the October report.
Source: DANE; calculations and projections by Banco de la República.

Graph 1.2
CPI Excluding Foods and Regulated Items^{a/, b/}
(annual change, end of period)

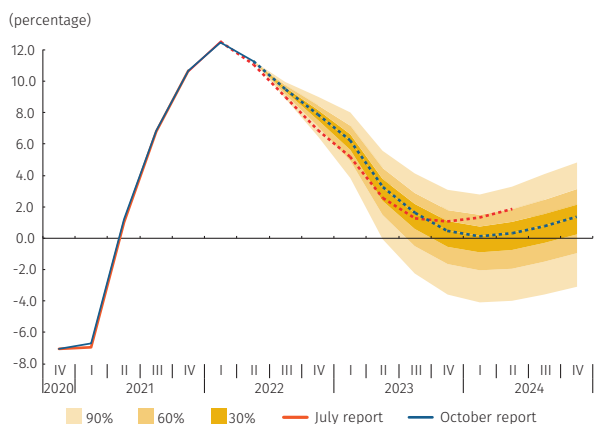


a/ This graph displays the forecast probability distribution and its probable trajectory on a nine-quarter time horizon. Density characterizes the prospective balance of risks with areas of 30%, 60%, and 90% probability surrounding the central forecast (mode) through a combination of densities from the Patacon and the 4GM monetary policy models.
b/ The probability distribution applies to the forecast exercise from the October report.
Source: DANE; calculations and projections by Banco de la República.

1.1 Macroeconomic summary

In September, headline inflation (11.4% annually) and the average of core inflation indicators (8.6% annually) continued on a rising trend, and higher increases than expected were recorded. Forecasts increased again, and inflation expectations remained above 3%. Inflationary surprises in the third quarter were significant and widespread, and they are the result of several shocks. On the one hand, international cost and price shocks, which have mainly affected goods and foods, continue to exert upwards pressure on national inflation. In addition to these external supply shocks, domestic supply shocks have also affected foods. On the other hand, the strong recovery of aggregate demand, especially for private consumption and for machinery and equipment, as well as a higher accumulated depreciation of the Colombian peso and its pass-through to domestic prices also explain the rise in inflation. Indexation also contributes, both through the Consumer Price Index (CPI) and through the Producer Price Index (PPI), which continues to have a significant impact on electricity prices and, to a lesser degree, on other public utilities and rent. In comparison with July’s report, the new forecast trajectory for headline and core inflation (excluding food and regulated items) is higher in the forecast horizon (Graphs 1.1 and 1.2), mainly due to exchange rate pressures, higher excess demand, and indexation at higher inflation rates, but it maintains a trend of convergence towards the target. In the case of food, a good domestic supply of perishable foods and some moderation in international processed food prices are still expected. However, the technical staff estimates higher pressures on this group’s prices from labor costs, raw material prices, and exchange rates. In terms of the CPI for regulated items, the new forecast supposes reductions in electricity prices at the end of the year, but the effects of indexation at higher inflation rates and the expected rises in fuel prices would continue to push this CPI group. Therefore, the new projection suggests that, in December, inflation would reach 11.3% and would decrease throughout 2023 and 2024, closing the year at 7.1% and 3.5%, respectively. These forecasts have a high level of uncertainty, due especially to the future behavior of international financial conditions, external price and cost shocks, the persistence of depreciation of the Colombian peso, the pace of adjustment of domestic demand, the indexation degree of nominal contracts, and the decisions that would be made regarding domestic fuel and electricity prices.

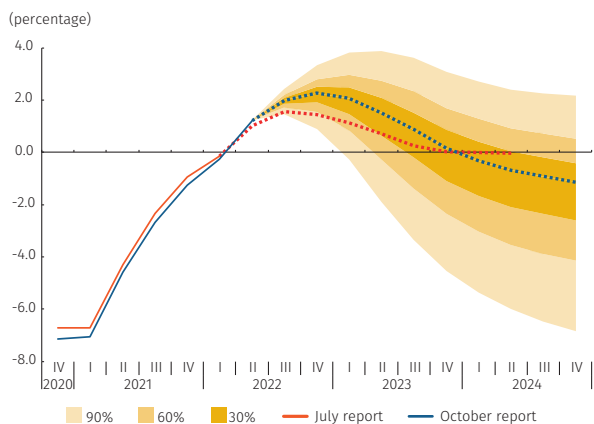
Graph 1.3
Gross Domestic Product, Four-Quarter Cumulative^{a/, b/, c/}
(annual change)



a/ This graph displays the forecast probability distribution and its probable trajectory on a nine-quarter time horizon. Density characterizes the prospective balance of risks with areas of 30%, 60%, and 90% probability surrounding the central forecast (mode) through a combination of densities from the Patacon and the 4GM monetary policy models.
b/ Seasonally adjusted and corrected for calendar effects.
c/ The probability distribution applies to the forecast exercise from the October report.

Source: DANE; calculations and projections by Banco de la República.

Graph 1.4
Output Gap^{a/, b/, c/}
(four-quarter cumulative)



a/ The historical output gap estimate is calculated as the difference between observed GDP (four-quarter cumulative) and potential GDP (trend; four-quarter cumulative) based on the 4GM model. The forecast is calculated as the difference between the technical staff's GDP estimate (four-quarter cumulative) and potential GDP (trend; four-quarter cumulative) from the 4GM model.
b/ This graph presents the forecast probability distribution and its probable trajectory on a nine-quarter time horizon. Density characterizes the prospective balance of risks with areas of 30%, 60%, and 90% probability surrounding the central forecast (mode), through a combination of densities from the Patacon and 4GM monetary policy models.
c/ The probability distribution applies to the forecast exercise from the October report.

Source: DANE; calculations and projections by Banco de la República.

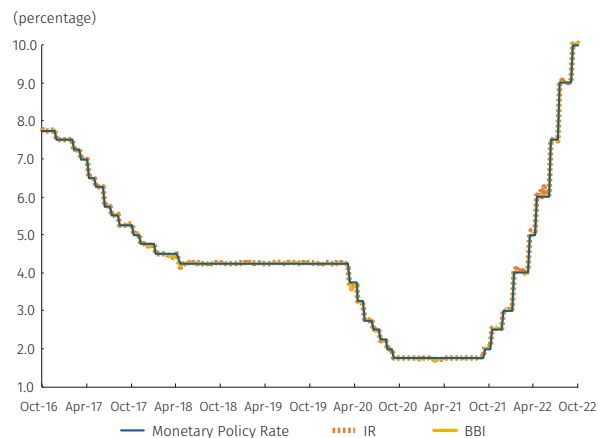
Economic activity continues to surprise on the upside, and the projection of growth for 2022 rose from 6.9% to 7.9% but lowered for 2023 from 1.1% to 0.5% (Graph 1.3). Thus, excess demand is higher than estimated in the previous report, and it would diminish in 2023. Economic growth in the second quarter was higher than estimated in July due to stronger domestic demand, mainly because of private consumption. Economic activity indicators for the third quarter suggest that the GDP would stay at a high level, above its potential, with an annual change of 6.4%, and 0.6% higher than observed in the second quarter. Nevertheless, these numbers reflect deceleration in its quarterly and annual growth. Domestic demand would show similar behavior, with a high value, higher than that of output. This can be explained partly by the strong behavior of private consumption and investment in machinery and equipment. In the third quarter, investment in construction would have continued with mediocre performance, which would still place it at levels lower than those observed before the pandemic. The trade deficit would have widened due to high imports with a stronger trend than that for exports. It is expected that, in the forecast horizon, consumption would decrease from its current high levels, partly as a consequence of tighter domestic financial conditions, lower repressed demand, higher exchange rate pressures on imported goods prices, and the deterioration of actual income due to the rise in inflation. Investment would continue to lag behind, without reaching the levels observed before the pandemic, in a context of high financing costs and high uncertainty. A lower projected behavior in domestic demand and the high levels of prices for oil and other basic goods that the country exports would be reflected in a reduction in the trade deficit. Due to all of this, economic growth for all of 2022, 2023, and 2024 would be 7.9%, 0.5%, and 1.3%, respectively. Expected excess demand (measured via the output gap) is estimated to be higher than contemplated in the previous report; it would diminish in 2023 and could turn negative in 2024 (Graph 1.4). These estimates remain subject to a high degree of uncertainty related to global political tension, a rise in international interest rates, and the effects of this rise on demand and financial conditions abroad. In the domestic context, the evolution of fiscal policy as well as future measures regarding economic policy and their possible effects on macroeconomic imbalances in the country, among others, are factors that generate uncertainty and affect risk premia, the exchange rate, investment, and the country's economic activity.

Interest rates at several of the world's main central banks continue to rise, some at a pace higher than expected by the market. This is in response to the high lev-

els of inflation and their inflation expectations, which continue to exceed the targets. Thus, global growth projections are still being moderated, risk premia have risen, and the dollar continues to gain strength against other main currencies. International pressures on global inflation have heightened. In the United States, core inflation has not receded, pressured by the behavior of the CPI for services and a tight labor market. Consequently, the U.S. Federal Reserve continued to increase the policy interest rate at a strong pace. This rate is expected to now reach higher levels than projected in the previous quarter. Other developed and emerging economies have also increased their policy interest rates. Thus, international financial conditions have tightened significantly, which reflects in a widespread strengthening of the dollar, increases in worldwide risk premia, and the devaluation of risky assets. Recently, these effects have been stronger in Colombia than in the majority of its peers in the region. Considering all of the aforementioned, the technical staff of the bank increased its assumption regarding the U.S. Federal Reserve's interest rate, reduced the country's external demand growth forecast, and raised the projected trajectory for the risk premium. The latter remains elevated at higher levels than its historical average, within a context of high local uncertainty and of extensive financing needs from the foreign sector and the public sector. All of this results in higher inflationary pressures associated to the depreciation of the Colombian peso. The uncertainty regarding external forecasts and its impact on the country remain elevated, given the unforeseeable evolution of the conflict between Russia and Ukraine, of geopolitical tensions, and of the tightening of external financial conditions, among others.

A macroeconomic context of high inflation, inflation expectations and forecasts above 3%, and a positive output gap suggests the need for contractionary monetary policy, compatible with the macroeconomic adjustment necessary to eliminate excess demand, mitigate the risk of unanchoring in inflation expectations, and guarantee convergence of inflation at the target. In comparison with the July report forecasts, domestic demand has been more dynamic, with a higher observed output level that surpasses the economy's productive capacity. Headline and core inflation have registered surprising rises, associated with the effects of domestic and external price shocks that were more persistent than anticipated, with excess demand and indexation processes in some CPI groups. The country's risk premium and the observed and expected international interest rates increased. As a consequence of this, inflationary pressures from the

Graph 1.5
Monetary Policy Interest Rate, Interbank Rate and BBI^{a/}
(weekly data)



a/ IR: Interbank Rate; BBI: Benchmark Banking Indicator.
 Sources: Office of the Financial Superintendent of Colombia and Banco de la República.

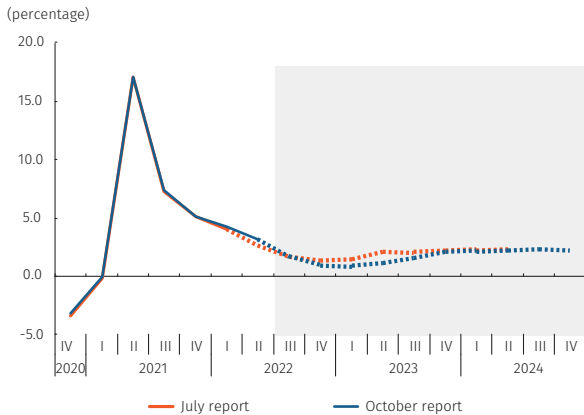
exchange rate rose, and in this report, the probability of the neutral real interest rate being higher than estimated increased. In general, inflation expectations for all terms and the bank’s technical staff inflation forecast for 2023 increased again and continue to stray from 3%. All of the aforementioned elevated the risk of unanchoring inflation expectations and could heighten widespread indexation processes that push inflation away from the target for a longer time. In this context, it is necessary to consolidate a contractionary monetary policy that tends towards convergence of inflation at the target in the forecast horizon and towards the reduction of excess demand in order to guarantee a sustainable output level trajectory.

1.2 Monetary policy decision

In its September and October of 2022 meetings, *Banco de la República’s* Board of Directors (BDBR) decided to continue adjusting its monetary policy. In September, the BDBR decided by a majority vote to raise the monetary policy interest rate by 100 basis points (bps), and in its October meeting, unanimously, by 100bps. Therefore, the rate is at 11.0% (Graph 1.5).

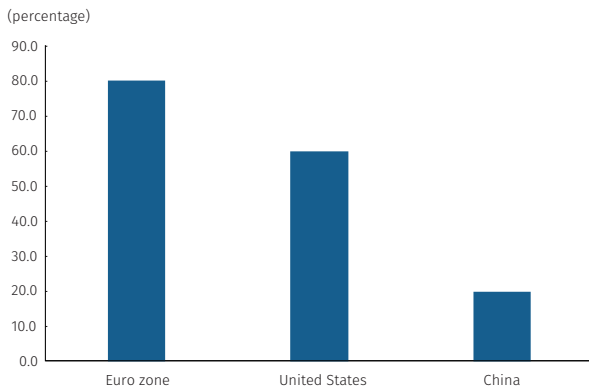
2. Macroeconomic forecasts and risk analysis

Graph 2.1
Real GDP, main trading partners
(Annual change; projections based on full-year assumptions)



Sources: Bloomberg, statistics offices, and central banks; calculations and projections by Banco de la República.

Graph 2.2
Probability of recession one year forward in some of the world's main economies



Note: corresponds to the median of the survey conducted by Bloomberg, consulted on 25 October 2022.
Source: Bloomberg.

2.1 International outlook

2.1.1 Foreign demand

The forecast horizon assumes low growth in foreign demand relevant to the country (Graph 2.1), in a scenario of further deceleration in the economy and world trade¹, high external inflation, and a more restrictive monetary policy cycle in several countries. This is compounded by high global uncertainty and the deterioration of international financial conditions. In particular, the technical staff highlights the impacts on global economic activity related to Russia's invasion of Ukraine, the energy crisis in Europe, the Covid-19 containment measures, along with the crisis in the real estate sector in China, the increased pace of monetary policy rate adjustment in the United States, and financial stress events in foreign markets. In this context, the risks of recession (Graph 2.2) and of the persistence of higher inflation have intensified in several economies, including those of the United States and the euro zone. For all of 2022, the country's trading partners' growth is assumed to be 2.5%, which is similar to that estimated in the July Report (2.4%) and incorporates the outperformance registered in the second quarter, which was partially offset by downward revisions in the second half of the year (Table 2.1). For 2023, an expansion of 1.4% is projected, which is lower than the 2.0% expected in the previous report, and for 2024, a growth of 2.2% is projected, which is lower than the historical average for this indicator.

The materialization of risks has affected the outlook for economic growth in the United States and the euro zone. In the second quarter, the United States' real GDP presented its second consecutive quarterly decline (-0.6% annualized quarterly a. q.), which surprised the market with its downturn. For the third quarter, its economic activity is reported to have rebounded². Going forward, domestic demand is expected to remain sluggish, because of high inflation (Graph 2.3), low household confidence, and deteriorating financial conditions. This is compounded by the accelerated pace of monetary

1 For 2023, the International Monetary Fund (IMF) reduced the world GDP projection from 2.9% in June to 2.7% in October. For this year, the World Trade Organization revised its projection for world merchandise trade growth downward to 1.0% in its October report, compared to 3.4% in April.

2 At the close of this report, it was known that, according to preliminary figures, in the third quarter of the year, the United States' GDP had an expansion of 2.6% annualized quarterly (a. q.).

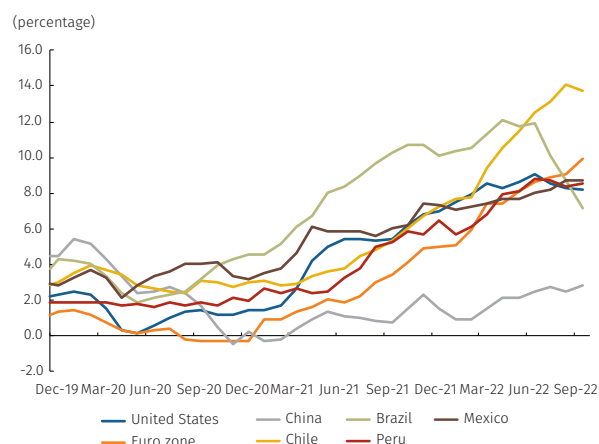
Table 2.1
Economic growth projections among main trade partners^{a/}

Main trade partners	2021 (pr)	2022 (proj)	2023 (proj)	2024 (proj)
United States	5.9	1.7	0.8	1.5
Euro zone	5.2	2.6	0.0	1.9
China	8.1	3.2	4.5	4.8
Ecuador	4.2	2.4	2.0	2.3
Brazil	4.6	2.5	0.6	1.9
Peru	13.6	2.7	2.5	2.9
Mexico	4.8	2.1	1.4	1.9
Chile	11.7	2.1	-0.5	2.2
Total trade partners^{a/}	7.1	2.5	1.4	2.2

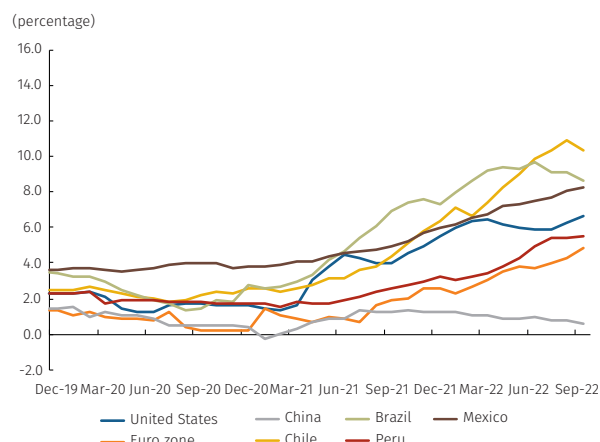
(pr): preliminary. (proj): projected.
a/ For the calculation of the weightings, participation in trade was used.
Source: Bloomberg, Focus Economics, statistical offices, and countries' central banks (observed data); calculations and projections by Banco de la República.

Graph 2.3
Inflation, main trading partners

A. Headline Inflation



B. Core inflation



Source: Bloomberg.

policy tightening (Graph 2.4, panel A), and the weakening of the country's real estate sector³.

On the other hand, the real GDP in the euro zone for the second quarter accelerated (3.3 % a. q.) and exceeded market expectations, favored by the reduction of the Covid-19 containment measures, the rebound in tourism, and improvements in the manufacturing sector. However, the effects of Russia's invasion of Ukraine continue to impact the performance of economic activity in Europe. In particular, the energy crisis due to restrictions to the gas supply from Russia would continue to have significant impacts on economic growth, fiscal accounts, and inflation. This is compounded by the deterioration of domestic financial conditions, low consumer confidence, higher monetary policy interest rates and a reduced international momentum. Thus, the recovery of these economies would be disturbed for the remainder of the year, and by 2023, economic growth is expected to be lower than estimated in the July Report. However, uncertainty is high, and the probability assigned by the market to recession scenarios in these economies has increased (Graph 2.2).

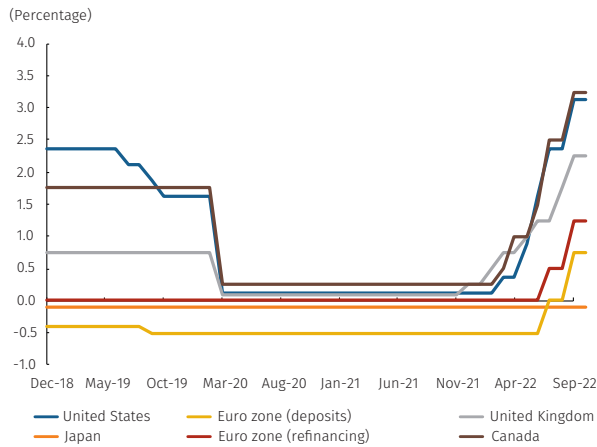
Growth projections for China have been revised downward amid difficulties in mitigating the impacts of the pandemic and the crisis in their real estate sector. During the third quarter, China's economic activity rebounded and registered an annual growth of 3.9% (3.9% quarterly), after 0.4% (-2.7% quarterly) in the previous quarter. In particular, its industrial production improved, with an annual growth rate of 4.8%, compared to 0.6% in the second quarter. However, low consumer confidence and a zero-tolerance Covid-19 policy are factors that would continue to affect the dynamics of private consumption. In the real estate sector, indicators continue to show significant contractions compared to the previous year. In response, additional government measures have been taken in recent months to mitigate the impacts of the shocks affecting China's economy, and its central bank reduced some of its key benchmark interest rates⁴. Thus, for 2022 and 2023, the economic growth assumptions for China were revised downward to 3.2% and 4.5%, respectively.

By 2022 and 2023, the average growth of Latin America's main trading partners is expected to be⁵ 2.4% and 1.5%, respectively. In the second quarter, economic activity in

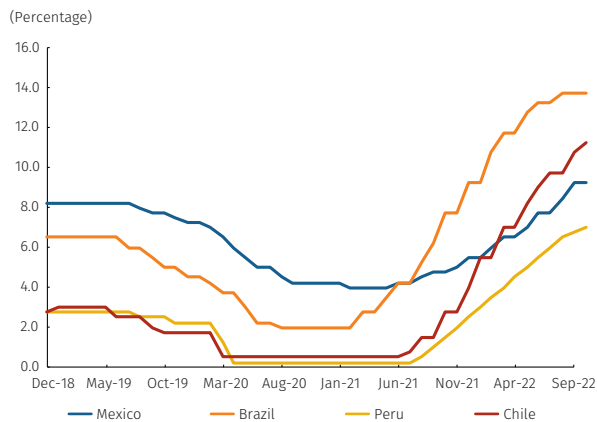
- 3 In recent months, there have been annual declines in building permits, the number of constructions starts, and new home sales. This behavior has occurred in the midst of rising mortgage rates.
- 4 In August, the Central Bank reduced the one-year prime rate from 3.7% to 3.65% and the five-year rate from 4.45% to 4.3%.
- 5 This corresponds to the average trade-weighted real GDP for Ecuador, Brazil, Chile, Mexico, and Peru.

Graph 2.4
Monetary policy interest rate, main trading partners

A. Developed economies

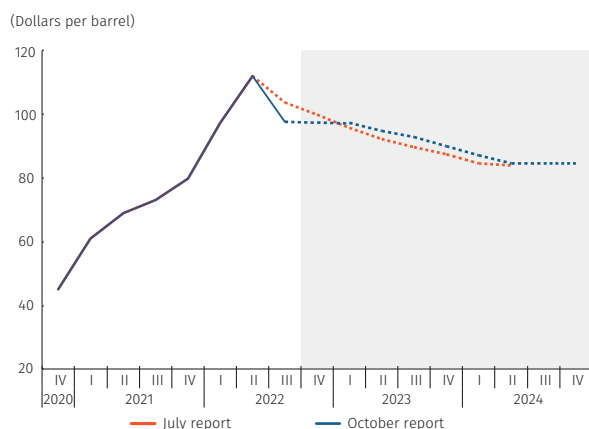


B. Latin America



Source: Bloomberg.

Graph 2.5
Assumed quarterly oil Price



Sources: Bloomberg; calculations and projections by Banco de la República.

Brazil, Mexico, Chile, and Peru outperformed expectations⁶. However, the economies of the region continue to be affected by high inflation (Graph 2.3), low consumer confidence, the impacts of the economic downturn, the impacts of their monetary policy interest rate increases (Graph 2.4, panel B), political and social uncertainty, and limited fiscal space. In turn, within the international context, the prices of some of the commodities exported by these countries have declined from the year's highs, although they remain at higher levels than those observed before the pandemic. Likewise, demand for their exports would be reduced by the slower growth of the world's main economies (Table 2.1), and they would continue to face the deterioration of international financial conditions and the greater perception of sovereign credit risk in emerging markets (Table 2.2). Considering this, a decrease in growth is still expected for the economies of the region during this year. However, considering the positive surprises of the second quarter, the GDP growth projection for Chile and Mexico was revised upwards, and to a greater extent for Brazil, where the rebound in economic activity for the third quarter and the new fiscal stimulus measures are also highlighted. For the coming year, growth in the general region's countries was revised downward, especially in the case of Chile, where an economic contraction is expected.

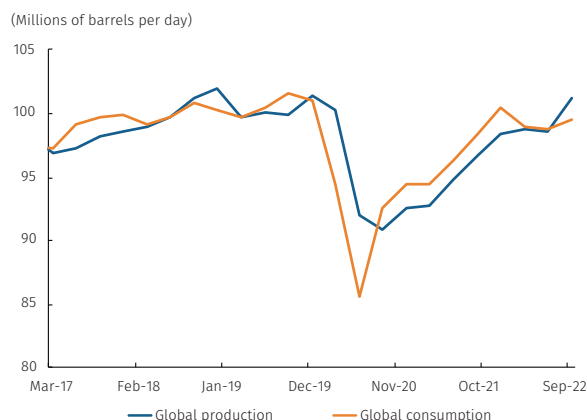
2.1.2 International Prices

A reduction in international oil price estimates is expected in the forecast horizon, in a context of lower global economic growth, although prices would remain relatively high due to the supply shocks affecting this market (Graph 2.5). During the third quarter, international oil prices showed a downward trend. This moderation in prices occurred in the midst of lower world economic growth prospects, the strengthening of the dollar, China's zero tolerance policy for Covid-19, the redirection of Russian oil to other countries, and the release of strategic reserves by the United States (Graph 2.6, panel A). However, oil prices remain relatively high and showed a rebound in October. This occurs in a context of announcements of further production cuts from the Organization of Petroleum Exporting Countries and its allies (OPEC+), a reduction in derivatives exports from Russia, together with the prospects of a decrease in its hydrocarbon supply due to the sanctions that will soon come into force. This is compounded by a low level of commercial crude oil inventory in the Organization for Economic Cooperation and Development (OECD) member countries (Graph 2.6, panel B) and by the energy crisis in Europe due to the Russian gas supply cuts prior to the beginning of the winter season. Going forward, the path of international crude oil prices is expected to decline, in line with a global economic slowdown, although this reduction would be limited

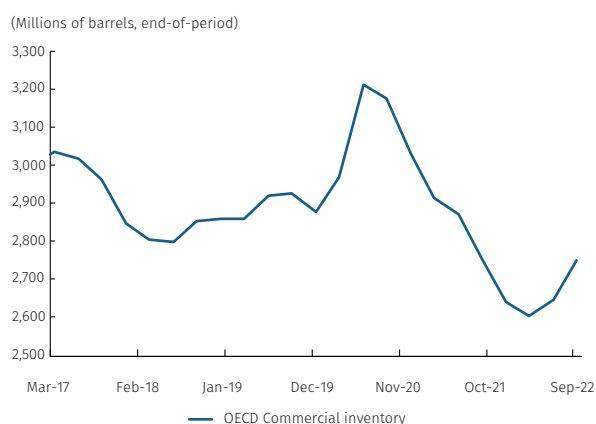
6 In the case of Ecuador, economic activity was affected by social protests and their impact was in line with the estimates in the July Report.

Graph 2.6
Global oil and other liquid fuels market

A. Global production and consumption balance

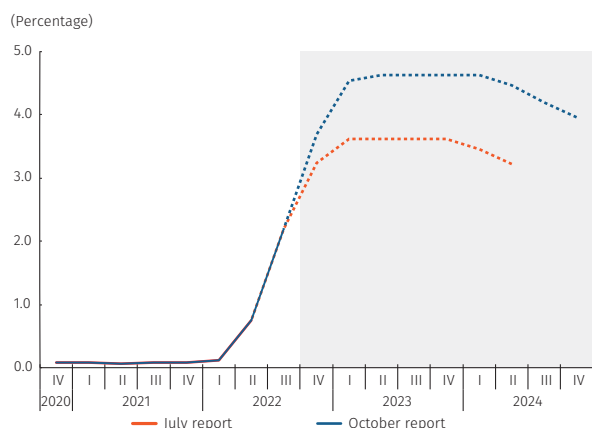


B. Commercial inventory amongst OECD countries



Sources: U.S. Energy Information Administration.

Graph 2.7
Assumed U.S. Federal Reserve quarterly interest rate



Source: Federal Reserve Bank of St. Louis, calculations and projections by Banco de la República.

by some supply restrictions that could keep the market tight. Thus, an average Brent price of USD 101 bl in 2022 (USD 103 bl in the July report) is expected, which, added to the increase in international estimates of other commodities exported by the country, would boost annual growth in terms of trade to over 20% this year. By 2023, an annual reduction is assumed that would bring the average oil price (Brent) to USD 94 bl (USD 91 bl in the July Report), while by 2024, the average price would be at USD 85 bl. Uncertainty about this assumption is high, given the multiple shocks faced by this market.⁷

By the end of 2022, inflation is expected to deviate significantly from its target in most economies. Thereafter, the process of inflation moderation would occur at different rates across countries and would face significant risks. According to the IMF, in the last quarter of 2022, global inflation would be at 9.3%, higher than that observed in the same moment of 2021 (5.6%) and than that projected in its previous report (8.3%). For the coming years, the IMF expects a reduction to 5.1% by the end of 2023, and to 3.7% by the end of 2024. In the United States, annual headline inflation decreased in September to 8.2 % (8.3 % in August), although it surprised the market on the upside, and annual core inflation increased to 6.6 % (6.3 % in August)⁸ (Graph 2.3). In the euro zone, headline and core inflation rose in September to 9.9 % and 4.8 %, compared to 9.1 % and 4.3 % in August, respectively (Chart 2.3). The energy crisis, which was aggravated by the complete suspension of Russian gas supplies before the winter season, contributed to this increase. Going forward, market and international agencies' projections indicate that headline inflation in these countries would decrease, although it would remain above its targets at the end of 2023⁹. This would occur in the midst of monetary policy tightening, slower economic growth, lower commodity prices, and the dilution of global supply shocks.

2.1.3 International financial developments

This report revised the assumption for the United States' monetary policy interest rate upwards (Graph 2.7). In September, the Federal Open Market Committee (FOMC) raised the monetary policy interest rate for the third consecutive time by 75 basis points (bps), placing it at a range between 3.0% and 3.25%. Thus, it has registered accelerated adjustment in comparison with previous rate increase cycles. In turn, the pace of reduction of the Balance

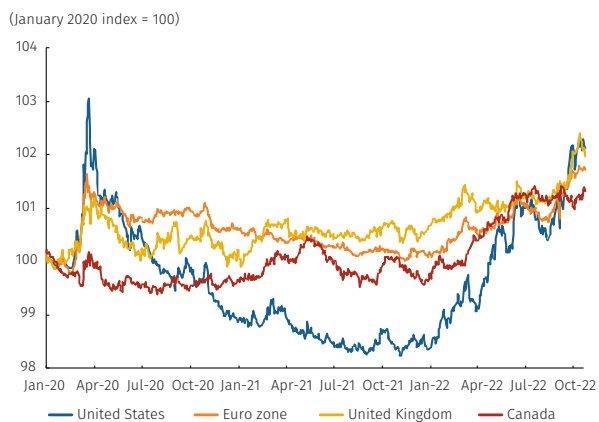
7 Of note are the announcements on the international agreement to impose a cap on the price of Russian oil, the uncertainty regarding the nuclear agreement with Iran, the risks of a global recession, among others.

8 Diffusion indexes and other measurements developed by the Federal Reserve suggest that a wide range of products and services continue to contribute to high inflation. Among the factors to note are high food prices, high labor costs, and higher prices for services.

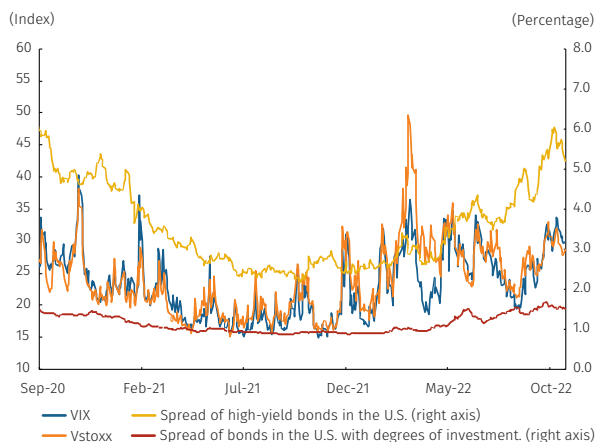
9 For 2023, the IMF projects an inflation of 2.4% in the United States, and 4.5% in the euro zone..

Graph 2.8
Financial conditions and risk indicators for developed economies

A. Financial conditions in developed economies



B Risk indicators in developed economies



Note: data to 21 October 2022.

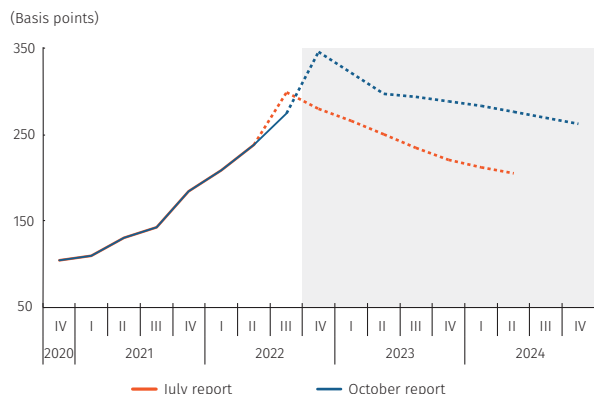
Sources: Bloomberg and the Federal Reserve Bank of St. Louis.

Sheet has quickened as of that month. The aforementioned has happened in an inflation context that remains historically high, that has outperformed upwards, and whose expectations are at levels higher than the target. In turn, the unemployment rate is relatively low despite mixed economic results and an increase in fears of an economic recession. Thus, the information from the markets and futures surveys¹⁰ and from the FOMC's projections¹¹ shows a higher interest rate trajectory than contemplated months ago. Taking all of this into account, the assumption for the United States' monetary policy interest rate was revised upwards, and the rate is expected to be within a range of 4.5% to 4.75% during the first meeting of 2023. The rate would remain at these values until the first quarter of 2024. Going forward, the rate would decrease starting in the second quarter, leading to a range from 3.75% to 4.0% at the end of 2024, in as far as inflation approaches the target. On the other hand, the European Central Bank (ECB) accelerated the pace at which it increases its benchmark interest rates (75 bps) and announced that the Governing Council hopes to carry out additional increases in the next meetings, at levels that ensure a timely return of inflation to its target.¹² In general, within a global context of high inflation, there has been synchronicity amongst cycles of monetary policy interest rate increases in the central banks of several nations' economies worldwide (Graph 2.4).

In the third quarter and the fourth quarter so far, international financial conditions have continued to deteriorate. The financial conditions of the world's most advanced economies have become more restrictive (Graph 2.8, panel A), and the world's main stock markets have deteriorated.¹³ On the one hand, public debt interest rates in the United States and their volatility have continued to rise, while that market's liquidity has decreased. Similarly, public debt securities and the currency in the United Kingdom recorded strong

- 10 By the end of 2022, the median from the Survey of Primary Dealers (SPD) carried out by the Federal Reserve Bank of New York increased from 3.38% in July to 4.38% in September. The median for the Survey of Market Participants (SMP) increased from 3.63% in July to 4.38% in September. For 2023, these surveys indicate that the rate would be at 4.63% during a good part of the year and would decrease in some manner during the last quarter of the year or at the beginning of 2024.
- 11 For the close of 2022 and 2023, the median of the benchmark interest rate projections is 4.38% and 4.63%, respectively. For the close of 2024 it would go down to a rate of 3.88%.
- 12 By the publication of this report, it was known that the ECB increased its three official types of interest rates by 75bps in its October 27th meeting, for the second consecutive time. In turn, starting in November, there would be an adjustment to the interest types applicable to financing operations (TLTRO III).
- 13 According to MSCI indexes, in the year so far, up to October 21st, China's stock markets have fallen 37%, Europe's 33%, those of developing countries 30%, and the United States' 22%.

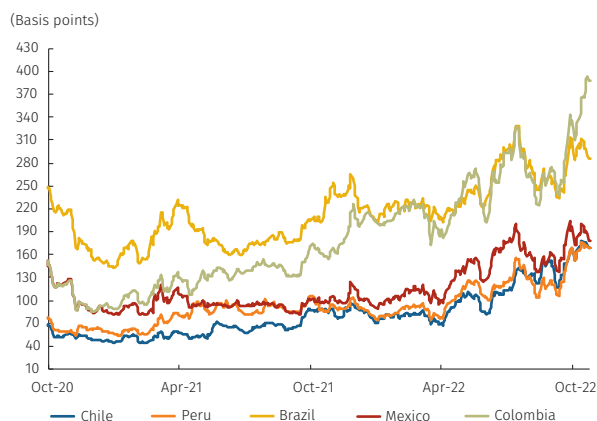
Graph 2.9
Colombia's assumed quarterly risk premium (CDS)^{a/}



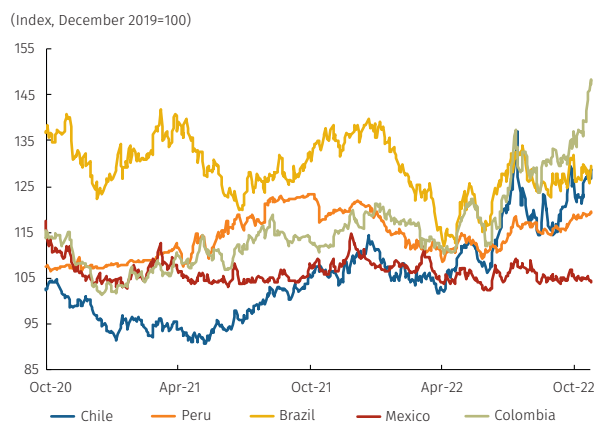
a/ Five-year credit default swaps.
Source: Bloomberg, calculations and projections by Banco de la República.

Graph 2.10
Behavior of nominal exchange rate and risk premium for selected Latin American countries

A. Five-year credit default swap



B. Nominal Exchange rate



Note: data to 21 October 2022.
Source: Bloomberg, calculations by Banco de la República.

devaluation at the end of the third quarter, amidst uncertainty regarding its fiscal policy. At the same time, worries about the solvency of some European banks generated additional volatility in markets, and the IMF points out that risks for global financial stability have increased. According to the Institute of International Finance (IIF), investment portfolio outflows were registered in emerging economies in September, related to higher outflows from equity markets which surpassed capital inflows to fixed income investments. In Colombia's case, the data from the local foreign exchange balance indicate foreign portfolio inflows at a value of USD 124 million (m) in September, a lower value than the USD 841 million registered during August.

The forecast horizon assumes a higher risk premium than in the July report and than the historical average. Nevertheless, it would tend to moderate in comparison to the high levels observed during the month of October (Graph 2.9). In the third quarter and throughout October so far, margins on advanced countries' corporate debt remained elevated, as did other risk indicators (VIX and VSTOXX) (Graph 2.8, panel B). In this same time period, risk premia in several emerging countries were above the second quarter's average (Graph 2.10, panel A). In Colombia's case, the 5-year Credit Default Swap (CDS) average rose to 275 bps in the third quarter and to 348 bps up to October 21st; in this last time period, it has reached its maximum value for the last thirteen years. This recent increase is higher than that registered in other emerging countries¹⁴, and its levels are higher than observed in the majority of the region's main economies. This figure was above the technical staff's expectations in the July report for the fourth trimester (280 bps). For its part, the dollar has strengthened worldwide, and in the case of Colombia, the peso has seen heavy depreciation¹⁵ (Graph 2.10, panel B). Colombia's risk premium's high levels and the currency's depreciation have occurred amidst the aforementioned global circumstances, in addition to local factors, such as fiscal and current account deficits, the level of public indebtedness, uncertainty about local economic policy, and a credit score for foreign currency debt that remains below the investment grade rating. Taking all of this into account, a risk premium

14 Between the third quarter average and the average for the fourth quarter so far in 2022 (up to October 21st), Colombia's 5-year Credit Default Swap (CDS) rose 73bps, South Africa's rose 42 bps, Peru's 36 bps, Chile's 31 bps, Malaysia's 28 bps, Brazil's 23 bps, and Mexico's 22 bps. In this time period, currencies depreciated in South Africa (6.1%), Turkey (3.5%), and Peru (2.1%), while the Brazilian real remained at a relatively stable value with an appreciation of (0.2%), and the Mexican peso appreciated (1.0%).

15 Between the third and second quarter, the Colombian peso depreciated by an average of 12.0%, and between the third quarter and the fourth quarter up to October 21st, average depreciation was close to 6.0%.

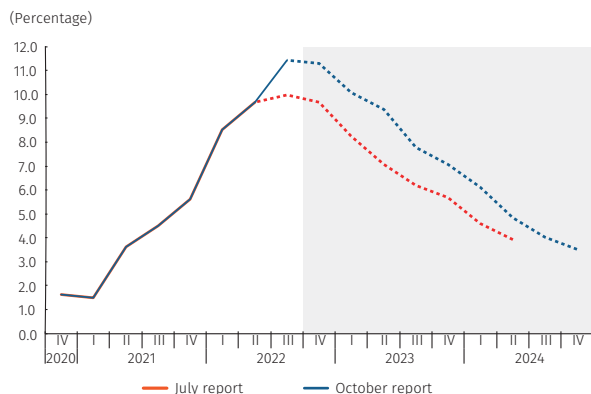
higher than that from the July report is assumed, which on average would reach 300 bps in 2023. By 2024, a reduction in this value is expected, and it would register an average of 273 bps, in accordance with improvements in the international financial context and the expected reduction in the country's macroeconomic imbalances.

2.2 Macroeconomic forecasts¹⁶

2.2.1 Inflation

At the end of this year, headline inflation would end up at elevated levels and higher than forecasted in the previous report; however, during 2023 some temporary inflationary pressures should yield, which, along with the effect of monetary policy, would channel inflation on a downward trend of convergence to the target. For the remainder of the year and for 2023, inflation is expected to be higher than in the July Report, largely due to greater pressures derived from the exchange rate, even though those stemming from high international prices of raw materials, transportation and logistics costs continue to gradually fade. Along with this, the new forecast path takes into account an indexation at higher inflation rates for the next two years, as well as higher labor cost adjustments and more elevated short- and medium-term inflation expectations. On the other hand, given the positive surprises in domestic demand and growth performance, the output gap was revised upward (as explained below), implying that consumer inflation in Colombia would be subject to greater demand and indexation pressures than those contemplated in the last report. However, these pressures should gradually fade as the factors that have driven high domestic consumption growth lose steam and domestic consumption returns to a more sustainable path in the long term, something that is expected to happen, in part, as a result of monetary policy actions. Thus, in 2022, inflation would end up at 11.3 %, with a decreasing trend over the next two years, with figures of 7.1 % by December 2023 and 3.5 % by the end of 2024 (Graph 2.11). These estimates maintain a wide margin of uncertainty, especially due to the high risks of a further deterioration of the external environment and/or a more persistent depreciation of the peso, and the various adjustments that could occur in fuel and electricity prices.

Graph 2.11
Consumer Price Index (CPI)
(annual change, end of period)

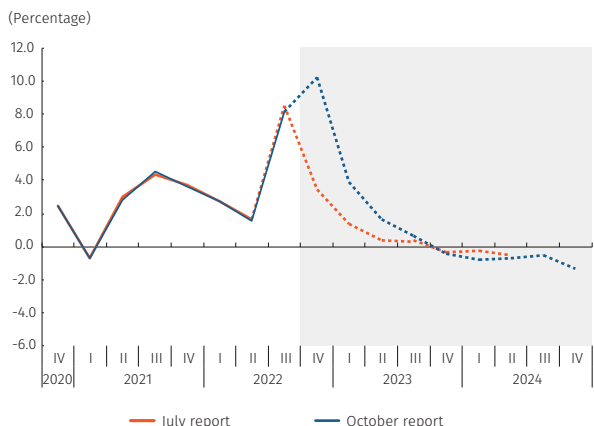


Source: DANE; calculations and projections by Banco de la República.

The decline in core inflation would be postponed to the middle of next year and would be more gradual than in the case of headline inflation. Compared to the previous report, the expected path for core inflation, as measured by the annual change in the CPI excluding food and regulated items, was revised upward over much of the forecast horizon. A more elevated exchange rate, a slow decline in external pressures and a higher-than-expected

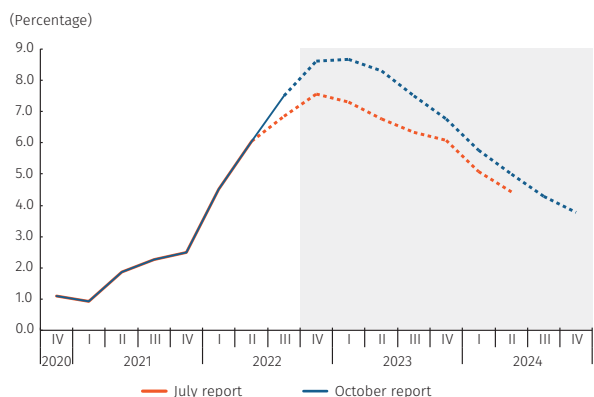
¹⁶ The results assume an active monetary policy in which Banco de la República's reference rate is adjusted to ensure compliance with the inflation target.

Graph 2.12
Quarterly RER inflationary gap^{a/}
(annual change, end of period)



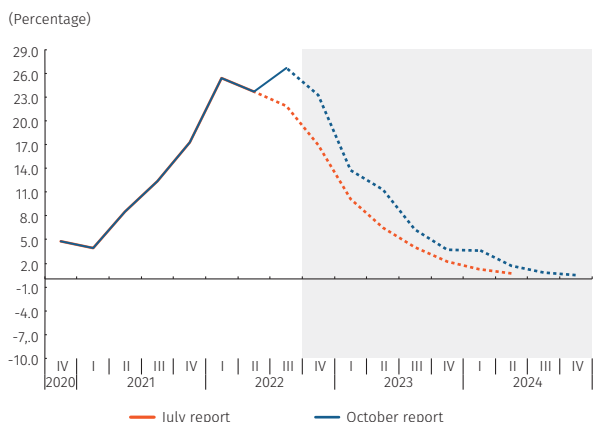
a/ The real exchange rate (RER) inflation gap captures inflationary pressures from the exchange rate. Positive values of this gap imply upward pressures on inflation from the exchange rate. This gap is calculated as the deviation of the real exchange rate from a non-inflationary trend component estimated under the economic structure of the 4GM monetary policy model.
 Source: Banco de la República.

Graph 2.13
CPI excluding food and regulated items
(annual change, end of period)



Source: DANE; calculations and projections by Banco de la República.

Graph 2.14
CPI for foods
(annual change, end of period)



Source: DANE; calculations and projections by Banco de la República.

level of demand would explain much of the correction and the forecast trajectory. In addition, indexation at higher inflation rates is generating greater inertia to core inflation, a probable increase in labor costs higher than that observed for this year, and inflation expectations that continue to rise. These latter circumstances mainly affect the CPI for services (excluding food and regulated items), whose annual variation is expected to have an upward trend until the middle of next year. The forecast for this sub-basket continues to contemplate the reversal of indirect tax relief¹⁷. In the case of the annual variation of the CPI for goods (excluding food and regulated items), the decline towards rates more compatible with the target should mainly occur in 2023, mainly due to the dissolution of external pressures and comparison base effects in 2022. This reversal of external pressures would help mitigate the impact of inflationary pressures from the exchange rate, which are higher than previously estimated, but which, in any case, should be reduced over the course of next year (Graph 2.12). With all this, core inflation is expected to close at 8.6% in 2022 and to peak in the first quarter of 2023 (8.7%). Thereafter, this indicator should exhibit a decreasing path due to the same factors discussed above for headline inflation, reaching 6.8 % by the end of 2023 and 3.8 % in December 2024 (Graph 2.13).

Despite the upward surprises in food prices in recent months, a decline in their annual variation is still expected from the end of 2022, which should be accentuated throughout 2023 due to the reversal of external pressures and the normalization of the agricultural cycle. The forecast trajectory for the annual CPI variation of this sub-basket was revised upward versus the July report throughout the forecast horizon, mainly due to a larger than expected depreciation of the peso, external pressures that are declining at a slower pace than anticipated, and a local agricultural cycle that is still affected. Added to this are higher wage costs and expected increases in fuel prices, which generate upward pressures on food production, transportation and marketing costs. However, external pressures would continue to ease and, therefore, the annual adjustment of the CPI for food, including processed food, would show a downward trend starting at the end of this year, which would be accentuated in 2023. The recovery and stabilization of domestic food supply would also contribute to this trend, due to favorable weather conditions for most agricultural products and the normalization of the agricultural cycle, following the problems caused by the May 2021 strike (see Box 1) and the shock to agro-inputs due to the conflict between Russia and Ukraine. Thus, in the central scenario of this Report, the annual variation of the food CPI would close in 2022 at 23.3 %, and in 2023 and 2024 at 3.7 % and 0.5 %, respectively (Graph 2.14).

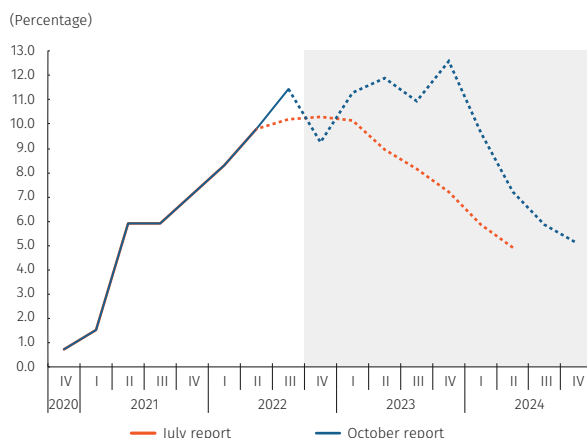
Any adjustments in domestic fuel prices continue to be important for the evolution of inflation over the forecast horizon. Given the current and expected levels for the international price of fuels and the exchange rate, there is

17 The full return of VAT on hotels, tourism and airline tickets is expected, as well as the reinstatement of the excise tax on meals away from home for all establishments as of the first quarter of 2023.

currently a significant gap between external prices in pesos and the domestic price, which has generated a significant deficit in the Fuel Price Stabilization Fund (*Fondo de Estabilización de los Precios de los Combustibles*, FEPC). To close this gap, the adjustments that would be needed in the domestic prices of regular gasoline and diesel are of great magnitude. In addition to the direct impact on the CPI of the gasoline price adjustment, there is also a relevant indirect impact via some input, transportation and marketing costs. In addition, due to its fiscal and macroeconomic dimension, the path of increases implemented may also affect other variables, such as the country's risk premium, the exchange rate, inflation expectations and consumption, which makes the estimation of its total impact on inflation complex and uncertain. This *Report* assumes that the fuel CPI adjusts in annual terms to a rate close to 10% by the end of 2022 and to a higher rate by the end of 2023.

The regulated items CPI's evolution will depend to a large extent on the decisions made by the authorities on fuel and energy prices. The forecast path for the annual variation of the regulated CPI would continue to reflect upward pressures coming from the high levels of the CPI, the PPI, the exchange rate and the international prices of some raw materials, which affect the rate formulas of public utilities and other regulated services. The projection also incorporates the pass-through of costs associated with the investment, the activation of adjustments postponed in past periods and the recovery of losses of some companies that provide public utilities. The bulk of all these pressures would be greater and more persistent than anticipated, which explains much of the increase in the forecast path over the entire horizon. However, it is assumed that the annual adjustment of this sub-basket would have a significant drop in the last quarter of 2022, below what was expected in the previous Report, as a result of the eventual reduction in electricity rates, in accordance with the recent resolutions issued by the authorities¹⁸. In any case, due to the important share of both electricity and fuels in the regulated CPI sub-basket (each one close to 17%) and their relevance in the cost structure of the economy, their evolution, which depends largely on the decisions of the national authorities, would have considerable effects on the regulated CPI and on headline inflation. In addition to the aforementioned increases in the CPI for fuels, this Report expects an annual change in the CPI for electricity of close to 12% by December 2022 and somewhat lower by the end of 2023. With this, the annual increase in the regulated CPI would stand at 9.3 % at the end of 2022, then increase to 12.6 % in December 2023 (partly due to the statistical comparison effect) and would begin to decline in 2024, closing that year at 5.1 % (Graph 2.15).

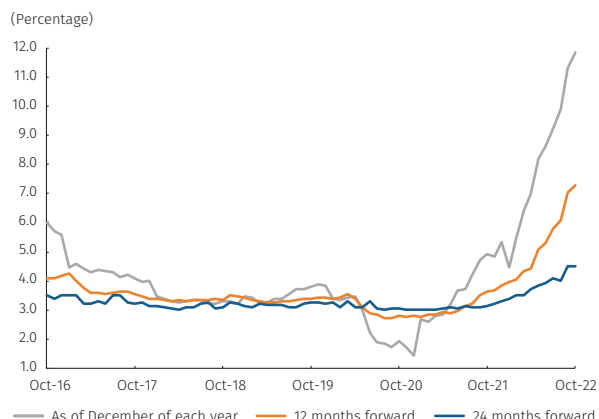
Graph 2.15
CPI for regulated items
(annual change, end of period)



Source: DANE; calculations and projections by Banco de la República.

18 Resolutions 701-017, 701-018 and 701-019 issued by the CREG on 16 September 2022.

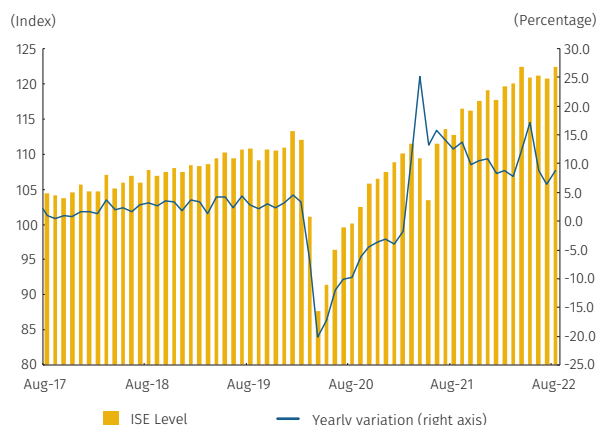
Graph 2.16
Inflation forecasts from banks and stockbrokers^{a/}



a/ Corresponds to the median of the responses of Banco de la República's Monthly Survey of Economic Analysts' Expectations. Source: DANE; calculations and projections by Banco de la República.

Inflation expectations over the forecast horizon increased and remain above target. Economic analysts' expectations, obtained from *Banco de la República's* monthly survey applied between October 6 and 11 (Graph 2.16), suggest a median headline inflation for the end of 2022 of 11.9 % (9.2 % in the July survey) and 9.4 % for non-food inflation (7.6 % in the July survey). By the end of 2023, according to the survey results, these measures would stand at 6.7% and 6.3%, respectively (5.2% and 5.1% in the July survey). Additionally, in this survey, the two and five-year headline inflation expectations increased to 4.5 % and decreased to 3.1 %, respectively (4.1 % and 3.2 % in the July survey). On the other hand, with information as of October 21, the estimated expectations based on public debt bonds (breakeven inflation, BEI), adjusted for inflationary risk and liquidity premia¹⁹, show inflation expectations for two, three and five years at 8.3 %, 7.7 % and 6.7 %, respectively (6.2 %, 5.9 % and 5.3 %, in that order, for July).

Graph 2.17
Economic Monitoring Indicator (ISE)^{a/} (monthly)

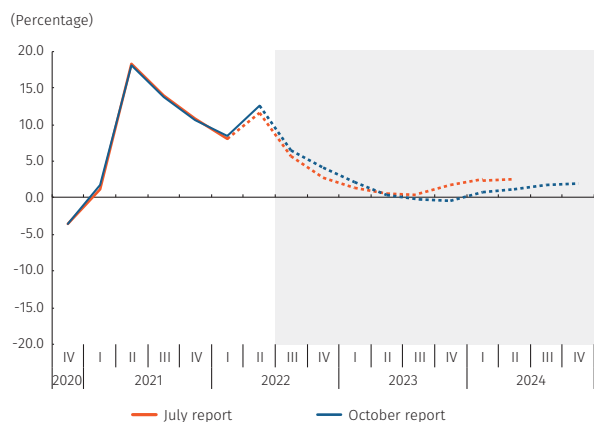


a/ Seasonally adjusted and corrected for calendar effects. Source: DANE; calculations and projections by Banco de la República.

2.2.2 Economic Activity

In the third quarter, the Colombian economy would have continued to show significant strength, although with a more moderate growth compared to that observed in the first half of the year. This would follow a strong recovery since the end of 2021 and GDP levels above those observed before the pandemic. For the third quarter of this year, various sectoral indicators available, the most comprehensive of which is the Economic Monitoring Indicator (ISE) (Graph 2.17), suggest that in the two-month period of July and August, economic activity continued to expand at a significant annual rate, although at a slower pace than that observed in the previous quarter. Thus, for the third quarter, annual GDP growth is estimated at 6.4 %, which, although higher than the forecast included in the July Report, in quarterly terms would imply a significant moderation in the growth rate (with a rate of 2.5 % t. a. a.), as anticipated in previous projections (Graph 2.18). Private consumption and investment in machinery and equipment would have been the main sources of economic expansion. On the supply side, manufacturing industry, transportation and accommodation, and arts, entertainment and recreation activities would be the most dynamic sectors; while construction and mining, although with positive annual variations, would still lag behind the levels observed before the pandemic.

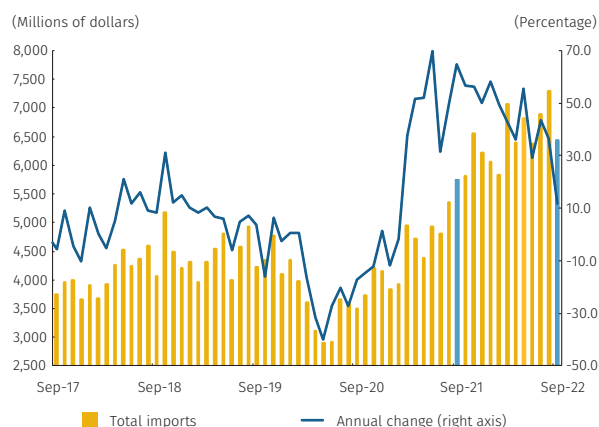
Graph 2.18
Quarterly GDP^{a/} (annual change)



a/ Seasonally adjusted and corrected for calendar effects. Source: DANE; calculations and projections by Banco de la República.

19 Inflation expectations net of premia are calculated as the spread between nominal and real risk-free rates extracted from local government bond markets at different maturities (Abrahams et al., 2015; Espinosa et al., 2015). In this sense, the so-called "inflation risk premium" arises from subtracting the term premium of the TES curve in UVR from the term premium of the TES curve in pesos. The differentials in these term premia may reflect uncertainty about future inflation; however, they may also be influenced by the particular frictions of each market, such as the preferences of some agents to invest in certain types of securities. Finally, the liquidity component is calculated as the spread between the liquidity premium extracted from TES in pesos and TES in UVR. Thus, the total BEI calculated with this methodology can be decomposed into inflation expectations, inflation risk premium and a liquidity component.

Graph 2.19
Total goods imports (CIF)
(monthly)



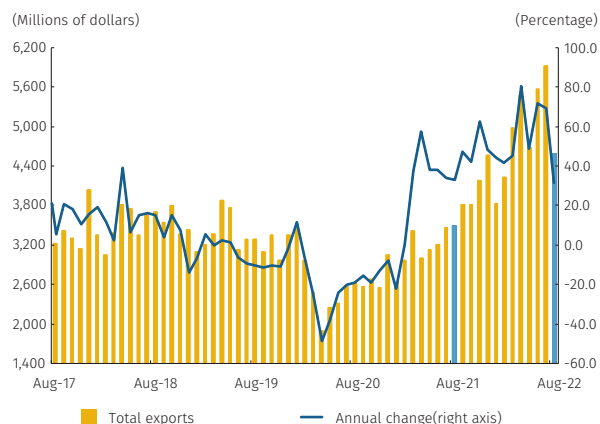
Sources: DANE and DIAN (foreign trade advances); calculations by *Banco de la República*.

Domestic demand would have continued to increase over the already very high levels reached in the second quarter, albeit at a slower pace, particularly due to a more moderate quarterly expansion of private consumption. Nevertheless, available indicators suggest that private consumption will continue to be sustained at historically high levels, which will allow it to maintain a significant annual growth rate, although lower than that of the first half of the year. By component, consumption of services is expected to remain the most dynamic. For the consumption of goods in general, more moderate quarterly growth is expected, partly due to the absence of VAT-free days. Figures such as the tertiary ISE, retail sales, transaction figures from some commercial banks, consumer credit loans and vehicle registrations point to this behavior. On the other hand, public consumption is expected to remain at levels similar to those of the second quarter, given the good dynamics registered by the employment of some government entities and the increase in spending associated with the return to on-site presence since the beginning of the year. With all this, the lower dynamics of total consumption would contribute to a slowdown in the growth of domestic demand in the third quarter, both in terms of annual and quarterly rates; nevertheless, this type of expenditure would continue to be the largest contributor to growth.

In the third quarter, investment would have continued to be driven by spending on machinery and equipment, which would have partially compensated for the lack of dynamism shown by investment in construction. For this period, a high annual growth in gross fixed capital formation is expected, similar to that observed in the second quarter. However, the expansion in quarterly terms would be small, mainly because investment in housing and other buildings and structures would continue to show little dynamism, particularly due to the poor performance of the social housing segment and civil works. For the latter, a better dynamic is expected towards the end of the year and 2023 as the execution of several projects of some local administrations progresses. In contrast to the above, investment in machinery and equipment registered a notable annual growth in the third quarter, maintaining the historically high levels observed in the first half of the year. This is suggested by the figures for imports of capital goods observed as of August and the DIAN advances as of September, which again show a significant increase in the transportation equipment category. Despite the expected growth in fixed capital investment, in this quarter this would remain 3.7% below the levels observed before the pandemic.

The trade deficit in constant pesos would have widened again, given the strong dynamism that imports continued to show in the third quarter, reflecting the strength of domestic demand. This behavior of external purchases would have registered a new increase between quarters and an annual growth of more than 20 %, which would be mainly originated in imports of capital goods (Graph 2.19). In the case of exports, foreign trade

Graph 2.20
Total goods exports (FOB)
(monthly)

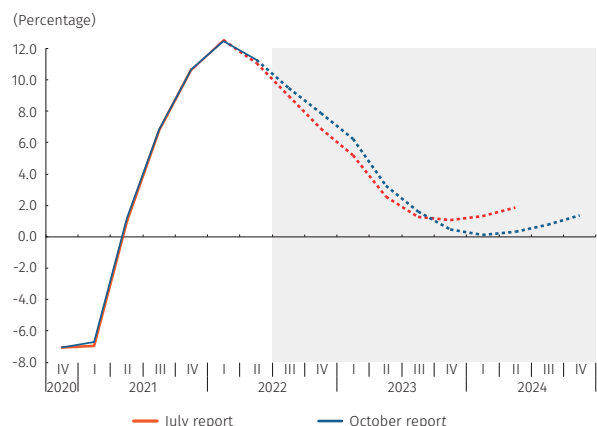


Source: DANE; calculations by Banco de la República.

figures as of August (Graph 2.20) and preliminary figures as of September forecast high levels close to those reached in the second quarter, which is largely explained by the favorable performance of foreign sales of non-traditional goods and services. It should be noted, however, that the results for the two-month period July-August were not favorable in the case of ferronickel exports and some agricultural goods, such as bananas and flowers, which prevents us from anticipating an increase in levels compared to the second quarter. In view of the above, in the third quarter the greater dynamics of imports would generate a trade deficit in real pesos slightly higher than in the previous quarter, and from an already very high level recorded in the second quarter. Thus, their contribution to the annual variation of GDP would continue to be negative.

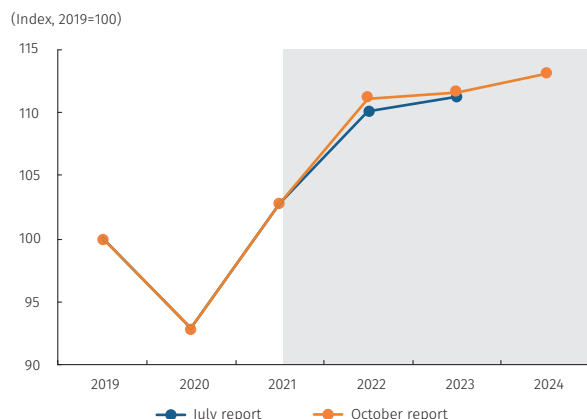
In the fourth quarter, the economy should continue to decelerate from the high levels of activity observed and with unusually high annual growth rates. The higher levels of economic activity in the second and third quarters implied an upward revision in the growth forecast for all of 2022, from 6.9% to 7.9%. In addition to the effects of monetary policy adjustment, the slowdown in growth towards the fourth quarter would occur in an international environment that has deteriorated, with tighter external financial conditions, stagnant growth in major trading partners, and strong exchange rate pressures on the prices of imported goods. Towards the fourth quarter, a drop in private consumption is not ruled out, compared to the very high level reached in the third quarter, which could be due to factors such as the effects of high inflation on households' purchasing power, the depletion of their savings surpluses, a higher cost of credit and continued low levels of confidence. This expected moderation in private consumption would be partially offset by a modest growth in public consumption, according to the figures contemplated in the *Medium-Term Fiscal Framework (MTFF)*, which, however, considers lower spending on health transfers, given the end of the health emergency. Regarding investment, in the fourth quarter there should be a deceleration in annual growth and little expansion in quarterly terms. This is because a significant reactivation of housing investment is not expected, due to the effects of high input costs and the increase in interest rates on credit for builders and new buyers. On the external front, exports would continue to grow in annual terms in the fourth quarter, driven mainly by a recovery in production and foreign sales of oil, coal and other raw materials. On the other hand, the annual growth rate of imports is expected to moderate, given the lower dynamism expected for domestic demand. Considering the above, a very slight expansion of output in quarterly terms would be recorded for the fourth quarter, as opposed to the fall expected in the previous *Report*. This, together with the high levels reached in the third quarter, would lead to GDP growth of 7.9 % for the whole of 2022, higher than that contemplated in the *July Report* (6.9 %) (Graph 2.21).

Graph 2.21
GDP, four-quarter cumulative^{a/}
(annual change)



a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations and projections by Banco de la República.

Graph 2.22
GDP, yearly levels



Source: DANE; calculations and projections by Banco de la República.

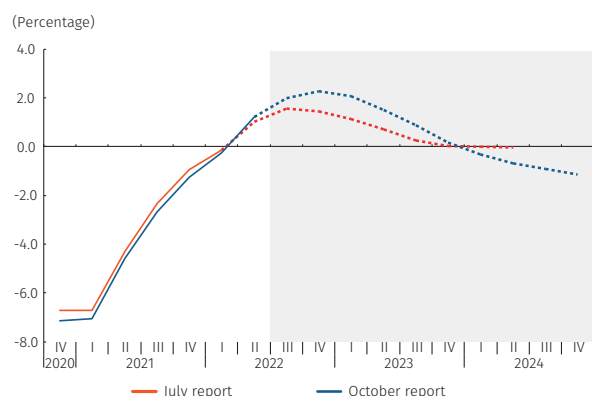
By 2023 and 2024, the Colombian economy should show lower growth rates than those recorded in the last two years, which would allow it to gradually reduce excess demand and converge towards more sustainable product values in the long term. In the next two years, the Colombian economy would face tighter external financial conditions than those estimated in the previous report, implying higher financing costs. In addition, trading partners would register low and lower growth rates than those contemplated in past reports, in a context of high external inflation and a more restrictive global monetary policy. Added to this are tighter domestic financial conditions and higher country risk premium levels on the forecast horizon, with negative effects on confidence and investment. All this should lead total consumption to fall, especially in the first half of 2023, and investment to maintain lower levels than those recorded before the pandemic, even though for the latter, a significant dynamic is assumed in civil works advanced by local governments entering their last year in office. Thus, economic activity is expected to decelerate significantly compared to what was observed in 2021 and what is expected for 2022 as a whole. This forecast could contemplate a decline in GDP levels in the first quarter of 2023, which would bring growth for the full year to 0.5% (compared to 1.1% in the previous report) (Graph 2.22). Implicit in this low rate of expansion is a correction in consumption and investment that would not recover to pre-pandemic levels within the forecast horizon. In 2024, economic activity is expected to accelerate somewhat, but its rate of increase would continue to be below potential growth. It is important to highlight the great uncertainty surrounding the internal and external fundamental factors that explain this forecast, which are detailed in section 2.3 of this *Report*.

Given the recent performance of the labor market and the forecasts for economic activity covered in this report, the national unemployment rate is expected to remain stable for the remainder of 2022, averaging 11% in 2023 (in a range between 9.2% and 12.8%). The information available from the Large Integrated Household Survey (GEIH) shows a labor market that registers annual growth in employment, although with signs of stabilization in recent months, especially in urban areas. The dynamics of employment has been driven by the salaried segment, while the non-salaried segment has grown at a slower pace and is where, in particular, signs of stabilization can be seen. Other labor demand indicators, such as vacancy rates, also show a growing trend, although with a more moderate performance at the margin. Meanwhile, labor participation has remained stable in the last half of the year, which has led to reductions in the seasonally adjusted unemployment rate (UR) (see chapter 3). Based on these dynamics and the macroeconomic scenario contemplated in this Report, the technical staff estimates that national UR would remain stable for the remainder of 2022 and would stand at 10.6 % in the last quarter of the year. The urban UR would close the year at 11.2 %. For 2023, forecasts for the

average UR for the whole year suggest that, for the national aggregate, this indicator would be between 9.2% and 12.8%, with a more likely value of 11%. In the case of urban areas, UR could be between 9.9% and 13.5%, with 11.7% as the most likely value. This suggests the presence of a negative urban unemployment gap equal to that estimated in the previous report, which implies a tight labor market in 2022 that could be generating inflationary pressures. However, by 2023 these pressures from the labor market would begin to diminish, given the UR increases expected for that year (see October 2022 *Labor Market Report*).

In the coming quarters, the Colombian economy will continue to exhibit excess demand, with a positive output gap, larger than estimated in previous reports. It is expected to gradually decrease during 2023 and close by the end of that year. This is suggested by the most recent information on economic activity, which during the second quarter of 2022 maintained a significant rate of expansion due, to a greater extent, to the good performance of private consumption and investment in machinery and equipment. Added to this is a labor market that is registering gains in job creation and consecutive reductions in the unemployment rate. On the price side, headline inflation and the different core inflation indicators as of August continue to surprise on the upside and remain well above the target, as a result of various internal and external factors that have affected both supply and demand. The above would indicate that the Colombian economy would be operating above its productive capacity. Thus, the forecast scenario of this Report contemplates an annual output gap for 2022 that would remain in positive territory (2.3 %) and would be higher than that estimated in the July Report (1.5 %) (Graph 2.23). The new gap is consistent with projected GDP growth for 2022 (7.9 %) and with potential output growing by 4.2 % in the same year. In 2023, the output gap is expected to begin to close gradually, in line with the correction in private consumption, unfavorable international financial conditions, the expected fiscal adjustment and a monetary policy that would remain in contractionary territory. Thus, by the end of 2023, the output gap would be close to zero, with potential output growing by 2.6%. It should be noted that these estimates are surrounded by great uncertainty due to the internal and external risks mentioned in section 2.3 of this *Report*.

Graph 2.23
Output gap a/
(four-quarter cumulative)



a/ The historical estimate of the output gap is calculated from the difference between observed GDP (four quarter cumulative) and potential GDP (trend; four-quarter cumulative) resulting from the 4GM model; for the forecast it is calculated as the difference between the technical staff's GDP estimate (four-quarter cumulative) and potential GDP (trend; four-quarter cumulative) resulting from the 4GM model.
Source: DANE; calculations and projections by Banco de la República.

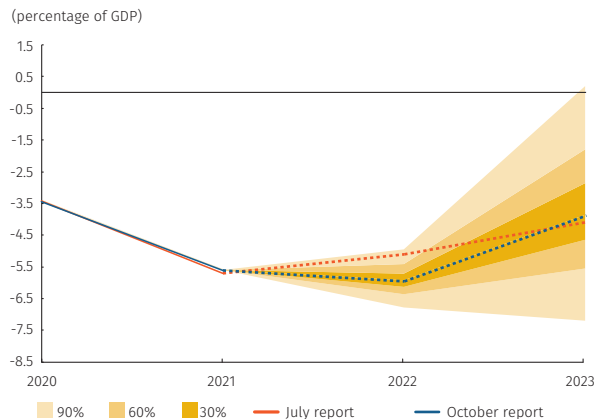
2.2.3 Balance of payments.

A current account deficit of 6.0% of GDP is projected for 2022, higher than that observed in 2021 (5.6% of GDP).²⁰ The

20 In the third quarter of 2022, the current account deficit would have reached 6.9% of GDP. The high external imbalance would be due to net factor income outflows, resulting from the profits of companies with foreign capital and interest on foreign debt, and to the growth of imports of goods and services, which would keep the trade deficit high. The higher current account imbalance would occur in spite of favorable export

higher external imbalance would be associated, in part, with the increase in imports of goods and services during the year, mainly explained by the growth of domestic demand and higher prices of raw materials, especially fuels and inputs for industry and agriculture. In addition, the dynamics of local economic activity and high hydrocarbon prices would increase the remittance of profits abroad by companies with foreign capital operating in the country²¹. The high deficit would also be contributed to by the payment of merchandise transportation services, given the increase in world tariffs and the upturn in the country's foreign trade. Higher interest on external debt, derived from the increase in international interest rates and the higher external debt balance, would also contribute to the external imbalance. On the other hand, the factors that would contribute to mitigate the widening of the current deficit include an improvement in external revenues derived mainly from higher export prices, net tourism revenues, external sales of non-traditional goods and workers' remittances. However, the volume of exports of traditional goods would grow at modest rates, and in some specific cases there would be annual declines. Thus, the current deficit estimate for 2022 is 6 % of GDP, which implies an upward revision compared to the July Report (5.1 %).

Graph 2.24
Annual current account a/b/
(four-quarter cumulative)



a/ The graph presents the probability distribution of the forecast and its most likely path for 2022 and 2023. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability around the central forecast (mode), mainly using the Patacon densities as a reference.

b/ The probability distribution corresponds to the forecasting exercise of the October Report.

Source: Banco de la República.

In 2023, the current account deficit would narrow to 3.9% of GDP, in line with the expected adjustment in domestic demand (Graph 2.24). The expected lower dynamics of consumption and the fall in world prices of supplies and products would imply a lower value of imports of goods and services. Likewise, the lower expected outflows from revenues from foreign direct investment (FDI), together with the normalization of global costs of maritime transportation of goods and a favorable balance in tourism services, would reduce pressures on the external imbalance. In 2023, the reduction of the current account deficit would be limited by the fall in traditional exports, given the lower prices and relatively low production levels of the main raw materials, such as oil, coal and coffee; by a slowdown in the demand for industrial products from our trading partners; by the increase in interest on foreign debt; and by a slight decline in workers' remittances due to the expected deterioration of economic activity in the countries where migrants reside. From the point of view of the macroeconomic balance of savings and investment, the lower deficit in the current account would be in line with the expected correction of private consumption and fiscal imbalance in 2023. Finally, it should be noted that uncertainty about future financial and economic conditions is high and has increased recently, which generates risks in the projections of the external accounts for 2022 and 2023 presented in this Report.

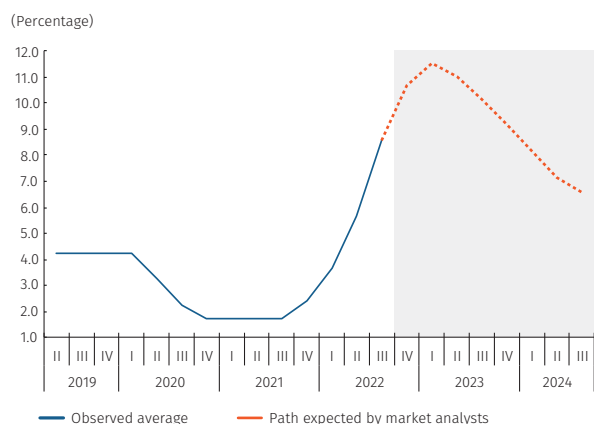
prices, especially for oil and mining goods, the rebound in net tourism income and high workers' remittances.

21 The annual increase in foreign companies' profits is mainly due to the high prices of coal and oil.

For the forecast horizon, it is assumed that the country would maintain access to external financing, albeit at significantly higher costs and in an environment of high volatility in the capital markets. External financial conditions have tightened due to the increase in international benchmark interest rates and a greater perception of local risk. In these conditions, FDI flows are expected to continue to finance a majority portion of the external deficit in 2022 and 2023. In particular, 2022 would see a significant rebound in FDI due to economic growth, high hydrocarbon prices, and capital inflows destined for one-off acquisitions of Colombian companies.²² FDI is expected to moderate in 2023 as the factors mentioned for 2022 lose momentum. Regarding other capital flows associated with the private sector, in 2022, assets would be constituted abroad by non-residents, which would be largely offset by inflows from new debt. This dynamic is expected to continue in 2023 and the private sector is expected to increase its external debt liabilities. For its part, and in line with the expected reduction in the fiscal deficit, the public sector would continue to contribute to external financing in 2022 and 2023, but at more moderate rates than those observed in the previous two years.

2.2.4 Monetary policy and interest rates expected by analysts

Graph 2.25
Average quarterly policy interest rate and analysts' expectations^{a/}



a/ These projections are calculated as the average of the rate that would be in effect in each quarter according to the median of the monthly responses of the Survey of Economic Analysts' Expectations conducted by Banco de la República in October 2022.
Source: Banco de la República.

The median policy rate expected by analysts stands at 10.7% for the fourth quarter of 2022 and at 9.2% by the end of 2023 (Graph 2.25). In the monthly survey of expectations for October, conducted by *Banco de la República* and applied to analysts, the median of the responses places the intervention interest rate for the fourth quarter of 2022 at 10.7% (median of 11% for the October meeting and 11.5% for the December meeting). For the fourth quarter of 2023, analysts project 9.2 % and for the third quarter of 2024 they place it at 6.6 %. The interest rate path implicit in the macroeconomic forecast of the technical staff responds to the conditions described in this report (inflation above the target, excess demand, exchange rate pressures, etc.). This path, for an eight-quarter horizon, is higher on average than that expected by the market in the October 2022 survey. The forecast horizon still includes a high level of uncertainty regarding the evolution of monetary policy in the United States, global financial conditions, geopolitical tensions, commodity prices, the country's sovereign risk premium and the evolution of local economic activity.

2.3 Balance of macroeconomic forecast risks

The risks associated with tighter external financial conditions, as well as the evolution of international factors that could affect the performance of the Colombian economy, are the

22 The capital inflows for the purchase of Nutresa and Grupo Sura shares were observed in the first quarter of 2022 and were accounted for as FDI and private sector external debt.

main sources of uncertainty in predictive density (PD) exercises²³. The balance of risks considered in the policy horizon includes high uncertainty regarding the future evolution of oil prices, the dynamics of the Fed's interest rate, the country risk premium and the possibility of a weaker global economy during 2023, which is reflected in a greater amplitude in the uncertainty intervals on the forecasts of macroeconomic variables.

The country's external funding cost could be higher than expected, given the restrictive monetary policies to face global inflation, the deterioration of Colombia's risk perception in international financial markets and local uncertainty.

In this *Report*, the uncertainty regarding external funding costs is greater than in previous reports. The materialization of this risk would imply greater pressures on the exchange rate and its transmission to prices, higher interest rates and lower levels of economic activity, in a context in which the economy continues to face fiscal and external deficits. Likewise, the uncertainty associated with the adjustment of fuel prices is incorporated, as well as the risk arising from the indexation processes to higher prices and wages.

The balance of risks for the macroeconomic scenario includes elevated levels of uncertainty and an upward bias in inflation.

The possibility of higher international interest rates and higher risk premia implies that exchange rate pressures affecting inflation could be greater. This would maintain the upward bias in inflation excluding food and regulated items, particularly in the basket of goods. Similarly, the uncertainty associated with the effects of indexation on the prices of some services, such as meals away from home and rent, continues to be high and with a positive bias, in a context in which demand pressures are present, as suggested by the positive output gap. Food inflation remains highly uncertain with an upwardly biased balance, whose risk factors are associated with exchange rate pressures and the speed at which the cost shocks that affected this basket are diluted. The regulated CPI takes into account the risks associated with fuel price adjustments, oil price projections, uncertainty regarding adjustments in some utility tariffs, and pressures from the exchange rate. With all of the above, the projected path of headline inflation presents an upward bias throughout the forecast horizon.

The PD exercise captures downward biases in economic activity for 2023 given the prospects of weak global economic performance and external financial conditions that may affect aggregate demand.

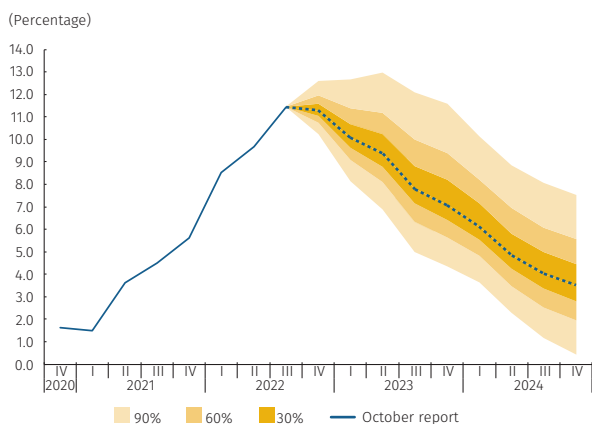
There are several risks that generate downward biases in GDP growth and the output gap during 2023 and 2024. Factors include those associated with the conditions and cost of external financing for the Colombian economy, the possibility of a slowdown in global economic activity, and geopolitical tensions. On the other hand, the risk of a further tightening of domestic financial conditions and uncertainty about the evolution of some local markets generate downward biases on consumption and investment dynamics.

In summary, the balance of risks on the macroeconomic scenario is characterized by a high level of uncertainty (wide forecast intervals), a downward bias in GDP growth in 2023, and an upward bias in inflation for the entire forecast horizon (graphs 2.26, 2.27, 2.28 and 2.29). In this context, with a 90% probability, inflation

23 Technical details on the construction of the balance of risks, through the exercise of predictive densities, can be found in the paper "Characterizing and communicating the balance of risks of macroeconomic forecasts: a predictive density approach for Colombia" (Mendez-Vizcaino et al., 2021) and in Box 1 of the July 2021 Monetary Policy Report.

would be in a range between 4.4% and 11.6% at the end of 2023 and between 0.4% and 7.5% at the end of 2024. With the same degree of certainty, core inflation would be between 4.2% and 10.4% by the end of 2023, and between 0.8% and 7.9% by December 2024. The probability that headline and core inflation will be below 4.0% during the fourth quarter of 2024 stands at 51% and 45%, respectively. Regarding economic activity, GDP growth is estimated with a 90 % probability in a range between -3.6% and 3.1 % for 2023, and between -3.1 % and 4.8 % for 2024.

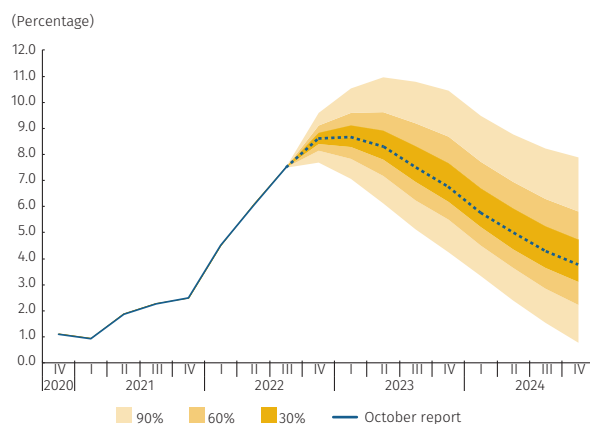
Graph 2.26
Consumer price index, predictive density^{a/ b/}
(yearly variation, end of period)



	IV Quarter 2022	IV Quarter 2023	IV Quarter 2024
Mode	11.29	7.09	3.51
< Mode	46%	37%	42%
Intervals			
<-2	0.0%	0.2%	17.9%
2--4	0.0%	3.2%	33.2%
>4	100.0%	96.4%	48.7%

a/ The graph presents the probability distribution of the forecast and its most probable path for a 9-quarter horizon. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability around the central forecast (mode), by combining the densities of the Patacon and the 4GM.
b/ The probability distribution corresponds to the forecasting exercise of the October Report.
Source: DANE; calculations and projections by Banco de la República.

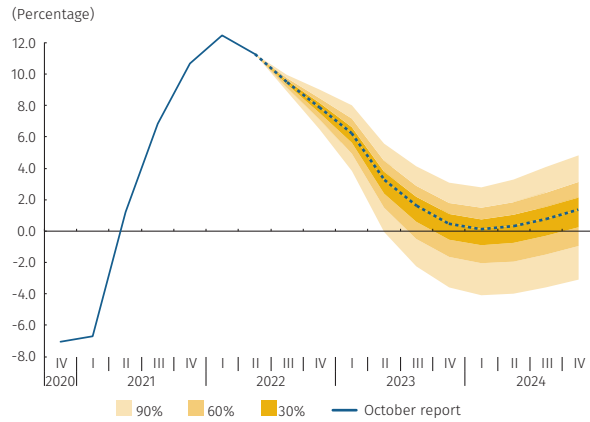
Graph 2.27
CPI without food and regulated items, predictive density
(yearly variation, end of period)



	IV Quarter 2022	IV Quarter 2023	IV Quarter 2024
Mode	8.61	6.77	3.78
< Mode	48%	40%	41%
Intervals			
<-2	0.0%	0.2%	14.5%
2--4	0.0%	3.5%	30.8%
>4	99.9%	96.1%	54.4%

a/ The graph presents the probability distribution of the forecast and its most probable path for a 9-quarter horizon. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability around the central forecast (mode), by combining the densities of the Patacon and the 4GM.
b/ The probability distribution corresponds to the forecasting exercise of the October Report.
Source: DANE; calculations and projections by Banco de la República.

Graph 2.28
Gross domestic product, four-quarter cumulative, predictive density^{a/ b/}
(yearly variation)



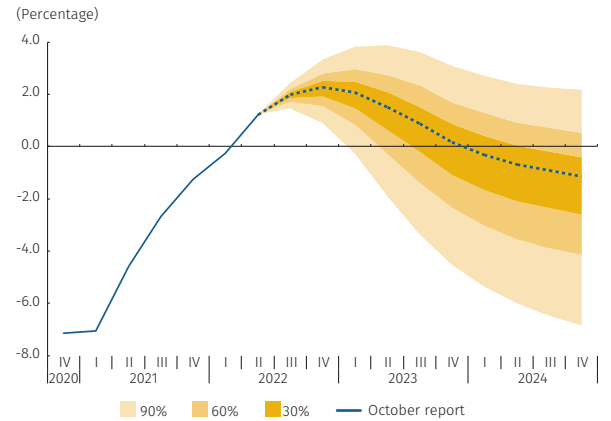
	IV Quarter. 2022	IV Quarter. 2023	IV Quarter. 2024
Mode	7.89	0.48	1.35
< Mode	56%	66%	59%
Intervals			
<0	0.0%	56.5%	36.7%
0 a 2	0.0%	30.7%	31.8%
2 a 5	0.0%	12.2%	27.0%
>5	99.9%	0.4%	4.2%

a/ The graph presents the probability distribution of the forecast and its most probable path for a 9-quarter horizon. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability around the central forecast (mode), by combining the densities of the Patacon and the 4GM.

b/ The probability distribution corresponds to the forecasting exercise of the October Report.

Source: DANE; calculations and projections by Banco de la República.

Graph 2.29
Product gap, predictive density a/ b/
(four-quarter cumulative)



	IV Quarter 2022	IV Quarter 2023	IV Quarter 2024
Mode	2.26	0.16	-1.13
< Mode	57%	65%	68%
Intervals			
< -2	0.0%	29.9%	55.5%
-2 a 0	0.1%	32.7%	25.3%
0-2	43.5%	24.7%	12.8%
>2	56.4%	12.7%	6.4%

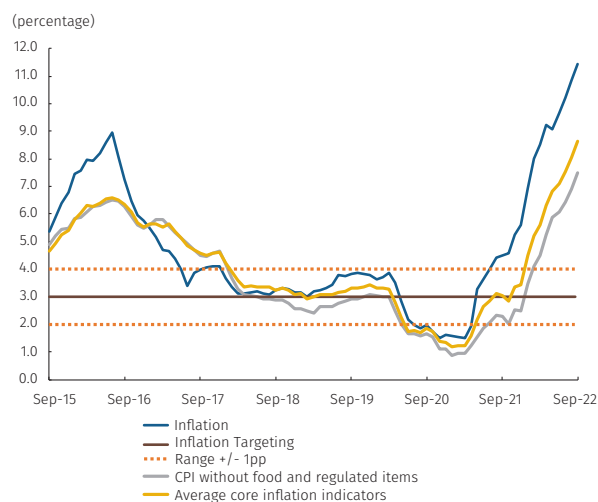
a/ The graph presents the probability distribution of the forecast and its most probable path for a 9-quarter horizon. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability around the central forecast (mode), by combining the densities of the Patacon and the 4GM.

b/ The probability distribution corresponds to the forecasting exercise of the October Report.

Source: DANE; calculations and projections by Banco de la República.

3. Current economic situation

Graph 3.1
CPI and core inflation indicators
(yearly variation)



Source: DANE and Banco de la República.

3.1 Inflation and price behavior

Consumer prices are being driven by the persistence of various supply and cost shocks in an environment of peso depreciation, high domestic demand and price indexation at high inflation rates. Annual consumer inflation in September (11.44 %) exceeded that observed in June (9.67 %), being the highest since March 1999 (13.51 %) (Graph 3.1). September’s figure was above market estimates and those of Banco de la República’s technical staff in July’s Monetary Policy Report. The upward surprises were particularly concentrated in the food and regulated group, whose annual variations exceeded what was forecast in the previous report. Core inflation (excluding food and regulated items) also maintained an upward trend during the third quarter, rising from 6.06% in June to 7.49% in September. In this quarter, the shocks that have been driving inflation in the world since the end of 2021 and the beginning of 2022 persisted. These include the energy, raw materials and agro-inputs crisis generated by Russia’s invasion of Ukraine. In addition to these, although on a smaller scale, there are the global transportation and logistics problems, and the production difficulties in China generated by the energy crisis of 2021, increases in labor costs and the zero-tolerance policies for Covid-19 in that country. In addition, food supply is restricted by food sovereignty policies in some countries, which have limited or suspended export volumes, as well as droughts in several parts of the world. At the local level, in addition to the accumulated depreciation of the peso against the dollar, consumer prices have been driven by strong domestic demand that exceeds the economy’s productive capacity, by indexation at higher rates of some regulated items and services, as well as a lower supply of some foods due to higher exports or adverse production cycles.

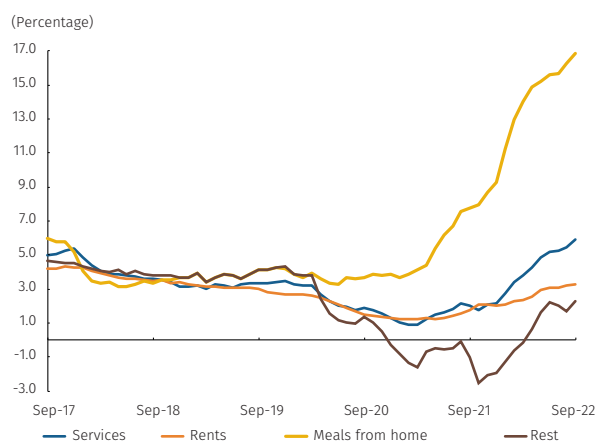
Graph 3.2
CPI of goods and services, excluding food and regulated items
(yearly variation)



Source: DANE and calculations by Banco de la República.

During the third quarter, the annual price adjustment of the CPI for goods was significant due to higher depreciation, the reactivation of some taxes suspended during the pandemic and strong domestic demand. The annual change in the CPI for goods continued with the upward trend it has been on since the beginning of the year, closing September (11.6%) above the figure for last June (8.3%) and December 2021 (3.3%) (Graph 3.2). These prices of the family food basket are being driven from the external front by the rising costs throughout the productive chain of the economy caused by the pandemic and by the other external factors already mentioned. At the national level, the increase in goods prices reflected the increase in electricity tariffs, the accumulated depreciation of the exchange rate so far this year, and a positive output gap. Within the sub-basket of goods, the increase in prices

Graph 3.3
CPI for services, excluding food and regulated items and their components
(yearly variation)



Source: DANE; calculations by Banco de la República.

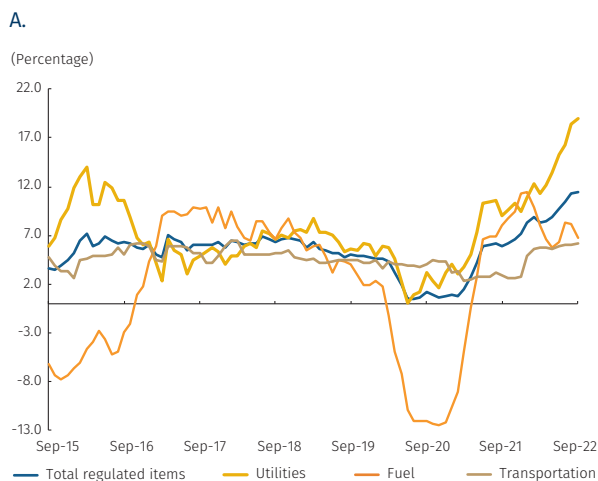
of private means of transportation, which is the segment with the greatest weight in the group, stands out. Likewise, toiletries, hygiene products and some medical products began to include VAT again as of July, a tax that was temporarily suspended until the end of the sanitary emergency in June of this year.

Services CPI price increase was widespread in the third quarter. Although this segment of the family basket registered the lowest annual growth in September among the major CPI groupings (5.9%), its dynamics were upward in comparison with those observed in June (5.2%) and December (2.2%) (Graph 3.2). Within services, the behavior of rents stands out with an annual growth of 3.3% in September, which, although higher than in June (3.1%), is still a moderate adjustment and close to the inflation target. According to historical figures, leasing rates tend to incorporate very slowly, and for several semesters, greater inflationary pressures (Graph 3.3). In contrast, meals away from home surprised by their accelerated annual growth rate, rising from 15.6% in June to 16.8% in September. The upward trend in food and utilities in general, together with higher labor costs, have boosted the prices of meals away from home. It is important to note that these prices were impacted upwards at the beginning of the year by the partial recovery of indirect taxes²⁴. The rest of the basket of services maintained its growth rate in the third quarter, and closed September (2.3%) with an annual variation in prices similar to that of June (2.2%).

Regulated prices are being indexed at higher rates due to the rebound in consumer and producer inflation. The annual change of this basket has been showing a positive trend throughout the year, going from 7.1% last December to 9.8% in June and closing September at 11.5% (Graph 3.4, panel A). During the third quarter, the upward trend in regulated services was concentrated in public utilities. Energy, in particular, exhibited high tariff increases due to the fact that most of the components of its tariff formula are indexed to the PPI, which registered high and higher increases than those of the CPI. Added to the above was the updating of increases not applied during the pandemic (tariff option), concerning the recovery of investments made to improve coverage and incorporate more renewable sources (wind and solar) in the energy matrix and due to increases in non-technical losses (illegal connections to the network and non-payment of service) in some cities, among other causes. Meanwhile, aqueduct rates continue to be driven by higher consumer inflation, while residential gas

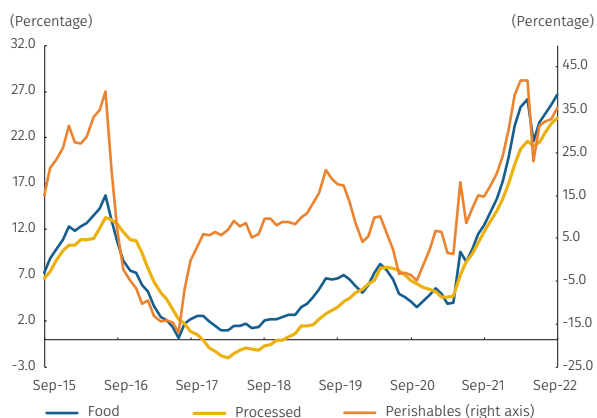
24 The reestablishment of the consumption tax on food services was partially verified in January 2022, in accordance with the provisions of the Social Investment Law, which contemplates the recovery of indirect taxes for restaurants belonging to the common regime, while those belonging to the simple regime will do so as from January 2023. See in this regard paragraph 5 of article 57 of Law 2155 of 14 September 2021 of the Congress of the Republic.

Graph 3.4
CPI of regulated items and its components
(yearly variation)



a/ Includes moderated EPS quotas, certificates/administrative documents and payment of fees.
Source: DANE; calculations by Banco de la República.

Graph 3.5
CPI of food and its components
(yearly variation)



Source: DANE; calculations by Banco de la República.

has been incorporating high international fuel prices and the accumulated depreciation of the peso against the dollar into its rates. The remaining regulated aggregates (fuels, education and others) did not present significant changes in their annual variations during the third quarter (Graph 3.4, Panels A and B). Finally, it should be noted that in the case of fuels, the National Government has already prepared a price adjustment plan in order to reduce the current deficit of the Fuel Price Stabilization Fund (FEPC).

During the third quarter, the annual variation in the food CPI resumed an upward trend, driven by rising costs and a lower world supply of agrochemicals and raw materials.

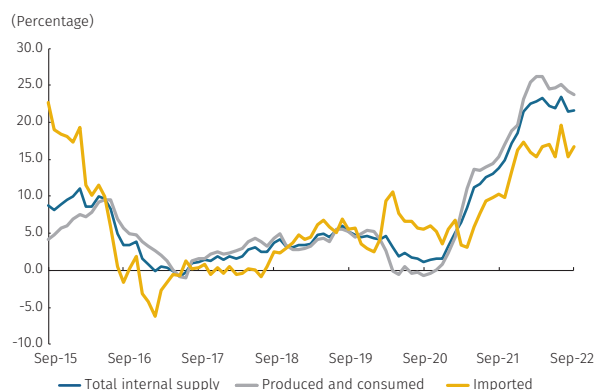
The annual variation of the food CPI in September (26.6%) rebounded with respect to that observed in June (23.6%) (Chart 3.5). During the third quarter, the fall in the relative prices of perishable foods was not repeated, as expected, and the annual adjustment of this food segment increased between June (31.2%) and September (35.5%). This would have been associated with both internal and external clashes, most notably the road blockade in the middle of last year (see Box 1 of this report) and Russia's invasion of Ukraine. These clashes led to a reduced use of agrochemicals (fertilizers and pesticides) or, alternatively, to the abandonment of some crops. This was compounded by growing fruit exports to the international market and adverse production cycles due to excess rainfall that affected the productivity of certain crops (some fruits and coffee). In September, annual changes in processed food prices reached (24.1%) a record high in recent years. The prices of this type of food were driven by the accumulated depreciation of the peso against the dollar, some difficulties in acquiring agricultural raw materials due to the aforementioned conflict between Russia and Ukraine, the still persistent problems in global logistics and transportation chains, the implementation in some countries of food sovereignty (which has reduced the flow of some foods in the world), as well as extreme droughts in some regions of the world that are weakening the global food supply.

Annual producer inflation remains relatively stable at elevated rates.

The annual change in the domestic supply PPI in September (21.6%) was not very different from that recorded in June (21.9%) and January (21.4%)²⁵, although these levels are the highest since 1991 (Graph 3.6). The high producer inflation recorded throughout the year is supported both by a high annual growth in the prices of the local component (23.7%) and in the imported component (16.8%). As with consumer prices, the PPI has been impacted upwards by external shocks, such as the aforementioned conflict (which has generated shortages and high international prices for basic goods), limitations to international trade by some exporting

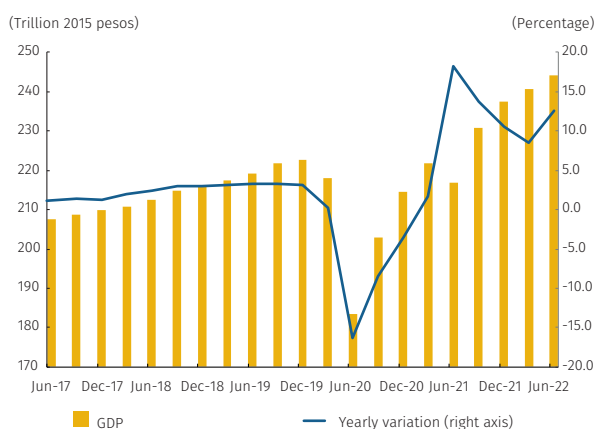
25 The annual variation of the PPI and its different components for the last available month is provisional. The DANE, the following month, officially confirms or corrects the latest data.

Graph 3.6
PPI by source
(yearly variation)



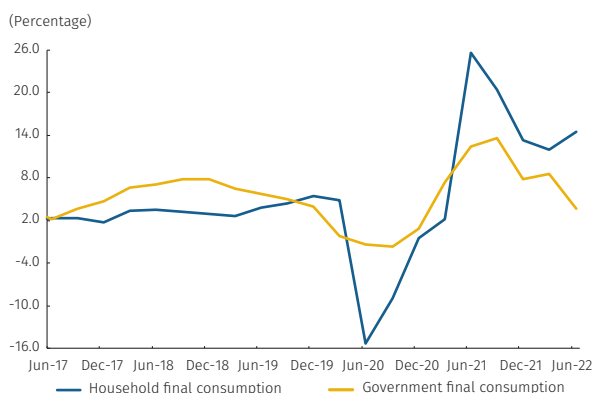
Source: DANE; calculations by Banco de la República.

Graph 3.7
Quarterly gross domestic product^{a/}
(yearly variation)



a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by Banco de la República.

Graph 3.8
Final household and general government spending^{a/}
(yearly variation)



a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by Banco de la República.

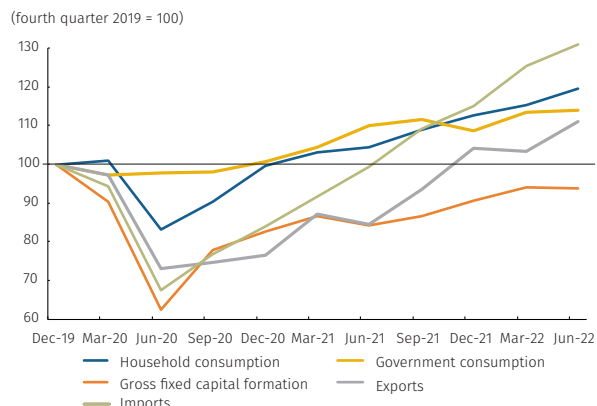
countries, droughts and production contraction in China. This, in turn, has been accompanied by idiosyncratic shocks that drive the PPI, such as the high depreciation of the exchange rate, adverse agricultural cycles, higher exports of fruit and bovine products, excess rainfall (which has reduced coffee and fruit harvests) and even the persistence of negative effects on agricultural production caused by last year's road blockades.

3.2 Growth and domestic demand

In the second quarter, economic activity maintained the upward trend it had been on for several quarters, surpassing the forecast of the previous report. During this period, the Colombian economy registered an annual expansion of 12.6 % both in the original series and in the seasonally adjusted and calendar-adjusted figures. Regarding the latter, this result exceeded what was contemplated by the technical staff in the central scenario of the July Report (11.5 %) and implied an annualized quarterly growth of 6.0 %. Thus, during the second quarter of 2022, the level of GDP was 9.7% above that observed in the fourth quarter of 2019 (Chart 3.7). The dynamism of economic activity in this period was in line with the recovery in employment, favorable financial conditions and a monetary policy that still remained in expansionary territory. This situation, together with other factors, led to a good performance of domestic demand. Although the growth of trading partners slowed during this period, exports showed a significant increase and contributed positively to GDP growth. On the supply side, arts, entertainment, and recreation activities, commerce and manufacturing maintained high annual expansions and higher levels than those recorded in the pre-pandemic period. On the other hand, sectors such as mining and construction continued to underperform.

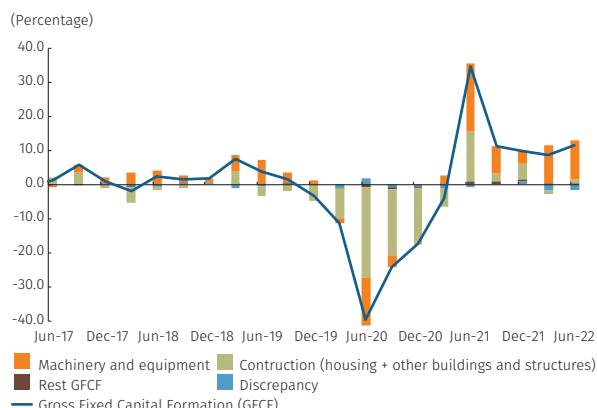
Between April and June, growth continued to be driven mainly by private consumption. During the second quarter of the year, the annual growth of this aggregate (14.5 %) accelerated (Graph 3.8), partly due to a low base of comparison (affected by last year's road blockages), and in quarterly terms it also registered a significant increase (15.7 % quarterly annualized). By component, durable and semi-durable goods consumption continued to show strong dynamism, which allowed them to register annual expansions above the average of household consumption. It should be noted that the VAT-free day in June particularly boosted these two segments. Consumption of non-durable goods surprised with a significant quarterly increase, even in spite of the high inflation that especially affects this item. Consumption of services, the most important item in private spending, remained strong, growing at an annual rate of 16.6%, accounting for nearly two thirds of the annual increase in private consumption and 40% of the increase in domestic demand. The good performance of household consumption in the second quarter continued to be supported by the increase in disposable income, due in

Graph 3.9
Demand components levels relative to 4Q 2019^{a/}



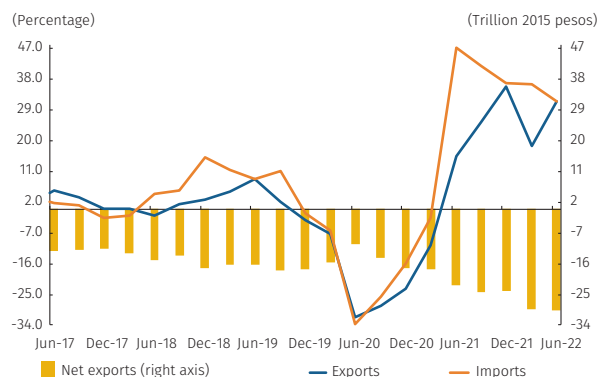
a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by Banco de la República.

Graph 3.10
Gross fixed capital formation^{a/}
(yearly variation, contributions)



a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by Banco de la República.

Graph 3.11
Exports, imports and trade balance^{a/}
(yearly variation and trillion 2015 pesos)



a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by Banco de la República.

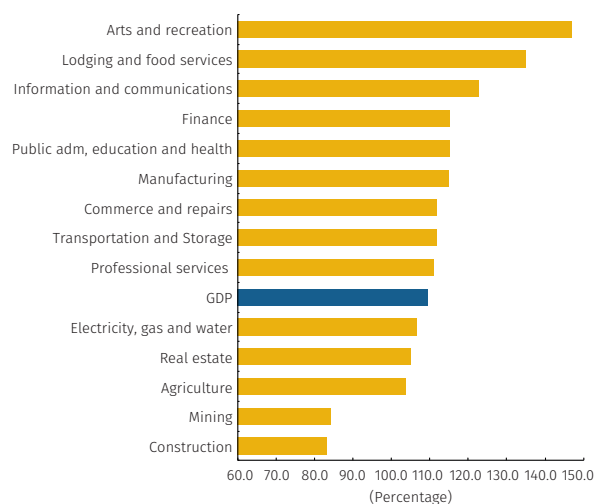
part to the recovery of employment, the greater distribution of dividends, the good dynamics of workers' remittances, and the credit granted by the financial system to households, among other factors. On the other hand, public consumption grew again between quarters, although at a slower pace than in previous periods. The main impulse to this component would have come from the increase in public employees' salaries that took place during the second quarter.

Investment showed a modest performance, with a slightly lower level than in the first quarter. Consequently, this continued to be the only major component of demand to be below the level recorded before the pandemic (Graph 3.9). Despite this, its annual rate of expansion also accelerated due to a favorable comparison base and stood at 11.5 % (Graph 3.10). The component that continued to drive gross fixed capital formation was investment in machinery and equipment, which maintained high levels, similar to those at the beginning of the year, and outstanding annual growth (26.4%). Within this, the most dynamic segment was capital goods for industry. In contrast, construction investment continued with a mediocre performance, with quarterly decreases in housing and other buildings and structures components. Within this sector, the construction of housing that is not of social interest (non-LIH) and civil works continued to be the main laggards.

The external deficit in constant pesos remained at historically high levels, close to those observed in the first quarter, despite the significant increase in exports. In the second quarter, foreign sales of goods and services expanded at a high quarterly (7.6 %) and annual (31.6 %) rate, which placed them at historical highs. The most dynamic items continued to be non-traditional exports and services, especially non-resident tourism. On the other hand, the strength of domestic demand, particularly private consumption, and part of investment, translated into a significant expansion of imports during the second quarter (31.7% annual and 4.4% quarterly). The highest growth was observed in imports of capital goods. With all the above, the trade deficit in constant pesos remained at very high values (Graph 3.11), and represented 12.1 % of GDP, a proportion close to the historically high proportion of the first quarter.

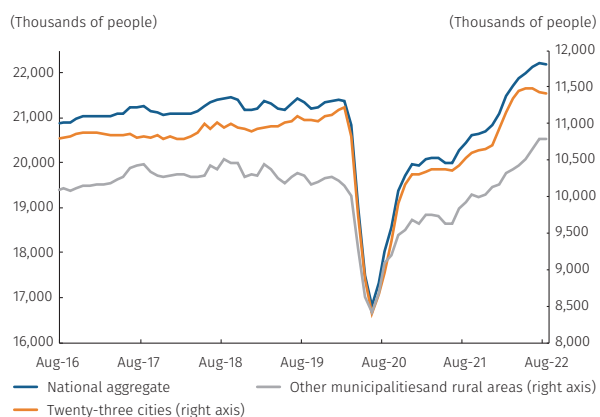
All the major supply sectors recorded positive annual growth, particularly in the arts and entertainment, commerce and manufacturing industry. During the second quarter of 2022, most tertiary activities showed a better performance than expected in the July Report. In particular, the performance of arts and entertainment activities stood out, which maintained an annual expansion of more than 30 % due to the reopening and increase in the capacity of these events, the solid growth of gambling and online games of chance, as well as the boost that activities related to the electoral season would have had. The accommodation and food services sector also maintained its strength and was approximately 35 % above the values of the

Graph 3.12
Sectoral valued added in 2Q 2022 relative to 4Q 2019^{a/}
(4Q 2019 = 100%)



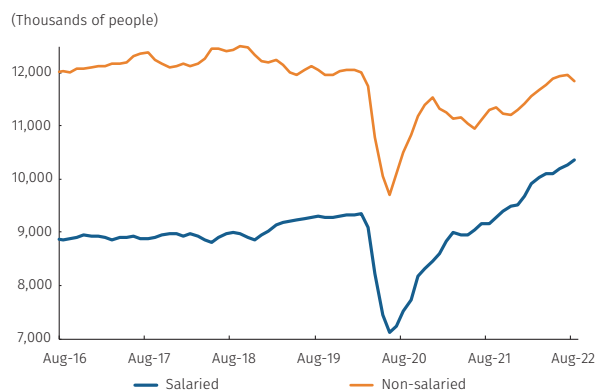
a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by Banco de la República.

Graph 3.13
Employed population by geographical domains



Note: data in moving quarter and seasonally adjusted.
Source: DANE (GEIH); calculations by Banco de la República.

Graph 3.14
Jobs by type of employment: national aggregate



Note: data in moving quarter and seasonally adjusted.
Source: DANE (GEIH); calculations by Banco de la República.

fourth quarter of 2019 (Graph 3.12). Trade and manufacturing activities also had a good dynamism, punctuated, in the first case, by the VAT-free day in June. Although all branches of the economy presented positive annual growth, the mining and construction sectors maintained a low performance and their levels continued to be lower than those observed in the pre-pandemic period. In mining, both coal mining and oil and gas exploitation continued at low levels. On the other hand, in the case of construction, the building segment continued to show little dynamism, despite the very good dynamics of housing sales in 2021, which suggests that the execution of these projects has been slow. On the other hand, the value added in civil works lagged behind pre-pandemic records by about 32%.

3.3 Labor Market²⁶

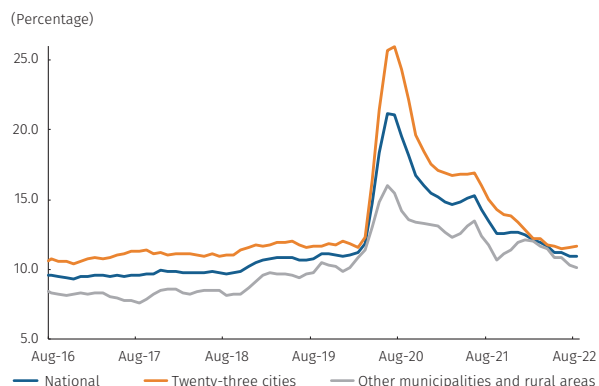
The most recent labor market information shows that employment continues to grow in annual terms, although there are signs of stabilization at the margin. The results of the GEIH show that, in the mobile quarter ending in August, employment registered an annual growth of 8.5%, which corresponds to 1.7 million new jobs. This behavior is the result of growth of 8.3 % in the urban area and 8.7 % in the other and the rural area. However, at the margin, there are signs of stabilization of this indicator, mainly in the urban area (Graph 3.13). At the sectoral level, the annual variation in employment was driven to a greater extent by the good performance of the commercial activities and lodging, recreation and other services, and public administration, health, and education segments, which together contributed 4.6 pp to the total variation in employment. By population group, women, people without higher education and non-heads of household continue to contribute the most to annual employment growth.

Employment growth is mainly driven by the salaried segment.

In the mobile quarter ending in August, the salaried segment grew at an annual rate of 13.1 % in the national aggregate, which meant an expansion of 1.2 million salaried employment compared to the same month of the previous year, corresponding to 71 % of the total job creation recorded in the last year. In turn, the non-salaried segment showed a more moderate growth, close to 4.8 % per year, which represents close to 0.5 million new jobs. Consistent with the above, the non-salaried segment is where there are mainly signs of stabilization (Graph 3.14). The good dynamics of salaried employment during the last year was driven by private employment, which contributed 6 pp to the annual variation

²⁶ The analysis of the labor market presented in this Report was carried out based on DANE's official splicing series between the GEIH Marco 2018 and the GEIH Marco 2005. For a more detailed analysis of the labor market, we invite you to consult Banco de la República's Labor Market Report, available at <https://www.banrep.gov.co/es/reporte-mercado-laboral>

Graph 3.15
Unemployment rate by geographical domains

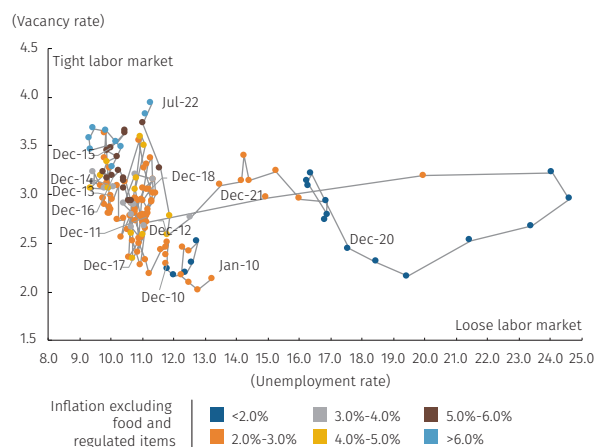


Note: data in moving quarter and seasonally adjusted.
Source: DANE (GEIH); calculations by Banco de la República.

of total employment. This is in line with the behavior of other sources of information on salaried and formal employment, such as pension contributions from the Integrated Record of Contributions to Social Security (PILA), and the records of affiliates to occupational risk management companies (ARL) and family compensation funds (CCF), which show annual growth of between 7.4% and 8.0%.

The unemployment rate (UR) continues to fall in annual terms, and is at pre-pandemic levels, although in recent months it has stabilized in the urban area. In the last semester, labor participation has remained stable in all domains, which, together with higher employment levels, has led to annual drops in UR. In August, the series in the moving quarter registered a contraction of 2.6 pp in the national aggregate compared to the same month of the previous year, standing at 10.9 %. By geographic domains, in the same month the UR in the other municipalities and the rural area stood at 10.2 %, while in the urban area, in line with a moderate dynamic of employment in this domain, the UR has stabilized at levels close to 11.7 % (Graph 3.15). The cities where UR decreased the most in the last year were Tunja (-8.8 pp) and Popayán (-5.4 pp), while there were increases in cities such as Valledupar (2.9 pp) and Cartagena (2.5 pp). By gender, the good dynamism of employment for women has allowed their UR to decrease faster than that of men; thus, the gender gap has exhibited important corrections in recent months and is at slightly lower levels than those observed before the pandemic.

Graph 3.16
Beveridge curve for the seven largest cities



Note: data in moving quarter and seasonally adjusted. GEIH Vacancy rate estimated based on hires are calculated according to the methodology of Morales, Hermida and Dávalos (2019).
Source: DANE (GEIH); calculations by Banco de la República.

Indicators from the demand side suggest a tight labor market. The performance of vacancy rates, calculated from different sources of information, such as classified ads, Public Employment Service (PES) offers and those estimated from GEIH and PILA information, show an upward trend, although it has moderated at the margin. This is consistent with the information on hiring expectations, which comes from the Quarterly Survey of Economic Expectations applied by Banco de la República, which remain in a positive balance, although with a drop of close to 10 pp compared to that reported three months ago, along with a significant increase in the perception of bottlenecks for hiring personnel. This, together with the recent behavior of unemployment rates, would suggest a tight labor market, in light of the Beveridge curve²⁷ (Graph 3.16), which would be generating inflationary pressures. On the other hand, the information from the GEIH shows an increase in current wages; however, in the case of salaried employees, higher inflation has led them to remain stable in real terms. In the case of the non-salaried employees, labor income has adjusted upward in both current and real terms throughout the year.

27 The Beveridge curve is the graphical representation of the relationship between the vacancy rate and the unemployment rate.

Box 3.1 Average monthly interest rates (percentage)

	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22
Interbank					
TPM	1.75	2.70	4.00	6.00	9.05
TIB overnight	1.79	2.73	4.06	6.06	9.07
IBR overnight	1.77	2.72	3.99	6.02	9.05
IBR to 1 month	1.93	2.96	4.77	6.77	9.74
IBR to 3 months	2.27	3.36	6.06	7.78	10.61
IBR to 6 months	2.76	3.96	7.38	8.71	11.25
Deposits					
Savings	0.97	1.19	1.82	2.82	4.43
DFT 90 days	2.05	3.08	4.97	7.72	10.99
CDT to 180 days	2.45	3.71	5.63	8.40	12.54
CDT to 360 days	3.16	5.10	7.59	10.75	14.80
CDT > 360 days	3.68	7.14	9.55	14.37	17.01
Credit					
Preferential	4.98	6.00	8.09	10.82	14.86
Ordinary	7.34	8.18	10.33	12.62	16.10
Non-Low income housing purchases	9.06	9.40	10.32	12.01	14.63
Low income housing purchases	10.98	11.55	12.23	13.68	14.89
Personal loan consumption	17.09	17.51	19.56	23.08	27.26
Payroll lending consumption	11.23	11.65	12.50	13.83	16.86
Credit card	23.49	24.47	25.39	28.02	32.49

Source: Office of the Financial Superintendent of Colombia; calculations by *Banco de la República*.

3.4 Financial and money market

In the third quarter, savings and loan interest rates continued to increase and portfolio growth stabilized at high rates.

Tighter external and domestic financial conditions, higher inflation and its expectations, and adjustments in the monetary policy interest rate (MPR), among other factors, explain the behavior of the savings and credit market. In savings, term certificates of deposit (CDT) recorded a significant rebound and became an important source of funding for credit institutions. These were collected at high interest rates, with increases that exceeded the accumulated increases in the MPR. Interest rates on credit in all its modalities also continued to increase. The acceleration of the portfolio directed to households and companies stopped, but their growth stabilized at high rates. The banking system continues to be solid in terms of solvency, profit generation and equity capacity to absorb adverse macroeconomic conditions.

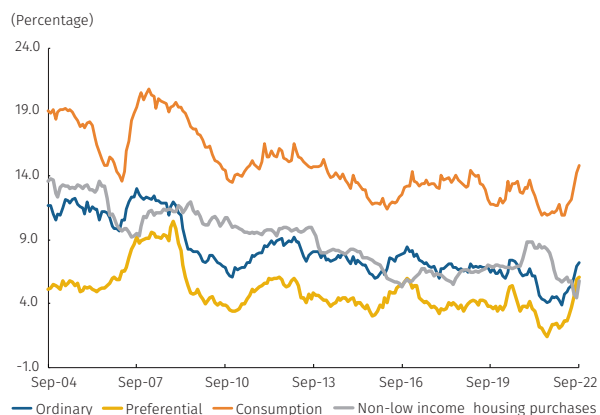
Money market, deposit and credit interest rates continue with an upward trend, in an environment of rising external interest rates, higher country risk premia, elevated inflation and its expectations, and adjustments in the MPR.

The overnight and one-month benchmark banking indicator (IBR) have followed the path of the MPR, while longer terms continue to reflect, in part, expectations of greater MPR adjustments (Table 3.1). In the deposit and credit markets, factors such as higher levels of external rates, the increase in the country risk premium, adjustments in the MPR, high levels of inflation and its expectations, and compliance with funding rules²⁸ explain a large part of the behavior of the amounts and interest rates in these markets. In the third quarter, CDTs accounted for the total increase in deposits, with an annual growth of 31%, and with interest rates that at all terms exceeded the accumulated increases in the MPR. Interest rates on savings deposits have also increased, although to a lesser extent. As for the credit market, its interest rates continue to increase, most markedly for personal consumer loans, commercial loans²⁹ and credit cards, with cumulative increases that exceed the adjustments made in the MPR. The interest rates of payroll consumer loans and housing loans have registered more moderate and lower increases than those registered by the MPR. In real terms, savings and credit interest rates have also increased, although to a lesser extent

28 Net stable funding ratio (CFEN): indicator established to monitor the stability of deposits of credit institutions, which is regulated by the Financial Superintendency of Colombia through external circulars 19 of 2019 and 21 of 2022. In July, the CFEN of credit establishments was 112.25%, higher than the 100% required as of March 2022.

29 As of this *Report*, the commercial rate for housing construction will not be detailed, since its disbursements are now included in the preferential and ordinary rates.

Graph 3.17
Real credit interest rates
(monthly average data deflated by the CPI excluding food)

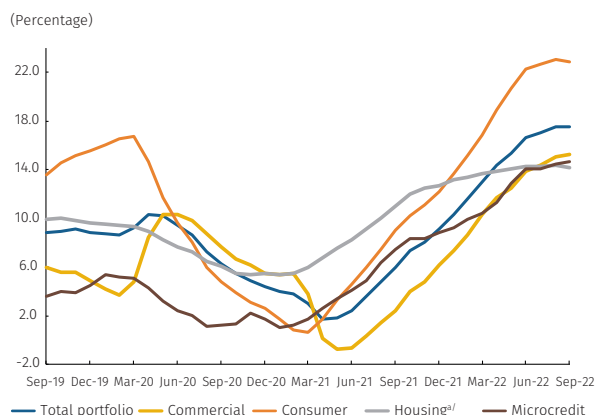


Source: Office of the Financial Superintendent of Colombia; calculations by *Banco de la República*.

than nominal rates due to the increase in inflation and its expectations (Graph 3.17).

Credit stopped accelerating, but its annual growth stabilized at high rates. Its dynamics continue to be led by the performance of consumer loans, component of spending that has been the main driver of domestic demand. During the third quarter, credit in local currency recorded an average annual increase of 17.4%, largely explained by the performance of consumer loans (22.8%) (Graph 3.18). In the latter modality, unsecured disbursements for personal investment have increased their share and there has been a greater use of credit cards. According to the Financial Superintendency³⁰, the expansion of this type of credit is above its trends, the quality of its harvests has deteriorated, and the payment capacity of debtors has weakened. This is also reflected in the survey of credit institutions³¹, where the results indicate a lower supply of new credit for consumer loans. In the third quarter, the housing portfolio recorded an average annual increase of 14.3%, similar to that observed during the current year. Approximately 90% of its disbursements are being delivered at a fixed rate in pesos, with an increasing participation of loans for low-income housing (LIH). As for the commercial and micro-credit portfolios, their annual growth rates also stabilized at high rates during the third quarter (14.9% and 14.4%, respectively) (Graph 3.18). Disbursements continue to be predominantly for credit terms of less than one year, particularly those of the preferential type, a demand associated with the needs of working capital. Lines of credit to large companies remain the most important, followed by loans to medium and small companies. Since July, there has also been a moderate recovery in foreign currency commercial loans granted by local banks.

Graph 3.18
Gross portfolio in local currency
(annual variation, monthly average data)



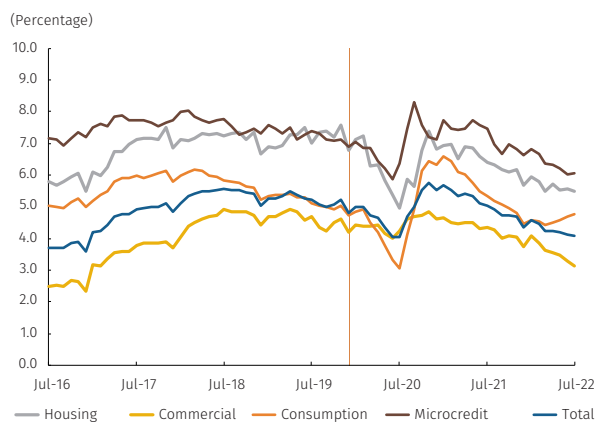
a/ Adjusted housing: bank portfolio plus securitizations.
Source: Office of the Financial Superintendent of Colombia; calculations by *Banco de la República*.

Based on information as of July, credit quality and solvency indicators, as well as profit generation, continue to show the robustness of credit institutions. The moderation of defaults and the momentum presented by the portfolio have been improving the NPL indicators, which as of July were below those observed in 2019 (Chart 3.19). If the written-off portfolio is included, the NPL indicator also shows a decreasing trend. In addition, starting in June, credit institutions began to increase the level of provisions to anticipate possible materialization of risks. At the same time, total solvency (17.6 %) and core solvency (13.8 %) remain above the required levels

30 See, “Condiciones necesarias para gestionar coyunturas desafiantes”, by Jorge Castaño Gutiérrez, 56 Convención Bancaria (Asobancaria), Cartagena de Indias, 17 August 2022, available at: <https://www.superfinanciera.gov.co/descargas/institucional/pubFile1061702/20220817preconvencionbancaria2022.pptx>

31 See Colombia Credit Situation Report, June 2022, pages 4 and 5, available at: <https://doi.org/h6vs>.

Graph 3.19
NPL Indicator
(past-due portfolio/total portfolio)



Source: Office of the Financial Superintendent of Colombia; calculations by *Banco de la República*.

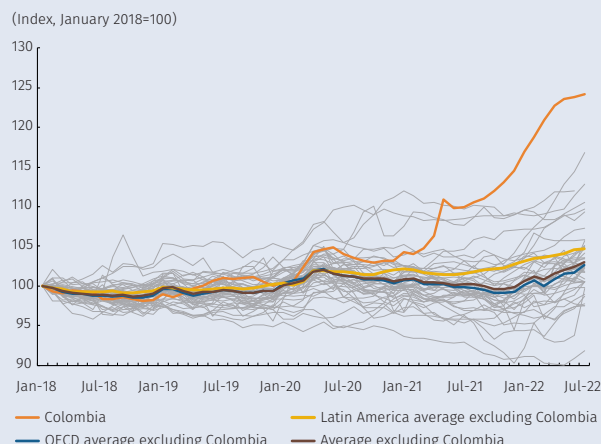
(9.0 % and 4.5 %, respectively), while 12-month accumulated profits continue to improve (COP 19 b, compared to COP 16 b in December 2021 and COP 13 b in 2019). Finally, financial stress tests³² in the face of unfavorable macroeconomic scenarios show that the system has the equity reserves to absorb them.

³² Details of the methodology and its results can be found in the Sensitivity Exercises chapters included in the periodic financial stability reports published by *Banco de la República* (see <https://www.banrep.gov.co/es/reporte-estabilidad-financiera>).

Box 1: Food inflation: a comparison with other countries

Margarita María Gáfaró-González
Adolfo León Cobo-Serna
Edgar Caicedo-García
Alejandra González-Ramírez

Graph B1.1
Relative food price index



Note: The gray lines represent the other OECD countries and Latin America.
Sources: OECD and ECLAC; own calculations.

Since last year, high increases in food prices have been observed worldwide. This phenomenon has been more intense in Colombia than in other Latin American countries and other member countries of the Organization for Economic Cooperation and Development (OECD). Between May 2021 and July 2022, food prices in Colombia have shown an average annual growth of 17%, which is 12 percentage points (pp) higher than the average for other member countries of the OECD and 7pp higher than in the average for other Latin American countries. This box studies the causes of these differences. First, through an econometric exercise, it shows that persistent effects of the roadblocks during the 2021 national strike might explain around 9pp of the total food inflation gap between Colombia and other comparable countries. Then, it describes the case of post-strike egg and potato production in the country. These two examples present evidence of the persistent effects of roadblocks on the food supply in Colombia, and they illustrate the mechanisms by which the roadblocks could have triggered persistent food price increases in the country.

Food prices worldwide have been exposed to heavy pressures related to high input prices and the recovery of global demand. Although these factors affect all countries similarly, Graph B1.1 shows that, starting in May 2021, relative food prices in Colombia have risen more than in other Latin American and OECD countries.¹ The coincidence of the moment when roadblocks began during the national strike, on 28 April 2021, and of the widening of the food inflation gap between Colombia and other countries, on May 2021, suggests that the strike could be one of the causes of this behavior. Hereunder, the technical staff presents an econometric exercise that offers information on this correlation and the possible effects of the strike on the widening of the food inflation gap between Colombia and other countries.

1. Effect of the 2021 roadblocks on the gap for food inflation between Colombia and other countries.

Specification of event study

An event study methodology is used to estimate the effect of the 2021 roadblocks on food inflation differences between Colombia and a group of countries which includes the rest of Latin America and other OECD member countries. This methodology allows the study to measure changes in the inflation gap between Colombia, and the average for the other countries after the strike, isolating the effect of

* The authors are the director of the Cali branch, the Head of the Inflation Section, the leader of the Programming and Inflation Department, and a special analyst at *Banco de la República's* Cali branch.

1 This index is calculated dividing the food CPI by the total CPI, both index values are normalized based on January 2018 values.

global shocks, such as the war between Russia and Ukraine, and the effect of each country's specific factors, such as weather and the depreciation of exchange rates. Equation (1) presents the econometric specification estimated by this methodology:

$$\widetilde{P}_{ct} = \mu_c + \gamma_t + \sum_{j=-10, j \neq -1}^{14} \beta_j 1\{t-K=j\} G_c + \beta_{-11} 1\{t-K \leq -11\} G_c + X_{ct} \Gamma + \epsilon_{ct}, \quad (1)$$

\widetilde{P}_{ct} is total food inflation in country c for month t ; μ_c and γ_t are country and time fixed effects, respectively; K represents the first month after the strike began (May 2021); G_c is a dichotomous variable that takes the value of 1 for Colombia and 0 for other countries (the control group), and X_{ct} includes control variables for country and month. These variables, explained further ahead, include measurements of rainfall excess and scarcity, the depreciation of currencies, and time fixed effects that interact with the relative weight of inputs and food exports and imports in each country, among others.

The country fixed effects allow the method to control for country-specific characteristics that do not vary over time, and which explain permanent differences in its inflation levels, such as monetary and exchange policy regimes. The time fixed effects capture inflation shocks that happen at given periods and which affect all countries equally, for instance increases in international supplies prices and logistic problems in global supply chains.

β_j coefficients are the parameters of interest. These coefficients capture the change in the inflation gap between Colombia and the control group's average in relation to the gap before the strike. April 2021 is used as a reference. Thus, these coefficients capture the change in the inflation gap between Colombia and the control group's average j months after the strike began² in comparison with the gap registered in April 2021.

The change in the inflation gap between Colombia and the control group, starting from May 2021, captures the effect of the strike on food inflation in the country if two conditions are met: first, whether food inflation in Colombia followed a similar trend to that of other control group countries before the strike³; and second, whether no different events or factors which affected food inflation happened in Colombia versus the control group after May 2021. The first condition implies coefficients $\beta_j = 0$ for the months before the strike, which can be verified empirically with the estimate derived from equation (1). The second condition is not directly verifiable. However, as is demonstrated further ahead, the stability of the coefficients estimated after including control variables that capture events relevant to food inflation in the sample's countries, suggests that the estimated coefficients cannot be explained by these factors and seem to be related to the strike's persistent effects on food prices in Colombia.

Results

The study uses data from January 2012 until July 2022 to estimate equation (1). Graph B1.2 presents these β_j estimates with their respective confidence intervals at 95%. The graph shows that it is not possible to reject the null hypothesis of the coefficients β_j being equal to zero for the months prior to the strike ($j < 0$). This means that, until April 2021, the gap for total food inflation between Colombia and the average for the control group followed a similar trend, having values that were not statistically different from the gap observed in April 2021.⁴ In May 2021, this gap grew 6 pp due to a rise in food prices in Colombia that persisted and even accelerated at the beginning of 2022.

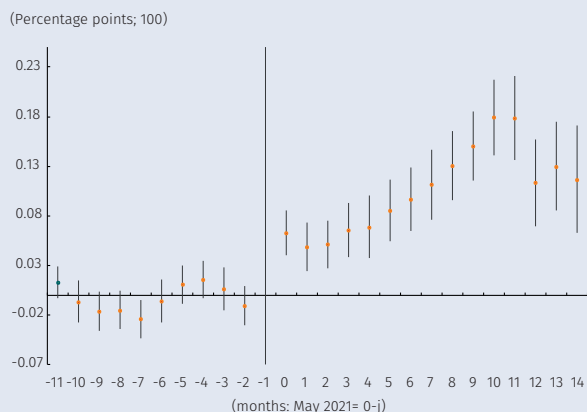
Table B1.1 shows the estimates for a difference-in-differences model that captures the average of the estimated coefficients β_j since May 2021. These estimates represent the average increase in the inflation gap between Colombia and the

2 Sub-index j represents time in relation to the start of the strike (May 2021); $j > 0$ represents periods of time after the strike began, and $j < 0$ represents periods of time prior to it.

3 This assumption is equivalent to the parallel trends assumption in a difference-in-differences design.

4 In April 2021, food inflation in Colombia was 3.9%, and the average for the control group was 2.5%. The control group includes Argentina, Austria, Belgium, Bolivia, Brazil, Canada, Chile, Costa Rica, the Czech Republic, Denmark, Ecuador, El Salvador, Estonia, Finland, France, Germany, Greece, Guatemala, Honduras, Hungary, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxemburg, Mexico, the Netherlands, Nicaragua, Norway, Panama, Paraguay, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, and Uruguay.

Graph B1.2
Results of event study estimates



Note: The chart shows the estimated coefficients β_j from equation 1. Control variables include: annual changes in the contemporary and 12 lagged exchange rate, time fixed effects interacted with categorical effects according to the weight of food exports and imports, input imports from around the world and from Russia and Ukraine, and food import tariffs. The coefficient β_{-11} groups the months prior to May 2020.

Sources: OECD, ECLAC, Banco de la República de Colombia, Banco Central de Honduras, Banco Central de Nicaragua, Banco Central del Paraguay, Banco Central de Bolivia, WITS-World Bank; authors' calculations.

Box: B1.1
Results of difference-in-difference regressions

	(1)	(2)	(3)	(4)
COL =1x After the strike=1	0.0915*** (0.009)	0.0942*** (0.011)	0.0830*** (0.009)	0.0943*** (0.010)
Shock shortage of rainfall				0.0501*** (0.012)
Shock excess rainfall				-0.020 (0.015)
R2	0.687	0.815	0.529	0.813
Observations	5614	5614	1188	1188
Countries	45	45	10	10
Period	2012-2022	2012-2022	2012- 2022	2012- 2022
Exchange rate		X		X
Export and import of food		X		X
Tariffs		X		X
Inputs Russia and Ukraine		X		X

Robust errors in parentheses * p<0.10; ** p<0.05; *** p<0.01 Note: control group countries in columns (1) and (2) are Argentina, Austria, Belgium, Bolivia, Brazil, Canada, Chile, Costa Rica, Czech Republic, Denmark, Ecuador, El Salvador, Estonia, Finland, France, Germany, Greece, Guatemala, Honduras, Hungary, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, Nicaragua, Norway, Panama, Paraguay, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States and Uruguay. The control group countries in columns (3) and (4) are Brazil, Chile, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua, Paraguay and Uruguay.
Source: authors' calculations.

control group after the strike.⁵ Column (1) shows the estimate's results only with fixed country and time effects. Column (2) includes control variables that capture differences between countries in exposure to international shocks, which might explain differences in the evolution of food prices.

In particular, annual changes in each country's exchange rates are included⁶, in addition to time fixed effects that interact with measurements of the relative weight of food imports and exports⁷, exposure to supplies imports from Russia and Ukraine, and a measurement of the degree of tariff protection for each country's food industry. These interactions capture the possibility of international price shocks affecting countries differentially, according to their exposure to international food and supplies markets. The results show that the estimated coefficient is similar in magnitude to the coefficient calculated before including these controls and suggest that neither the exchange rate nor the differential effect of international shocks, according to each country's degree of exposure, can explain the inflation gap observed between Colombia and the control group after May 2021.

Columns (3) and (4) show the results when the control group is limited to a group of non-dollarized Latin American countries with flexible exchange rates⁸. Column (4) includes, as an additional control, measurements of precipitation excess and scarcity in these countries⁹. Once more, it can be observed that the strike's estimated effect is stable among the specifications. According to these results, excess rain caused by the recent *La Niña* phenomenon cannot explain the inflation gap between Colombia and the Latin American countries included in the analysis. While rain has partially affected agricultural production in Colombia, *La Niña* also affects other countries in the region through heavy droughts that also have negative effects on food production. Therefore, this phenomenon is insufficient for explaining the rise in food prices in Colombia relative to other countries.

In further exercises, measurements of meat and livestock exports and the unemployment rate are included as controls, with results similar to those obtained before including these variables. This indicates that neither the behavior of meat exports, nor a quicker reactivation of demand given recovery in

5 This average is estimated by means of a difference-in-differences method $P_{it} = \mu_c + \gamma_i + \beta G_c \times 1\{t \leq K\} + X_{it} \Gamma + \epsilon_{it}$, where the coefficient β captures the average difference for food inflation between Colombia and the control group countries after May 2021 and up until July 2022.

6 In order to take into account the lagging effects of exchange rate depreciation on inflation, each country's annual devaluation is included as a control in period t and twelve more time lags ($t, t-1, \dots, t-12$).

7 In order to create this measurement, the average weight of food imports and exports against total food and of supplies imports in proportion of each country's GDP between 2010 and 2019 is calculated. Then, dichotomous variables are generated that indicate whether each country shows a proportion of the respective variable above the sample's median.

8 These countries are Brazil, Chile, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua, Paraguay and Uruguay.

9 These measures are calculated based on monthly precipitation maps from the Copernicus Climate Change Service. Information gathered since 1979 is used to calculate rainfall excess and scarcity shocks for each subnational region. A rainfall excess shock is considered to have occurred during a certain month when precipitation levels reach the 80th percentile in historical distribution for that month in the respective region. Likewise, a scarcity shock corresponds to a precipitation level below the 20th percentile. The regression includes a shock cumulative value for each country between months t and $t-6$.

employment can explain the differences observed in inflation between Colombia and the other countries analyzed.

In summary, the results show that roadblocks during the 2021 national strike are related to an average gap of 9 pp between food inflation in Colombia and in the study's different control groups. This increase in food inflation as of May 2021 could explain an average of 1.7 pp of the headline inflation observed in Colombia since then¹⁰. The event study's coefficients show a rise in Colombia's food prices which occurred immediately after the start of the strike and which has persisted until the latest available data, from July 2022. Next, some of the mechanisms through which the strike could have generated persistent effects on food prices will be discussed.

2. Systems: the effect of roadblocks on food production

The roadblocks, which lasted approximately two months, prevented access to and from some of the country's cities and productive regions, especially in the southwest. This affected food supply and generated an immediate increase in prices. Additionally, it hurt the incomes of producers that were not able to sell their harvests or access agricultural supplies, thus restricting fertilization labors and weed control. This had persistent effects on production. Next, two examples that illustrate these effects are presented.

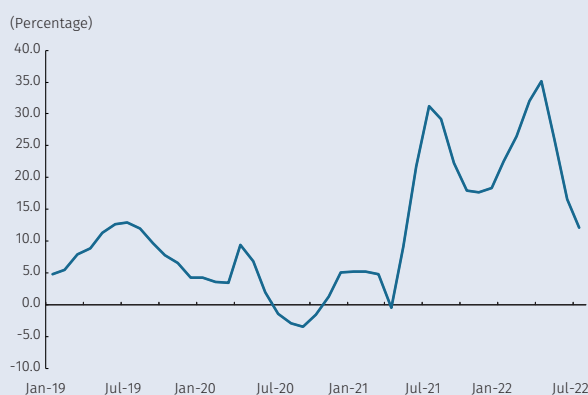
Eggs

Graph B1.3 shows an average annual CPI growth of 23% for eggs since May 2021. This increase contrasts with the behavior prior to the strike and coincides with deceleration in production and chick hatchery in the country (Graph B1.4)¹¹. Up until April 2021, egg production grew at an average annual rate of 12%. Starting in May 2021, production growth decelerated, falling to average levels of -1%. According to information from producers roadblocks prevented access to food for birds in the southwest, where approximately 30% of the country's poultry production is concentrated. This food reduction affected birds' development, impacting egg and laying bird production. These effects would take two years to dissipate. The recovery of production has also been affected by the persistence of high supply costs. This can be seen in a placement that still has not regained its levels prior to the roadblocks. A similar phenomenon appeared in the case of chicken and pork production, with less persistent effects given shorter production cycles. According to informants from this sector, these effects dissipated during the second semester of 2021.

Potatoes

Graph B1.5 shows the annual change in potato prices and supply in the country. In May 2021, a 10% fall in national potato supply can be seen, which can be explained by a contraction of supply

Graph B1.3
Egg CPI variation
(YOY)

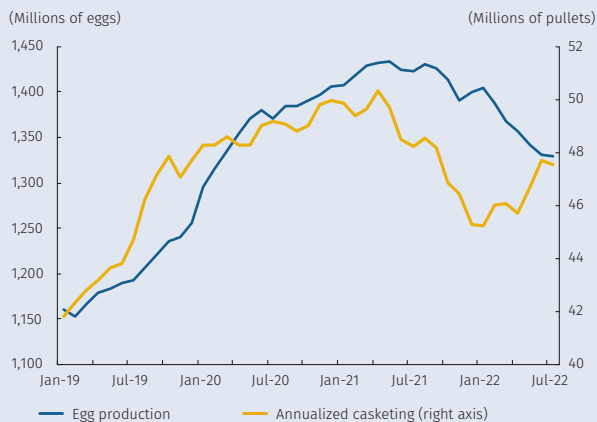


Source: DANE; authors' calculations.

¹⁰ For the purposes of this exercise, a counterfactual food inflation is calculated by subtracting the difference calculated in Graph B1.3 from observed food inflation. Total inflation is calculated as the weighted sum between observed inflation excluding foods and the counterfactual food inflation. For this weighted sum, the DANE's weightings are used for each segment in the most recent methodological modification, from 2018.

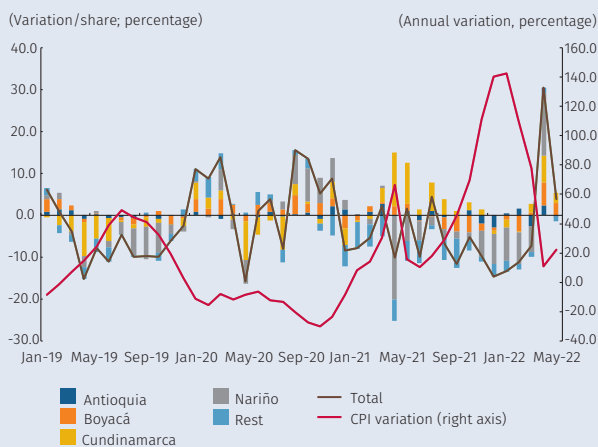
¹¹ Annualized placement corresponds to the sum of twelve months of monthly chick placement.

Graph B1.4
Egg production and casketing



Source: Fenavi; authors' calculations.

Graph B1.5
Potato supply



Source: DANE-SIPSA; authors' calculations.

from Nariño, where roadblocks prevented the transportation of harvests to the rest of the country¹². The fall in producer incomes in this region, who like the rest of the country had been exposed to increases in supplies costs and, in some regions, excess rainfall, deteriorated financial conditions for planting. These lower amounts of re-planting diminished tuber supply, which produced an increase in prices during the first months of 2022.

Conclusions

The data indicate that the May 2021 strike coincided with a significant rise in food prices in Colombia. This phenomenon was more pronounced than in other comparable countries and cannot be explained by other factors, such as excess rainfall, exchange rate depreciation, or some indicators of international trade. Although it is not possible to completely reject that other specific factors of the local economy might explain part of the differences between Colombia and other countries, the disturbance caused by the roadblocks to the production cycles of important foods in the market basket, such as eggs and potatoes, indicates that the strike could be a relevant factor in explaining these differences. These disturbances may have boosted pressures on the supply of input price increases. And, along with dynamism in demand, they might have triggered the observed price increases. It is expected that the pressures caused by the strike have already begun to dissipate and that the inflation gap between Colombia and other countries narrows in the following months, as production cycles stabilize.

12 See: "¿Cuáles son las razones por las que la papa ha subido más de 110 % en el último año?" (agronegocios.co)

Annex 1

Macroeconomic projections from local and foreign analysts^{a/, b/}

	Units	Oct-22	Dec-22	Oct-23	Dec-23	Oct-24
Total CPI	Monthly Variation (average)	0.62	n. a.	n. a.	n. a.	n. a.
CPI excluding foods	Monthly Variation (average)	0.54	n. a.	n. a.	n. a.	n. a.
Total CPI	Annual Variation (average), end of period	12.11 ^{c/}	11.90	7.38	6.93	4.70
CPI excluding foods	Annual Variation (average), end of period	9.09 ^{c/}	9.43	6.80	6.34	4.32
Nominal exchange rate	Pesos per dollar, end of period	4,600	4,445	4,347	4,300	4,200
Policy rate	Percentage, end of period	11.00	11.50	9.00	8.50	6.00

	Units	III-2022	IV-2022	2022	I-2023	II-2023	III-2023	IV-2023	2023	I-2024	II-2024	III-2024
GDP	Annual variation, original series	6.6	3.8	7.6	2.5	1.5	1.4	1.5	1.8	2.4	2.6	n. a.
Unemployment	Thirteen cities, average for period	10.7	10.6	n. a.	11.5	11.3	11.0	11.0	n. a.	11.3	11.2	n. a.
IBR (90 days)	Effective annual rate, end of period	n. r.	11.5	n. a.	11.4	10.6	9.5	8.5	n. d.	7.5	6.6	6.0
DTF	Effective annual rate, end of period	n. r.	11.6	n. a.	11.6	11.1	10.1	9.2	n. d.	8.4	7.0	6.1
Fiscal Deficit (NCG) ^{d/}	Percentage of GDP	n. a.	n. a.	5.6	n. a.	n. a.	n. a.	n. a.	4.4	n. a.	n. a.	n. a.
Current Account Deficit ^{d/}	Percentage of GDP	n. a.	n. a.	5.3	n. a.	n. a.	n. a.	n. a.	4.6	n. a.	n. a.	n. a.

n. a.: not available.

n. r.: not relevant given that data is already observed.

a/ Starting with the July 2020 Monetary Policy Report, the survey of foreign and local macroeconomic analysts has been suspended and data corresponding to *Banco de la República's* Monthly Survey of Economic Analyst Expectations is included.

b/ Corresponds to the median response from *Banco de la República's* Monthly Survey of Economic Analyst Expectations, except for the total CPI and CPI excluding foods, which correspond to averages.

c/ Data calculated based on the results of *Banco de la República's* Monthly Survey of Economic Analyst Expectations.

d/ Positive values represent deficit and negative values represent surplus.

Source: Monthly Survey of Economic Analyst Expectations, *Banco de la República*, October 2022.

Annex 2

Main macroeconomic forecast variables

		Years										
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Exogenous variables												
External ^{a/}												
Trade partners GDP ^{b/}	Percentage, annual change, seasonally adjusted	2.7	2.1	1.6	2.7	2.5	1.4	-6.5	7.1	2.5	1.4	2.2
Oil price (Benchmark Brent)	Dollars per barrel, average for period	99	54	45	55	72	64	43	71	101	94	85
Federal funds (Fed) effective interest rate	Percentage, average for period	0.09	0.13	0.39	1.00	1.83	2.16	0.36	0.08	1.70	4.60	4.31
Credit default swaps at 5 years for Colombia	Basis points, average for period	101	184	212	129	114	99	141	142	267	300	273
Domestic												
Colombia real neutral interest rate	Percentage, average for period	1.4	1.5	1.6	1.3	1.3	1.2	1.3	1.5	2.0	2.2	2.2
Potential (trend) GDP	Percentage, annual change	3.9	3.3	2.7	2.4	2.3	2.5	0.1	4.2	4.2	2.6	2.7
Endogenous variables												
Prices												
Total CPI	Percentage, annual change, end of period	3.66	6.77	5.75	4.09	3.18	3.80	1.61	5.62	11.29	7.09	3.51
CPI excluding food ^{c/}	Percentage, annual change, end of period	3.28	5.25	5.51	5.03	3.51	3.45	1.03	3.44	.	.	.
CPI tradable (excluding food and regulated items)	Percentage, annual change, end of period	1.75	7.27	5.91	3.24	1.40	2.18	0.63	3.31	.	.	.
CPI non-tradable (excluding food and regulated items)	Percentage, annual change, end of period	3.34	4.64	5.26	5.38	3.13	3.45	1.29	2.18	.	.	.
CPI regulated items	Percentage, annual change, end of period	4.89	4.43	5.63	6.26	6.65	4.81	0.73	7.10	9.26	12.57	5.12
CPI food ^{d/}	Percentage, annual change, end of period	5.24	13.08	6.65	0.48	1.87	5.80	4.80	17.23	23.25	3.74	0.52
CPI perishables	Percentage, annual change, end of period	16.74	26.03	-6.63	5.84	8.88	8.66	2.49	24.42	.	.	.
CPI processed	Percentage, annual change, end of period	2.54	9.62	10.74	-0.91	-0.08	5.04	5.43	15.32	.	.	.
Core inflation indicators ^{e/}												
CPI excluding food	Percentage, annual change, end of period	3.28	5.25	5.51	5.03	3.51	3.45	1.03	3.44	.	.	.
Core 15 CPI	Percentage, annual change, end of period	3.19	5.59	5.98	4.21	3.22	3.78	1.88	4.42	.	.	.
CPI excluding food and regulated items	Percentage, annual change, end of period	2.82	5.50	5.48	4.67	2.57	3.10	1.11	2.49	8.61	6.77	3.78
Average of all core inflation indicators	Percentage, annual change, end of period	3.10	5.44	5.66	4.64	3.10	3.44	1.34	3.45	.	.	.
MER	Pesos por dólar, promedio del periodo	2,001	2,746	3,053	2,951	2,957	3,282	3,691	3,747	.	.	.
Inflation gap in the real interest rate	Percentage, average for period	-0.3	9.5	2.5	-1.8	-0.8	3.6	6.1	2.6	5.7	1.4	-0.9
Economic activity												
Gross domestic product (SACE)	Percentage, annual change, SACE	4.5	3.0	2.1	1.4	2.6	3.2	-7.0	10.7	7.9	0.5	1.3
Final consumption spending	Percentage, annual change, SACE	4.3	3.4	1.6	2.3	4.0	4.3	-4.2	13.9	.	.	.
Final household consumption spending	Percentage, annual change, SACE	4.2	3.1	1.6	2.1	3.2	4.1	-5.0	14.8	.	.	.
Final government spending	Percentage, annual change, SACE	4.7	4.9	1.8	3.6	7.4	5.3	-0.6	10.3	.	.	.
Gross capital formation	Percentage, annual change, SACE	12.0	-1.2	-0.2	-3.2	1.5	3.0	-20.5	12.2	.	.	.
Gross fixed capital formation	Percentage, annual change, SACE	9.2	2.8	-2.9	1.9	1.0	2.2	-23.3	11.2	.	.	.
Housing	Percentage, annual change, SACE	10.4	9.5	-0.2	-1.9	-0.4	-8.9	-30.3	22.6	.	.	.
Other buildings and structures	Percentage, annual change, SACE	9.6	10.2	0.0	4.6	-3.5	1.1	-30.9	-3.0	.	.	.
Machinery and equipment	Percentage, annual change, SACE	9.2	-9.3	-7.9	1.4	8.6	12.3	-13.4	19.1	.	.	.
Cultivated biological resources	Percentage, annual change, SACE	-1.3	2.3	13.1	0.3	-3.1	7.9	-1.8	3.7	.	.	.
Intellectual property products	Percentage, annual change, SACE	5.1	1.3	-12.0	1.2	1.5	-0.7	-10.8	10.3	.	.	.
Domestic demand	Percentage, annual change, SACE	6.0	2.4	1.2	1.1	3.5	4.0	-7.5	13.6	.	.	.
Exports	Percentage, annual change, SACE	-0.3	1.7	-0.2	2.6	0.6	3.1	-22.7	14.8	.	.	.
Imports	Percentage, annual change, SACE	7.8	-1.1	-3.5	1.0	5.8	7.3	-20.5	28.7	.	.	.
Output gap ^{f/}	Percentage	1.3	1.0	0.4	-0.6	-0.4	0.3	-7.1	-1.2	2.3	0.2	-1.1
Short-term indicators												
Real industrial production	Percentage, annual change, seasonally adjusted	1.7	2.1	3.5	0.0	2.9	1.3	-8.1	16.1	.	.	.
Retail commerce sales excluding fuels and vehicles	Percentage, annual change, seasonally adjusted	8.4	6.4	2.0	-0.2	5.4	8.1	-1.7	11.9	.	.	.
Coffee production	Percentage, annual change in cumulative production for the period	11.5	16.8	0.4	-0.3	-4.5	8.8	-5.8	-9.5	.	.	.
Oil production	Percentage, annual change, average for period	-1.9	1.6	-11.7	-3.7	1.4	2.4	-11.8	-5.8	.	.	.
Labor Market ^{g/}												
National Total												
Unemployment rate	Percentage, seasonally adjusted, average for period	9.4	9.2	9.5	9.7	10.0	10.9	16.5	13.8	11.1	11.0	.
Employment rate	Percentage, seasonally adjusted, average for period	61.1	61.3	60.5	60.0	59.1	57.7	50.4	53.1	.	.	.
Overall participation rate	Percentage, seasonally adjusted, average for period	67.4	67.5	66.9	66.4	65.7	64.8	60.4	61.5	.	.	.
Thirteen cities and metropolitan areas												
Unemployment rate	Percentage, seasonally adjusted, average for period	10.2	10.1	10.3	11.0	11.1	11.5	18.9	15.2	11.5	11.7	.
Employment rate	Percentage, seasonally adjusted, average for period	62.8	62.6	61.7	60.5	59.6	58.8	50.8	53.8	.	.	.
Overall participation rate	Percentage, seasonally adjusted, average for period	69.9	69.6	68.8	67.9	67.1	66.4	62.7	63.5	.	.	.
Balance of payments ^{h/i/}												
Current account (A + B + C)	Millions of dollars	-19,819	-18,702	-12,587	-9,924	-14,041	-14,808	-9,347	-17,621	-20,516	-14,105	.
Percentage of GDP	Percentage, nominal terms	-5.2	-6.4	-4.5	-3.2	-4.2	-4.6	-3.5	-5.6	-6.0	-3.9	.
A. Goods and Services	Millions of dollars	-12,332	-19,004	-13,451	-8,762	-10,556	-14,146	-13,089	-20,047	-15,564	-8,709	.
B. Primary income (factor income)	Millions of dollars	-12,108	-5,450	-5,312	-8,046	-11,442	-9,717	-5,046	-8,349	-16,829	-16,020	.
C. Secondary income (current account transfers)	Millions of dollars	4,622	5,752	6,177	6,883	7,957	9,055	8,788	10,775	11,877	10,624	.
Financial account (A + B + C + D)	Millions of dollars	-19,292	-18,060	-12,339	-9,625	-12,954	-13,298	-8,161	-16,558	.	.	.
Percentage of GDP	Percentage, nominal terms	-5.1	-6.2	-4.4	-3.1	-3.9	-4.1	-3.0	-5.3	.	.	.
A. Foreign investment (II + I)	Millions of dollars	-12,270	-7,403	-9,341	-10,011	-6,172	-10,836	-5,773	-6,546	.	.	.
i. Foreign in Colombia (FDI)	Millions of dollars	16,169	11,621	13,858	13,701	11,299	13,989	7,459	9,727	.	.	.
ii. Colombian abroad	Millions of dollars	3,899	4,218	4,517	3,690	5,126	3,153	1,686	3,181	.	.	.
B. Portfolio investment	Millions of dollars	-11,565	-9,091	-4,945	-1,800	862	24	-1,768	-4,621	.	.	.
C. Other investment (loans and other credits and derivatives)	Millions of dollars	106	-1,981	1,781	1,641	-8,831	-5,820	-4,949	-6,044	.	.	.
D. Reserve assets	Millones de dólares	4,437	415	165	545	1,187	3,333	4,328	654	.	.	.
Errors and omissions (E and O)	Millones de dólares	526	642	247	299	1,087	1,509	1,186	1,064	.	.	.
Interest rates												
Monetary policy rate ^{j/}	Percentage, average for period	3.88	4.67	7.10	6.10	4.35	4.25	2.87	1.91	.	.	.
Monetary Policy rate expected by analysts ^{k/}	Percentage, average for period									7.14	10.46	.
BBI	Percentage, average for period	3.8	4.7	7.1	6.1	4.3	4.3	2.9	1.9	.	.	.
Commercial interest rate ^{l/}	Percentage, average for period	8.7	9.4	12.8	11.1	9.3	8.8	7.4	6.2	.	.	.
Consumer interest rate ^{m/}	Percentage, average for period	17.3	17.2	19.2	19.4	17.9	16.5	15.0	14.3	.	.	.
Mortgage rate ^{n/}	Percentage, average for period	11.1	11.0	12.4	11.6	10.6	10.4	10.1	9.1	.	.	.

Note: Values in bold represent a projection or assumption.

SACE: Seasonally adjusted and corrected for calendar effects.

a) Quarterly data in bold correspond to an assumption based on the annual projection of each variable.

b) Calculated for the largest trade partners (excluding Venezuela) by total trade from Colombia.

c) Calculations by Banco de la República; excludes the division of the CPI for food and non-alcoholic drinks. See González, E.; Hernández, R.; Caicedo, E.; Martínez-Cortés, N.; Grajales, A.; Romero, J. (2020). "Nueva clasificación del Banrep de la canasta del IPC and revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, Banco de la República, available at: <https://investiga.banrep.gov.co/es/be-1122>.

d) Calculations by Banco de la República; equal to the division of the CPI for food and non-alcoholic drinks produced by DANE (does not include sub-categories corresponding to food away from home). See González, E.; Hernández, R.; Caicedo, E.; Martínez-Cortés, N.; Grajales, A.; Romero, J. (2020). "Nueva clasificación del Banrep de la canasta del IPC y revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, Banco de la República, available at: <https://investiga.banrep.gov.co/es/be-1122>.

e) Calculations by Banco de la República. See González, E.; Hernández, R.; Caicedo, E.; Martínez-Cortés, N.; Grajales, A.; Romero, J. (2020). "Nueva clasificación del Banrep de la canasta del IPC y revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, Banco de la República, available at: <https://investiga.banrep.gov.co/es/be-1122>.

f) The historical estimate for the gap is calculated as the difference between observed and potential (trend) GDP resulting from the 4G monetary policy model; forecast is calculated as the difference between the technical staff's GDP estimate and potential (trend) GDP from the 4G model.

g) Rates are calculated based on seasonally adjusted annual populations.

h) The results presented herein follow the recommendations of the sixth balance of payments manual proposed by the International Monetary Fund (IMF). See additional information and methodological changes at: <http://www.banrep.gov.co/balanza-pagos>.

i) Results for 2020 and 2021 are preliminary.

j) Corresponds to the annually average monetary policy rate calculated with the working days of the series.

k) These projections are calculated as the average rate that would be active in each year according to the median of the analyst response to the Central Bank's monthly economic analyst survey from October 2022.

l) Weighted average by rate amounts for ordinary, treasury, and preferential credit.

m) Excludes credits granted through credit cards.

n) Weighted average per interest rate amounts for disbursements in pesos and UVR for non-low-income housing credit.

Annex 2 (Continued)

Main macroeconomic forecast variables

		2017				2018			
		T1	T2	T3	T4	T1	T2	T3	T4
Exogenous variables									
External ^{a/}									
Trade partners GDP ^{b/}	Percentage, annual change, seasonally adjusted	2.3	3.4	3.2	2.9	2.3	3.3	1.2	0.9
Oil price (Benchmark Brent)	Dollars per barrel, average for period	55	51	52	61	67	75	76	69
Federal funds (Fed) effective interest rate	Percentage, average for period	0.70	0.95	1.16	1.20	1.45	1.74	1.92	2.22
Credit default swaps at 5 years for Colombia	Basis points, average for period	144	130	127	113	99	113	110	132
Domestic									
Colombia real neutral interest rate	Percentage, average for period								
Potential (trend) GDP	Percentage, annual change								
Endogenous variables									
Prices									
CPI Total	Percentage, annual change, end of period	4.69	3.99	3.97	4.09	3.14	3.20	3.23	3.18
CPI excluding food ^{c/}	Percentage, annual change, end of period	5.55	5.40	4.86	5.03	3.97	3.73	3.67	3.51
CPI tradable (excluding food and regulated items)	Percentage, annual change, end of period	5.69	4.28	3.46	3.24	1.67	1.39	1.39	1.40
CPI non-tradable (excluding food and regulated items)	Percentage, annual change, end of period	5.87	5.55	5.02	5.38	4.09	3.79	3.60	3.13
CPI food ^{d/}	Percentage, annual change, end of period	4.71	6.33	6.10	6.26	6.28	6.21	6.35	6.65
CPI perishables	Percentage, annual change, end of period	1.46	-1.21	0.59	0.48	-0.06	1.11	1.47	1.87
CPI processed	Percentage, annual change, end of period	-13.09	-14.72	-0.32	5.84	7.13	8.47	9.51	8.88
Core inflation indicators ^{e/}	Percentage, annual change, end of period	6.28	3.29	0.84	-0.91	-2.01	-0.91	-0.72	-0.08
CPI excluding food	Percentage, annual change, end of period	5.55	5.40	4.86	5.03	3.97	3.73	3.67	3.51
Core 15 CPI	Percentage, annual change, end of period	5.63	5.16	4.49	4.21	3.45	3.24	3.19	3.22
CPI excluding food and regulated items	Percentage, annual change, end of period	5.81	5.13	4.50	4.67	3.28	2.99	2.87	2.57
Average of all core inflation indicators	Percentage, annual change, end of period	5.66	5.23	4.62	4.64	3.57	3.32	3.24	3.10
MER	Pesos per dollar, average for period	2,924	2,920	2,975	2,986	2,860	2,839	2,961	3,160
Inflation gap in the real interest rate	Percentage, average for period	-2.9	-3.2	-0.7	-0.2	-3.4	-3.8	-0.4	4.5
Economic activity									
Gross domestic product (SACE)	Percentage, annual change, SACE	1.5	1.3	1.4	1.2	2.0	2.4	2.9	2.9
Final consumption spending	Percentage, annual change, SACE	2.2	2.3	2.6	2.3	3.8	4.1	3.9	4.0
Final household consumption spending	Percentage, annual change, SACE	1.9	2.3	2.4	1.7	3.3	3.5	3.3	2.9
Final government spending	Percentage, annual change, SACE	4.0	2.2	3.6	4.8	6.6	7.0	7.9	7.8
Gross capital formation	Percentage, annual change, SACE	-0.3	-1.9	-4.6	-6.2	-5.9	1.4	0.0	11.1
Gross fixed capital formation	Percentage, annual change, SACE	-0.6	1.4	5.8	1.0	-1.9	2.4	1.6	1.9
Housing	Percentage, annual change, SACE	12.7	-0.6	-4.4	-13.2	-8.8	-1.6	6.2	3.6
Other buildings and structures	Percentage, annual change, SACE	-3.7	5.7	11.2	5.4	-6.3	-1.3	-5.5	-1.0
Machinery and equipment	Percentage, annual change, SACE	-5.8	-2.1	7.5	6.2	11.6	13.5	6.8	3.5
Cultivated biological resources	Percentage, annual change, SACE	21.7	-2.0	-10.7	-4.3	-10.9	-6.6	3.6	2.4
Intellectual property products	Percentage, annual change, SACE	-5.3	2.3	4.7	3.5	2.5	2.5	0.9	0.2
Domestic demand	Percentage, annual change, SACE	1.0	1.4	1.3	0.7	1.6	3.6	3.5	5.1
Exports	Percentage, annual change, SACE	1.4	5.4	3.4	0.2	0.1	-2.0	1.6	2.9
Imports	Percentage, annual change, SACE	3.8	1.8	1.0	-2.5	-1.7	4.6	5.3	15.3
Output gap ^{f/}	Percentage	0.2	-0.1	-0.3	-0.6	-0.7	-0.7	-0.5	-0.4
Short-term indicators									
Real industrial production	Percentage, annual change, seasonally adjusted	-0.7	-0.5	1.1	0.2	2.5	2.7	3.8	2.8
Retail commerce sales excluding fuels and vehicles	Percentage, annual change, seasonally adjusted	-0.1	-0.3	0.5	-0.8	4.6	6.3	4.8	6.0
Coffee production	Percentage, annual change in cumulative production for the period	13.0	-17.2	17.1	-10.1	-5.8	13.1	-13.8	-6.6
Oil production	Percentage, annual change, average for period	-11.6	-5.2	1.5	1.9	0.7	1.2	1.1	2.6
Labor Market ^{g/}									
National Total									
Unemployment rate	Percentage, seasonally adjusted, average for period	9.6	9.5	9.7	9.8	9.7	9.9	9.7	10.5
Employment rate	Percentage, seasonally adjusted, average for period	60.2	60.4	59.9	59.5	59.2	59.5	59.5	58.4
Overall participation rate	Percentage, seasonally adjusted, average for period	66.6	66.8	66.4	66.0	65.6	66.0	65.9	65.2
Thirteen cities and metropolitan areas									
Unemployment rate	Percentage, seasonally adjusted, average for period	10.8	11.0	11.3	10.9	11.1	11.0	10.8	11.6
Employment rate	Percentage, seasonally adjusted, average for period	61.0	60.7	60.3	59.9	59.7	59.8	60.1	58.9
Overall participation rate	Percentage, seasonally adjusted, average for period	68.3	68.2	68.0	67.2	67.1	67.3	67.4	66.6
Balance of payments ^{h/i/}									
Current account (A + B + C)	Millions of dollars	-3,490	-2,426	-2,561	-1,449	-3,023	-3,471	-3,406	-4,141
Percentage of GDP	Percentage, nominal terms	-4.7	-3.2	-3.2	-1.7	-3.7	-4.2	-4.0	-4.9
A. Goods and Services	Millions of dollars	-2,730	-2,551	-2,326	-1,154	-1,840	-2,557	-2,672	-3,487
B. Primary income (factor income)	Millions of dollars	-2,286	-1,558	-1,993	-2,208	-2,922	-2,784	-2,769	-2,967
C. Secondary income (current account transfers)	Millions of dollars	1,527	1,684	1,759	1,914	1,739	1,870	2,035	2,313
Financial account (A + B + C + D)	Millions of dollars	-2,986	-2,625	-2,379	-1,635	-2,876	-2,719	-3,487	-3,872
Percentage of GDP	Percentage, nominal terms	-4.0	-3.5	-3.0	-2.0	-3.5	-3.3	-4.1	-4.6
A. Foreign investment (II + I)	Millions of dollars	-1,743	-1,217	-4,112	-2,939	-910	-2,273	-2,375	-615
i. Foreign in Colombia (FDI)	Millions of dollars	2,459	2,492	4,957	3,793	1,982	3,773	2,704	2,839
ii. Colombian abroad	Millions of dollars	716	1,275	845	854	1,072	1,500	330	2,224
B. Portfolio investment	Millions of dollars	182	-2,178	-424	620	1,715	350	482	-1,684
C. Other investment (loans, other credits and derivatives)	Millions of dollars	-1,518	617	2,031	512	-3,817	-945	-1,763	-2,305
D. Reserve assets	Millions of dollars	93	154	126	173	137	150	169	732
Errors and omissions (E and O)	Millions of dollars	503	-199	181	-186	146	752	-81	270
Interest rates									
Monetary policy rate ^{j/}	Percentage, average for period	7.38	6.56	5.48	4.99	4.58	4.33	4.25	4.25
Monetary policy rate expected by analysts ^{k/}	Percentage, average for period								
BBI	Percentage, average for period	7.4	6.6	5.5	5.0	4.6	4.3	4.3	4.3
Commercial interest rate ^{l/}	Percentage, average for period	12.8	11.6	10.6	10.0	9.4	9.4	9.3	9.0
Consumer interest rate ^{m/}	Percentage, average for period	20.1	19.7	19.0	18.7	18.7	17.9	18.0	17.3
Mortgage rate ^{n/}	Percentage, average for period	12.5	12.3	11.3	10.9	10.8	10.6	10.5	10.4

Note: Values in bold represent a projection or assumption.

SACE: Seasonally adjusted and corrected for calendar effects.

a/ Quarterly data in bold correspond to an assumption based on the annual projection of each variable.

b/ Calculated for the largest trade partners (excluding Venezuela) by non-traditional dollar exports from Colombia.

c/ Calculations by Banco de la República; excludes the division of the CPI for food and non-alcoholic drinks. See González, E.; Hernández, R.; Caicedo, E.; Martínez-Cortés, N.; Grajales, A.; Romero, J. (2020). "Nueva clasificación del Banrep de la canasta del IPC and revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, Banco de la República, available at: <https://investiga.banrep.gov.co/es/be-1122>.

d/ Calculations by Banco de la República; equal to the division of the CPI for food and non-alcoholic drinks produced by DANE (does not include sub-categories corresponding to food away from home). See González, E.; Hernández, R.; Caicedo, E.; Martínez-Cortés, N.; Grajales, A.; Romero, J. (2020). "Nueva clasificación del Banrep de la canasta del IPC and revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, Banco de la República, available at: <https://investiga.banrep.gov.co/es/be-1122>.

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f/ The historical estimate for the gap is calculated as the difference between observed and potential (trend) GDP resulting from the 4G monetary policy model; forecast is calculated as the difference between the technical staff's GDP estimate and potential (trend) GDP from the 4G model.

g/ Corresponds to the moving average seasonal adjusted quarter

h/ The results presented herein follow the recommendations of the sixth balance of payments manual proposed by the International Monetary Fund (IMF). See additional information and methodological changes at: <http://www.banrep.gov.co/balanza-pagos>.

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k/ These projections are calculated as the average rate that would be active in each quarter according to the median of the analyst response to the Central Bank's monthly economic analyst survey from October 2022.

l/ Weighted average by rate amounts for ordinary, treasury, and preferential credit.

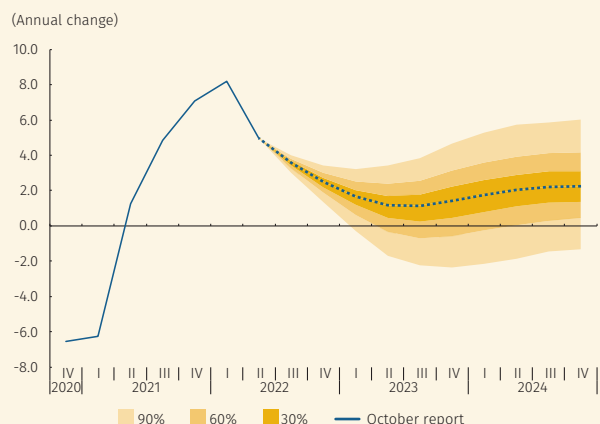
m/ Excludes credits granted through credit cards.

n/ Weighted average per interest rate amounts for disbursements in pesos and UVR for non-low-income housing credit

2019				2020				2021				2022				2023				2024			
T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
0.9	3.0	1.8	-2.0	-7.4	-44.0	50.5	12.5	5.3	5.6	6.3	3.5	2.0	0.9	0.4	0.4	1.8	1.9	2.1	2.5	2.2	2.2	2.2	2.2
64	68	62	62	51	33	43	45	61	69	73	80	98	112	98	97	97	95	93	90	87	84	84	84
2.40	2.40	2.20	1.65	1.23	0.06	0.09	0.09	0.08	0.07	0.09	0.08	0.12	0.76	2.20	3.70	4.54	4.63	4.63	4.63	4.63	4.47	4.20	3.96
121	104	90	83	125	206	132	104	110	131	143	185	209	238	275	346	322	298	293	289	283	276	270	263
3.21	3.43	3.82	3.80	3.86	2.19	1.97	1.61	1.51	3.63	4.51	5.62	8.53	9.67	11.44	11.29	10.07	9.38	7.79	7.09	6.12	4.85	4.02	3.51
3.27	3.22	3.37	3.45	3.26	1.40	1.57	1.03	1.06	2.70	3.03	3.44	5.31	6.84	8.33	.	.	.	.	.	.	.	.	.
1.09	1.60	1.83	2.18	2.41	0.73	1.15	0.63	1.05	2.57	2.97	3.31	6.41	8.30	11.57	.	.	.	.	.	.	.	.	.
3.01	3.10	3.37	3.45	3.22	2.00	1.86	1.29	0.89	1.61	2.01	2.18	3.79	5.21	5.93	.	.	.	.	.	.	.	.	.
6.33	5.24	5.03	4.81	4.27	0.44	1.19	0.73	1.52	5.93	5.94	7.10	8.32	9.80	11.46	9.26	11.30	11.89	10.96	12.57	9.63	7.22	5.85	5.12
3.24	4.96	6.49	5.80	7.19	6.55	4.13	4.80	3.92	8.52	12.40	17.23	25.37	23.65	26.62	23.25	13.78	11.27	6.24	3.74	3.72	1.63	0.78	0.52
9.98	15.46	17.50	8.66	9.79	2.52	-3.42	2.49	1.58	8.69	14.82	24.42	41.87	31.21	35.50	.	.	.	.	.	.	.	.	.
1.43	2.18	3.57	5.04	6.46	7.75	6.40	5.43	4.60	8.47	11.74	15.32	20.69	21.50	24.14	.	.	.	.	.	.	.	.	.
3.27	3.22	3.37	3.45	3.26	1.40	1.57	1.03	1.06	2.70	3.03	3.44	5.31	6.84	8.33	.	.	.	.	.	.	.	.	.
3.24	3.34	3.66	3.78	3.64	2.17	2.33	1.88	1.67	3.36	3.79	4.42	6.93	8.41	10.04	.	.	.	.	.	.	.	.	.
2.41	2.65	2.92	3.10	2.99	1.65	1.67	1.11	0.94	1.87	2.28	2.49	4.51	6.06	7.49	8.61	8.66	8.29	7.51	6.77	5.78	4.98	4.29	3.78
2.97	3.07	3.32	3.44	3.30	1.74	1.86	1.34	1.22	2.64	3.03	3.45	5.58	7.10	8.62	.	.	.	.	.	.	.	.	.
3.135	3.242	3.337	3.413	3.532	3.850	3.731	3.661	3.556	3.696	3.847	3.880	3.913	3.916	4.383	10.2	3.9	1.7	0.6	-0.4	-0.8	-0.7	-0.6	-1.4
2.3	3.3	4.2	4.8	5.1	10.9	6.0	2.5	-0.7	2.9	4.5	3.6	2.7	1.5	8.2	.	.	.	.	.	.	.	.	.
3.2	3.2	3.2	3.1	0.2	-16.4	-8.5	-3.6	1.7	18.2	13.7	10.6	8.5	12.6	6.4	4.2	2.1	0.4	-0.2	-0.3	0.7	1.2	1.7	1.9
3.3	4.3	4.5	5.1	4.3	-12.7	-7.7	-0.3	2.8	23.1	19.3	13.2	11.8	12.5	9.3	.	.	.	.	.	.	.	.	.
2.6	3.8	4.4	5.5	4.9	-15.2	-8.9	-0.5	2.2	25.6	20.5	13.3	12.0	14.5	10.2	.	.	.	.	.	.	.	.	.
6.4	5.8	5.0	4.0	-0.2	-1.3	-1.7	0.8	7.4	12.4	13.7	7.9	8.5	3.7	2.8	.	.	.	.	.	.	.	.	.
9.9	3.4	4.6	-5.3	-11.7	-35.7	-17.1	-17.4	-2.3	30.2	8.0	18.4	15.9	25.0	17.8	.	.	.	.	.	.	.	.	.
7.5	3.8	1.6	-3.5	-11.5	-39.7	-24.2	-17.4	-4.0	34.6	11.3	9.8	8.5	11.5	11.0	.	.	.	.	.	.	.	.	.
-5.4	-9.9	-8.7	-11.5	-20.8	-42.3	-31.2	-27.1	12.7	36.6	19.1	26.0	-1.9	1.3	-5.0	.	.	.	.	.	.	.	.	.
13.2	-1.5	0.1	-6.0	-12.4	-47.9	-33.9	-29.3	-20.4	24.0	-4.1	0.0	-2.7	2.5	8.5	.	.	.	.	.	.	.	.	.
14.4	21.7	10.0	3.5	-4.1	-37.4	-9.5	0.0	6.6	50.3	19.5	9.1	25.5	26.4	20.5	.	.	.	.	.	.	.	.	.
5.8	10.1	14.6	1.5	1.7	1.3	-8.1	-1.6	8.8	5.6	0.9	-0.6	-10.6	-10.6	-4.9	.	.	.	.	.	.	.	.	.
-0.7	-1.6	-0.8	0.5	-2.2	-19.3	-12.8	-8.8	-3.2	13.6	16.5	15.8	15.2	15.8	4.8	.	.	.	.	.	.	.	.	.
4.6	3.7	4.9	2.9	0.8	-17.9	-9.5	-3.2	1.7	24.3	17.8	12.8	12.9	14.5	8.3	.	.	.	.	.	.	.	.	.
5.1	8.8	2.1	-3.3	-7.1	-31.8	-28.4	-23.4	-10.5	15.6	25.6	35.8	18.6	31.6	18.9	.	.	.	.	.	.	.	.	.
11.6	8.9	11.0	-1.3	-6.2	-33.8	-25.7	-15.9	-2.6	47.2	42.0	36.8	36.7	31.7	22.4	.	.	.	.	.	.	.	.	.
-0.2	0.0	0.2	0.3	-0.3	-3.8	-6.0	-7.1	-7.1	-4.6	-2.7	-1.2	-0.3	1.2	2.0	2.3	2.1	1.5	0.9	0.2	-0.3	-0.7	-0.9	-1.1
1.1	2.4	0.7	0.9	-1.5	-23.5	-7.3	0.0	6.7	27.5	20.0	12.8	12.0	21.2	.	.	.	.	.	.	.	.	.	.
6.3	7.2	9.6	9.2	6.3	-14.7	-3.4	5.0	4.5	18.9	15.3	10.5	11.7	21.7	.	.	.	.	.	.	.	.	.	.
-1.9	6.6	4.9	24.1	-13.8	-1.9	-3.6	-4.6	13.3	-24.7	-1.9	-18.8	-16.3	9.7	-18.2	.	.	.	.	.	.	.	.	.
5.3	3.2	1.4	-0.2	-2.1	-15.7	-15.4	-14.1	-14.6	-5.1	-0.1	-1.7	-0.1	5.1	.	.	.	.	.	.	.	.	.	.
10.8	10.6	11.1	11.0	11.9	21.1	18.1	15.5	14.7	15.3	12.6	12.7	12.0	11.2	10.6	10.6	10.8	11.2	11.0	11.0	.	.	.	.
58.3	57.8	57.3	57.4	55.6	44.5	49.1	52.5	52.7	52.0	53.7	53.9	55.9	56.7	.	.	.	.	.	.	.	.	.	.
65.4	64.6	64.5	64.5	63.1	56.4	60.0	62.1	61.7	61.3	61.4	61.7	63.5	63.8	.	.	.	.	.	.	.	.	.	.
11.7	11.4	11.3	11.6	11.8	25.2	21.8	17.3	16.7	16.8	14.1	13.2	12.1	11.3	11.2	11.2	11.4	11.9	11.7	11.7	.	.	.	.
58.7	58.8	58.8	58.7	56.9	44.1	49.0	53.3	53.4	53.1	54.4	54.4	57.4	57.9	.	.	.	.	.	.	.	.	.	.
66.6	66.4	66.3	66.5	64.5	58.9	62.7	64.5	64.1	63.8	63.3	62.7	65.3	65.3	.	.	.	.	.	.	.	.	.	.
-3,821	-3,218	-4,302	-3,466	-2,324	-1,984	-2,033	-3,006	-3,017	-3,998	-4,822	-5,785	-5,159	-5,039	.	.	.	.	.	.	.	.	.	.
-4.8	-4.1	-5.3	-4.1	-3.2	-3.6	-3.1	-4.0	-4.0	-5.5	-6.1	-6.7	-6.2	-5.7	.	.	.	.	.	.	.	.	.	.
-3,137	-2,997	-4,405	-3,606	-3,098	-2,651	-3,262	-4,078	-3,684	-5,023	-5,285	-6,055	-4,965	-3,159	.	.	.	.	.	.	.	.	.	.
-2,616	-2,502	-2,301	-2,298	-1,999	-1,051	-1,194	-1,403	-1,783	-1,602	-2,300	-2,664	-3,371	-4,723	.	.	.	.	.	.	.	.	.	.
1,932	2,281	2,404	2,438	2,173	1,718	2,422	2,475	2,450	2,627	2,763	2,935	3,177	2,843	.	.	.	.	.	.	.	.	.	.
-3,520	-3,333	-3,740	-2,706	-1,751	-1,948	-1,868	-2,594	-2,769	-3,732	-4,530	-5,527	-4,756	-5,164	.	.	.	.	.	.	.	.	.	.
-4.4	-4.2	-4.6	-3.2	-2.4	-3.5	-2.8	-3.4	-3.7	-5.1	-5.7	-6.4	-5.7	-5.8	.	.	.	.	.	.	.	.	.	.
-2,652	-3,626	-1,678	-2,880	-1,939	-1,736	-2,69	-1,829	-1,464	-1,038	-2,609	-1,435	-3,693	-3,279	.	.	.	.	.	.	.	.	.	.
3,394	4,090	3,163	3,342	3,175	1,371	844	2,069	2,333	2,023	2,788	2,584	5,072	4,773	.	.	.	.	.	.	.	.	.	.
741	465	1,485	462	1,236	-365	575	240	869	984	179	1,149	1,379	1,495	.	.	.	.	.	.	.	.	.	.
-1,382	-282	137	1,551	-168	-3,429	323	1,506	1,319	-6,089	851	-701	1,930	-605	.	.	.	.	.	.	.	.	.	.
-1,836	48	-2,453	-1,579	526	628	-2,126	-3,976	-2,814	3,222	-2,926	-3,526	-3,120	-1,354	.	.	.	.	.	.	.	.	.	.
2,351	526	254	202	-171	2,590	205	1,705	190	174	154	135	127	74	.	.	.	.	.	.	.	.	.	.
301	-115	562	760	573	36	166	411	249	266	292	258	403	-124	.	.	.	.	.	.	.	.	.	.
4.25	4.25	4.25	4.25	4.23	3.26	2.24	1.75	1.75	1.75	1.75	2.40	3.69	5.68	8.56	10.68	11.50	11.00	10.17	9.17	8.17	7.17	6.58	.
4.3	4.3	4.3	4.3	4.2	3.2	2.2	1.7	1.7	1.7	1.8	2.4	3.7	5.7	8.6	.	.	.	.	.	.	.	.	.
9.1	9.0	8.9	8.5	8.4	8.3	7.0	6.2	6.0	5.7	6.0	6.9	8.6	10.8	14.3	.	.	.	.	.	.	.	.	.
18.0	17.2	16.0	15.5	15.8	15.5	14.8	14.2	14.0	13.7	14.3	14.8	16.7	19.1	22.9	.	.	.	.	.	.	.	.	.
10.4	10.5	10.4	10.4	10.4	10.2	9.6	9.2	8.9	9.0	9.0	9.3	9.9	11.5	13.4	.	.	.	.	.	.	.	.	.

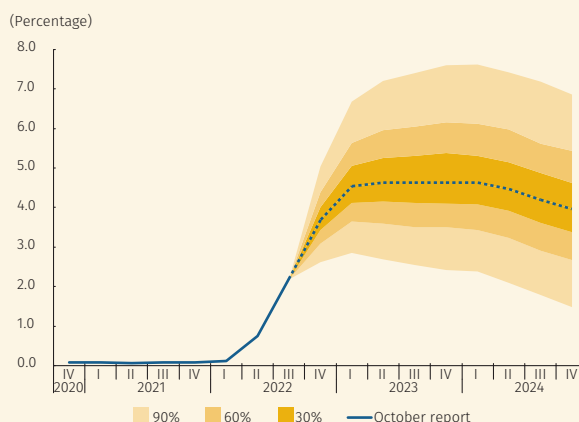
Annex 3 Predictive densities for other relevant macroeconomic variables

Graph A3.1
Supposed quarterly trade partner 12-month growth based on annual projections, predictive density^{a/}



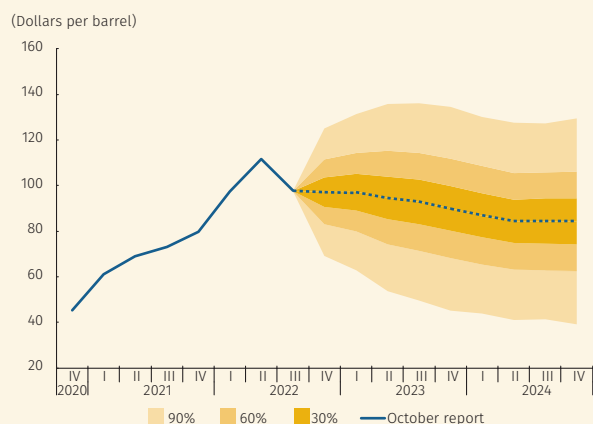
a/ The graph displays the probability distribution and its most likely trajectory on an nine-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Sources: Bloomberg, statistics offices, central banks. Calculations and projections by *Banco de la República*.

Graph A3.3
Supposed U.S. Federal Reserve quarterly interest rate, predictive density^{a/}



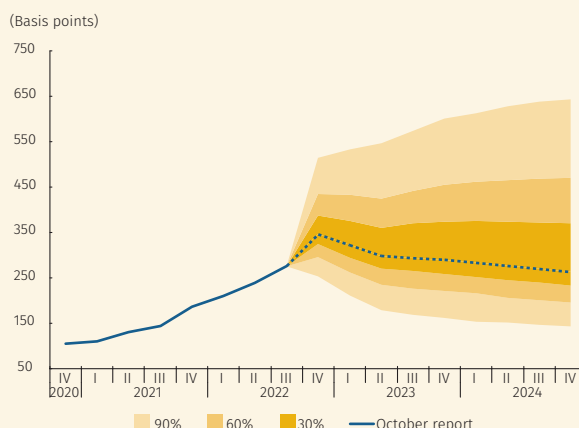
a/ The graph displays the probability distribution and its most likely trajectory on an nine-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Source: Federal Reserve Bank of St. Louis. Calculations and projections by *Banco de la República*.

Graph A3.2
Supposed quarterly oil price, predictive density^{a/}



a/ The graph displays the probability distribution and its most likely trajectory on an nine-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Source: Bloomberg. Calculations and projections by *Banco de la República*.

Graph A3.4
Supposed quarterly risk premium for Colombia (CDS), predictive density^{a/,b/}

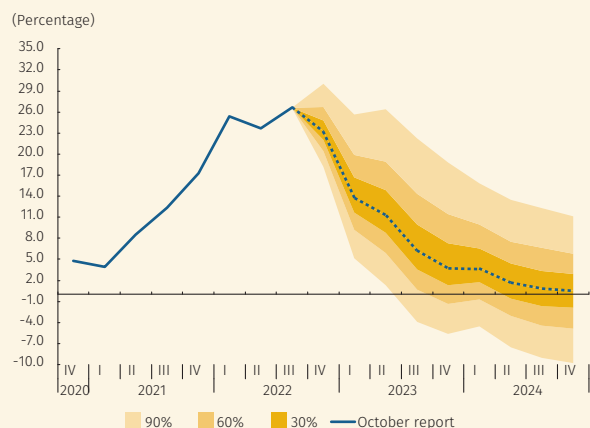


a/ Five-year credit default swaps.
b/ The graph displays the probability distribution and its most likely trajectory on an nine-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode), using a combination of densities from the Patacon and 4GM models.
Source: Bloomberg. Calculations and projections by *Banco de la República*.

Annex 3 (continued)

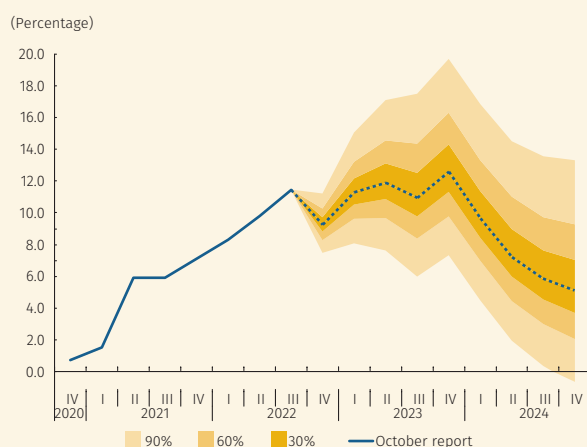
Predictive densities for other relevant macroeconomic variables

Graph A3.5
CPI for foods, predictive density^{a/}
(Annual change; end-of-period)



a/ The graph displays the probability distribution and its most likely trajectory on a nine-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode), using a combination of densities from the Patacon and 4GM models. Source: DANE. Calculations and projections by *Banco de la República*.

Graph A3.6
CPI for regulated items, predictive density^{a/}
(Annual change; end-of-period)



a/ The graph displays the probability distribution and its most likely trajectory on a nine-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode), using a combination of densities from the Patacon and 4GM models. Source: DANE. Calculations and projections by *Banco de la República*.