MONETARY POLICY REPORT

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MONETARY **POLICY REPORT**

* Presented by the technical staff to the Board of Directors for its meeting on 31 October 2023.

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This new version incorporates ortho-typographic corrections that do not alter the information presented orginally.

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Hernando Vargas Herrera
Deputy Technical Governor

Office for Monetary Policy and Economic Information (*)
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Programming and Inflation Department
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Cristian González Téllez

Models and Capacities Development Section
José David Pulido Pescador
Head

Santiago Forero Alvarado
Sara Naranjo Saldarriaga
Anderson Grajales Olarte

(*) Eliana González, head of the Statistics Section; Deicy Cristiano, Julián Cárdenas, Isleny Carranza, and Ramón Hernández, analysts at the Statistics Section; Jesús Bejarano, Director of the Applied Macroeconomic Analysis Department; Andrés Herrera, David López, and Manuela Quintero, analysts of the Fiscal and Sector Analysis Group; Juan David Bonilla, Diego Escobar, Juan Felipe Carmona, Joseph Yesid Palomino, Nathaly Vergel, Juan Sebastián Mayorga, and Hugo Daza, student interns, also participated in the making of 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 policy[1]. 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% 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%.

The main instrument used by the BDBR to control is the policy interest rate (overnight repo rate, or benchmark interest rate). Given that monetary policy actions take time to have their full effect on the economy and inflation[2], 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 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 third following business day. Additionally, the Monetary Policy Report (MPR), produced by the Central Bank's technical staff, is published in January, April, July, and October, on the second following business day. On the fourth following business day, the Governor clarifies concerns about the minutes, and the Bank's Deputy Technical Governor presents the MPR. This dissemination scheme[4] seeks to deliver relevant and up-to-date information to contribute to better decision-making by the agents of the economy.

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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, Faculty 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 The current communication scheme was approved by the BDBR in its meeting in May 2023.

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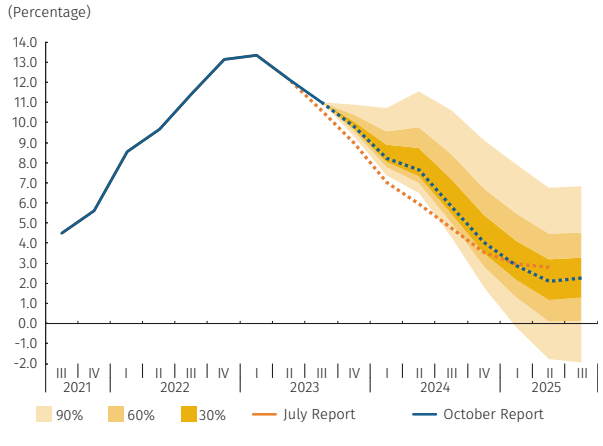
1. Summary

1.1. Macroeconomic Summary

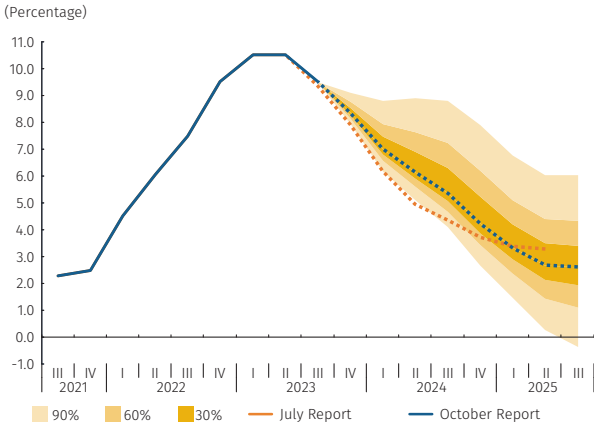
In September, both headline (11.0%) and core (9.5%) inflation continued to decline, although by less than anticipated, remaining well above the target. Going forward, the cumulative impact of monetary policy actions and the unwinding of various shocks that affected prices will continue to help inflation converge towards the 3 percent target over the forecast horizon. In the third quarter, annual price variances in the food and goods sub-baskets lessened and took on a downward trajectory, while the prices of services and regulated items remained relatively stable; all sub-baskets showed annual changes well-above the 3.0% inflation target. This slower inflation decline was explained by the behavior of food prices, primarily the pricing rebound in perishables. Moreover, price indexation mechanisms have transferred transitory increases in specific sub-baskets (e.g., food) to other consumer price index (CPI) items, thus enhancing inflation's persistence. This fact has proved significant for the price behavior of certain services indexed to headline inflation (e.g., rents and utilities) or to the minimum wage (e.g., higher education and building management fees), which continue to show an upward trend. For 2024, the forecast for all CPI sub-baskets increased compared to the July Report. This increase is partly explained by the assimilation of the *El Niño* phenomenon effects, which assumes a moderate upward pressure on food and energy prices for the first half of 2024. This is compounded by a slower-than-expected reduction of excess demand and an indexation of prices and wages to higher inflation by yearend 2024. Food costs and international prices of some foods would continue to ease, thus lessening some of their earlier upward inflationary pressures. Overall, the forecast for headline inflation stands at 9.8% (previously 9.0%) for yearend 2023. By the end of 2024, assuming a solid contractionary monetary policy stance over the forecast horizon, this Report places the probability of inflation falling below 4.0%, which is the central scenario, at 28% (Graph 1.1). However, inflation would continue to fall during the first half of 2025 and stand slightly below the 3.0% target by the third quarter of that year, with a 74% probability of reaching values below 4.0%. Relative to the previous Report, the core inflation estimate increased from 7.9% to 8.4% and from 3.7% to 4.2% for yearend 2023 and yearned 2024, respectively (Graph 1.2). As with the behavior of headline inflation, core inflation would fall slightly below the 3.0% target by the first half of 2025. These projections are subject to high uncertainty and involve significant upside risks. The latter includes the possibility of a more substantial impact from the *El Niño* phenomenon on food and energy prices than foreseen in this Report; increases in the real minimum wage in 2024 that surpass the increase in the economy's producti-

Graph 1.1
Consumer Price Index [a/, b/]
(annual change; end-of-period)



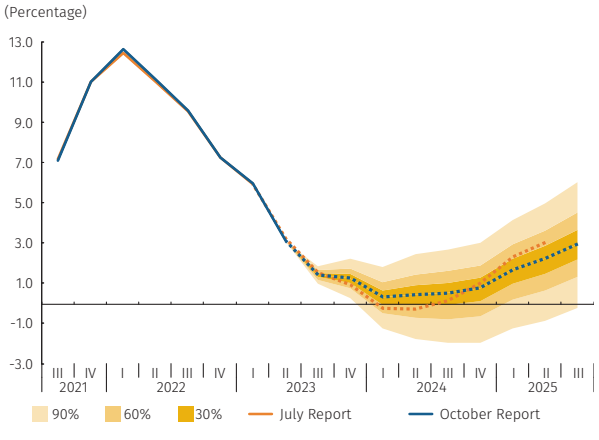
a/ This graph presents the forecast probability distribution on an eight-quarter time horizon. Density characterizes the prospective balance of risks with areas of 30%, 60%, and 90% probability surrounding the central forecast (mode), through a combination of densities from the Patacon and the 4GM monetary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

Graph 1.2
CPI excluding food and regulated items [a/, b/]
(annual change; end-of-period)



a/ This graph presents the forecast probability distribution on an eight-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 corresponds to the forecast exercise from the October report.
Source: DANE – calculations and projections by *Banco de la República*.

Graph 1.3
Gross Domestic Product, four quarter accumulation [a/, b/, c/]
(annual change)

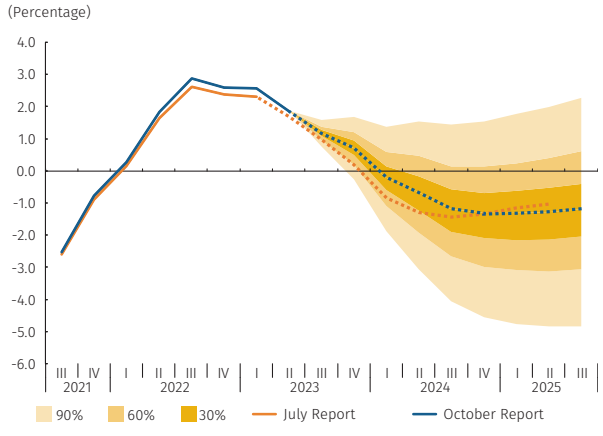


a/ Seasonally adjusted and corrected for calendar effects.
b/ This graph presents the forecast probability distribution on an eight-quarter time horizon. Density characterizes the prospective balance of risks with areas of 30%, 60%, and 90% probability surrounding the central forecast (mode), through a combination of densities from the Patacon and the 4GM monetary policy models.
c/ The probability distribution corresponds to the forecast exercise from the October report.
Source: DANE; Calculations and projections by *Banco de la República*.

vity levels, accentuating indexation mechanisms and generating stickier inflation thus limiting its expected decline; and oil prices that, should their current high levels persist, could place additional pressures on the Fuel Price Stabilization Fund (*Fondo de Estabilización de los Precios de los Combustibles*, FEPC) and require more significant adjustments to the domestic prices of this basket.

Economic activity continues to display low growth rates, although somewhat higher than anticipated in the July Report. The adjustment in domestic demand is expected to continue and regulate towards a more compatible level with the economy's productive capacity. The seasonally adjusted and corrected for calendar effects gross domestic product (GDP) grew by 0.3% annually in the second quarter. Domestic demand fell from the high levels recorded the previous year owing to the decline in investment and a fall in the consumption of durable and semi-durable goods. The dynamics of services consumption continued to moderate, although still displaying high levels, while public consumption recovered significantly. The significant drop in imports echoed the performance of domestic demand that, together with the growth of exports, explains a decline in the real external deficit. The available economic indicators suggest an annual GDP growth of 0.4% for the third quarter, with a slight recovery between quarters. In yearly terms, investment would continue on a downward path. At the same time, total consumption would remain at high levels similar to those observed a year ago, with a reconfiguration towards greater consumption spending on services instead of goods. The lower pace of domestic demand would be reflected in a further drop in imports that, combined with a stable level of exports, would result in a further decrease in the external deficit. Weak external demand is expected during the remainder of 2023 amid a backdrop of tight global financial conditions and lower terms of trade than those observed in 2022. Domestic demand would continue to adjust toward more sustainable values in a context of low consumer and business confidence levels, high household indebtedness, a reduced credit supply, and a contractionary monetary policy stance aimed at bringing inflation closer to its target. Consequently, annual GDP growth would continue at 1.2% for 2023, a figure above that of the July Report (0.9%), yet similar to that forecast by the technical staff since mid-2022 (Graph 1.3). By 2024, growth would reach 0.8% (formerly 1.0%), with investment recovering from the record lows estimated for 2023 and consumption continuing at similar levels to those projected for the current year in a contractionary stance regarding the General Government's fiscal deficit coupled with a restrictive monetary policy course. Net external demand would also contribute to growth. Excess demand (measured by the output gap) would diminish towards the end of 2023, but at a more gradual pace than foreseen in the previous Report and turn negative by 2024 (Graph 1.4). These estimates continue to be subject to a high degree of uncertainty due to external factors

Graph 1.4
Output gap [a/, b/, c/] - Predictive Densities
(four-quarter accumulation)



a/ The historical output gap estimate is calculated as the difference between observed GDP (four-quarter accumulation) and potential GDP (trend; four-quarter accumulation) based on the 4GM model.
b/ This graph presents the forecast probability distribution on an eight-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.
c/ The probability distribution corresponds to the forecast exercise from the October report.
Source: DANE; Calculations and projections by *Banco de la República*.

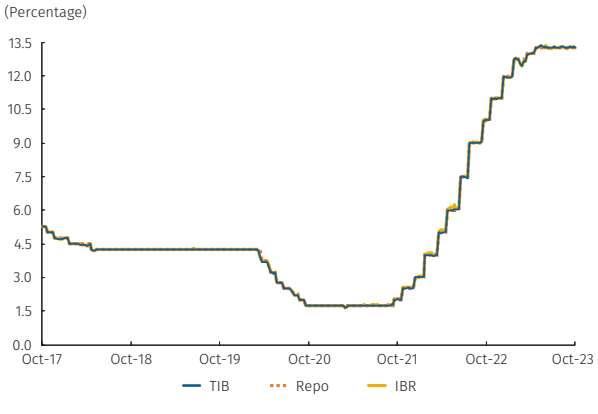
(e.g., global political tensions and monetary policy in advanced countries) and domestic factors (e.g., uncertainty surrounding the development and impact of the reforms submitted to Congress and the response of domestic demand to local financial conditions).

In 2023 and 2024, the country's external imbalance would narrow and show a significant adjustment, mainly reflecting the correction in domestic demand. Lower domestic demand, compatible with longer-term sustainable output levels and the convergence of inflation to the target, has contributed to a fall in the external imbalance that will continue for the remainder of the year and through 2024. The latter would bring about a decline in the current account deficit as a share of GDP from 6.2% in 2022 to 3.4% in 2023 and 3.2% in 2024. This adjustment principally reflects a fall in imports from the elevated levels seen in 2022, lower profits remitted abroad by companies with foreign direct investment (FDI), and a rebound in service-related exports associated with tourism. The decrease in the current account deficit improves the country's external position and reduces the economy's vulnerability to significant worldwide deteriorations.

External financial conditions are projected to remain tight in an environment of global inflation that has decelerated but continues above the target in several countries, along with a weaker-than-expected global economy slowdown. In the United States, the Federal Reserve (Fed) kept the interest rate unchanged in the 5.25% to 5.50% range and given the persistence of high core inflation and a tight labor market, it could raise rates yet again during the remainder of the year. Furthermore, the Fed's recent announcements indicate that it will maintain high interest rates for a more extended term, considering additional pressures from recent oil and fuel price increases and an economy that has proven more resilient than anticipated. Long-term interest rates in the United States have risen significantly amid a backdrop of growing fiscal deficits, uncertainty about future monetary policy, and the neutral interest rate in that country. In this context, Colombia's sovereign risk premium and exchange rate increased, returning to similar levels as those observed in June. The higher cost of external financing and the increased uncertainty partly derived from geopolitical tensions and conflicts, among other factors, would continue to impact the world economy and suggest a relevant slowdown in external demand for the country. The latter, together with lower terms of trade, would generate a year-on-year decline in the national income versus the previous year. Uncertainty regarding external forecasts and their effect on the country remains high, given the unpredictable evolution of global conflicts (Ukraine and the Middle East), ongoing geopolitical tensions, external financial conditions, and the perception of Colombia's sovereign risk, among other factors.

The macroeconomic context, characterized by receding inflation, yet whose forecasts and expectations continue to surpass the target and the prevailing excess demand, indicates the need to maintain a contractionary monetary policy stance. This posture is necessary to ensure the convergence of inflation towards the target, the correction of aggregate demand to levels more compatible with the economy's productive capacity, and to solidify a sustainable external position. Economic activity indicators for the third quarter continue to point to a low economic growth rate. However, this adjustment is occurring at a slower pace than projected. The estimated excess demand remains, reflected in an output level that surpasses the economy's productive capacity and a labor market exhibiting unemployment rates at the lowest level of the past six years and employment levels (especially salaried) continuing to grow in most sectors of the economy. Credit risk has increased, but the Colombian financial system maintains provisions, solvency, and liquidity levels that would allow it to face significant macroeconomic deteriorations. Headline and core inflation fell, but by less than forecast, and remain at high levels well above the target. Going forward, inflation's deceleration is expected to continue, albeit slower than estimated in July. Inflation expectations increased and continued above the target. This macroeconomic environment, characterized by high inflation, above-target inflation forecasts and expectations, and enduring excess demand, together with the inflationary risks mentioned above, requires maintaining a contractionary monetary policy stance to bring inflation to the target and achieve sustainable output levels. The recent solid financial system indicators indicate no trade-off between monetary policy and financial stability.

Graph 1.5
Monetary policy interest rate, interbank rate and BBI[a/]
(weekly data)



1/ IR: interbank rate. BBI: benchmark banking indicator.
Sources: Office of the Financial Superintendent of Colombia and *Banco de la República.*

1.2 Monetary Policy Decision

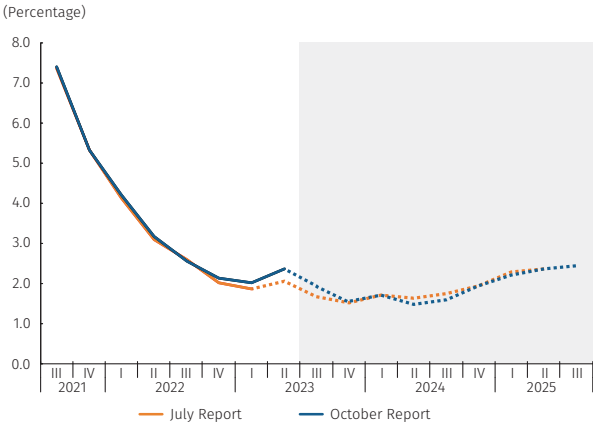
At its September and October 2023 meetings, the Board of Directors of *Banco de la República* (BDBR) decided by a majority to maintain the monetary policy interest rate unchanged at 13.25% (Graph 1.5).

2. Macroeconomic Forecast and Risk Analysis

2.1 International Outlook

2.1.1 Foreign Demand

Graph 2.1 Real GDP, main trade partners
(Annual change, projections according to full-year assumption)



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

Some of Colombia´s principal trading partners have demonstrated increased economic activity. As a result, the expected slowdown in external demand for 2023 is lower than that forecasted in the previous report. (Graph 2.1). In the United States,[1] private consumption and employment momentum continue despite a restrictive monetary policy. Mexico's robust investment and Brazil's[2] strong export performance contribute positively to the economic landscape. Conversely, economic downturns have befallen regional trading partners, including Peru, Ecuador[3], and Chile, amidst adverse climatic phenomena and heightened political and social uncertainty. Brazil, Chile, and Peru have responded to significant reductions in inflation by initiating cuts to their monetary policy interest rates. China faced lower-than-expected economic growth in the second quarter due to weak domestic demand, a decline in exports, and structural challenges in the real estate sector.[4] Given these developments, the growth assumption for trading partners has undergone an upward revision for 2023, increasing from 1.8% to 2.0%. This implies a lower deceleration than the 3.0% observed in 2022 (Table 2.1). This revision occurs against heightened global uncertainty, with total inflation expected to slow less than projected due to increased energy price pressures (Graph 2.2). Core inflation remains persistently high, prompting some central banks, particularly in advanced economies, to maintain elevated policy interest rates for an extended period (Graph 2.3). Additionally, a more drawn-out global trade slowdown[5] and continued rising geopolitical, war,

Table 2.1 Economic Growth among Main Trade Partners[a/]

Main partner	2021 (pre)	2022 (pre)	2023 (proj)	2024 (proj)
United States	5.8	1.9	2.0	0.8
Eurozone	5.3	3.5	0.6	1.0
China	8.4	3.0	5.1	4.1
Ecuador	4.2	2.9	1.5	1.9
Brazil	5.0	2.9	3.0	1.5
Peru	13.3	2.7	1.0	2.4
Mexico	5.8	3.9	2.9	1.8
Chile	11.7	2.4	0.0	1.9
All trade partners[a/]	7.2	3.0	2.0	1.7

(pre): preliminary, (proj): projected
a/ Projections based on the contribution of non-traditional trade.
Sources: Bloomberg, Focus Economics, statistics offices and central banks (observed data); *Banco de la República* (projections and calculations).

1 At the end of September, the Bureau of Economic Analysis (BEA) updated the national accounts and revised the level of real GDP from the first quarter of 2013 to the first quarter of 2023. Additionally, the reference year for price and quantity chain-linking was changed from 2012 to 2017. Furthermore, as of the close of this report, preliminary figures indicate that in the third quarter of 2023, the GDP of the United States exhibited an annual growth of 2.9%.

2 In its September report, the Organization for Economic Co-operation and Development (OECD) revised upward its global economic growth projections for 2023 from 2.7% to 3.0%.

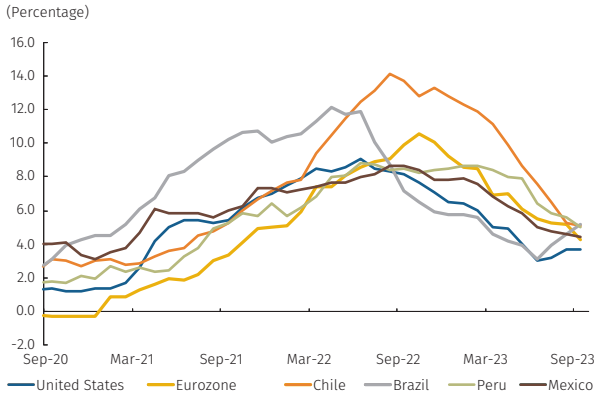
3 Despite the positive performance of the Ecuadorian economy in the second quarter of 2023 (2.5% quarterly), in its September report, the central bank of Ecuador revised downward annual growth from 2.9% to 1.5% for 2023.

4 When writing this Report, we learned that during the third quarter of the year, the Chinese economy grew by 4.9% in annual terms, surprising the market on the upside. However, growth is still below the Chinese government's target of 5.0%.

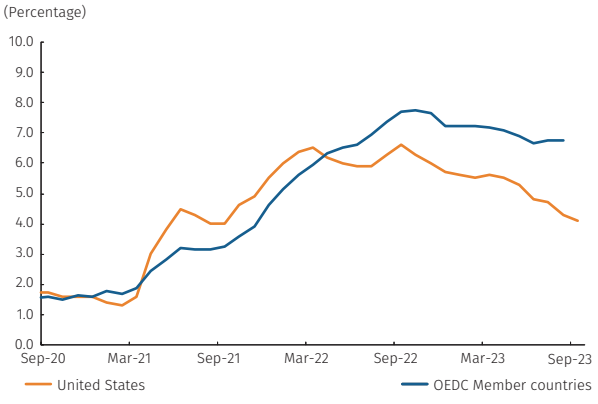
5 In its October reports, the World Trade Organization revised downward its world trade growth projection from 1.7% to 0.8% for 2023 (which would accelerate to 3.3% in 2024); and the IMF revised it from 2.0% to 0.9%.

Graph 2.2
Inflation, select main trading partners

A. Headline Inflation



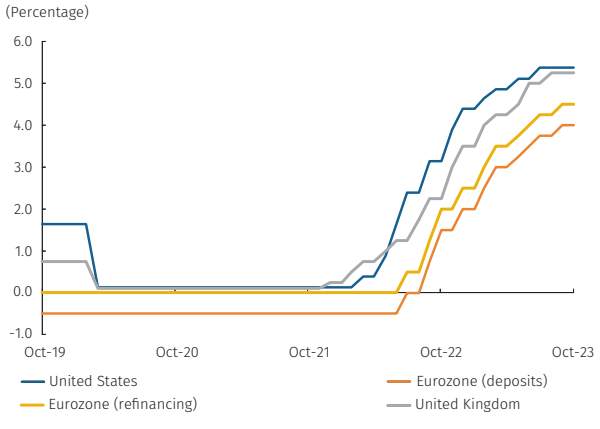
B. Inflation excluding food and energy



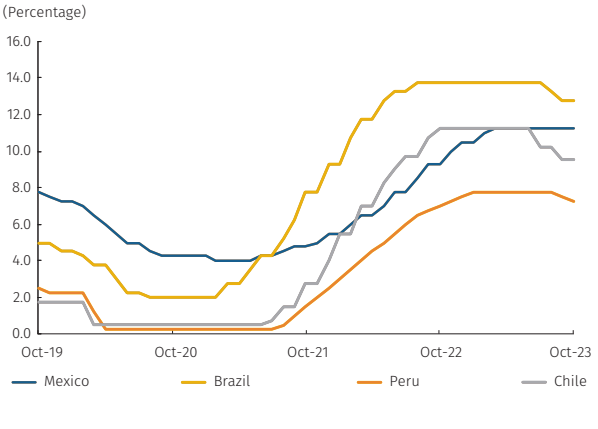
Source: Bloomberg and the Organization for Economic Development and Cooperation (OEDC).

Graph 2.3
Monetary policy interest rate, select main trading partners

A. Developed Economies

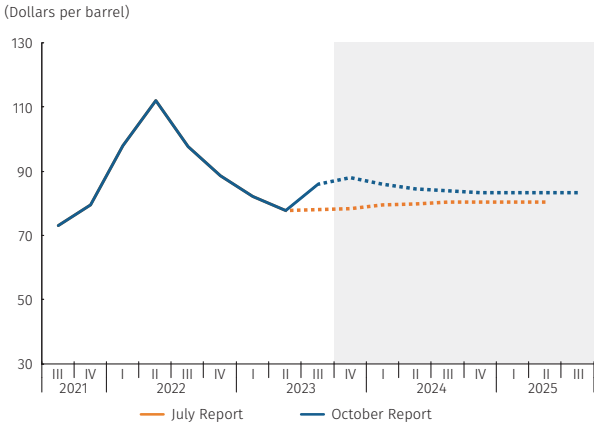


B. Latin America



Note: October 2023 includes data observed on the 19th of said month.
Source: Bloomberg.

Graph 2.4
Projected quarterly oil price



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

and trade tensions persist. Looking ahead to 2024, the growth of external demand relevant to the country is projected to be slightly lower than initially forecasted in the previous Report (1.7% versus 1.8%). The deceleration is expected to persist, with growth falling below the historical average of the indicator.[6]

2.1.2 International Prices

Within the forecast horizon, oil price assumption has been revised upward (Graph 2.4), promising to bolster the country's external revenues. During the third quarter, the average Brent price reached approximately USD 86 per barrel (bl), surpassing

6 The historical average annual growth of trading partners between 2001 and 2022 is 2.81%.

values observed in the first half of 2023 and the *Banco de la República*'s technical staff's initial forecast. This price surge during the period can be attributed, in part, to cuts in Saudi Arabia's oil extraction, diminished exports from Russia,[7] and disruptions to export ports arising from the conflict with Ukraine.[8] Factors such as the reduction in crude oil inventories available for consumption in select OECD economies and heightened uncertainty related to geopolitical conflicts in the Middle East further justify the upward revisions in the anticipated international oil price trend in this Report. Looking ahead, the ascent in prices is expected to encounter limitations due to concerns about future economic activity, the strengthening of the dollar, reduced global demand for jet fuel and gasoline in the United States,[9] and the continued high production levels in countries outside the Organization of the Petroleum Exporting Countries and their allies (OPEC+). Consequently, the assumed average Brent price is set to close to USD 83 per barrel in 2023 and USD 84 per barrel in 2024 (an increase from the previous supposition of USD 80 per barrel for 2024 in the July Report). However, it is worth noting that in recent months, the oil price has exhibited significant volatility within a context of elevated uncertainty stemming from geopolitical conflicts.

A contraction in terms of trade is anticipated for 2023, albeit at a more moderate pace, attributed to the positive adjustment in expected oil prices. Currently, the terms of trade are expected to continue deteriorating, primarily influenced by annual reductions in the average international prices of key export commodities like coal, coffee, and oil. However, this decline is projected to be less severe than initially anticipated in the prior Report, owing to the probable upturn in the international oil benchmark prices and reduced expenses associated with freight charges for transporting goods.

The deceleration of headline global inflation is expected to persist through 2023, albeit at a slower rate than initially anticipated, primarily due to recent pressures on energy prices. The global reduction in inflation has unfolded against the backdrop of contractionary monetary policy stances across various countries, a global economic slowdown, the normalization of global supply chains (Graph 2.5), and diminished energy and food prices. However, as previously noted, energy prices during the third quarter experienced a resurgence. In the United States, September witnessed a stabilization in annual headline inflation at 3.7%, halting its descent primarily due to increases in energy prices, notably gasoline.[10] Additionally, annual core inflation moderated from 4.3% in August to 4.1% in September (Graph 2.2). In the eurozone, both annual headline and core inflation declined in September to 4.3% and 4.5%, respectively, compared to 5.2% and 5.3% in August (Graph 2.2). Looking ahead to 2024, headline inflation in these economies is projected to decrease

7 Saudi Arabia announced that it would extend oil extraction cuts of one million barrels per day, while Russia established oil export cuts of 300,000 barrels per day; both policies will be in force until December of this year.

8 The unilateral termination of the Black Sea grain agreement led to an escalation of the conflict between Russia and Ukraine, with the establishment of war-risk areas, including some primary ports for Russian oil exports.

9 The increase in oil prices led to an increase in the price of some derivatives. In the case of gasoline, high prices in the United States led to a reduction in demand, placing it at its lowest level in 25 years.

10 The increase in gasoline prices in the United States may be explained by the rise in international oil prices, the scheduled shutdown of an Exxon Mobile Corp. production unit, and the heightened heat waves that forced the closure of additional refineries.

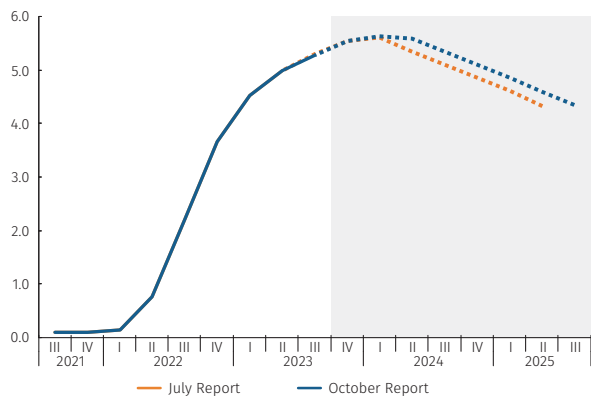
Graph 2.5
Global Supply Chain Pressure Index[a/]

(Standard deviations from average value)

a/ For its construction, the authors used international shipping indicators (Baltic Dry Index (BDI), Harpex index, among others) and specific subcomponents of the Purchase Manager Index (PMI) surveys for the Eurozone, China, Japan, South Korea, Taiwan, UK, and US.
Sources: Benigno, Gianluca, di Giovanni, Julian, J. Groen Jan J., and Noble, Adam I. "A New Barometer of Global Supply Chain Pressures" Federal Reserve Bank of New York Liberty Street Economics (January 4, 2022). https://libertystreeteconomics.newyorkfed.org/2022/01/a-new-barometer-of-global-supply-chain-pressures/.

Graph 2.6
Projected US Federal Reserve quarterly interest rate

(Percentage)



Source: Federal Reserve Bank of Saint Louis; calculations and projections by *Banco de la República*.

but is likely to remain above their targets.[11] According to the latest International Monetary Fund (IMF) projections, annual global average headline inflation is foreseen to decrease from the 8.7% observed in 2022 to 6.9% in 2023 and further to 5.8% in 2024. Conversely, global core inflation is predicted to remain high and persistent, reflecting the observed strength in the demand for services and relatively tight labor markets. In harmony, the IMF has revised upward its projections for annual average global core inflation, expecting a moderation from 6.4% in 2022 to 6.3% in 2023 and 5.3% in 2024.

2.1.3 International Financial Developments

International financial conditions have tightened. The presumption regarding the monetary policy interest rate in the United States continues to anticipate an increase for the remainder of 2023. The projection for 2024 has been revised upward compared to the prior Report (Graph 2.6), reflecting an expectation of prolonged high interest rates. In its September meeting, the Federal Open Market Committee (FOMC) opted to keep its monetary policy interest rate unchanged within a range of 5.25% to 5.50%,[12] aligning with projections from the July Report. Additionally, the FOMC's latest median projections suggest an additional 25 basis points increase for the remainder of the year. Looking ahead, it foresees a higher policy rate over the next two years relative to its June projections, with estimates rising from 4.6% to 5.1% by the end of 2024 and from 3.4% to 3.9% by the end of 2025. These expectations unfold against a backdrop of recent upswings in energy prices and specific services, resilient private consumption, a persistently tight labor market,[13] and heightened estimates of the economy's neutral interest rate. Over the last three months, futures associated with the policy interest rate have experienced an increase, moving closer to the FOMC's projections.[14] Given these considerations, this Report maintains the presumption of a 25 basis points increase for the remainder of the year, suggesting a closing range between 5.50% and 5.75% for 2023. For 2024, the assumed trajectory has been adjusted

11 In the United States, the median of the New York Fed's September surveys of market participants and primary dealers, total PCE inflation (implicit personal consumption expenditures deflator) for the end of 2024 is expected to be 2.3% and 2.2%, respectively. In the Eurozone according to the European Central Bank's (ECB) September survey, the median harmonized total inflation would be 2.3% for the last quarter of 2024.

12 At its September 14 meeting, the European Central Bank raised its benchmark interest rates by 25 bps, reaching the peak of the tightening cycle expected by the market. Subsequently, at its October 26 meeting, the ECB kept its benchmark interest rates unchanged.

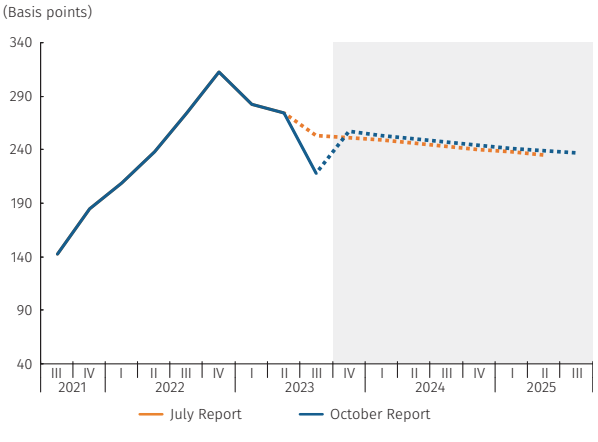
13 In its June report, the FOMC's latest projections indicate a projected growth increase by the end of 2023, rising from 1.0% to 2.1%. Additionally, the implicit PCE deflator is expected to climb from 3.2% to 3.3%, while the core PCE component is anticipated to decrease from 3.9% to 3.7% for the same period.

14 For year-end 2023 and 2024, the futures associated with the monetary policy rate taken on October 17, 2023 are at 5.41% and 4.84%, respectively, compared to 5.39% and 4.09% of the futures taken on July 20 of the same year.

upward, with reductions anticipated to commence at the end of the first half of the year, leading to a range between 4.75% and 5.00% by the year's end. The Report underscores the high uncertainty surrounding the evolution of the monetary policy interest rate in the United States. This uncertainty is associated with recent concerns about the country's fiscal sustainability, the increase of long-term interest rates in the bond market, the tightening of local financial conditions, and the repercussions of the conflict in the Middle East on economic activity and prices.

The prevailing environment of heightened international uncertainty and stringent financing conditions results in elevated risk premiums for Colombia. Throughout the remainder of 2023 and 2024, the risk premium for Colombia is expected to maintain historically high levels, somewhat surpassing the estimates from the July Report (Graph 2.7). In the third quarter, key volatility indicators in international markets, such as VIX and Vstoxx, saw a decrease compared to values recorded in the first half of the year. However, since the end of September, the outlook for a global economy exhibiting greater resilience in 2023, potentially requiring prolonged high monetary policy interest rates, coupled with the eruption of conflict in the Middle East, has induced increased risk aversion in international markets. In conjunction with rising long-term interest rates on debt securities and expanding credit spreads, the latter has contributed to a tightening of global financial conditions. In this scenario, the risk premiums for several emerging economies, which had significantly decreased during the third quarter, experienced a rebound to levels close to those observed at the beginning of June (Graph 2.8, panel A). For Colombia, the average five-year Credit Default Swap (CDS) transitioned from 275 basis points in the second quarter of 2023 to 219 basis points in the third quarter and rose to 250 basis points in the fourth quarter as of October 19. Similarly, except for Chile, currencies in the region that appreciated in the third quarter

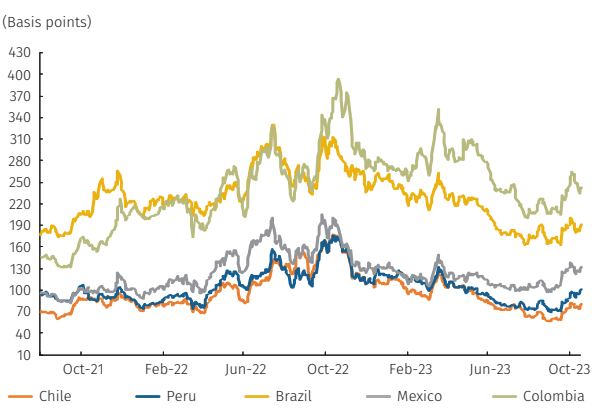
Graph 2.7
Colombia's projected quarterly risk premium (CDS)[a/]



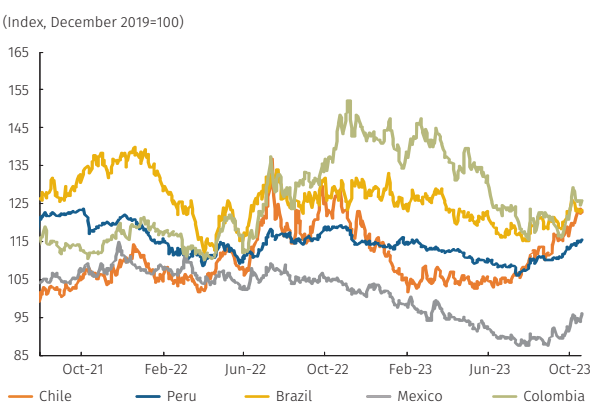
a/ Five-year credit default swaps
Source: Bloomberg; calculations and projections by *Banco de la República.*

Graph 2.8
Behavior of nominal exchange rate and risk premium for select Latin American countries

A. Five-year credit default swaps



B. Nominal exchange rate



Note: Data to October 19, 2023
Source: Bloomberg; calculations by *Banco de la República.*

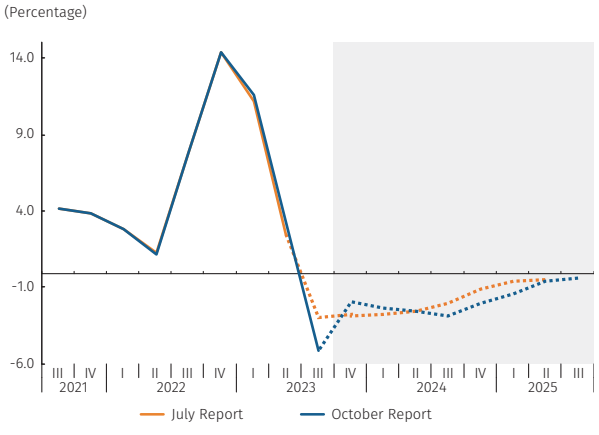
depreciated again during the fourth quarter (as of October 19, Graph 2.8, panel B). Given this backdrop, a risk premium trajectory similar to that outlined in the July Report is assumed, remaining above its historical average and averaging 259 basis points in 2023 and 249 basis points in 2024.[15] This trajectory factors in the October increase in the indicator, heightened volatility in international financial markets, the sustained presence of high monetary policy interest rates in most major advanced economies, elevated global uncertainty, the emergence of new military conflicts in the Middle East, as well as local factors such as fiscal and external imbalances, a high level of public debt, and uncertainties regarding the effects of certain reforms under consideration by Congress.

2.2 Macroeconomic Projections[16]

2.2.1 Inflation

In recent months, the confirmation of climatic conditions associated with an *El Niño* phenomenon has emerged, introducing a potential impediment to the anticipated decline in inflation. This Report's forecasts anticipate the presence of the *El Niño* phenomenon, expecting transitory yet moderate upward pressures on food prices and, to a lesser extent, on the regulated items and services sub-baskets. Moreover, this iteration of the forecast foresees a more gradual narrowing of the output gap compared to the previous Report, a decision explained in another section. These considerations collectively led to an upward revision of the expected headline inflation by the end of 2023. Due to the subsequent effects on indexation, minimum wage adjustments, and price expectations, there is also an associated increase in the projected path for 2024. Moreover, the inflation forecast accounts for an upward impact resulting from the implementation of the so-called "healthy taxes" on sweetened beverages and ultra-processed foods, effective from November of the current year. Consequently, inflation is expected to persist well above the target for the remainder of this year and a significant portion of 2024. However, an overarching decline is anticipated throughout the forecast horizon, signaling the eventual convergence of inflation towards the 3.0% target. This decline will be facilitated by the dissipation of upward supply shocks and a reduction in excess demand, driven in part by monetary policy actions, and will also contribute to sustaining a downward trajectory in inflation expectations. Pressures on the exchange rate are likely to further contribute to the fall in annual inflation, as indicated by an estimate of the inflationary gap of the real exchange rate, which is expected to be in negative territory throughout

Graph 2.9
Quarterly RER inflationary gap a/
(annual change, end-of-period)

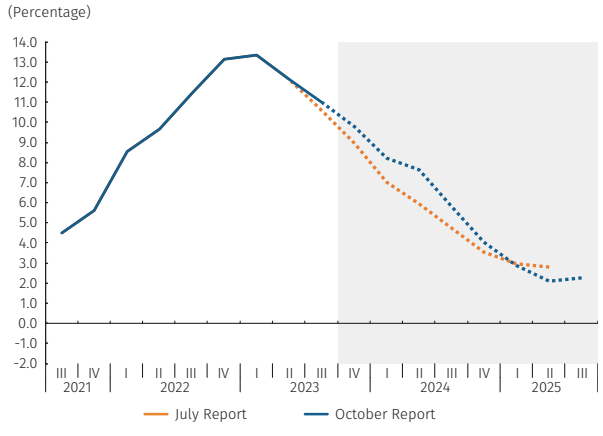


a/ The real exchange rate (RER) inflationary gap captures inflationary pressures caused by the exchange rate. Positive values imply upward inflation pressures. The gap is calculated as the deviation in the real exchange rate relative to a non-inflationary trend estimate under the 4GM monetary policy model.
Source: *Banco de la República*.

15 The July Report's assumption for Colombia's five-year CDS was 266 bps for 2023 and 246 bps for 2024.

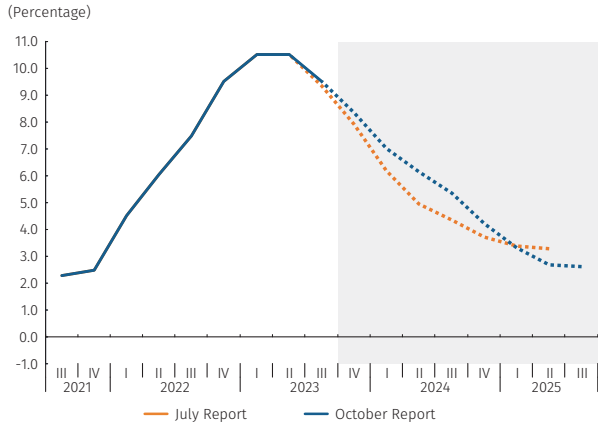
16 The results assume an active monetary policy wherein *Banco de la República's* benchmark interest rate is adjusted to guarantee compliance with the inflation target.

Graph 2.10
Consumer Price Index (CPI)
(Annual change, end-of-period)



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

Graph 2.11
CPI excluding food and regulated items
(Annual change, end-of-period)



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

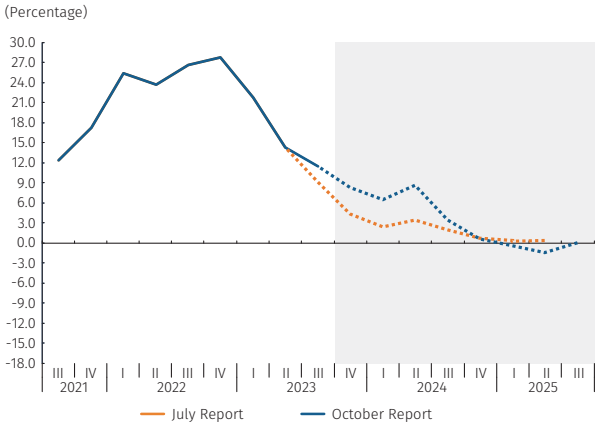
the forecast horizon (Graph 2.9). Considering all these factors, the projection is for headline annual inflation to reach 9.8% and 4.0% by the end of 2023 and 2024, respectively, versus the 9.0% and 3.5% contemplated in the July Report. The forecast envisions its converging to the 3.0% target by 2025 (Graph 2.10). It is worth noting that these projections are contingent upon a contractionary monetary policy stance being continued throughout the forecast horizon. Additionally, compared to the prior Report, the probability of inflation falling below 4.0% by the end of 2024 has diminished to 28%. Nonetheless, a sustained downward trajectory is anticipated in the first half of 2025, with a 74% probability of reaching values below 4.0% by the third quarter of that year.

The observed downward trend in core inflation during the third quarter is anticipated to persist throughout the forecast horizon, primarily owing to the cumulative effects of monetary policy. The persistently restrictive stance of monetary policy is poised to significantly eliminate any remaining excess demand, moderating inflationary pressures stemming from the exchange rate and re-anchoring inflation expectations. This Report maintains the expectation of dissolving excess demand in the year's remaining months. It foresees a negative output gap starting next year, a crucial factor contributing to a substantial decline in core inflation over the forecast period. The expected reduction in core inflation is further supported by downward pressures from the exchange rate and diminishing inflation expectations. Nevertheless, the trajectory has been adjusted upward until the end of 2024 due to the influence of new supply shocks (such as the *El Niño* phenomenon), due to observed figures surpassing projections from the July Report, the impact of higher inflation at yearend on indexation processes, and an estimated output gap that, although diminishing, is slightly higher than projected in the prior Report. The gradual decline in core inflation is mainly influenced by the performance of the Consumer Price Index (CPI) services sub-basket excluding food and regulated items (SAR). Indexation carries a greater weight in this sub-basket, especially across items like rents, imparting more inertia to its behavior (Box 1). Additionally, within this category, food away from home (FAH) may experience an additional temporary impact due to the *El Niño* phenomenon and the implementation of the healthy taxes. On the other hand, SAR goods are likely to experience a more pronounced decline, partly due to downward pressures arising from the exchange rate and continuing declines in international prices. Given the above, annual core inflation is expected to stand at 8.4% and 4.2% by yearend 2023 and 2024, representing a shift from the figures presented in the July Report of 7.9% and 3.7%, respectively. The forecast indicates a continued decline, reaching slightly below the 3.0% target in the first half of 2025 (Graph 2.11).

Annual changes within the Consumer Price Index (CPI) for food are anticipated to continue declining over the forecast horizon, albeit at a slower pace than previously projected.

This deceleration is attributed, in part, to the effects of the *El Niño* phenomenon in the central scenario. The downward trajectory in food prices is expected to result from a relative recovery in domestic supply, a sustained decline in input prices, and the impact of downward pressure from the exchange rate. However, this descending trend is likely to follow a higher path than foreseen in the previous Report to experience a temporary interruption in mid-2024, primarily due to the moderate effects of the *El Niño*[17] phenomenon on prices (Box 2). Consistent with the timing of impacts from previous *El Niño* events, the effects are likely to peak in the second quarter of 2024, reversing rapidly in the latter half of that year.[18] This adjustment in the trajectory is further influenced by upward surprises observed in recent months in perishable food prices, indicating a premature agricultural cycle. Additionally, the current forecast factors in the upward impact resulting from the application of the healthy taxes. These taxes, targeted on processed foods, will be phased in gradually over the forecast horizon, commencing in November 2023 and continuing in the same months of 2024 and 2025 (per Law 2277 of 2022). Considering these factors, the annual variation of the CPI for food is projected to reach 8.3% by yearend 2023. By 2024, a substantial decrease is expected, driven by the dissipation of the aforementioned supply pressures, bringing the figure to levels close to 0.6% by the end of that year (Graph 2.12).

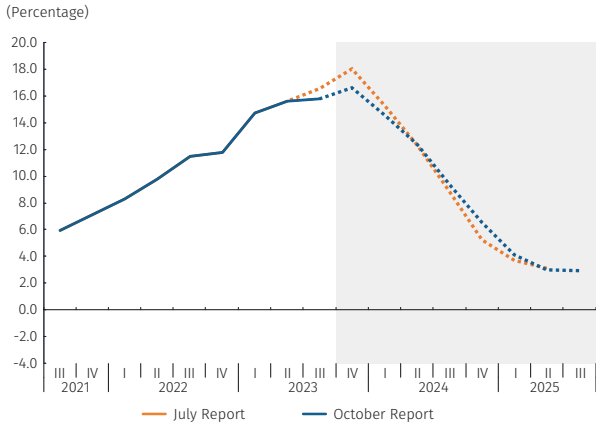
Graph 2.12
CPI for foods
(Annual change, end-of-period)



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

Prices on regulated items will continue to show high annual adjustments for the remainder of this year and the next, predominantly driven by the observed and expected increases in fuel prices, indexation, and impacts on energy rates associated with the presence of the *El Niño* phenomenon. The annual change of the CPI of this sub-basket would continue on an upward trend for the remainder of 2023 as a result of the expected adjustments in fuel prices and pressures due to indexation. The recognition of costs, postponed investments and adjustments in some public services, and the estimated effect of an *El Niño* phenomenon on energy rates is compounded therein. By 2024, these factors would continue to exert relevant pressures and would gradually wane. In particular, adjustments in the CPI for fuels are expected to be smaller starting in the middle of the first quarter of that year,[19] which

Graph 2.13
CPI for regulated items
(Annual change, end-of-period)



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

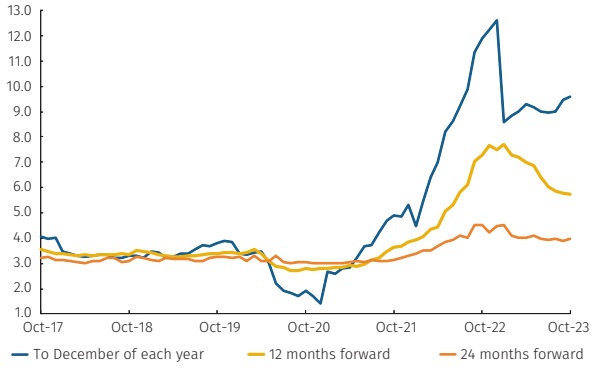
17 While the official declaration of an *El Niño* phenomenon is typically made in November upon the completion of required periods and conditions, several months have already witnessed *El Niño*-type climatic conditions, predominantly of moderate intensity. Presently, specialized agencies attribute a very high probability to the phenomenon's occurrence, though uncertainty persists regarding its intensity, expected to range between moderate and strong.

18 See Box 2 of this Report for more information on the *El Niño* phenomenon and its effects on inflation in Colombia.

19 The government has declared that the adjustment in gasoline prices will be finalized by January 2024. Additionally, it has communicated plans to raise diesel fuel prices starting in February of the same year. However, as diesel fuel holds a minimal share in the Consumer Price Index (CPI), its direct impact is anticipated to be very low. Its primary influence on consumer prices is expected to manifest indirectly through increased freight transportation costs.

Graph 2.14
Bank and stockbroker inflation forecast[a/]

(Percentage)



a/ Corresponds to the median response of the Monthly survey of economic analyst expectations conducted by *Banco de la República*.
Source: DANE; calculations and projections by *Banco de la República*.

together would lead to a reduction in the annual variation of the CPI for regulated items from 16.7% to 6.5% between the end of 2023 and 2024. From mid-2025 onwards, it would approach 3.0% (Graph 2.13).

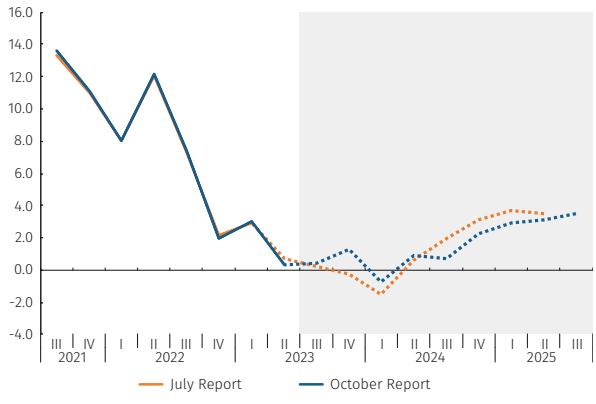
The decrease in measures of short-term inflation expectations experienced an interruption in the last quarter, with current levels significantly above the target. The expectations of economic analysts obtained from the monthly survey conducted by *Banco de la República* between October 9 and 12 (Graph 2.14) suggest a median headline inflation rate of 9.6% by yearend 2023, compared to 9.0% in the July survey and 9.8% for inflation excluding food, as opposed to 9.4% in the July survey. By yearend 2024, these metrics are poised to reach 5.3% and 5.4%, respectively, surpassing the figures indicated in the July survey (5.0% and 4.8%). Similarly, the median responses reported for one-, two-, and five-year headline inflation expectations are 5.7%, compared to 6.0% in July, 4.0%, versus 3.9% in July, and 3.0%, the same level observed in July. Moreover, with information to October 24, expectations based on public debt bonds (BEI), adjusted by inflation and liquidity risk premiums,[20] indicate slight changes in two-, three-, and five-year ahead inflation expectations from 6.1%, 5.8%, and 5.2%, to 5.6%, 5.2%, and 4.7% for July.[21]

2.2.2 Economic Activity

During the third quarter, the Colombian economy is expected to experience modest annual growth, which, however, would have allowed it to maintain the high levels of economic activity attained towards the end of 2022 and the beginning of 2023. For this period, the available sectoral economic indicators suggest an estimated annual real GDP growth of 0.4% (Graph 2.15). The secondary sectors, which have the most up-to-date available data, reveal a subpar performance on the supply side. Notably, the manufacturing sector has experienced a consistent decline for several months leading up to August. Similarly, construction, encompassing both buildings and civil works, has exhibited a downward trend in annual terms, falling below pre-pandemic levels. Consequently, a pessimistic outlook is anticipated, forecasting negative real growth for the entire

Graph 2.15
Quarterly GDP a/
(Annual change)

(Percentage)

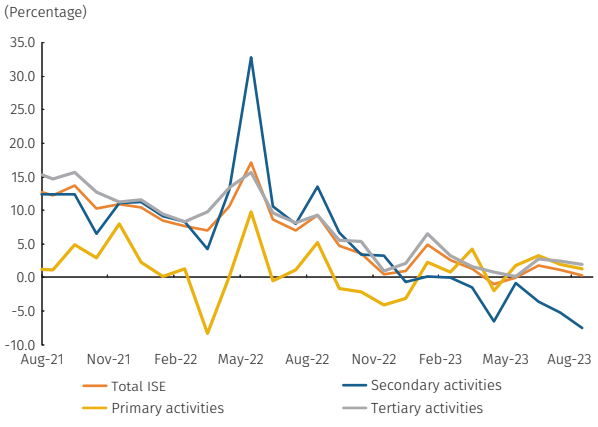


a/ Seasonally adjusted and corrected for calendar effects
Source: DANE; calculations and projections by *Banco de la República*.

20 Inflation expectations net of premiums are calculated as the difference between nominal and real rates excluding risk based on public debt markets at multiple terms (Abrahams et al., 2015; Espinosa et al., 2015). Consequently, the so-called inflationary risk premium is derived from subtracting the premium by term on the TES curve in UVR from the premium by term on the TES curve in pesos. The differences in these premiums by term may reflect uncertainty about future inflation, however, they may also be influenced by friction in particular market, such as the preferences of some agents to invest in certain types of bonds. Meanwhile, the liquidity component is calculated as the difference between the liquidity premium from the TES curve in pesos and the premium from the TES curve in UVR. As a result, total BEI calculated with this methodology can be disaggregated by expected inflation, the inflationary risk premium, and a liquidity component.

21 These figures correspond to the calculation made in October for July rates.

Graph 2.16
Economic Tracking Indicator (ISE), and ISE by sectors [a/, b/]
(Annual change)



a/ Seasonally adjusted and corrected for calendar effects
b/ Primary activities: agriculture, hunting, forestry and fishing, mine and quarry exploitation. Secondary activities: manufacturing industries and construction. Tertiary activities: electricity, gas, and water supply; commerce, maintenance, transportation, and lodging; information and communications, financial and insurance activities; real estate activities; professional, scientific, and technical activities; administrative and support services; public administration and defense, education and health; arts and entertainment
Source: DANE; calculations and projections by *Banco de la República*.

sector in the third quarter. Conversely, recent data indicates positive annual growth in the primary and tertiary sectors. This upturn can be attributed to reported increases in oil and coal production, a resurgence in agricultural activities, favorable momentum from the financial sector, arts and entertainment activities, and the notably high levels achieved by the public administration, health, and education sectors. In the tertiary sector, the encouraging performance has counterbalanced the declines observed in the commerce, maintenance, transportation, and lodging sectors (see Box 3). Furthermore, the Economic Tracking Index (ETI) for July and August, (Graph 2.16) has reported slightly more favorable results than anticipated, with an increase in levels between both months. All these factors have led to a reassessment of the annual growth forecast for the third quarter, resulting in an upward revision from the figure presented in the July Report (0.2%).

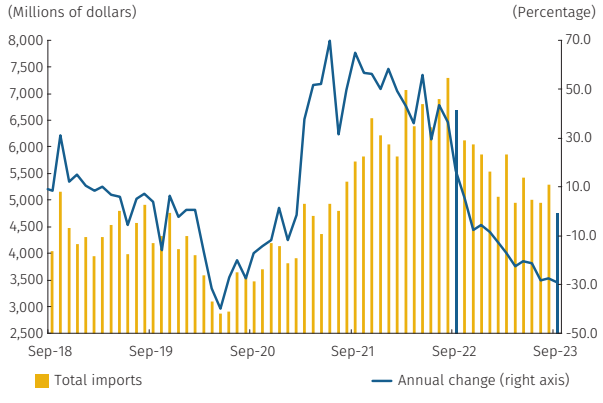
The adjustment process in domestic demand is expected to continue, moving towards levels more aligned with the economy's productive capacity and contributing to the reduction of inflation. Specifically, domestic demand is projected to revert to a negative annual growth rate in the third quarter. However, the levels are expected to remain elevated and closely aligned with their long-term trend. The primary driver of the domestic absorption correction is again expected to be gross capital formation, with investment in machinery and equipment experiencing a notable annual and quarterly decline after reaching historically high levels in preceding quarters. This trend is substantiated by preliminary information derived from capital goods imports to September. As for construction investment, available data suggests a modest quarterly growth, propelled by the housing and non-residential buildings segment. Investment in civil works is projected to increase in the third quarter but at relatively low levels, consistent with observations since the beginning of the year. Recent reports from the manufacturing industry indicate a significant inventory deaccumulation expected in the third quarter, influencing the overall level of gross capital formation.

Annual consumption would have continued to slow down, primarily attributed to the moderation of private consumption. Various indicators, notably the ETI for tertiary sectors and August retail sales, indicate that household consumption would have experienced a slight annual decline in the third quarter. This decline, however, may be attributed in part to the high basis for comparison in 2022, influenced by VAT-free days, a surge in demand for services, and ample credit availability, among other factors. Despite this, household consumption levels have remained notably high, surpassing pre-pandemic records. Notably, the average annual growth of private consumption from 2019 to the present has been around 4.5%, significantly higher than the 2.7% recorded between 2015 and 2019. The moderation in private consumption has persisted within the context of tight monetary and financial conditions, with a more pronounced impact on goods consumption com-

pared to services consumption. Negative annual rates are anticipated for durable and semi-durable segments, while the services segment is expected to maintain positive albeit low growth. Regarding public consumption, the third quarter is likely to see slightly lower levels than the exceptionally high ones recorded in the second quarter. This period includes expenditures related to regional and local elections, as well as the portion of the retroactive salary increase for public employees that was not accounted for in June.

As domestic demand weakens, a further reduction in imports is expected, contributing to a correction in the external deficit in constant pesos. Preliminary data from the National Tax and Customs Authority (DIAN) as of September (Graph 2.17) indicate a significant reduction in imports during the third quarter, both on an annual and quarterly basis. This decline is primarily attributed to decreases in the acquisition of capital goods, specifically machinery for industry and transportation equipment, as well as durable consumption purchases. DANE's export figures (Graph 2.18) suggest a slight reduction in exports in constant pesos, observed in both annual and quarterly terms. The quarterly decline is expected to be more pronounced in the external sales of non-traditional goods, while service exports, particularly in non-resident tourism, are likely to remain at elevated levels. Given these dynamics, the updated estimate proposes that the trade deficit in constant pesos would have narrowed in comparison to the second quarter, reaching levels comparable to those recorded for yearend 2018.

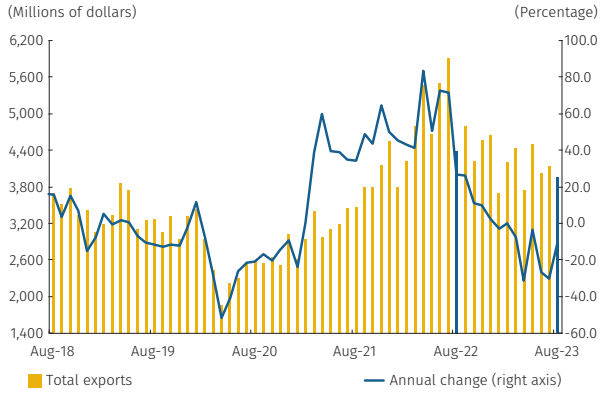
Graph 2.17
Total goods imports (CIF)
(Monthly)



Source: DANE and DIAN (preliminary foreign trade data); calculations by *Banco de la República*.

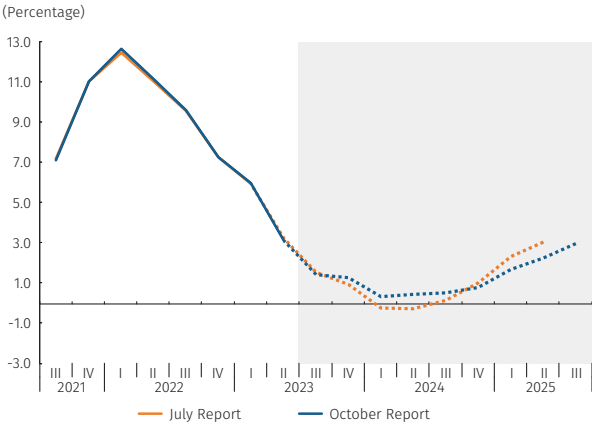
Based on the observed trends in the first three quarters of the year and the current monetary policy stance, this Report maintains an expectation of moderate GDP growth for the entirety of 2023. This aligns with the ongoing effort to reduce excess demand and aims to facilitate inflation convergence to the target. It is anticipated that by yearend, GDP will experience a slight decline compared to the third quarter, coupled with an increase in its annual growth rate, primarily attributed to the low base of comparison for yearend 2022. This forecast remains consistent with the projection of relatively low levels of investment in machinery and equipment in the coming months. Additionally, there is an expectation of moderate growth in civil works construction, which may not fully offset the subdued dynamism observed in the first half of the year. Quarter-on-quarter private consumption is anticipated to continue declining, influenced by high household indebtedness, elevated financing costs, persistent inflation, and relatively low levels of confidence. Conversely, the expansion of public consumption is likely to remain at levels consistent with the 2023 Medium-Term Fiscal Framework. The positive momentum seen in the third quarter in certain branches of the agricultural and mining sector, as well as in select groups of the services sector (such as public administration, defense, and entertainment services), is projected to continue boosting economic activity levels in the fourth quarter. The trade deficit

Graph 2.18
Total goods exports (FOB)
(Monthly)



Source: DANE; calculations by *Banco de la República*.

Graph 2.19
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*.

is foreseen to continue correcting by the end of the year, primarily driven by an adjustment in imports from the exceptionally high levels witnessed in previous years. Given the above, this Report projects annual GDP growth of 1.2% for the entirety of 2023, reflecting an increase from the figure published in July (0.9%) (Graph 2.19).

In 2024, the economy is anticipated to continue on a slow-paced growth trajectory, aligning with an adjustment path aimed at facilitating the convergence of inflation toward its target for the forecast horizon. Within the domestic context, private consumption is expected to persist at relatively high levels seen in 2022 and 2023, albeit with marginal growth, consistent with a contractionary monetary policy and a modest deterioration in the labor market. As households gradually reduce their levels of indebtedness, a gradual recovery in consumption is anticipated towards the end of 2024, extending into 2025. Concerning investment, this Report expects a boost from the low levels projected for 2023 due to the reactivation of civil works driven by progress in 5G road projects and local investment initiatives, including the execution of the Bogota subway works. Consequently, investment is projected to gradually recover from the low 2023 levels, exhibiting slight expansion throughout 2024. In the external context, global economic activity is expected to maintain a growth dynamic similar to that of 2023, supporting an increase in exports and contributing to a moderate GDP expansion. This, coupled with imports stabilizing at slightly higher levels than the previous year, is anticipated to narrow the external deficit further. This occurs in an environment of inflation rates approaching the central banks' targets in developed economies, facilitating the expectation of a gradual easing of external interest rates and a reduction in external financing costs. Given these factors, the Colombian economy is projected to grow by 0.8% for the entirety of 2024, consistent with the figure published in the prior Report (1.0%), with output levels below those of potential GDP. By the close of 2025, the economy is expected to grow at rates closer to its potential.

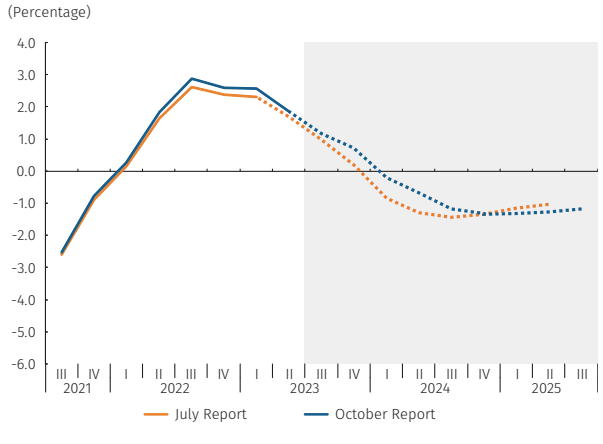
The unemployment rate (UR) for the remainder of 2023 is expected to be slightly lower than estimated in the prior Report but is anticipated to experience some weakening throughout 2024. The information available as of August from the Integrated Household Survey (GEIH) indicates an expanding employment landscape, primarily driven by the salaried segment. Simultaneously, the global labor force participation rate (GPR) has continued to rise, reaching 64.7% and surpassing pre-pandemic levels. Consequently, the national UR for the rolling quarter ending in August has continued to decrease.[22] Given the recent labor market dynamics and the economic activity projections in this Report, the seasonally adjusted national UR is expected to show a slight increase for the remain-

22 See Chapter 3 of this Report for additional information.

der of the year, averaging 10% for the fourth quarter of 2023 (between 8.7% and 11.4%). This figure represents a downward revision compared to the July forecast, reflecting the improved performance of the labor market in the last quarter. In 2024, the unemployment rate is anticipated to increase slightly, particularly in the first quarter, averaging between 8.5% and 12.1% for the entire year, with 10.3% as the most likely value. For the urban area, the unemployment rate for the fourth quarter of 2023 is projected to be 10.6% (between 9.2% and 11.9%), with a slight increase expected for the entirety of 2024, averaging 10.9% (between 9.1% and 12.7%) and ending the year at 11%. Estimates of a UR consistent with stable inflation (Nairu: non-accelerating inflation rate of unemployment) suggest that the labor market would remain tight, a situation expected to correct over the forecast horizon. Despite the economic slowdown, employment in Colombia, like in other economies, remains resilient. In 2024, there could be a transient disconnection between the output gap and the labor market gap; however, the persistence of this phenomenon is uncertain. Inflationary pressures linked to wage costs from labor market dynamics would be mitigated, although regulatory pressures, mainly due to minimum wage adjustments, would persist.

For the third quarter of the year, the output gap estimate has been upwardly revised compared to the projection in the July Report. Nevertheless, excess demand is expected to dissipate fully during 2023 and in 2024, the gap is anticipated to shift into negative territory, contributing to the convergence of inflation towards the target. The annual output gap is projected to continue narrowing throughout the third quarter and the subsequent period (Graph 2.20), consistent with a moderation of domestic demand within a context where both domestic and external financial conditions are expected to remain tight. It is essential to highlight that the upward adjustment in the forecast for headline and core inflation in 2023, along with a lower unemployment rate and a somewhat more gradual economic slowdown than initially anticipated, signals a potential slower closure of the output gap compared to the prior Report's forecast. In line with this, the central scenario in this Report envisions an annual output gap of 0.7% by yearend 2023, contrasting with the previous forecast of 0.2%. As we transition into 2024, the gap is expected to enter negative territory and is likely to end the year at approximately -1.3% by the end of that year. These estimates are consistent with potential output growing at annual rates of 3.1% in 2023 and 2.9% in 2024. It is important to note that the uncertainty surrounding these estimates remains high due to domestic and external risks, as mentioned in other sections of this Report.

Graph 2.20
Output gap [a/]
(four-quarter cumulative)

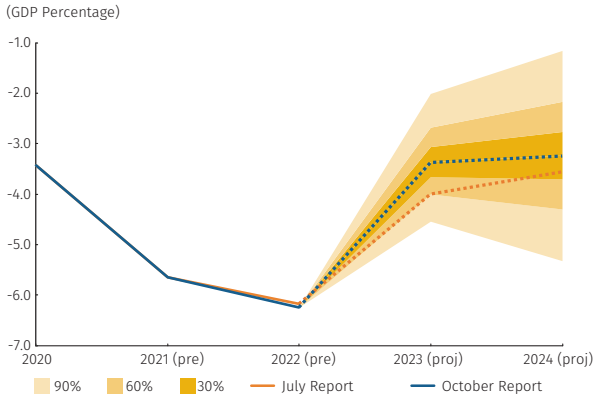


a/ The historical estimate of the output gap is calculated as the difference between observed GDP (four-quarter cumulative) and potential GDP (trend; four-quarter cumulative) from the 4GM model; for the forecast, it is calculated as the difference between the technical staff's GDP estimate (four-quarter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

2.2.3 Balance of Payments

In 2023, the current account deficit is expected to narrow to 3.4% of GDP, further improving to 3.2% in 2024, marking a corrective shift from the 6.2% of GDP deficit registered

Graph 2.21
Annual current account [a/, b/]
(four-quarter cumulative)



(pre): preliminary, (proj): projected
a/ The graph displays the probability distribution and its most likely path for 2023 and 2024. Densities characterize the balance of potential risks with areas of 30%, 60%, and 90% probability around the central forecast (mode), using primarily as reference the densities from the Patacon model.
b/ The probability distribution is derived from the forecasting exercise of the October Report.
Source: *Banco de la República*.

in 2022 (Graph 2.21).[23] The adjustment of the trade deficit is expected to be the primary driver in this reduction in external disparity in 2023. Specifically, this involves a decline in imports, especially of intermediate and capital goods, within the context of an economic slowdown, low investment levels, and a moderation in domestic demand. Additionally, international factors, such as lower international prices for raw materials and lower imported freight costs, further contribute to this trend. Also, the robust performance of the tourism sector is expected to surpass pre-pandemic export levels for these services. However, challenges persist, with exports of basic goods facing constraints such as lower international prices, relatively low production levels of key products,[24] and a slowdown in external demand, limiting a more substantial correction of the trade deficit. The lower factor income deficit is also instrumental in closing the external disparity, driven by elevated yields on international reserves and reduced profits remitted abroad by companies with foreign direct investment (FDI), which offset higher interest payments on external debt. Finally, the increased flow of workers' remittances contributes to maintaining a surplus in current transfers.[25] Looking ahead to 2024, continued dynamism in tourism exports, the normalization of freight rates, reduced profits for certain FDI companies, and high levels of workers' remittances are expected to result in a further tightening of the current deficit as a percentage of GDP. In terms of savings and investment aggregates, this deficit correction aligns with the projected reduction in the public sector imbalance and the expected adjustments in private sector investment and consumption. It is worth noting that uncertainty surrounding current account forecasts is linked to variables such as the future evolution of international commodity prices, international financial conditions, the cost of external financing, and the degree of adjustment in domestic demand, among other factors.

Anticipated reductions in the current account deficit for 2023 and 2024 are expected to lead to lower financing needs. Over the specified period, the nation is poised to sustain access to external financing, with foreign direct investment (FDI) continuing to serve as its principal source. While the public sector will continue to require financing, the extent is projected to be

23 A current account deficit of close to 2.9% of GDP is expected for the third quarter of 2023, lower than the 7.1% observed in the same period of 2022. The adjustment of the trade imbalance in goods and services, as well as the lower deficit projected for primary income, contribute to explaining these yearend figures.

24 A reduction in the dollar value of exports of products such as oil and its derivatives, coal and coffee is expected for 2023. In the case of oil and its derivatives, the effect of lower international prices will be partially offset by the recovery of production compared to 2022 levels. In the case of coal and coffee, the reduction is expected to be due to both lower domestic prices and lower production.

25 Workers' remittances are expected to increase this year due to high levels of migration of Colombians abroad observed in 2022 and what remains of 2023, as well as tight labor markets in several countries where Colombian migrants reside.

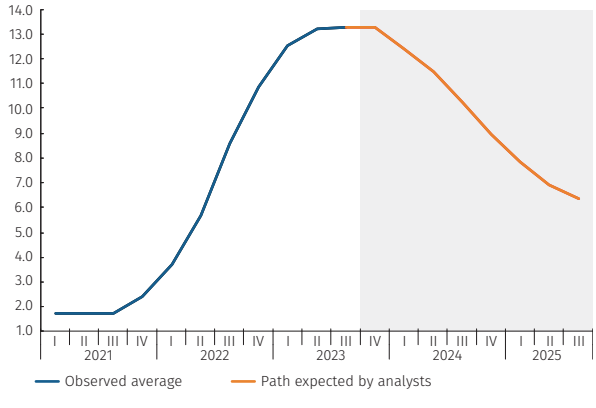
less than in previous years, reflecting the anticipated reduction in the fiscal imbalance. Simultaneously, the private sector is foreseen to accumulate assets abroad. Notably, this financing environment is expected to unfold against a backdrop of continued high interest rates in the United States, coupled with an above-average Colombian risk premium versus its historical average.

2.2.4 Monetary Policy and Interest Rates Expected by Analysts

In recent months, there has been an upward trend in the anticipated path of interest rates, as assessed by analysts. The median analyst expectation for the fourth-quarter policy interest rate is 13.25% for 2023 and would reach an average of 8.9% for the fourth quarter of 2024 (Graph 2.22). The median response to *Banco de la República*'s monthly survey of analyst expectations, conducted at the beginning of October, indicates that the policy interest rate during the fourth quarter of 2023 is expected to stand at 13.25% and to gradually decrease throughout 2024, reaching 8.9% in the fourth quarter of that year. Looking further ahead, at the end of the two-year horizon, analysts foresee the prevailing policy rate to stand at 6.3%. Conversely, the policy interest rate path outlined in the Bank's technical staff forecast, as presented in this Report, is consistent with the gradual alignment of inflation towards its 3.0% target over the forecast horizon. This trajectory, on average, is higher than that predicted by the market's expectations over the forecast horizon, as per the October 2023 survey. It is worth noting that, by yearend 2024, analysts anticipate higher inflation and growth rates relative to the figures projected by the Bank's technical staff. The forecast horizon remains fraught with uncertainty, connected to geopolitical tensions, external financial conditions, exchange rate pressures, the pace of deceleration in the Colombian economy, the persistence of inflation, wage adjustments in 2024, and indexation processes. These factors could influence the trajectory of inflation convergence towards the target.

Graph 2.22
Monetary policy interest rate: average observed quarterly and rate expected by analysts [a/]

(Percentage)



a/ These projections are calculated considering the quarterly average of the current rate according to the median response of the Monthly survey of economic analyst expectations conducted by *Banco de la República* for October 2023.
Source: *Banco de la República*.

2.3 Balance of Macroeconomic Risks

The current assessment of risk balance indicates similar levels of uncertainty regarding external variables as outlined in the previous Report and incorporates some revisions to domestic variable-related risks. The predictive densities (PD) exercise,[26] designed to evaluate the risk balance across multiple variables within the macroeconomic forecast, continues to reflect a heightened state of uncertainty concerning the various elements influencing economic behavior and shaping the macroeconomic scenario. On the external front, this Report continues to

26 Technical details on the construction of the risk balance through the predictive density exercise can be found in the paper "Caracterización y comunicación del balance de riesgos de los pronósticos macroeconómicos: un enfoque de densidad predictiva para Colombia" (Méndez-Vizcaíno et al., 2021) and in Box 1 of the July 2021 Monetary Policy Report.

outline high levels of ambiguity concerning oil prices, external financial conditions, the economic activity dynamics among trading partners, and global food prices. In the domestic context, based on economic activity indicator information, uncertainty concerning the pace at which domestic demand adjusts in the short term has lowered. However, uncertainties persist regarding the impact of climatic shocks on inflation, future wage adjustments, the level of persistence of inflation in some baskets, and the performance of select regulated prices. These elements contribute to significantly widening the PD bands, introducing an upward bias for both headline and core inflation.

Regarding the external outlook, notable risk factors include geopolitical conflicts and the potential tightening of external financial conditions. This Report acknowledges an upside risk in oil prices, given the potential escalation of ongoing conflicts, particularly in the Middle East. Concerning the US Fed's interest rate, factors favoring an increase, such as higher inflationary pressures from energy prices and a potentially higher neutral real interest rate, outweigh downside risks associated with the possibility of a recession or financial stability issues in the United States. Therefore, a moderate upside risk balance is incorporated into this variable. Conversely, potential effects arising from international geopolitical tensions and an extended tightening of credit conditions pose moderate downside risks to the growth of trading partners and introduce upside risks to external inflation. Lastly, a moderate upside risk is included in the risk premium, as upward pressures from tighter financial conditions and increased uncertainty stemming from geopolitical tensions outweigh the downward effects of a possible higher oil price and the observed correction in fiscal and current account deficits.

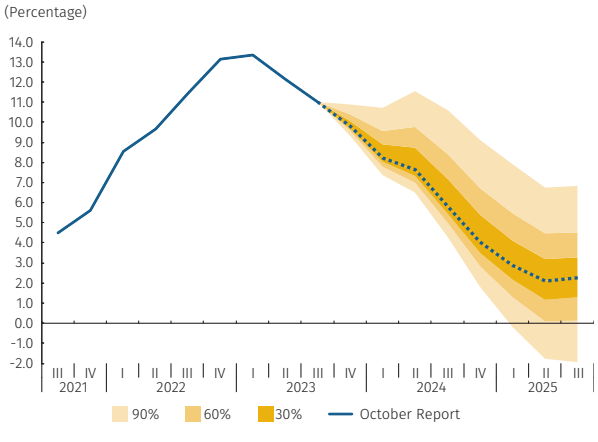
Upside risks predominantly influence trajectories for both total and core inflation. The predictive densities (PD) exercise on prices involves the amalgamation of various factors contributing to upside risks in inflation, with their relevance varying across different baskets. Specifically, the potential for the *El Niño* phenomenon to have more pronounced effects than initially envisioned introduces upside risks in food, regulated items, and services inflation, mainly through food away from home. These risks are anticipated to persist until the first half of 2024, after which they are expected to reverse. Conversely, an upward adjustment in the minimum wage beyond the projected level introduces upside risks across various baskets, notably in the services category. The exercise also considers the prospect of an upward risk in the regulated items basket due to potential increases in energy and transportation prices surpassing expectations, influenced by the elevated risks associated with the *El Niño* phenomenon and oil prices. Lastly, the exercise incorporates the risk of a more prolonged persistence in the services basket, explained, in part, by the potential for a higher degree of indexation or the pressures exerted by a more pronounced deceleration in housing supply on rental prices.

The economic activity projections incorporate a mix of risk factors across different stages of the forecast horizon. For the third quarter of 2023, a moderate upside risk is factored into the economic activity forecast; an assessment based on recent trends in services consumption and the labor market has demonstrated greater dynamism than initially anticipated. Alternatively, downside risks take precedence for the remainder of the forecast horizon. Notably, investment may exhibit less dynamism than predicted, influenced by both the tightening of external and domestic financial conditions and the deterioration of specific determinants at the local level, such as contractual uncertainty and security perceptions. These risks outweigh the upside factors in the consumption component. Consequently, the

growth trajectory and the output gap pose more significant downside risks from the fourth quarter of 2023 onwards, extending throughout 2024 and 2025.

In summary, the balance of risks is characterized by significant uncertainty levels; for 2024, a noteworthy inflationary upward bias and a moderate growth downward bias are foreseen (Graphs 2.23, 2.24, 2.25, and 2.26). In this context, with a 90% probability, headline inflation would fall between 9.3% and 10.9% by yearend 2023 and between 1.8% and 9.1% by the end of 2024. On the other hand, core inflation, with the same degree of certainty, would fall between 7.9% and 9.1% by yearend 2023 and between 2.7% and 7.9% for the fourth quarter of 2024. The probability that headline and core inflation will be below 4.0% by the end of 2024 is 28% and 22%, respectively. Regarding economic activity, with a 90% probability, annual GDP growth is expected to stand between 0.3% and 2.2% for 2023 and between -2.0% and 3.0% for 2024.

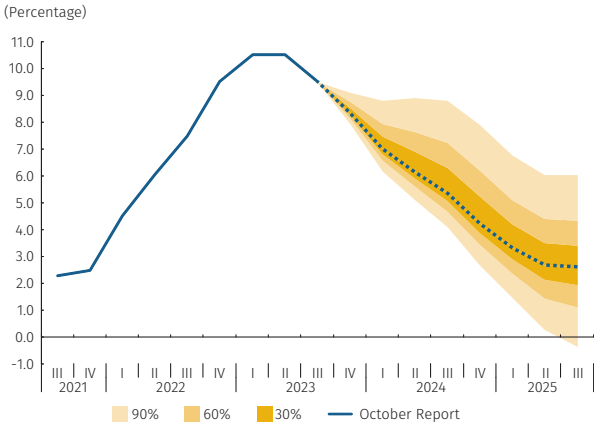
Graph 2.23
Consumer price index, predictive density [a/, b/]
(annual change, end-of-period)



	4Q 2024	3Q 2025
Mode	4.0	2.3
< Mode	28%	49%
	Intervals	
<2	6.3%	44.9%
2 to 4	21.6%	28.8%
>4	72.1%	26.2%

a/ The graph displays the probability distribution and its most likely path on an eight-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.
b/ The probability distribution is derived from the forecasting exercise of the July Report.
Source: DANE; calculations and projections by *Banco de la República*.

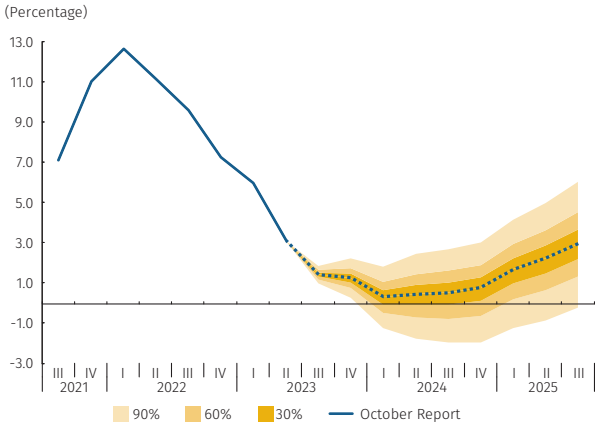
Graph 2.24
CPI excluding food and regulated items, predictive density[a/, b/]
(annual change, end-of-period)



	4Q 2024	3Q 2025
Mode	4.2	2.6
< Mode	27%	47%
	Intervals	
<2	1.7%	33.9%
2 to 4	20.1%	39.6%
>4	78.2%	26.4%

a/ The graph displays the probability distribution and its most likely path on an eight-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.
b/ The probability distribution is derived from the forecasting exercise of the July Report.
Source: DANE; calculations and projections by *Banco de la República*.

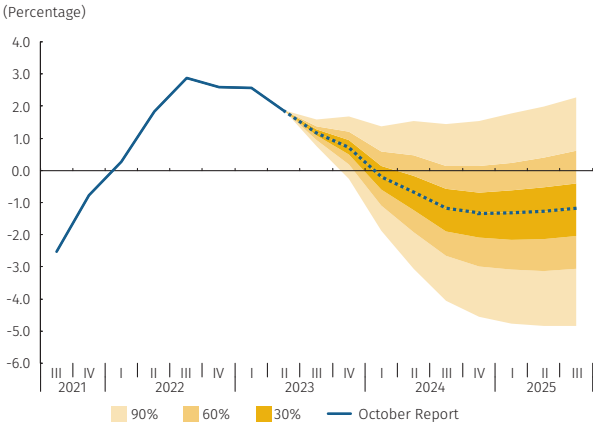
Graph 2.25
GDP, four-quarter cumulative, predictive density a/, b/, c/
(annual change)



	4Q 2023	4Q 2024	3Q 2025
Mode	1.2	0.8	2.9
< Mode	51%	57%	52%
	Intervals		
<0	1.5%	36.8%	6.3%
0 to 1,5	65.7%	37.6%	17.0%
1,5 to 3	32.6%	20.5%	29.8%
>3	0.2%	5.1%	46.9%

a/ The graph displays the probability distribution and its most likely path on an eight-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.
b/ The probability distribution is derived from the forecasting exercise of the July Report.
Source: DANE; calculations and projections by *Banco de la República*.

Graph 2.26
Output gap, predictive density a/, b/, c/
(four-quarter cumulative)

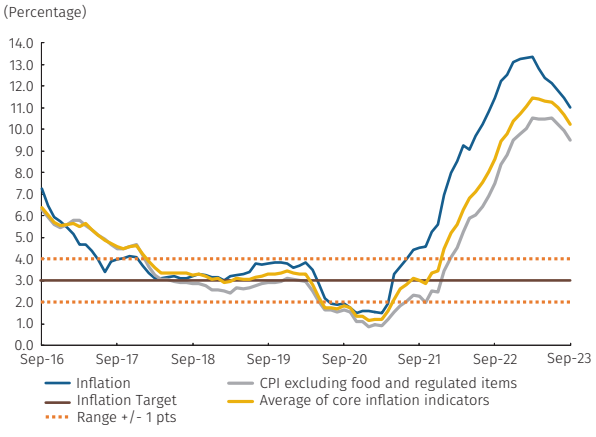


	4Q 2023	4Q 2024	3Q 2025
Mode	0.72	-1.31	-1.18
< Mode	51%	56%	53%
	Intervals		
< -2	0.0%	40.9%	37.3%
-2 to 0	11.5%	39.5%	35.3%
0 to 2	86.3%	17.1%	20.4%
>2	2.3%	2.5%	7.0%

a/ The graph displays the probability distribution and its most likely path on an eight-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.
b/ The probability distribution is derived from the forecasting exercise of the July Report.
Source: DANE; calculations and projections by *Banco de la República*.

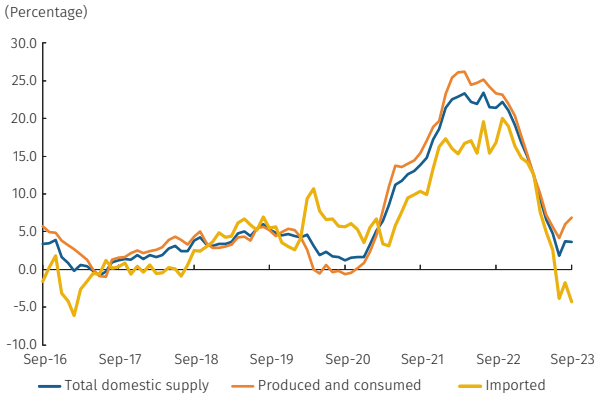
3. Current economic situation

Graph 3.1
CPI and core inflation indicators
(Annual change)



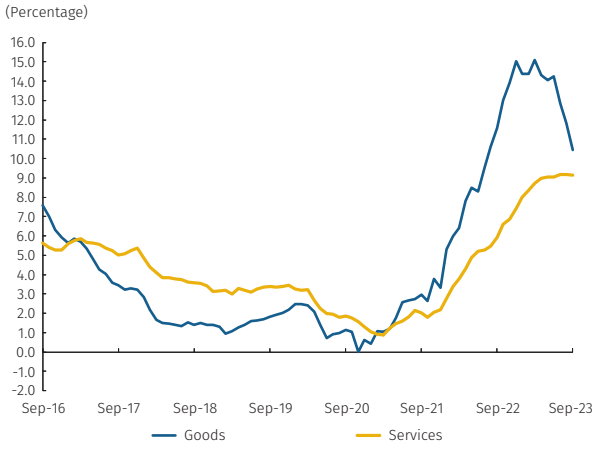
Sources: DANE and *Banco de la República.*

Graph 3.2
PPI by origin
(Annual change)



Sources: DANE; calculations by *Banco de la República.*

Graph 3.3
CPI for goods and services, excluding food and regulated items (Annual change)



Sources: DANE; calculations by *Banco de la República.*

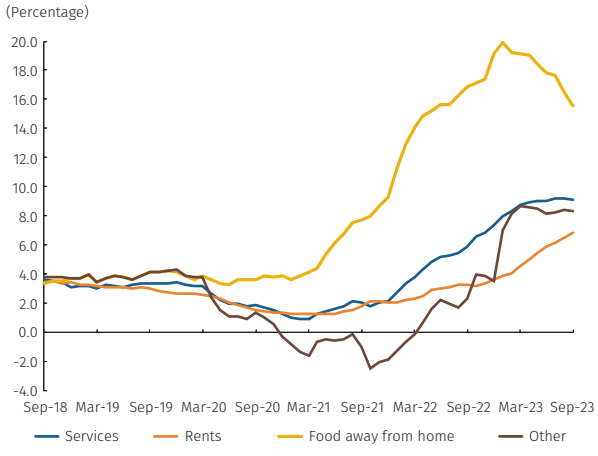
3.1 Inflation and price behavior

During the third quarter, both headline and core annual consumer inflation exhibited a downward trend, albeit not as steep as expected. At the end of the third quarter, annual inflation stood at 11.0%, below the recent peak reached in March (13.3%) and lower than that recorded for June (12.1%) (Graph 3.1). After stabilizing in the second quarter at around 10.5%, core inflation (excluding food and regulated items) also declined during the third quarter, although less markedly, closing at 9.5%. Despite dropping in recent months, annual and core inflation remain at very high levels vis a vis the target owing to various domestic factors that continue to exert upward inflationary pressure on consumer prices. Among these, the most notable are the required fuel price adjustments, road transport difficulties, unfavorable agricultural production cycles, climate disturbances, and price indexation to high rates, particularly for services and regulated items. The latter was exacerbated by a sustained positive output gap in the third quarter despite the slowdown in domestic demand. All these factors have contributed to a slower inflation decrease in Colombia than that seen in other countries. The downward pressures operating on domestic prices are consistent with the lessening exchange rate pressures and a reduction in domestic and external non-wage cost burdens, indicated by the significant drop in the domestic supply PPI, whose annual change fell from 19.2% in December to 4.8% in June, and to 3.6% in September (Graph 3.2).[27]

The weakening of core inflation in recent months was mainly centered in the CPI for goods, attributed to a high comparison reference point and lower exchange rate pressures. Since July, annual change in the CPI for goods began to decline significantly and closed September at 10.4%. This decrease is primarily explained by its high measure for comparison after the end of the health emergency was decreed on June 30, 2022, when the VAT for various toiletries and medical goods was reinstated. The price increase of these items generated upward and higher fluctuations during the year in this CPI segment (Graph 3.3). Lower inflationary exchange rate pressures also contributed to a lesser annual adjustment in goods-related prices. Despite the above, the recent downward trajectory has been somewhat less steep than forecast in the previous Report.

27 The September annual producer price inflation (PPI) figure provided by DANE is provisional.

Graph 3.4
CPI for services, excluding food and regulated items and its components
(Annual change)



Sources: DANE; calculations by *Banco de la República*.

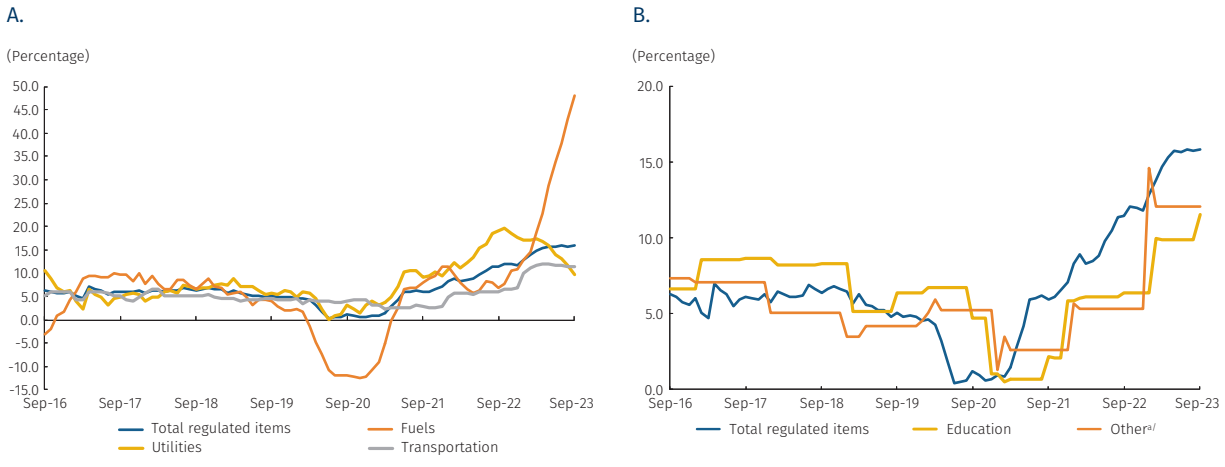
In contrast to goods, services have shown more enduring price adjustments, mainly influenced by price indexing. Annual change in the CPI for services did not show significant alterations during the third quarter, moving slightly from 9.0% in June to 9.1% in September. The upward price pressure on the CPI for services was fronted by the rents component, whose annual change climbed from 5.9% in June to 6.8% in September (Graph 3.4), exceeding the technical staff's expectations. Rental rates are being driven by several factors, including the indexation of contracts to 2022 year-end inflation, lower availability of rental properties partly due to a slowdown in the construction sector, and positive demand dynamics. Other upside pressures also continue in the recreational, educational, and personal services categories, as well as in airline tickets and tourism-related services (Graph 3.4). In contrast, the annual change in the CPI for food away from home continued to decline throughout the third quarter, closing September at 15.6% versus the 17.8% recorded in June. Despite this, prices in this segment continue to grow rapidly because of the upward pressure from utility rates, wages, food, and demand.

The CPI for regulated items sub-basket continued to increase, mainly due to the mandated increase in fuel prices. The annual change in regulated prices grew from 15.6% in June to 15.8% in September. The government's policy of bringing the domestic gasoline price in line with its international counterpart continued these months, resulting in an annual change of 48.0% in the fuel CPI (compared to 34.0% in June) (Graph 3.5, panel A). This policy, in force since October last year, resulted in an annual price increase of 38.8% to September. These alterations, together with the minimum wage increase at the beginning of the year, have impacted regulated transport rates, whose annual change to September was 11.4%. Conversely, regulated education prices during the third quarter, indexed to past annual inflation,[28] continued to display annual adjustments of close to 10%. Concerning public utility rates, the yearly change varied by a lower amount between June (14.1%) and September (9.7%) due to a favorable statistical comparison base and the decision of the Mayor's Office of Medellin to adjust the energy rate between June and December.[29] It is important to note that, despite the above, the annual rise in public utility service

28 For 2023, the annual increase in tuition and fees for elementary and middle school education was set with the annual change as of August 2022 (10.84%), plus other additional elements. See (available only in Spanish): https://www.mineducacion.gov.co/1780/articles-412565_pdf.pdf

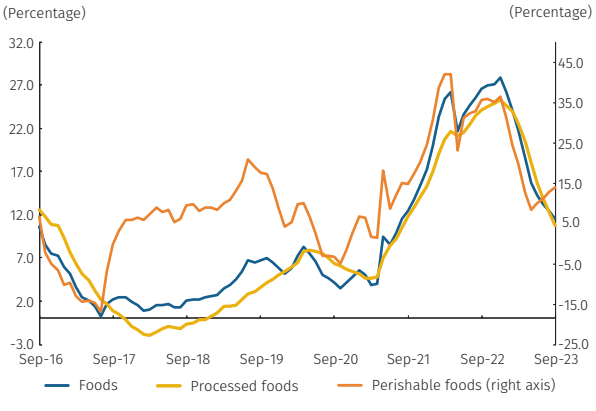
29 This more than offset the increase in energy rates resulting from the National Government's decision to guarantee energy service in the rural area of La Guajira. The Ministry of Mines and Energy issued Decree 1276 of July 31, 2023, instating a mandatory contribution for the department of La Guajira of one thousand pesos per strata 4, 5, and 6 households for a term of six (6) months, which will be collected through the public utility services invoices nationwide. In the commercial and industrial segment, this contribution amounts to five thousand pesos per invoice, which is equal to less than 0.8% of the average monthly invoice paid by these

Graph 3.5
CPI for regulated items and its components
(Annual change)



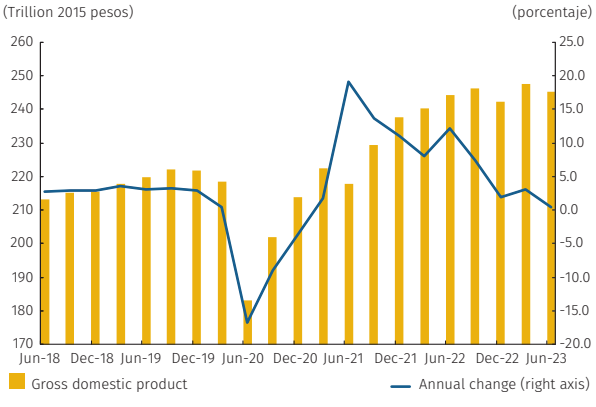
a/ Includes moderated EPS quotas, administrative certificates and documents, and professional fee payments
Sources: DANE; calculations by *Banco de la República*.

Graph 3.6
CPI for foods and its components
(Annual change)



Sources: DANE; calculations by *Banco de la República*.

Graph 3.7
Gross domestic product a/
(Quarterly and annual change)



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

prices is widespread, given that most show increases above 10% (Graph 3.5, panel B).

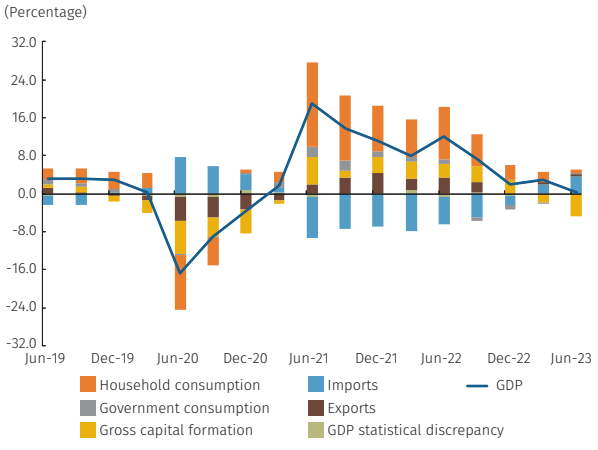
The annual change in the CPI for food continued to decline, though at a slower pace than anticipated. The annual food-related variation that recorded a sharp decline in the first half of the year continued its downward trajectory in the third quarter but at a more moderate pace and at slightly higher rates than those foreseen in previous Reports, ending September at 11.5% (Graph 3.6). On the one hand, the annual change of the perishables component during this period rebounded from 10.1% in June to 13.9% in September. The latter would be explained by an unfavorable crop cycle of some fruits, vegetables, and potatoes and road transportation disruptions, including landslides and blockades, particularly in the country's eastern region. On the other hand, the annual change in the CPI for processed foods continued to fall from 15.6% in June to 10.7% in September, aided by falling international food and raw material prices in recent quarters due to the appreciation of the peso throughout this year to September and the normalization of logistics and transport costs, despite the ongoing war between Russia and Ukraine.

3.2 Growth and domestic demand

The decline in the annual GDP growth rate continued in the second quarter, although it remained at high levels that exceeded the economy's productive capacity. In this period, the Colombian economy registered a slight yearly growth

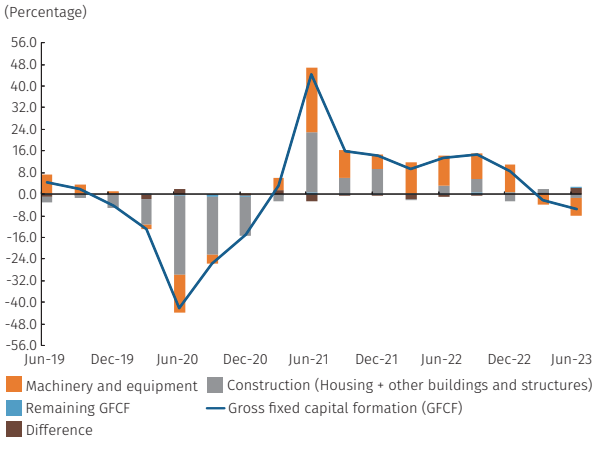
users. For further information, see (available only in Spanish): https://www.minenergia.gov.co/documents/10437/DECRETO_1276_DEL_31_DE_JULIO_DE_2023_002.pdf

Graph 3.8
Contributions to annual changes to quarterly GDP [a/]
(Annual change, contribution)



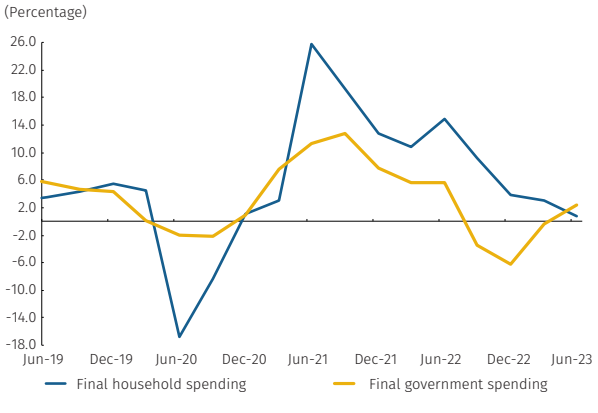
a/ Seasonally adjusted and corrected for calendar effects
Sources: DANE; calculations by *Banco de la República*.

Graph 3.9
Quarterly gross fixed capital formation[a/]
(Annual change, contributions)



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

Graph 3.10
Final household and general government spending[a/]
(Annual change)



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

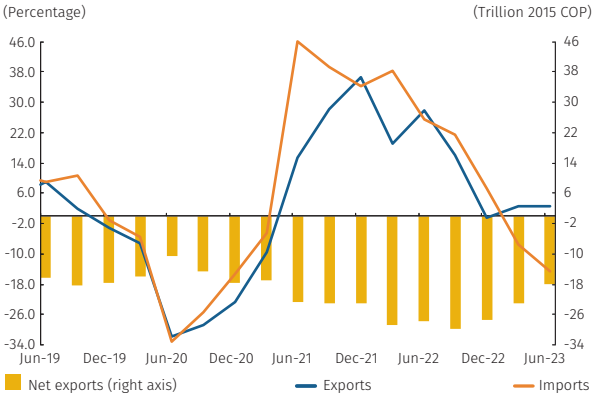
of 0.3% (lower than the 0.7% forecast in the July Report). According to seasonally adjusted figures corrected for calendar effects, activity levels throughout the whole of the year showed no significant changes (Graph 3.7). The slowdown in the economic recovery rate of growth continues in sync with the annual and quarterly decline in domestic demand. The latter is within a backdrop of easing yet persistently high above-target inflation, a monetary policy in contractionary territory, and low consumer and business confidence indicators. Additionally, external financial conditions remain tight, and the growth of trading partners is slowing. On the supply side, artistic activities continue to show double-digit annual growth rates, although lower than those of previous quarters. In contrast, secondary sectors (industry and construction) and commerce, transportation, and lodging saw annual and quarterly declines.

The slowdown in yearly domestic demand continued, falling to levels below those of previous quarters, mainly due to the behavior of investment. According to the most recent figures published by DANE, the second quarter domestic absorption showed a third consecutive quarterly decline, resulting in an annual drop for this aggregate (-3.8% seasonally and calendar adjusted). Consequently, its contribution to annual GDP growth in this period was negative (Graph 3.8). Among the components of domestic demand, gross capital formation presented the most significant decrease in both annual (-22.2%) and quarterly (-13.8%) terms. However, it should be noted that cumulative inventory levels fell significantly in the second quarter, mainly in the industrial sector, which caused a minor reduction of gross fixed capital formation in both annual (-5.7 %) and quarterly (-5.3%) terms. The largest contributor to this decline within this category was machinery and equipment investment (Graph 3.9), which continued to fall quarter-on-quarter, especially for industrial capital goods purchases, as suggested by import data. It is worth noting that this segment is correcting from the historic highs recorded in 2022. Construction investment also failed to perform favorably, as construction in housing and other buildings and structures recorded annual and quarterly declines, explained mainly by lower non-public housing completion rates and an unrelenting weakness exhibited in civil works activities.

In line with expectations, the annual consumption growth rate also weakened yet ended above the high level seen in the first quarter, driven by the significant increase in public consumption. Annual total consumption grew by 1.2% in the second quarter, lower than in the first quarter and the second semester of 2022. However, it grew by 2.3% versus the first quarter and reached the highest level in its historical series. In a breakdown by component, public consumption contributed most to this increase, with notable quarterly and annual increases of 5.3% and 2.3%, respectively (Graph 3.10). According to DANE information, the upsurge in this compo-

nent was driven primarily by the retroactive salary increase for public employees, mostly paid out in June. Alternatively, annual growth in private consumption continued to curb during this period (0.8%). Durable and semi-durable goods consumption levels fell and showed a negative annual change after their historic highs in 2022. Conversely, non-durable goods and services consumption grew slightly quarter-on-quarter, sustaining their higher values and exhibiting modest yearly increases. During the second quarter, the continued slowdown of private consumption occurred within a backdrop of a restrictive monetary policy, low consumer confidence levels, an uncertain environment and a slowdown in household credit.

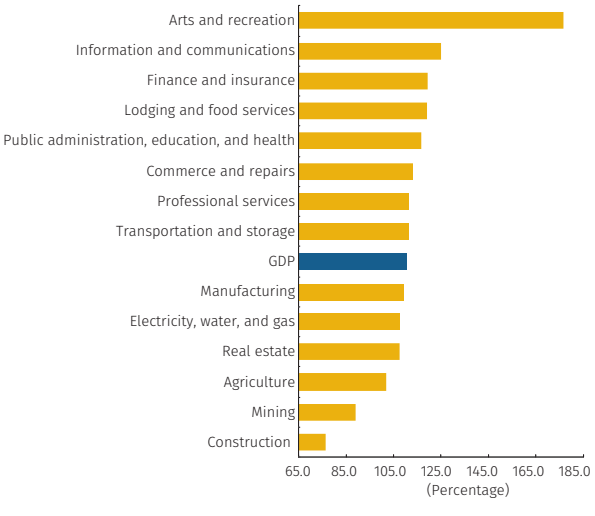
Graph 3.11
Exports, imports, and trade balance[a/]
(Annual change and trillion 2015 COP)



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

The significant weakening of imports continued during the second quarter, after the high levels reached the previous year, reducing the trade deficit further in real pesos. The deceleration in investment activities and the decreased vigor of private consumption were reflected in significantly lower annual (-14.5%) and quarterly (-7.6 %) imports. Lesser purchases of capital goods were the chief contributor to the reduction in this item. In contrast, exports in real pesos increased in both annual (2.5%) and quarterly (2.6%) terms, predominantly boosted by external sales of manufactured goods and some agricultural products and services. This is despite the decline in USD-denominated exports because of a more significant price drop in exported products. The abovementioned led to a sustained closing of the trade gap in real pesos during the second quarter to similar levels as those recorded in the fourth quarter of 2019 (Graph 3.11).

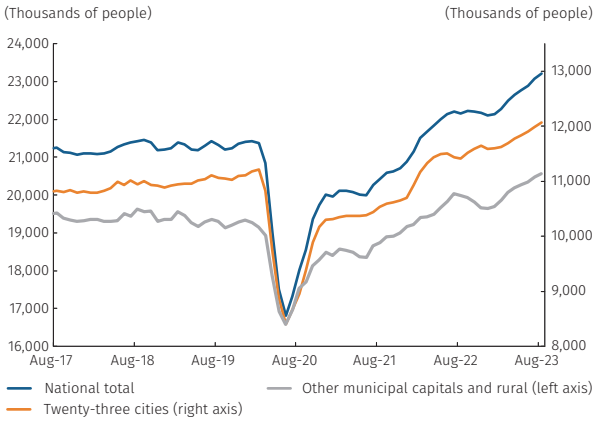
Graph 3.12
Sectoral value-added levels in 2Q 2023 relative to 4Q 2019 [a/]
(4Q 2019 = 100%)



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

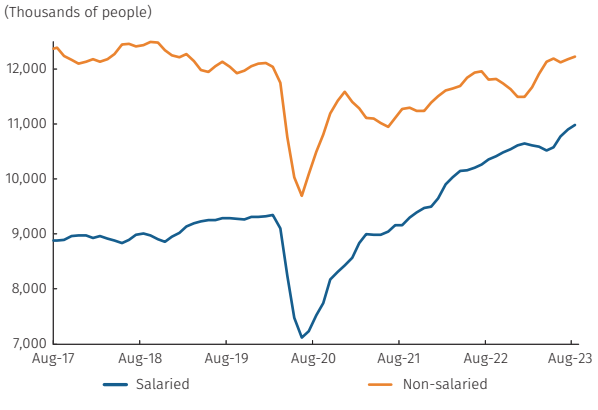
On the supply side, the sectors that showed lesser activity levels were manufacturing, construction, and commerce, recording annual drops. In the second quarter of 2023, tertiary activities remained the most dynamic, rising annually by 1.5%. This behavior was mainly explained by yearly growth in artistic and entertainment activities (12.6%) powered by the boom in online gaming and sports betting, public administration, health and education services (4.4%), and financial and insurance activities (3.7%). The above dynamic was partly offset by the deceleration in commerce, transport, and lodging services (-3.1%) and professional, scientific, and technical activities (-0.4%). Primary activities also recorded an annual increase (0.5%) due to revamped activities in the mining sector, mainly associated with oil extraction. In contrast, agricultural and livestock activities performed poorly due to low coffee production, among other factors. Finally, the secondary sector suffered the most in this period (-3.8%) because of the significant deceleration of the manufacturing industry and the continued low activity levels of the construction sector (Graph 3.12).

Graph 3.13
Employed population by location



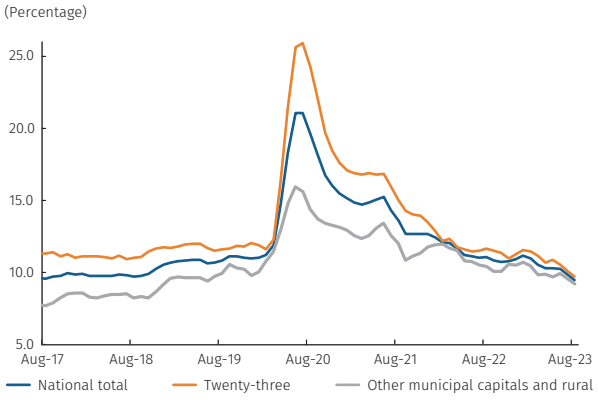
Note: corresponds to rolling quarterly seasonally adjusted data
Sources: DANE (GEIH); calculations by *Banco de la República.*

Graph 3.14
Jobs by type of employment: national total



Note: corresponds to rolling quarterly seasonally adjusted data
Sources: DANE (GEIH); calculations by *Banco de la República.*

Graph 3.15
Unemployment rate by location



Note: corresponds to rolling quarter seasonally adjusted data
Sources: DANE (GEIH); calculations by *Banco de la República.*

3.3 Labor market[30]

In the rolling quarter ending in August, employment continued to increase. During these three months, the Integrated Household Survey (GEIH) results report an annual employment growth of 4.8%, corresponding to 1.1 million new jobs.[31] Annual urban and rural employment changes were 5.8% and 3.7%, respectively (Graph 3.13). By sector, annual employment growth was primarily driven by the positive performance of the retail and lodging, public administration, health and education, and recreation and other services categories, which jointly increased annual employment by 2.2 pts. On the contrary, mining and electricity, gas, and water supply-related activities presented yearly reductions.

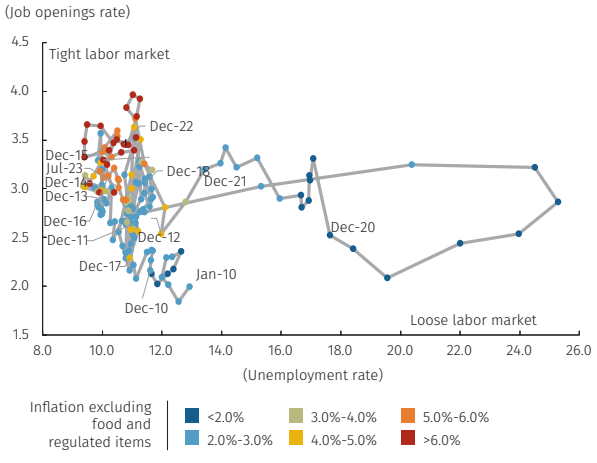
In recent months, job creation has been driven mainly by the salaried segment. As of August, the expansion of national aggregate employment on a rolling quarter basis was led by the salaried segment (Graph 3.14), particularly private employment. Other sources of information on salaried and formal employment, such as pension contributions in the Comprehensive Contribution Settlement System (PILA) and the records of affiliates to family compensation funds (CCF) and affiliates of labor risk administrators (ARL), confirm the behavior of salaried employment. Additionally, the non-salaried continued to grow, although at a more moderate pace, driven mainly by self-employed workers. The higher growth of salaried employment associated with formal employment allowed the national aggregate informal employment rate to continue falling to 56.1% in August.

This same month, the national aggregate unemployment rate continued to decline and remained below its historical average. As of August, the national three-month rolling unemployment rate fell to 9.5%. In the same period, the urban and rural unemployment rates also declined to 9.7% and 9.2%, respectively (Graph 3.15). The high heterogeneity in the unemployment figures among the twenty-three main cities stands out, with Quibdó exhibiting the highest unemployment rate (24.7%), while Santa Marta has the lowest (8.1%). In general, there was a year-on-year decrease in unemployment rate among the main cities, with Valledupar (-4.8 pts), Tunja (-4.1 pts), Barranquilla (-3.2 pts), and Medellin (-3.2 pts) displaying the largest drops; in contrast, increases were noted in Neiva (1.2 pts), while Cali, Quibdó and Cartagena showed no changes. Regarding unemployment by gender, a positive trend in female employment activity has allowed the gender gap to narrow by the end of August at 4.3 pts, a historic low.

30 For a more detailed analysis of the labor market, we invite you to consult *Banco de la República*'s Labor Market Report, available only in Spanish at https://www.banrep.gov.co/es/reporte-mercado-laboral

31 In line with employment behavior, average total national employment has increased (1.9 pts to fall at 58.6%), with higher increases noted in urban (2.5 pts) vs. rural areas (1.2 pts).

Graph 3.16
Beveridge curve for the seven largest cities



Notes: rolling quarter seasonally adjusted data. GEIH Vacancy rate is estimated based on hires according to Morales, Hermida, and Dávalos methodology (2019).
Sources: DANE (GEIH); calculations by *Banco de la República*.

Other formal labor demand indicators remain at comparatively high levels and, together with the behavior of unemployment, suggest a labor market that continues to tighten. The job vacancies index to August computed from the Public Employment Service (PES), classified ads as well as available while implicit GEIH hiring figures to July remained at comparatively high levels after the contractions experienced in the first semester of the year. The relative stability of job vacancy rates and hiring expectations from *Banco de la República*'s monthly Survey of Economic Expectations (EMEE) do not present any significant changes[32], remaining positive and suggesting modest growth in formal employment in the near future. [33] the Beveridge curve (Graph 3.16), the urban employment and job vacancy rate behavior suggests a tight labor for the next few months. Nonetheless, low hiring in an environment of economic deceleration signals that this tightness might ease in the near future and into 2024. Finally, as of July, information from the household job income survey shows that nominal income indices continue to be on an annual upward adjustment path for the national aggregate. However, there are differences in real terms between the salaried and non-salaried or informal segments. In the case of the salaried segment, wage adjustments have outpaced observed inflation, with a median yearly real wage increase of 1.9%. In contrast, real job income for the non-salaried segment fell by 6.0%.

3.4 Financial and money markets

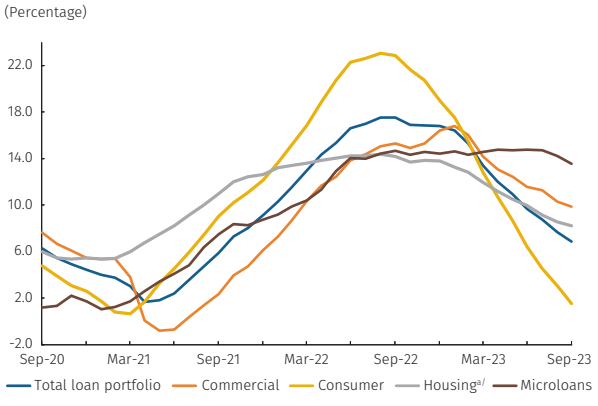
During the third quarter, credit institutions temporarily tightened financing conditions, although this situation has already begun to note a correction. In the last week of September, the account balance of the General Directorate of Public Credit and National Treasury - Ministry of Finance and Public Credit (DGCPTN for its Spanish acronym) at *Banco de la República* reached historically high levels of close to COP 50 trillion. Additionally, the amount of longer-term CDT (CDT (term deposit certificates) maturities in July and August may have increased the cost of term funding within an environment of compliance with the terms of the Net Stable Funding Ratio (NSFR). This situation was reflected in the increases seen up to August in deposit interest rates at various maturities. Nevertheless, liquidity conditions have recently improved due to changes in NSFR[34] regulations and the liquidity

32 As of the second quarter of 2023, the EMEE survey results saw a 1.2 pts increase versus the previous quarter between those with plans to increase or decrease their workforce in the short term.

33 The Beveridge curve is a graphical representation of the relationship between unemployment and the job vacancy rate.

34 The Office of the Financial Superintendent of Colombia published External Circular 013, which seeks to align Basel III international standards with the requirements of the local NSFR. It references a change in the risk-weighting of demand deposits from 0% to 25% for supervised enti-

Graph 3.17
Gross loan portfolio in Colombian pesos
(Annual change, monthly averages)



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

Table 3.1
Average monthly interest rates
(Percentage)

	Sep-21	Dec-21	Dec-22	Jun-23	Sep-23
Interbancarias					
Interbank policy rate	1.75	2.70	11.42	13.25	13.25
Interbank overnight	1.79	2.73	11.41	13.28	13.25
BBI overnight	1.77	2.72	11.41	13.28	13.25
BBI 1-month	1.93	2.96	11.80	13.25	13.23
BBI 3-months	2.27	3.36	12.08	13.25	13.11
BBI 6-months	2.76	3.97	12.31	13.03	12.71
BBI 12-months	-	-	12.17	11.99	11.59
Deposits					
Savings	0.97	1.19	5.72	6.23	6.40
DTF 90-days	2.05	3.08	13.42	13.02	13.07
CDT* a 180-days	2.45	3.71	15.58	13.30	13.49
CDT a 360-days	3.16	5.10	17.08	14.17	13.78
CDT > 360-days	3.68	7.14	19.15	14.44	13.62
Credit					
Preferential	4.98	6.00	18.57	17.65	17.30
Ordinary	7.34	8.18	19.27	19.20	19.04
Non-public housing purchases	9.06	9.40	17.22	17.97	17.44
Public housing purchases	10.98	11.55	17.00	16.41	16.12
Personal loan consumption	17.09	17.51	31.23	31.65	29.74
Payroll loan consumption	11.23	11.65	19.45	19.82	19.55
Credit card	23.49	24.47	39.01	39.58	37.60

*CDT (term deposit certificates)
Sources: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República*.

structure implemented by *Banco de la República*, which included expansion repos auctions at longer maturities than usual and securities purchases to infuse liquidity into the economy. Liquidity conditions are expected to remain normal going forward.

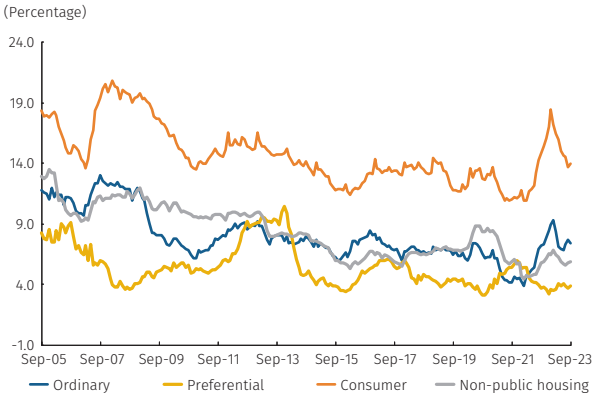
Loan portfolios continued to decrease in an environment of lower credit demand and banks' higher lending requirements (Graph 3.17). Loan demand has shown a contraction consistent with the economic slowdown, high interest rate levels, and high household indebtedness, among others, thus decreasing the loan portfolio. On the supply side, credit institutions have placed stricter loan granting conditions within an environment of deteriorating loan portfolio quality indicators and increased loan loss provision expenses. Undeniably, according to data from the Quarterly Survey on Credit in Colombia, as of June 2023, the supply of new loans for all types of credit has declined compared to the end of 2022. A search for less risky placements has also been evidenced, such as in the consumer loan portfolio, where a more significant share of promissory notes-backed loans has been observed. Consequently, the annual growth of the loan portfolio to September in pesos was 6.9% (-3.62% real[35]), 2.8 pts, and 9.9 pts less than that recorded in June 2023 and December 2022, respectively. This slowdown in the loan portfolio has been seen across all loan types, although most markedly in consumer loans and, to a lesser extent, in mortgages and commercial loans. In real terms, all types of loan portfolios recorded annual declines from the high levels observed in 2022.

Lending and deposit interest rates showed mixed behavior during the year's third quarter and remained high (Table 3.1). The monetary policy interest rate (MPR) has remained at 13.25% since April 2023. In the money market, interest rates with terms below six months remained consistent with the MPR, while for the terms above six months, the benchmark banking index (BBI) behavior suggests an increase in expectations of a lower MPR. The banking interest rate increased during the first part of the third quarter, reflecting the tight liquidity conditions of the financial system. However, this behavior suffered a partial reversal during September, in line with improvements in the economy's liquidity conditions and the expectations of a lower MPR in 2024. In the credit market, interest rates for the various types of loans fell during the third quarter, with those for commercial and consumer loans falling below those seen in December 2022. In real terms, rates continue above the average of recent years (Graph 3.18).

ties and mutual funds (FIC for its Spanish acronym) without lock-in periods until September 30, 2024. After that date, non-operating and operating deposits will be included and will have a weighting of 0% or 50%, respectively.

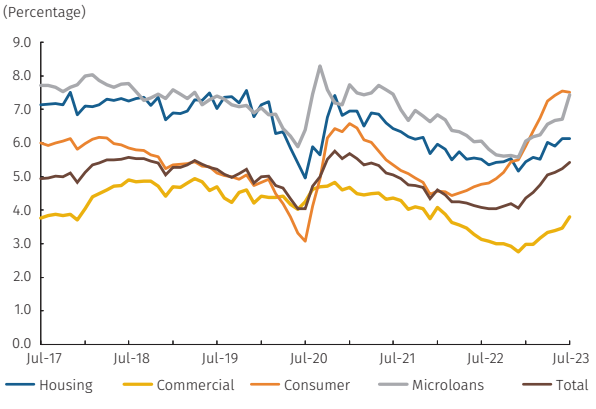
35 Deflated by CPI without food.

Graph 3.18
Real loan interest rates
(monthly average data deflated by the CPI excluding food)



Sources: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

Graph 3.19
NPL Indicator
(Past due loan portfolio/ Total loan portfolio)



Sources: Office of the Financial Superintendent of Colombia, calculations by *Banco de la República.*

The solvency levels of credit institutions remain stable, although profits have weakened. In July 2023, the twelve-month cumulative profits of credit institutions totaled COP 10.3 trillion, a COP 6 t decrease versus those seen in December 2022. This occurred amid an environment of higher loan portfolio provisions and a deteriorating non-preforming loans indicator for all credit types (Graph 3.19), especially notable in the case of consumer loans, though at levels still close to historical averages. The household financial burden indicator also remains high. Finally, with data to July, the total (17.5%) and basic (14.2%) solvency levels of credit institutions remained well above the regulatory minimums (9.0% and 4.5%, respectively).

Box 1
Inflation Persistence in the Current Environment

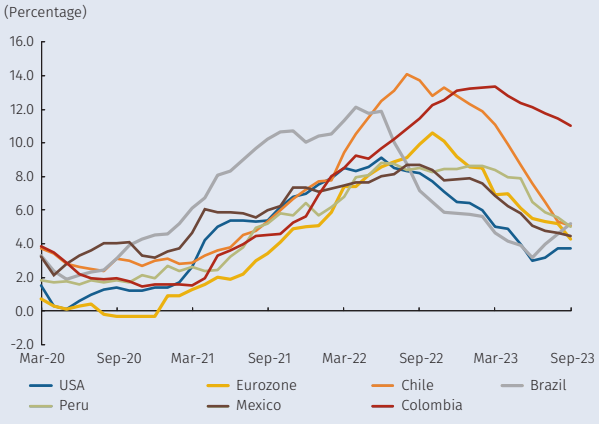
José Vicente Romero Chamorro
Nicolás Martínez Cortés
Franky Galeano Ramírez*

1. Introduction

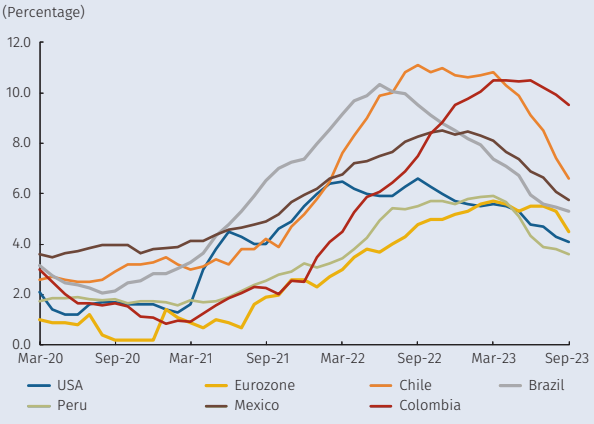
Inflation persistence[1] is highly relevant in monetary policy discussions because as inflation rises, its deviation from the central bank's target becomes more difficult to correct, with potentially higher costs to a nation's economic activity. While Colombia has experienced recent decreases in annual CPI changes, it continues to experience remarkably high inflation levels. When comparing headline and core inflation levels with those of other countries, Colombia stands out for its exceptionally elevated figures and lower and slower inflation decline than those experienced by other economies (Graph B1.1).

Graph B1.1
Inflation in Colombia and other countries

A. Annual headline inflation



B. Annual core inflation[a/]



a/ Is the measurement of inflation excluding food and fuel or, as the case may be, the core inflation measured by the Central Bank. For Brazil, it is the average of three core inflation measurements monitored by the central bank (exclusion method, trimmed means, and double weighted). For Colombia, inflation excluding food and regulated items is used.
Sources: National central banks and statistical entities of each country.

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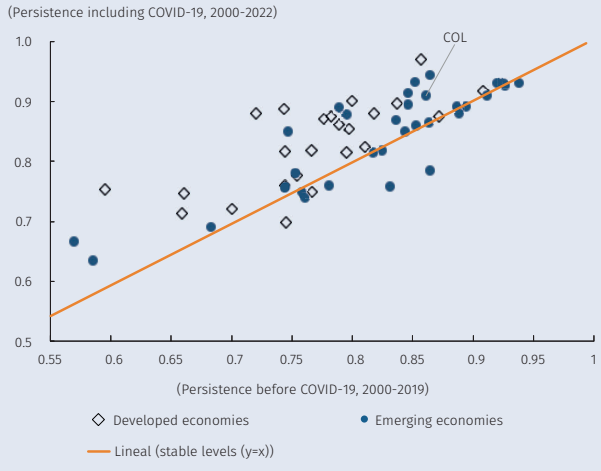
* The authors are Senior Economist at the Macroeconomic Models Department and Specialists at the Programming and Inflation Department, respectively. They are responsible for their opinions, which do not compromise *Banco de la República* or its Board of Directors.

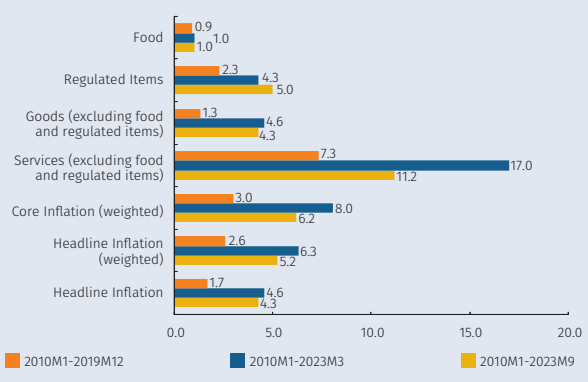
1 The persistence of an economic variable can be understood as the analog of "inertia" in physics (Fuhrer (2010)). Once a process is started, it tends to last over time unless there are one or several forces that stop it.

Graph B1.2
Global changes in the level of inflation persistence (autocorrelation parameter)



Note: Emerging economies do not include Argentina, Russia, Ukraine, Turkey, and Venezuela. Persistence was obtained using AR models.
Sources: Calculation by the authors using quarterly inflation obtained with the seasonally adjusted CPI. Inflation data was obtained from the World Bank for 69 countries (23 developed and 46 emerging economies).

Graph B1.3
Monthly inflation persistence derived from a half-life computation (number of months it takes for 50% of the initial shock to dissipate)



Sources: Calculation by the authors using monthly inflation obtained with the seasonally adjusted CPI.

As shown in Graph B1.2, when studying one of the conventional measures of inflationary persistence (the autocorrelation parameter[2]) for a broad spectrum of countries before (x-axis) and after the COVID-19 pandemic (y-axis), it is evident that Colombia's inflation exhibits more remarkable persistence, which exacerbated after the health crisis. In this context, this Box seeks to analyze the dynamics of inflation persistence in Colombia following the sharp increase in inflation experienced since 2021.

2. Inflation persistence in Colombia

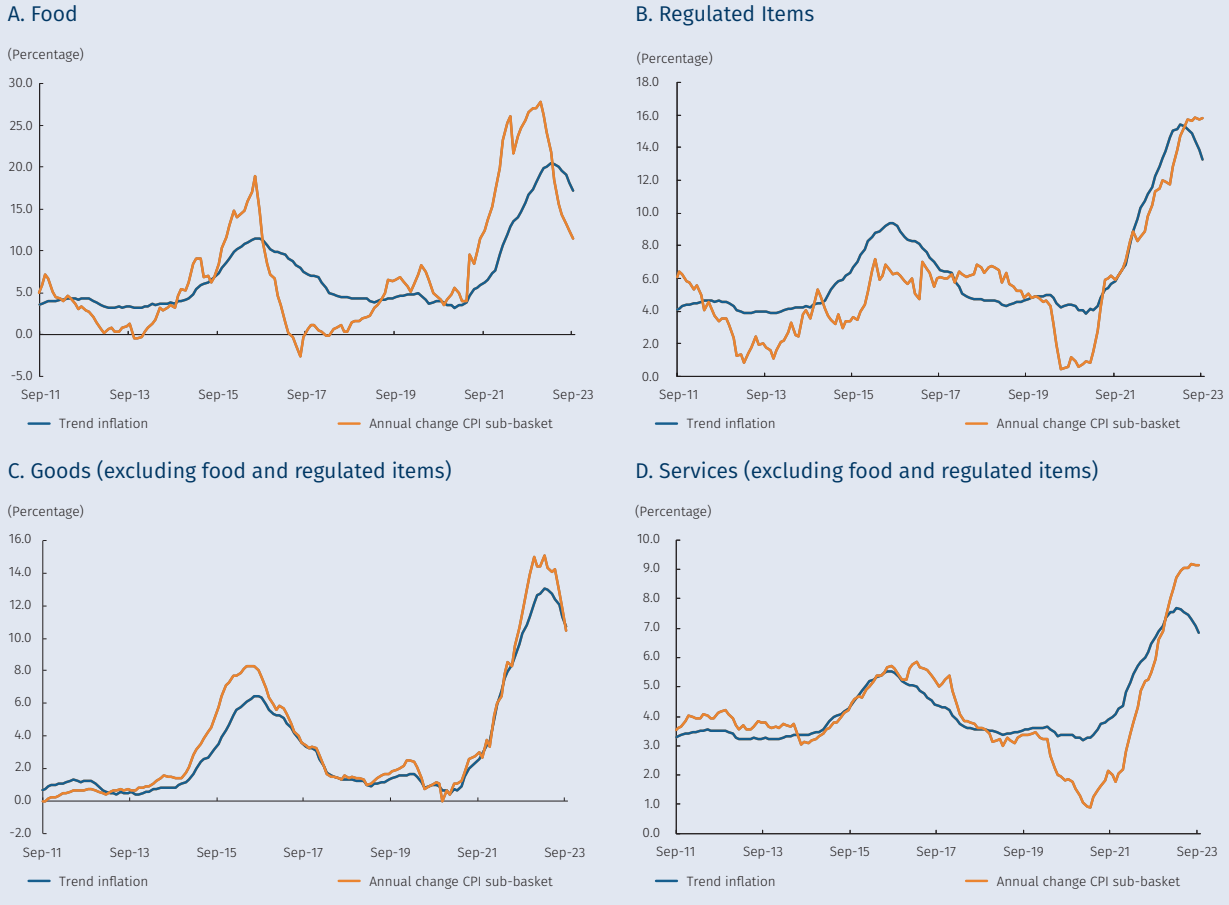
There are several methodologies to measure inflation persistence.[3] In this section, we use two. The first one estimates the half-life of the shocks affecting inflation. This metric seeks to determine how long it takes for half of the effect of a shock on inflation to dissipate. In this analysis, we apply the methodology proposed by Barrero et al. (2023), focusing on the food, regulated items, and goods and services (excluding food and regulated items) sub-baskets in Colombia. In this case, we modeled an autoregressive model (AR(p)) for monthly seasonally adjusted inflation for each of the CPI sub-baskets and three periods beginning from 2010: 1) up to the COVID-19 pandemic; 2) up to the first quarter of 2023; and 3) up to the third quarter of the same year. Subsequently, we calculated the inverse roots of the autoregressive polynomial for each subclass (persistence measure) and aggregated the results using their CPI weights. The half-life in months was computed assuming a shock of 1 percentage point (pp) in each sub-basket, calculating the number of months it takes for 50% of the initial shock to dissipate. Graph B1.3 illustrates how the inflationary persistence in the different groupings experienced a significant increase after the 2020 health crisis, particularly for the basket of goods. Concerning headline inflation, the half-life of an inflationary shock increased from 1.7 months at the close of 2019 to 4.6 months by the close of the first quarter of 2023. Although this trend has reversed somewhat, and inflation half-life levels have declined, current persistence values remain higher than those observed before the pandemic.

The second methodology we employ to measure persistence consists of estimating underlying trend inflation following the Stock and Watson (2016) model, which was applied recently to the United States case (Almuzara, 2023) and the Colombian case in a simplified version (Rojas-Martinez et al., 2022). Its implementation consists of utilizing a Kalman filter to estimate the common (or "permanent") components among 24 different CPI categories (disaggregation of the various CPI expenditure divisions) and the idiosyncratic (or "transitory") component of each sub-basket. Graph B1.4 isolates trend inflation among the primary *Banco de la República* analysis sub-baskets (González-Molano et al., 2020). After running the model with the 24 initial categories using the CPI weights, the results were grouped according to the following classifications: food, regulated items, goods (excluding food and regulated items), and services (excluding food and regulated items). This methodology allows us to determine whether inflation dynamics are short-lived or persistent and whether they are concentrated in particular economic sectors or generalized. In this

2 To obtain a cross-country comparison, the autocorrelation parameter derived from an AR(1) model with seasonally adjusted quarterly data was used. Data before and after the COVID-19 health crisis (2000-2019) up to the first quarter of 2023 were considered.

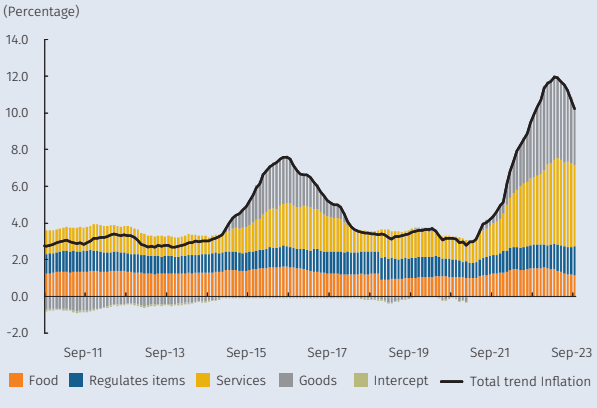
3 For Colombia, the leading academic research that analyzes inflation persistence can be found in González and Hamann (2011) and Echavarría et al. (2011A; 2011B).

Graph B1.4
Persistence of inflation sub-baskets measured through the trend component



Fuentes: DANE y cálculo de los autores.

Graph B1.5
Total trend inflation and contributions



Sources: Calculation by the authors.

context, trend component increases may be associated with a more marked inflation persistence.

Between the second half of 2021 and the first half of 2023, trend-level inflation registered a notable increase in the food, regulated items, goods (excluding food and regulated items), and services (excluding food and regulated items) sub-baskets. Said trend increase was even more significant than the episode of 2015-2016, characterized by several external and supply shocks. Graph B1.4 shows a partial reversal in the four sub-baskets in recent months, but the trend estimates are still far from the levels observed before the 2020 health crisis. Graph B1.5 shows the total trend inflation following this methodology and the contributions of the different baskets. Accordingly, the trend level of headline inflation, despite the corrections observed in recent months, continues at historically high levels and has been defined by the substantial contribution of the baskets that constitute core inflation, i.e., goods (excluding food and regulated items), and services (excluding food and regulated items).

3. Conclusions

The inflation episode that began in the second half of 2021 in Colombia is characterized by unusual levels of persistent inflation. Applying metrics such as half-life or trend inflation indicators, we find their levels to be currently high and above those observed before the COVID-19 health crisis despite recent inflation decreases.

The increase in inflation persistence may result from the more significant and numerous shocks that have successively impacted inflation. Moreover, upward price shocks may have generated longer-lasting effects through domestic propagation mechanisms, such as a heightened sensitivity of the economy to shock or increases in the economy's indexation levels. These two phenomena are known in the literature as "inherited" and "intrinsic" persistence, respectively (Fuhrer 2010; Barrero et al. 2023). The increase in intrinsic persistence may be more worrisome to the monetary authority since it may arise from a change in the economy's structure and price formation. Given the current high inflation, the risk that the degree of indexation of the economy has changed or will change in the future persists. Therefore, it is essential to continue to monitor inflation persistence and its determinants carefully.

References

Almuzara, Martin, Babur Kocaoglu, and Argia M. Sbordone. "Where Is Inflation Persistence Coming From?" Social Science Research Network. (July 6, 2023). Rochester, NY. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4502850.

Barrero, Alfonso, Carlomagno, Guillermo, Concha, Pedro, Eterovic, Nicolás, and Kirchner, Markus. "Longer duration of high inflation" Monetary Policy Report Box 1.3., Banco Central de Chile. (March 2023) https://www.bcentral.cl/documents/33528/4107325/MPR-March-2023.pdf/d1f77c83-809f-4e9b-13fc-f9588e849e9b

Echavarría S., Juan José, López, Enrique, and Misas, Martha. "The Statistical Persistence of Inflation in Colombia." RePEc - Econpapers. (2013). https://econpapers.repec.org/RePEc:cml:incocp:2en-6.

Echavarría, Juan José, Rodríguez N., Norberto, and Rojas, Luis. "The Target of the Central Bank and Inflation Persistence in Colombia." RePEc - Econpapers. (2013). https://econpapers.repec.org/RePEc:cml:incocp:2en-5.

Fuhrer, Jeffrey C. "Inflation Persistence," in: Benjamin M. Friedman & Michael Woodford (ed.), Handbook of Monetary Economics, (2010), Elsevier: edition 1, volume 3, chapter 9: 423-486.

Gonzalez, Andres and Hamann, Franz, "Lack of Credibility, Inflation Persistence and Disinflation in Colombia." Revista Desarrollo y Sociedad. Vol. 67. (2011) Pages 61-97. 10.13043/dys.67.2.

González-Molano, Eliana R., Hernández-Ortega, Ramón, Caicedo-García, Edgar, Martínez-Cortés, Nicolás, Romero, José Vicente, and Grajales-Olarte, Anderson. "Banrep's new classification of the CPI basket and revision of core inflation measures in Colombia," Borradores de Economía, *Banco de la República*, No. 1122 (2020).

Rojas-Martínez, Carlos D., Martínez-Cortés, Nicolás, and Galeano-Ramírez, Franky Juliano. "Common Inflationary Trends in Colombia" Box 2, Monetary Policy Report, *Banco de la República* (July 2022).

Stock, James H., Watson, Mark W., "Core inflation and trend inflation," Review of Economics and Statistics; (2016) Vol. 98, No. 4. pp. 770-784.

Box 2
Characterization of *EL Niño* Phenomenon in Colombia

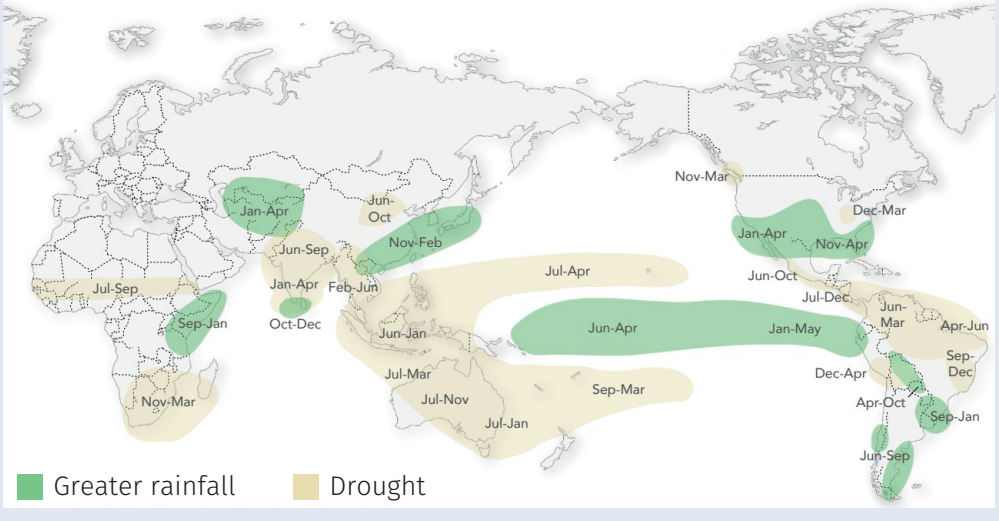
Edgar Caicedo García
Juan David Bonilla Pérez*

This Box characterizes *El Niño* and *La Niña* climate phenomena, specifically relating to their classification, monitoring, and intensity. Furthermore, simple calculations were performed to identify the recurrence and average duration of these weather events. Finally, the direct conduits through which an *El Niño* phenomenon can affect annual inflation in Colombia are described.

1. What are *El Niño* and *La Niña* phenomena, how are they measured, and how is their intensity determined?

The *El Niño*-Southern Oscillation (ENSO) phenomenon is an oceanic and atmospheric anomaly whose primary characteristic is a change in the temperature of the surface waters of the central and eastern tropical Pacific Ocean, especially off the coasts of Peru and Ecuador. Consequently, the ENSO pattern can appear in one of three states: warm (*El Niño*), cool (*La Niña*), and neutral. These climatic and atmospheric disturbances have persisted for millions of years, but reliable measurements have only been available since the middle of the last century.[1] The presence of an *El Niño* event has a global effect (drought or increased rainfall),

Map B2.1
Impact of *El Niño* on Global Precipitation Levels



Source: Columbia Climate School, International Research Institute for Climate and Society (IRI); accessed at: https://iri.columbia.edu/wp-content/uploads/2023/05/ELNINO-RAINFALL-2023.pdf.

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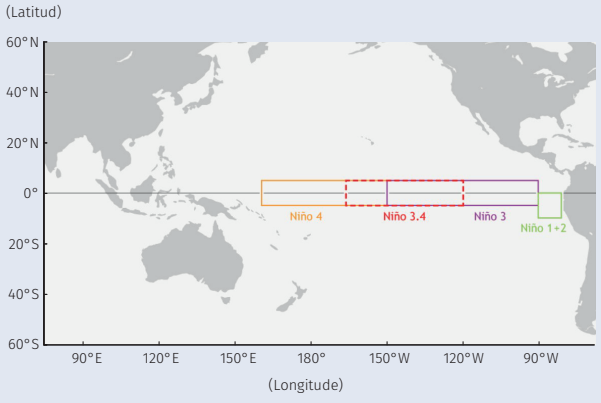
* Mr. Caicedo Garcia is a professional and Mr. Bonilla Pérez is an intern at *Banco de la República*'s Programming and Inflation Department. The views and opinions expressed herein do not necessarily reflect those of the Bank or its Board of Directors.

1 The term *El Niño* ("the Boy" in Spanish) dates back more than a hundred years, originally called "*El Niño* de Navidad" (The Christmas Boy) because it usually peaks close to Christmas. For more information, see https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ensofaq.shtml#NINA.

Map B2.2
El Niño Regions in the Equatorial Pacific Ocean[a/]



a/The NOAA divides the tropical Pacific Ocean into four regions and monitors ENSO by measuring the surface water temperature of region 3.4
Source: NOAclimate.gov, accessed at https://www.climate.gov/media/5541

disturbing different economic sectors and prices in a large part of the world (Map B2.1).[2] In Colombia, the most affected regions by the *El Niño* phenomenon, typified by lower rainfall and higher temperatures, are the Caribbean and Andean regions.

For ENSO monitoring, the U.S. National Oceanic and Atmospheric Administration (NOAA) divides the tropical Pacific Ocean into four regions: Niño 1+2, Niño 3, Niño 3-4, and Niño 4 (Map B2.2). NOAA monitors the equatorial Pacific Ocean (especially in region 3-4, between longitudes 120° W-170° W and latitudes 5°N-5°S) and, with this information, constructs the Oceanic Niño Index (ONI), which measures the temperature anomalies in a three-month running mean of the surface water temperature of the east-central tropical Pacific versus the average observed in the last thirty years. An *El Niño* event is considered to occur when ONI values are equal to or higher than 0.5°C for at least five consecutive months (three-month rolling averages). Opposite values (five observations equal to or below -0.5°C) denote a *La Niña* episode. Normal or neutral conditions persist as long as temperature anomalies do not deviate beyond 0.499°C and -0.499°C from their historical mean.

The intensity of the *El Niño* phenomenon is defined according to set ONI ranges. When water temperature anomalies in the *El Niño* 3-4 region of the equatorial Pacific Ocean range between 0.5°C and 1.0°C above their historical average for three consecutive periods (in three-month running means), it is considered a weak *El Niño* event. When these anomalies are between 1.0°C to 1.5°C, it is qualified as a moderate *El Niño* event; between 1.5°C to 2.0°C it is considered a strong event, and values above 2.0°C suggest a very strong or extreme *El Niño* is present.

2. Characterization of *El Niño*

Table R2.1 shows historic climatic disturbances according to NOAA public information. It shows that in the second half of the last century, there were more *El Niño* events (17) than *La Niña* events (10). The opposite has been the case in the present century, where the number of *La Niña* (10) episodes exceeds those of *El Niño* (seven, including the current one). Since the middle of the last century, of the 26 *El Niño* episodes recorded (not counting the present), eight were classified as weak, seven as moderate, and eight between strong and extreme (including three as very strong).

It should be noted that the *El Niño* phenomenon, like *La Niña*, does not follow regular onset, occurrence, duration, or intensity patterns. For example, there were four consecutive *El Niño* episodes (between September 1976 and June 1983), while *La Niña* occurred successively only twice (e.g., between August 2020 and January 2023). The statistical range of duration of *El Niño* and *La Niña* is between 5 and 19 months and 5 and 32 months, respectively. The maximum period with consecutive neutral conditions present was fifty months, and the minimum was one month. Alternatively, the average duration of an *El Niño* phenomenon is ten months, with an average course of six months for a weak *El Niño*, ten months for a moderate *El Niño*, twelve months for a strong *El Niño*, and almost sixteen months for an

2 There are lesser known *El Niño*-like phenomena. "*El Niño* Costero" is seen in the *El Niño* 1+2 region off the coasts of Peru and Ecuador and has a localized impact, particularly affecting Peru. It is characterized by enhanced effects of the global *El Niño* (3-4) in Peru and, to a lesser extent in Ecuador, without adverse impact on the rest of the continent. The Dipole, or Indian Ocean *El Niño* (IOD), is an anomaly that occurs in the equatorial Indian Ocean and creates climate disturbances in East Africa (rains), Indonesia, and Australia (droughts).

Cuadro R2.1
Caracterización del ENSO

Dates	Episode	Duration in months	Neutral conditions	Intensity	Observations
Jan 50 to Jul 50	Niña	7	10		
Jul 51 to Jan 52	Niño	8	12	Moderate	
Feb 53 to Feb 54	Niño	13	2	Weak	2 consecutive *El Niño*
May 54 to Sep 56	Niña	29	6		
Apr 57 to Jul 58	Niño	16	3	Strong	
Nov 58 to Mar 59	Niño	5	50	Weak	
Jun 63 to Feb 64	Niño	9	2	Moderate	3 consecutive *El Niño*
May 64 to Jan 65	Niña	9	3		
May 65 to Apr 66	Niño	12	29	Strong	
Oct 68 to May 69	Niño	8	2	Moderate	
Aug 69 to Jan 70	Niño	6	5	Weak	3 consecutive *El Niño*
Jul 70 to Jan 72	Niña	19	3		
May 72 to Mar 73	Niño	11	1	Strong	
May 73 to Jul 74	Niña	15	2		
Oct 74 to Apr 76	Niña	19	4		2 consecutive *La Niña*
Sep 76 to Feb 77	Niño	6	6	Weak	
Sep 77 to Jan 78	Niño	5	20	Weak	
Oct 79 to Feb 80	Niño	5	25	Weak	
Apr 82 to Jun 83	Niño	15	2	Super Strong	4 consecutive *El Niño*
Sep 83 to Jan 84	Niña	5	8		
Oct 84 to Aug 85	Niña	11	12		2 consecutive *La Niña*
Sep 86 to Feb 88	Niño	18	2	Moderate	
May 88 to May 89	Niña	13	23		
May 91 to Jun 92	Niño	14	26	Strong	
Sep 94 to Mar 95	Niño	7	4	Moderate	2 consecutive *El Niño*
Aug 95 to Mar 96	Niña	8	13		
May 97 to May 98	Niño	13	1	Super Strong	
Jul 98 to Feb 01	Niña	32	15		
Jun 02 to Feb 03	Niño	9	16	Moderate	
Jul 04 to Feb 05	Niño	8	8	Weak	2 consecutive *El Niño*
Nov 05 to Mar 06	Niña	5	5		
Sep 06 to Jan 07	Niño	5	4	Weak	
Jun 07 to Jun 08	Niña	13	4		
Nov 08 to Mar 09	Niña	5	3		2 consecutive *La Niña*
Jul 09 to Mar 10	Niño	9	2	Strong	
Jun 10 to May 11	Niña	12	1		
Jul 11 to Apr 12	Niña	10	29		2 consecutive *La Niña*
Oct 14 to Apr 16	Niño	19	3	Super Strong	
Aug 16 to Dec 16	Niña	5	9		
Oct 17 to Apr 18	Niña	6	4		2 consecutive *La Niña*
Sep 18 to Jun 19	Niño	10	13	Moderate	
Aug 20 to May 21	Niña	10	2		
Aug 21 to Jan 23	Niña	18	2		2 consecutive *La Niña*

Event	Average duration in months	Maximum duration in months	Intensity with higher	Most consecutive events
El Niño	10.0	19	Weak	4
La Niña	12.6	32	-	2
Neutral conditions	9.2	50	-	-

Source: Created by the authors using NOAA data.

extreme *El Niño*. The average number of months without adverse climatic anomalies is close to nine months. The latter suggests an increasing relationship between the intensity and duration of *El Niño*; namely, the more intense the *El Niño*, the longer its term tends to be.

3. In Colombia, what sectors may be affected by *El Niño*, and what has been the impact of previous episodes on consumer inflation?

The *El Niño* phenomenon, contingent upon its intensity, primarily affects agriculture, public utilities (electricity and, to a lesser extent, water supply), and food away from home sectors, placing upward pressure on consumer prices.[3] According to information from the Ministry of Agriculture, the *El Niño* phenomenon mainly reduces livestock production (especially cattle) and crop yields (by approximately 5.0%). It affects more severely the Caribbean and Andean regions, reducing the food supply and placing upward pressure on food prices (Ministry of Agriculture, 2012). Historically, the most affected crops are fique, cassava, African oil palm, barley, rice, potato, corn, cotton, sugarcane, bananas, cocoa, and beans. Ministry data also indicated that milk production decreases on average by 4.9% during *El Niño* episodes. In addition, previous *El Niño* events have resulted in substantial reductions in the volume of fish caught, especially in the Pacific Ocean, affecting the harvest of several fish species.[4] Lower river flows also affect river transport, water supply, and electric power supply.

One of the most notable traits of *El Niño*, regardless of its intensity, is that it leads to a decrease in relative food prices in Colombia (relative to total CPI), particularly those of perishables. Furthermore, when the *El Niño* climate event occurs without the presence of other macroeconomic shocks,[5] the seasonal pattern of relative food prices assumes a bell shape, with rising food prices in the first half of the year and falling prices during the second half. In the case of the concurrent occurrence of exogenous non-climate-related shocks, the intra-annual behavior of relative prices will depend on the nature of the additional shocks taking place and their duration.

In general, the *El Niño* phenomena may occur with differing intensities and varying effects on prices. This is because it is challenging to isolate from the inflationary behavior what responds to the deteriorating weather conditions effects versus other shocks that may occur simultaneously. Consequently, possible *El Niño* events of modest intensity could heavily impact prices, while strong intensity events may have more moderate consequences on inflation. Some studies suggest the effects could range from between 18 to 62 basis points,[6] a scope that depends not only on the intensity of the climatic incident but also on the macroeconomic conditions taking place at the time.[7]

Finally, it is essential to highlight that, as supported by historical data, the impact of an *El Niño* phenomenon would presently pass on with less traction and strength to consumer prices because food, including food away from home, has been steadily decreasing its share in the consumer basket. The current CPI for food (December 2018 base = 100) weighs less than half (23.8%) of what it did in 1988 (about 49%), and the most volatile and weather-affected items (perishables) fell from 13.6% in 1988 to 3.2%, as of today. Likewise, processed foods, whose price dynamics depend less on the weather and correlate more with demand or exchange rate behavior, also decreased their share in the CPI from 35.4 % in 1988 to 11.9 % today. In contrast, items highly indexed to wages or past inflation, such as meals away from home, have increased their weight in the CPI from 1.4% in 1998 to 8.8% today.

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3 Food away from home is a CPI subclass considered a service, not food, in the most recent CPI methodological revision (December 2018).

4 The most affected species include ronco, margarita, corvina, snapper, tuna, and carduma. Alternatively, lobster harvests increases with the warmer waters.

5 These include shocks such as high demand, a sharp exchange rate depreciation, increases in international food or oil prices, etc.

6 In general, the literature has found that a weak *El Niño* weather shock does not impact consumer food prices and, consequently, total inflation.

7 For more information on estimates regarding the impact of previous *El Niño* episodes on inflation in Colombia, see Abril- Salcedo et al. (2016), Abril-Salcedo et al. (2020), and Bejarano-Salcedo et al. (2020).

References

Abril-Salcedo, Davinson Stev, Luis Fernando Melo-Velandia, and Daniel Parra-Amado. "Impactos de Los Fenómenos Climáticos Sobre El Precio de Los Alimentos En Colombia." Ensayos sobre Política Económica, *Banco de la República*, vol. 34, no. 80 (June 2016): 146–58. https://doi.org/10.1016/j.espe.2016.03.003.

Abril-Salcedo, Davinson Stev, Melo-Velandia, Luis Fernando and Parra-Amado, Daniel "Non-linear Relationship between the Weather Phenomenon *El Niño* and Colombian Food Prices", Australian Journal of Agricultural and Resource Economics, Australian Agricultural and Resource Economics Society, vol. 64, no. 4, (October 2020): 1059-1086.

Bejarano-Salcedo, Valeria, Caicedo-García, Edgar, Cárdenas-Cárdenas, Julián Alonso, and Julio- Román, Juan Manuel. "Understanding, Measuring and Forecasting "*El Niño*" Effect on Food Prices: The Case of Colombia." Borradores de Economía, *Banco de la República* no. 1102, (2020).

Bejarano-Salcedo, Valeria, Caicedo-García, Edgar, Cárdenas-Cárdenas, Julián Alonso, and Julio- Román, Juan Manuel. "The stylized facts of the relationship between *El Niño*, *La Niña* and inflation in Colombia." Borradores de Economía, *Banco de la República* no. 1105, (2020).

Colombian Ministry of Agriculture, "Plan de mitigación de los efectos del fenómeno *El Niño* en el sector agropecuario, acuícola y pesquero" 2nd edition, (2012), Colombia.

Box 3
Some Effects of the Most Recent Access Road Closures in the Llanos Orientales on the Regional Economy

Juan Felipe Carmona-Pascuales
Juan Pablo Cote-Barón
Karen L. Pulido-Mahecha*

So far this year, two events have resulted in the closure of the roadways that connected the eastern plains region of Colombia - the Llanos Orientales- with the country's central region. These happenstances were the avalanche in the Quetame-Cundinamarca tranche on July 18 and the Los Grillos bridge collapse on the Cusiana crossroads on August 20. Unsurprisingly, both events adversely affected land transportation to and from the region, potentially impacting the Llano's economic activity and the prices of products distributed to other municipalities, a behavior whose aggregate effect could be mirrored at a national level.

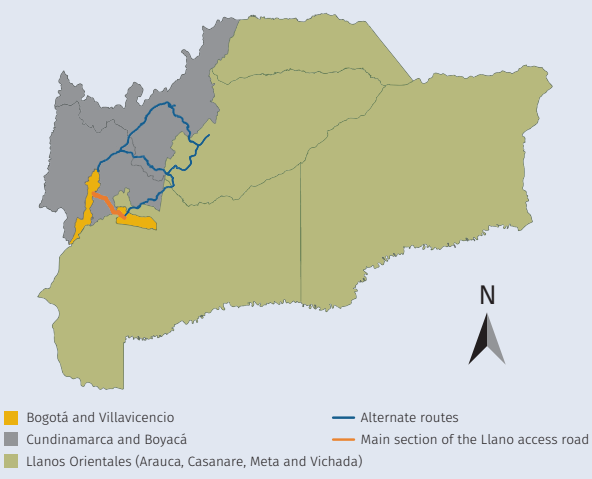
The focus of this Box is to explore through various economic indicators the effect of the recent road closures in the Llano on the region's economic activity. Several of these indicators were used to construct the third-quarter economic activity forecast presented in this Report.

1. Background

The Llanos Orientales region, which comprises the departments of Arauca, Casanare, Meta, and Vichada, accounts for about 5.7% of the country's value added. Given its oil and natural gas deposits, it is considered one of the country's principal regions for potential growth of the mining-energy sector, currently contributing 50% of its real production. Agricultural activities are also a vital mainstay of the local and national economy, supplying various areas of the country with multiple products, including rice, palm oil, corn, and beef. Additionally, tourism activities have recently accelerated the region's growth, taking advantage of its fauna and flora diversity.

However, the region is located in a geographic expanse that features topographical challenges and unstable gradients, making it highly sensitive to adverse weather conditions such as excessive rainfall. These factors, among others, have affected the physical conditions of its road networks through both temporary closures of its main access road—the dual carriageway Llano highway[1]—and the two alternate routes—the Sisga and Cusiana roads[2]—that connect the nation's capital, Bogotá, with the region's principal city, Villavicencio. (Map B3.1).

Map B3.1
Road network in the Llanos Orientales[a/]



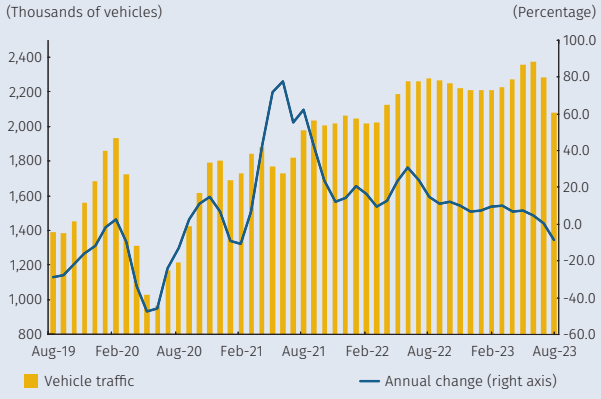
a/ The Llanos Orientales region comprises the departments of Arauca, Casanare, Meta, and Vichada.
Sources: Invias (National Roads Institute); calculations by *Banco de la República.*

* The authors are part of *Banco de la República's* Programming and Inflation Department. The views and opinions of the authors expressed herein do not necessarily reflect those of the Bank or its Board of Directors.

1 The dual carriageway to the Llanos, which is part of the Puerto Carreño- Buenaventura transversal corridor, extends 89.8 kilometers through the municipalities of Usme, Cáqueza, El Tablón, Quetame, Guayabetal, Chirajara and Buenavista.

2 The Transversal del Sisga tranche connects Bogotá and Villavicencio through the municipalities of Machetá, Guateque, Santa María, San Luis de Gaceno, El Secreto,

Graph B3.1
Total vehicle traffic through the tolls of the Llanos access roads[a/, b/]



a/ The Llanos Orientales region comprises the departments of Arauca, Casanare, Meta, and Vichada.
b/ Series seasonally adjusted and corrected for calendar effects
Sources: National Infrastructure Agency (ANI); calculations by *Banco de la República*. Preliminary data to August 2023.

The main road closures include the Chirajara bridge collapse in 2018 at kilometer 58 due to the 2019 intense rainy season and the above-mentioned road closures that befell this year.

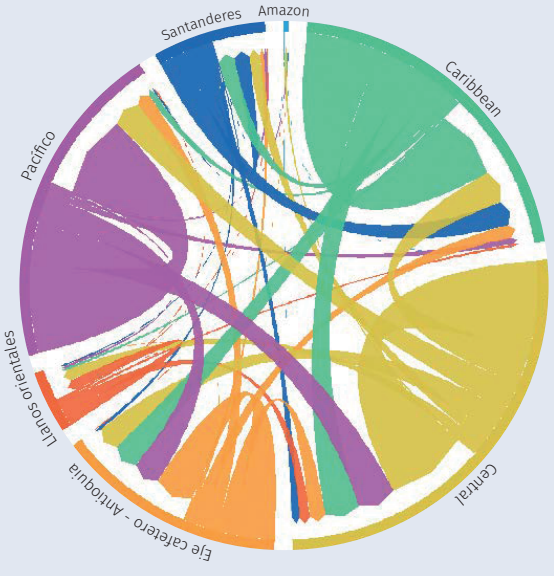
These last temporary closings affected chiefly land transportation. According to figures from the National Infrastructure Agency (ANI for its Spanish acronym), vehicle traffic through the Llanos tolls[3,] with seasonally adjusted rolling quarter data, registered monthly decreases of 3.8% and 7.8% in July and August, respectively (Graph B3.1), coinciding with the months when the incidents occurred; year-on-year, 15.8% fewer vehicles transited through the tolls in these two months versus the same period of the previous year.

2. Movement of Goods

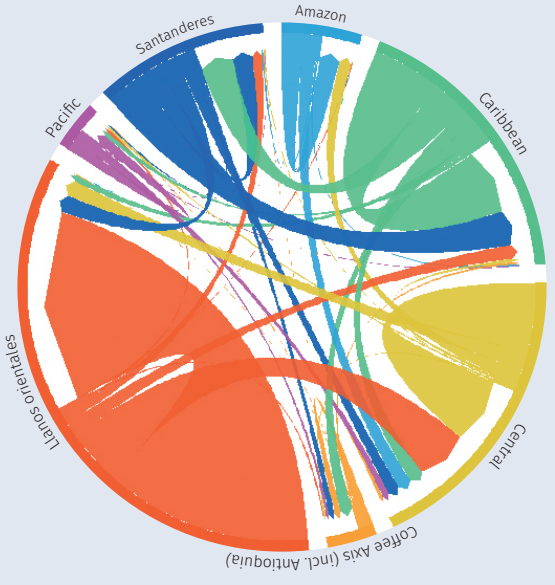
The National Registry of Cargo Dispatch (RNDC for its Spanish acronym) of the Ministry of Transport of Colombia consolidates the road freight manifests of the country's registered logistics companies, which allows the identification of the domestic movement of goods at the regional level.[4] Graph B3.2 summarizes origin/destination move-

Graph B3.2
Merchandise flows between regions[a/]
(Average for the period from Jan-2015 to Aug-2023)

A. Solid land cargo (tons)



B. Liquid land cargo (gallons)



a/ The Llanos Orientales region comprises the departments of Arauca, Casanare, Meta, and Vichada.
Sources: National Registry of Cargo Dispatch (RNDC) of the Ministry of Transport; calculations by *Banco de la República*.

Aguaclara, Villanueva and Barranca de Upía. It extends for close to 274 kilometers. For its part, the Trasnversal de Cusiana is over 325 in length and covers the municipalities of Tunja, Sogamoso, Aguazul, Villanueva and Barranca de Upía.

3 These are the Boquerón I, Boquerón II, Casetabla, Iracá, La Libertad, Naranjal, Ocoa, Pipiral, Puente Amarillo, Puente Quetame, San Pedro, Veracruz and Yucao tolls.

4 The RNDC information is disaggregated by population center; however, the analysis presented in this Box aggregates freight flows by region using the following classification: 1) Amazon region: includes the departments of Amazonas, Caquetá, Guainía, Guaviare, Putumayo and Vaupés; 2) Caribbean region: includes the departments of Atlántico, Bolívar, Córdoba, Cesar, La Guajira, Magdalena, Sucre, and San Andrés y Providencia; 3) Central region: comprises Bogotá D.C., and the departments of Boyacá, Cundinamarca, Huila and Tolima; 4) Coffee Belt region: includes the departments of Antioquia, Caldas, Quindío and Risaralda; 5) Pacific region: includes the departments of Cauca, Chocó, Nariño and Valle del Cauca; and 6) Santanderes region: encompasses the departments of Norte de Santander and Santander.

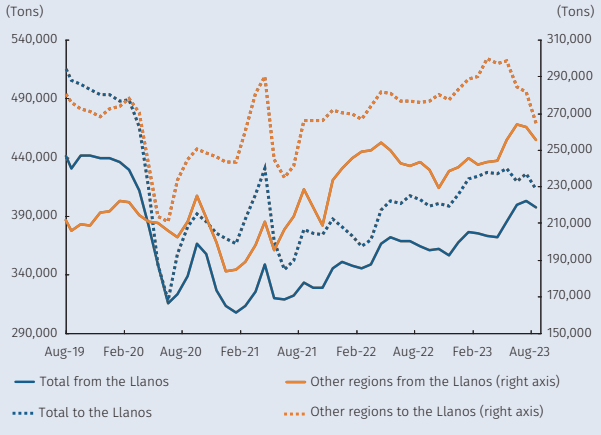
ments between regions according to the average tons and gallons transported between January 2015 and August 2023. Concerning solid land freight, the Central region is characterized for shipping the largest share of goods to the rest of the country, representing about 28.4% of total domestic freight, resulting from the flow of imported goods that are conveyed to the domestic market from the ports of Buenaventura and Cartagena; it is followed by the Pacific (23.7%) and the Caribbean (23.2%) regions.

Conversely, the Llanos Orientales region contributes only 4.0% of the total solid cargo to the national total, although it is the region with the highest share in the transport of liquid cargo nationally (40.6%), mainly owing to the local production of crude oil, gases, and other flammable liquids. Most of the goods produced in the region are sent to regional departments to cover domestic demand. Specifically, on average, 41.3% of the regional goods produced are consumed domestically, 37.7% are dispatched to the Central region to provision specific agricultural products supply channels in the city of Bogotá and some municipalities of Cundinamarca, and 10.2% are shipped to the Caribbean region.

According to seasonally adjusted data from the RNDC, in the rolling quarter to July and August, the movement of goods by road from the Llanos Orientales to the rest of the country registered a monthly decrease (-0.7% and -2.6%, respectively), mainly due to a reduction in the flow of goods to the Central, Pacific, and Coffee Belt regions (the latter includes Antioquia). It should be emphasized that this behavior was partially offset by the continued vitality seen in the intra-departmental flows within the region, which have an important share in the movement of total tons from the Llanos Orientales (Graph B3.3). There was also a marginal decrease in the volume of solid cargo moved from the rest of the country to the region due to lower tonnage from the Central, Caribbean, and Santanderes regions.

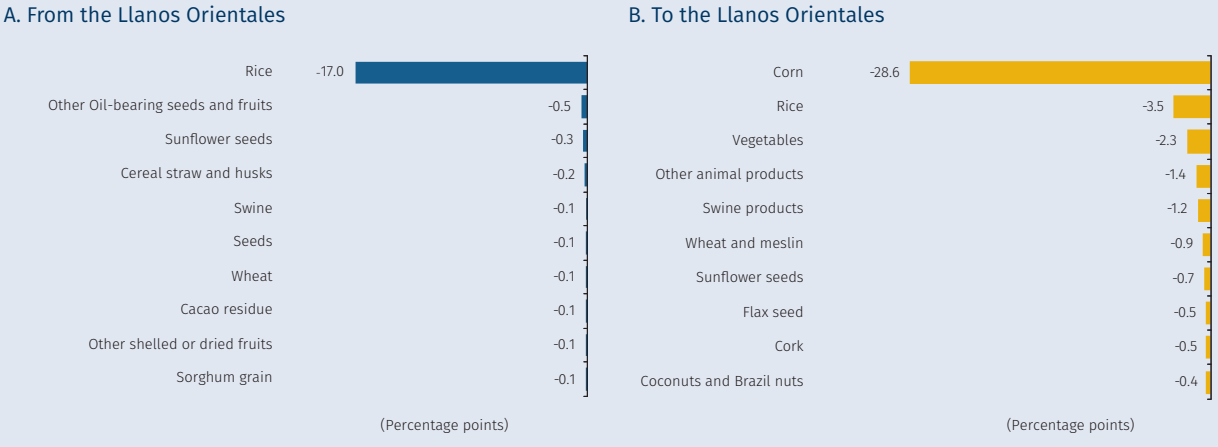
In the July-August cumulative period, agriculture and livestock was the sector that showed the most significant reduction in the movement of cargo from the Llanos Orientales (-13.3% annually) due to a decrease in the volume of tons transported of products such as rice, oil-bearing seeds and fruits, sunflower seeds, cereal straw and husks, and live swine, which together contributed -18.0 percentage

Graph B3.3
Road transport of solid cargo between the Llanos and other regions of the country (series in moving quarter) a/, b/



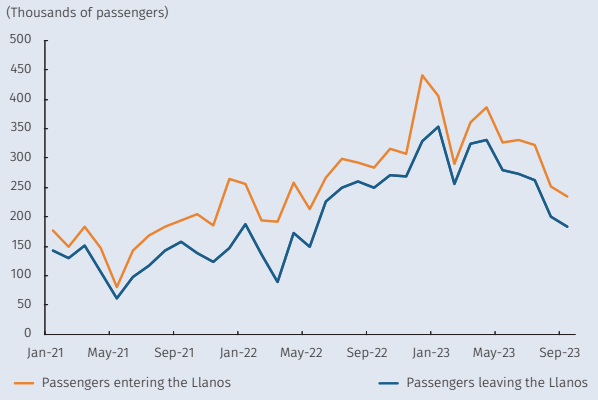
a/ The Llanos Orientales region comprises the departments of Arauca, Casanare, Meta, and Vichada.
b/ Series seasonally adjusted and corrected for calendar effects
Sources: RNDC- Ministry of Transport; calculations by *Banco de la República*.

Graph B3.4
Contribution to the annual change of agricultural and livestock cargo of the Llanos[a/]
Principal products (Average Jul-Aug 2023 vs Jul-Aug 2022)



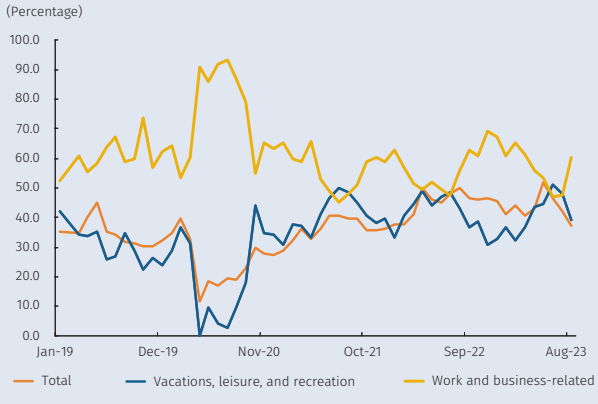
a/ The Llanos Orientales region comprises the departments of Arauca, Casanare, Meta, and Vichada.
Sources: RNDC- Ministry of Transport; calculations by *Banco de la República*.

Graph B3.5
Llanos Orientales inter-municipal passenger traffic[a/ b/]



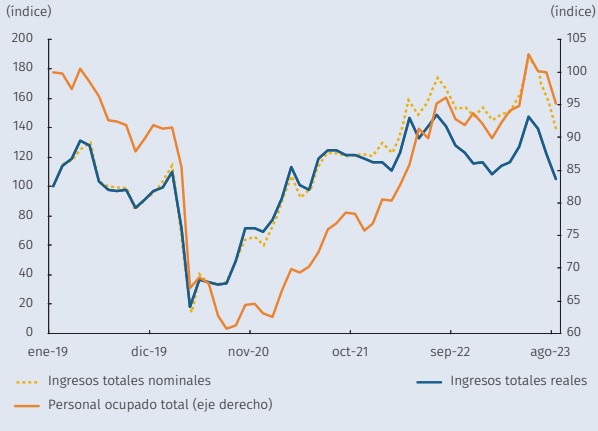
a/ The Llanos Orientales region comprises the departments of Arauca, Casanare, Meta, and Vichada.
b/ Series seasonally adjusted and corrected for calendar effects
Sources: Superintendence of Transportation; calculations by *Banco de la República*.

Graph B3.6
Llanos Orientales hotel occupancy rate a/ b/
(Total and by purpose of trip)



a/ The Llanos Orientales region comprises the departments of Arauca, Casanare, Meta, and Vichada.
b/ Series seasonally adjusted and corrected for calendar effects
Sources: DANE's Monthly Hotel Survey; calculations by *Banco de la República*.

Graph B3.7
Aggregate indices of income, employed personnel and salaries of the hotels of the Llanos Orientales [a/, b/]
(January 2019 base = 100)



a/ La región de los Llanos Orientales está conformada por los departamentos de Arauca, Casanare, Meta y Vichada.
b/ Series desestacionalizadas y ajustadas por efecto calendario.
Fuente: Encuesta Mensual de Alojamiento - DANE; cálculos del Banco de la República.

points (pp) to the yearly change (Graph B3.4). The flow to the Llanos Orientales also fell by 21.8% annually, mainly because of the lower product transport of items such as corn, rice, vegetables, and animal and pork by-products.

In contrast, during these two months, manufacturing products transported from the Llanos Orientales recorded an annual growth of 4.1% due to an increase in tons of goods shipped including palm oil, stone manufacturing, animal fats and oils, cakes, raw wood, and hydraulic cements, which together contributed 15.5 pp to the annual change. However, the flows of manufacturing products from the rest of the country to the region fell by 6.2% annually, largely owing to a lower volume of water, construction products, and animal feed products transported, among others.

3. Intermunicipal Passenger Traffic

According to data from the Superintendence of Transportation on inter-municipal passenger movements provided by the transport terminals, between January 2021 and September 2023, passengers traveling by road to and from the Llanos Orientales accounted for 4.9% of the total flow of passengers in the country. In the third quarter of 2023, this movement recorded an annual drop of 15.6%, both due to the decrease in passenger traffic leaving the Llanos (-15.1%) as well as those entering the region (-7.6%) (Graph B3.5). Notably, the annual monthly change declined in all months of the quarter, reaching -27.6% in September.

Concerning the inter-municipal passenger movement from the Llanos, the decrease is primarily in the flow to the Central region's departments, impacting by -18.5 pp the annual change. Regarding passengers traveling to the Llanos Orientales, the Central and Santanderes regions saw a notable drop, contributing -10.5 pp to the national decrease.

4. Tourism

As suggested by various indicators, tourism-related sectors were also significantly affected by the recent Llano road closures, among other factors. Specifically, according to DANE's Monthly Hotel Survey (EMA for its Spanish acronym), which tracks information on the behavior of establishments providing lodging at the national and regional levels, in July and August, the hotel occupancy rate in the region decreased compared to previous months, reaching levels close to those seen at the end of 2021 (around 36.0%) (Graph B3.6). This performance is primarily attributed to a drop in vacation, leisure, and recreation travelers. Real hotel revenues show a similar trend; in July and August, according to the EMA, they presented annual growth rate declines of 17.7% and 25.5% and monthly decreases of 12.3% and 14.2%, respectively. This was accompanied by decreases in the number of workers employed by the industry (Graph B3.7).

5. Effects of Closures on GDP

Based on the DANE input-output matrix for 2019, which provides a perspective on the forward and backward linkages of land transport with other productive sectors of the economy, we quantified the effect the recent Llano Orientales road closures potentially had on annual GDP growth during the third quarter of 2023.

Assuming a counterfactual scenario wherein vehicle traffic transiting through the Llano tolls in July and August would not have been affected by the closures and would thus record levels similar to those of June, the annual change of this flow is estimated to present a -14.4 pp decrease attributable to said events. We have also assumed that this impact on vehicle traffic is for the entire third quarter, affecting in equal measure the value added of the land transport segment in the Llanos Orientales.

According to ANI's information, the flow of vehicles transiting through the Llanos tolls represents close to 9.0% of the total national toll traffic. Based on the above, the closures of the roads that connect the Llano with the rest of the country in July and August are found to have had an impact of -0.04 pp on annual GDP change during the third quarter of 2023.

6. Conclusions

The recent temporary closures of the main thoroughfare and one of the alternate routes connecting Bogotá and Villavicencio significantly affected land transportation to and from the Llanos Orientales. First and foremost, there was a negative impact on the transportation of goods, particularly agricultural goods. It is plausible to expect the latter may have affected the costs of goods shipped out from the area, although this is not examined in this Box. In addition, the closures affected inter-municipal passenger transport, whose reductions partly explain the drop in real hotel revenues, given the lower flow of tourists visiting the region.

Forecasts of economic activity presented in this Report are constructed using some of the indicators presented in this Box. Accordingly, these findings would point to a decrease in land transport activity in the third quarter of the year, among other factors. Given the forward linkages between transportation and commerce, lodging, and food service activities, a decline in the dynamism of these economic sectors would also be expected. As stated in this Report, this macro sector would actually be the only one in the tertiary sectors to record an annual contraction.

Another calculation -based on the DANE input-output matrix for 2019- leads to conclude that the effect of the Llanos Orientales road closures on the annual growth of national GDP would have been -0.04 pp for the third quarter of 2023.

Appendix 1
Macroeconomic forecasts by local and foreign analysts[a/, b/]

	Unit	Oct-23	Dec-23	Oct-24	Dec-24	Oct-25
Headline CPI	Monthly variation (average)	0.37	n.a.	n.a.	n.a.	n.a.
CPI excluding food	Monthly variation (average)	0.34	n.a.	n.a.	n.a.	n.a.
Headline CPI	Annual variation (average), end of period	10.62[c/]	9.56	5.89	5.37	4.10
CPI excluding food	Annual variation (average), end of period	10.60[c/]	9.82	5.75	5.25	3.72
Nominal exchange rate	COP per USD, end of period	4,195	4,164	4,120	4,155	4,111
Monetary policy rate	Percentage, end of period	13.25	12.75	8.75	8.00	5.63

	Unit	III-2023	IV-2023	2023	I-2024	II-2024	III-2024	IV-2024	2024	I-2025	II-2025	III-2025
GDP	Annual change, original series	0.5	1.1	1.2	0.4	1.4	1.9	2.6	1.8	2.7	2.7	n.a.
Unemployment	Thirteen cities, quarterly average	9.7	9.9	n.a.	11.4	11.4	11.0	10.2	n.a.	12.0	11.0	n.a.
IBR (90 days)	Effective annual rate, end of period	n.r.	12.5	n.a.	11.3	10.3	9.0	8.0	n.a.	7.2	6.6	5.6
Fiscal Deficit (GNC) [d/]	Share of GDP	n.a.	n.a.	4.3	n.a.	n.a.	n.a.	n.a.	4.5	n.a.	n.a.	n.a.
Direct Account Deficit[d/]	Share of GDP	n.a.	n.a.	3.7	n.a.	n.a.	n.a.	n.a.	3.7	n.a.	n.a.	n.a.

n.a.: Not available.
n.r.: Not relevant, given that the data has already been observed.
a/ The survey excluded the question related to the DTF starting with the April 2023 *Banco de la República's* Monthly Survey of Economic Analyst Expectations.
Expectations (EME for its Spanish acronym) conducted by *Banco de la República.*
b/ Is the response median to *Banco de la República's Monthly Survey of Economic Analyst Expectations*, except for the CPI and CPI excluding food, which are the response average.
c/ Data calculated based on the results of *Banco de la República's* Monthly Survey of Economic Analyst Expectations (EME).
d/ Positive values represent deficit and negative values represent surplus.
Sources: *Banco de la República Monthly Survey of Economic Analyst Expectations*, conducted in octubre 2023.

Appendix 2
Main macroeconomic forecasting variables

		Years										
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Exogenous variables												
External [a/]												
GDP of trading partners [b/]	Percentage, annual var., seasonally adjusted	2.7	2.1	1.5	2.7	2.5	1.4	-6.4	7.2	3.0	**2.0**	**1.7**
Oil price (Brent benchmark)	Dollars per barrel, average of the period	99	54	45	55	72	64	43	71	99	**83**	**84**
Federal funds effective rate (Fed)	Percentage, average for the period	0.09	0.13	0.39	1.00	1.83	2.16	0.36	0.08	1.68	**5.08**	**5.41**
5-year Credit Default Swap for Colombia	Basis points, average for the period	101	184	212	129	114	99	142	142	259	**259**	**249**
Internal												
Neutral real interest rate for Colombia	Percentage, average for the period	1.4	1.5	1.6	1.3	1.3	1.2	1.3	1.5	2.0	**2.2**	**2.4**
Potential GDP for Colombia (trend)	Percentage, annual change	4.0	3.3	2.7	2.4	2.3	2.4	0.0	4.0	3.8	**3.1**	**2.9**
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	13.12	**9.80**	**4.04**
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	9.99	.	.
CPI for goods (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	15.04	.	.
CPI for services (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	7.41	.	.
CPI for regulated items	Percentage, annual change, end of period	4.89	4.43	5.63	6.26	6.65	4.81	0.73	7.10	11.77	**16.65**	**6.50**
CPI for food [d/]	Percentage, annual change, end of period	5.24	13.08	6.65	0.48	1.87	5.80	4.80	17.23	27.81	**8.33**	**0.56**
CPI for perishable food	Percentage, annual change, end of period	16.74	26.03	-6.63	5.84	8.88	8.66	2.49	24.42	36.44	.	.
CPI for processed food	Percentage, annual change, end of period	2.54	9.62	10.74	-0.91	-0.08	5.04	5.43	15.32	25.33	.	.
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	9.99	.	.
Core CPI 15	Percentage, annual change, end of period	3.19	5.59	5.98	4.21	3.22	3.78	1.88	4.42	11.55	.	.
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	9.51	**8.36**	**4.24**
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	10.35	.	.
Representative market exchange rate (TMR)	Pesos per dollar, average for the period	2.001	2.746	3.053	2.951	2.957	3.282	3.691	3.747	4.257	.	.
Real exchange rate Inflationary gap	Percentage, average for the period	-0.3	9.5	2.5	-1.7	-0.7	3.6	6.4	2.5	6.5	**2.0**	**-2.5**
Economic activity												
Gross domestic product (sats)*	Percentage, annual change, sats	4.5	3.0	2.1	1.4	2.6	3.2	-7.3	11.0	7.3	**1.2**	**0.8**
Final consumption expense	Percentage, annual change, sats	4.3	3.4	1.6	2.3	4.0	4.3	-4.1	13.6	7.9	.	.
Household final consumption expenditure	Percentage, annual change, sats	4.2	3.1	1.6	2.1	3.2	4.1	-4.9	14.5	9.5	.	.
General government final consumption expenditure	Percentage, annual change, sats	4.7	4.9	1.8	3.6	7.4	5.3	-0.8	9.8	0.3	.	.
Gross capital formation	Percentage, annual change, sats	12.0	-1.2	-0.2	-3.2	1.5	3.0	-21.1	12.6	16.8	.	.
Gross fixed capital formation	Percentage, annual change, sats	9.2	2.8	-2.9	1.9	1.0	2.2	-24.0	17.3	11.4	.	.
Housing	Percentage, annual change, sats	10.4	9.5	-0.2	-1.9	-0.4	-8.9	-32.7	40.2	4.5	.	.
Other buildings and structures	Percentage, annual change, sats	9.6	10.2	0.0	4.6	-3.5	1.1	-31.6	1.0	0.4	.	.
Machinery and equipment	Percentage, annual change, sats	9.2	-9.3	-7.9	1.4	8.6	12.3	-13.3	24.2	24.5	.	.
Cultivated biological resources	Percentage, annual change, sats	-1.3	2.3	13.1	0.3	-3.1	7.9	-1.8	-0.9	-6.8	.	.
Intellectual property products	Percentage, annual change, sats	5.1	1.3	-12.0	1.2	1.5	-0.7	-10.8	6.4	12.4	.	.
Domestic demand	Percentage, annual change, sats	6.0	2.4	1.2	1.1	3.5	4.0	-7.5	13.4	9.4	.	.
Exports	Percentage, annual change, sats	-0.3	1.7	-0.2	2.6	0.6	3.1	-22.7	15.9	14.8	.	.
Imports	Percentage, annual change, sats	7.8	-1.1	-3.5	1.0	5.8	7.3	-19.9	26.7	22.3	.	.
Product gap [f/]	Porcentaje	1.3	0.9	0.3	-0.7	-0.5	0.3	-7.2	-0.8	2.6	**0.7**	**-1.3**
Short-term indicators												
Real production of manufacturing industry	Percentage, var. annual, seasonally adjusted	1.7	2.2	3.5	0.0	2.9	1.3	-8.1	16.2	10.5	.	.
Retail trade sales, excluding fuels or vehicles	Percentage, var. annual, seasonally adjusted	8.4	6.4	2.0	-0.2	5.5	8.1	-1.5	12.2	9.0	.	.
Coffee production	Percentage, var. annual, cum. for period	11.5	16.8	0.4	-0.3	-4.5	8.8	-5.8	-9.5	-11.9	.	.
Oil production	Percentage, annual var., period average	-1.8	1.5	-11.9	-3.6	1.3	2.4	-11.8	-5.8	2.4	.	.
Labor market [g/]												
Total national												
Unemployment rate	Percentage, annual var., period average	9.4	9.2	9.5	9.7	10.0	10.9	16.7	13.8	11.2	**10.0**	**10.3**
Occupancy Rate	Percentage, annual var., period average	61.1	61.3	60.5	60.0	59.1	57.7	50.4	53.1	56.5	.	.
Overall participation rate	Percentage, annual var., period average	67.4	67.5	66.9	66.4	65.7	64.8	60.4	61.5	63.6	.	.
Thirteen cities and metropolitan areas												
Unemployment rate	Percentage, annual var., period average	10.2	10.1	10.3	11.0	11.1	11.5	19.1	15.2	11.4	**10.4**	**10.9**
Occupancy Rate	Percentage, annual var., period average	62.8	62.6	61.7	60.5	59.6	58.8	50.8	53.8	58.1	.	.
Overall participation rate	Percentage, annual var., period average	69.9	69.6	68.8	67.9	67.1	66.4	62.7	63.5	65.5	.	.
Balance of payments [h/i/]												
Current account (A + B + C)	Millions of dollars	-19,819	-18,702	-12,587	-9,924	-14,041	-14,810	-9,267	-17,951	-21,526	**-12,489**	**-13,124**
Percentage of GDP	Percentage, nominal terms	-5.2	-6.3	-4.4	-3.2	-4.2	-4.6	-3.4	-5.6	-6.2	**-3.4**	**-3.2**
A. Goods and services	Millions of dollars	-12,332	-19,004	-13,451	-8,762	-10,556	-14,148	-13,105	-20,002	-16,427	**-9,661**	**-10,770**
B. Primary income (factor income)	Millions of dollars	-12,108	-5,450	-5,312	-8,046	-11,442	-9,717	-4,950	-8,723	-17,407	**-15,187**	**-14,877**
C. Secondary income (current transfers)	Millions of dollars	4,622	5,752	6,177	6,883	7,957	9,055	8,788	10,775	12,308	**12,360**	**12,522**
Financial account (A + B + C + D)	Millions of dollars	-19,292	-18,060	-12,339	-9,625	-12,954	-13,298	-8,113	-16,693	-20,718	.	.
Percentage of GDP	Percentage, nominal terms	-5.1	-6.1	-4.4	-3.1	-3.9	-4.1	-3.0	-5.3	-6.0	.	.
A. Foreign investment (ii - i)	Millions of dollars	-12,270	-7,403	-9,341	-10,011	-6,172	-10,836	-5,725	-6,381	-13,991	.	.
i. Foreign Investment in Colombia (FDI)	Millions of dollars	16,169	11,621	13,858	13,701	11,299	13,989	7,459	9,561	17,393	.	.
ii. Colombian abroad	Millions of dollars	3,899	4,218	4,517	3,690	5,126	3,153	1,733	3,181	3,401	.	.
B. Portfolio investment	Millions of dollars	-11,565	-9,091	-4,945	-1,800	862	24	-1,768	-4,595	411	.	.
C. Other investment (loans, other credits, and derivatives)	Millions of dollars	106	-1,981	1,781	1,641	-8,831	-5,820	-4,949	-6,371	-7,709	.	.
D. Reserve assets	Millions of dollars	4.437	415	165	545	1.187	3.333	4.328	654	571	.	.
Errors and omissions (E&O)	Millions of dollars	526	642	247	299	1.087	1.511	1.153	1.258	807	.	.
Interest rates												
Policy interest rate [j/]	Percentage, period average	3.88	4.67	7.10	6.10	4.35	4.25	2.87	1.91	7.19	.	.
Policy rate expected by analysts [k/]	Percentage, period average										**13.05**	**10.77**
IBR overnight	Percentage, period average	3.8	4.7	7.1	6.1	4.3	4.3	2.9	1.9	7.2	.	.
Commercial interest rate [l/]	Percentage, period average	8.7	9.4	12.8	11.1	9.3	8.8	7.4	6.2	13.3	.	.
Consumer interest rate [m/]	Percentage, period average	17.3	17.2	19.2	19.4	17.9	16.5	15.0	14.3	21.1	.	.
Mortgage interest rate [n/]	Percentage, period average	11.1	11.0	12.4	11.6	10.6	10.4	10.1	9.1	12.9	.	.

Note: values in bold are forecasts or assumptions.
sats: seasonally adjusted time series, modified to eliminate the effect of seasonal and calendar influences.
a/ Quarterly data in bold are assumptions based on the annual forecast of each variable.
b/ Calculated with the main trading partners (excluding Venezuela) weighted by their share of trade.
c/ Calculations by *Banco de la República*; excluding the CPI item weight for food and non-alcoholic beverages. Consult 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.
d/ Calculations by *Banco de la República*; equal to the CPI item weight of Food and non-alcoholic beverages produced by DANE (does not include the subclasses corresponding to meals outside the home). See González, E.; Hernández, R. et al, Ibid.
e/ Calculations by *Banco de la República*. See González, E.; Hernández, R. et al, Ibid.
f/ The historical gap estimate is calculated based on the difference between observed GDP (cumulative 4 quarters) and potential GDP (trend; cumulative 4 quarters) resulting from the 4GM model; in the forecast it is calculated from the difference between the technical staff's estimate of GDP (cumulative 4 quarters) and potential GDP (trend; cumulative 4 quarters) resulting from the 4GM model.
g/ Rates are calculated based on seasonally adjusted annual populations.
h/ The results presented follow the recommendations of the sixth edition of the Balance of Payments and International Investment Position Manual (BPM6). See additional information and method changes at http://www.banrep.gov.co/ balance-payments.
i/ Results for 2021 and 2022 are preliminary.
j/ Corresponds to the average annual monetary policy interest rate calculated with the working days of the series.
k/ These projections are calculated as the average of the interest rate that would be in effect in each year according to the median of the monthly responses to the Monthly Survey of Economic Analyst Expectations (EME) conducted by *Banco de la República* in octubre 2023.
l/ Weighted average of interest rates on ordinary, treasury and preferential loans.
m/ Does not include loans granted through credit cards.
n/ Corresponds to the weighted average of interest rate of the disbursements in COP and UVR (real value unit for its Spanish acronym) for the acquisition of NON-VIS housing (housing that is not social interest housing).

Appendix 2 (continuation)
Main macroeconomic forecasting variables

		2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Exogenous variables									
External [a/]									
GDP of trading partners [b/]	Percentage, annual var., seasonally adjusted	2.4	3.1	1.0	0.9	0.8	3.5	1.6	-1.8
Oil price (Brent benchmark)	Dollars per barrel, average of the period	67	75	76	69	64	68	62	62
Federal funds effective rate (Fed)	Percentage, average for the period	1.45	1.74	1.92	2.22	2.40	2.40	2.20	1.65
5-year Credit Default Swap for Colombia	Basis points, average for the period	99	113	110	132	121	104	90	83
Internal									
Neutral real interest rate for Colombia	Percentage, average for the period								
Potential GDP for Colombia (trend)	Percentage, annual change								
Endogenous variables									
Prices									
Total CPI	Percentage, annual change, end of period	3.14	3.20	3.23	3.18	3.21	3.43	3.82	3.80
CPI excluding food [c/]	Percentage, annual change, end of period	3.97	3.73	3.67	3.51	3.27	3.22	3.37	3.45
CPI for goods (excluding food and regulated items)	Percentage, annual change, end of period	1.67	1.39	1.39	1.40	1.09	1.60	1.83	2.18
CPI for services (excluding food and regulated items)	Percentage, annual change, end of period	4.09	3.79	3.60	3.13	3.01	3.10	3.37	3.45
CPI excluding food	Percentage, annual change, end of period	6.28	6.21	6.35	6.65	6.33	5.24	5.03	4.81
CPI for food [d/]	Percentage, annual change, end of period	-0.06	1.11	1.47	1.87	3.24	4.96	6.49	5.80
CPI for perishable food	Percentage, annual change, end of period	7.13	8.47	9.51	8.88	9.98	15.46	17.50	8.66
CPI for processed food	Percentage, annual change, end of period	-2.01	-0.91	-0.72	-0.08	1.43	2.18	3.57	5.04
Core inflation indicators [e/]									
CPI excluding food	Percentage, annual change, end of period	3.97	3.73	3.67	3.51	3.27	3.22	3.37	3.45
Core CPI 15	Percentage, annual change, end of period	3.45	3.24	3.19	3.22	3.24	3.34	3.66	3.78
CPI excluding food and regulated items	Percentage, annual change, end of period	3.28	2.99	2.87	2.57	2.41	2.65	2.92	3.10
Average of all core inflation indicators	Percentage, annual change, end of period	3.57	3.32	3.24	3.10	2.97	3.07	3.32	3.44
Representative market exchange rate (TMR)	Pesos per dollar, average for the period	2,860	2,839	2,961	3,160	3,135	3,242	3,337	3,413
Real exchange rate Inflationary gap	Percentage, average for the period	-3.3	-3.8	-0.4	4.5	2.3	3.2	4.0	4.8
Economic activity									
Gross domestic product (sats)*	Percentage, annual change, sats	1.7	2.7	3.0	2.8	3.6	3.1	3.2	2.9
Final consumption expense	Percentage, annual change, sats	3.8	4.0	4.0	4.0	3.4	4.1	4.7	5.0
Household final consumption expenditure	Percentage, annual change, sats	3.4	3.5	3.2	2.9	2.9	3.5	4.4	5.4
General government final consumption expenditure	Percentage, annual change, sats	6.7	6.9	7.8	8.0	6.6	5.6	4.7	4.3
Formación bruta de capital	Percentage, annual change, sats	-6.6	0.6	0.9	12.0	8.4	3.4	5.7	-5.0
Gross capital formation	Percentage, annual change, sats	-1.5	2.4	1.4	1.8	7.3	4.3	2.0	-4.3
Housing	Percentage, annual change, sats	-9.3	0.0	6.1	2.9	-6.7	-8.0	-7.8	-13.0
Other buildings and structures	Percentage, annual change, sats	-6.7	-1.3	-4.8	-1.3	12.8	-1.0	0.6	-6.4
Machinery and equipment	Percentage, annual change, sats	12.0	13.1	6.9	3.4	14.2	22.5	10.2	2.6
Cultivated biological resources	Percentage, annual change, sats	-10.8	-6.6	3.7	2.2	5.6	9.8	14.7	1.7
Intellectual property products	Percentage, annual change, sats	2.4	2.4	0.7	0.6	-0.7	-1.1	-1.5	0.6
Domestic demand	Percentage, annual change, sats	1.6	3.7	3.6	5.0	4.5	4.0	4.7	2.9
Exports	Percentage, annual change, sats	0.3	-2.2	1.5	2.9	5.1	9.1	1.8	-3.2
Imports	Percentage, annual change, sats	-1.6	4.7	5.3	15.2	11.5	8.9	10.8	-1.0
Product gap [f/]	Percentage	-0.9	-0.8	-0.6	-0.5	-0.2	0.0	0.2	0.3
Short-term indicators									
Real production of manufacturing industry	Percentage, var. annual, seasonally adjusted	2.5	2.7	3.7	2.8	1.1	2.5	0.7	1.0
Retail trade sales, excluding fuels or vehicles	Percentage, var. annual, seasonally adjusted	4.4	6.2	5.1	6.2	6.6	6.9	9.5	9.2
Coffee production	Percentage, var. annual, cum. for period	-5.8	13.1	-13.8	-6.6	-1.9	6.6	4.9	24.1
Oil production	Percentage, annual var., period average	0.4	1.0	1.1	2.6	5.4	3.2	1.4	-0.2
Labor market [g/]									
Total national									
Unemployment rate	Percentage, annual var., period average	9.7	9.9	9.7	10.5	10.8	10.6	11.1	11.0
Occupancy Rate	Percentage, annual var., period average	59.2	59.4	59.5	58.4	58.3	57.7	57.3	57.5
Overall participation rate	Percentage, annual var., period average	65.6	65.9	65.9	65.2	65.4	64.6	64.4	64.6
Thirteen cities and metropolitan areas									
Unemployment rate	Percentage, annual var., period average	11.1	11.0	10.8	11.5	11.8	11.4	11.3	11.6
Occupancy Rate	Percentage, annual var., period average	59.6	59.9	60.0	58.9	58.7	58.9	58.7	58.7
Overall participation rate	Percentage, annual var., period average	67.1	67.3	67.3	66.6	66.6	66.4	66.3	66.4
Balance of payments [h/i/]									
Current account (A + B + C)	Millions of dollars	-3,023	-3,471	-3,406	-4,141	-3,821	-3,219	-4,303	-3,467
Percentage of GDP	Percentage, nominal terms	-3.7	-4.2	-4.0	-5.0	-4.8	-4.1	-5.3	-4.2
A. Goods and services	Millions of dollars	-1,840	-2,557	-2,672	-3,487	-3,138	-2,998	-4,406	-3,607
B. Primary income (factor income)	Millions of dollars	-2,922	-2,784	-2,769	-2,967	-2,616	-2,502	-2,301	-2,298
C. Secondary income (current transfers)	Millions of dollars	1,739	1,870	2,035	2,313	1,932	2,281	2,404	2,438
Financial account (A + B + C + D)	Millions of dollars	-2,876	-2,719	-3,487	-3,872	-3,520	-3,333	-3,740	-2,706
Percentage of GDP	Percentage, nominal terms	-3.5	-3.3	-4.1	-4.7	-4.4	-4.2	-4.6	-3.3
A. Foreign investment (ii - i)	Millions of dollars	-910	-2.273	-2.375	-615	-2.652	-3.626	-1.678	-2.880
i. Foreign Investment in Colombia (FDI)	Millions of dollars	1,982	3,773	2,704	2,839	3,394	4,090	3,163	3,342
ii. Colombian abroad	Millions of dollars	1,072	1,500	330	2,224	741	465	1,485	462
B. Portfolio investment	Millions of dollars	1,715	350	482	-1,684	-1,382	-282	137	1,551
C. Other investment (loans, other credits and derivatives)	Millions of dollars	-3,817	-945	-1,763	-2,305	-1,836	48	-2,453	-1,579
D. Reserve assets	Millions of dollars	137	150	169	732	2.351	526	254	202
Errors and omissions (E&O)	Millions of dollars	146	752	-81	270	302	-114	563	761
Interest rates									
Policy interest rate [j/]	Percentage, period average	4,58	4,33	4,25	4,25	4,25	4,25	4,25	4,25
Policy rate expected by analysts [k/]	Percentage, period average								
IBR overnight	Percentage, period average	4,6	4,3	4,3	4,3	4,3	4,3	4,3	4,3
Commercial interest rate [l/]	Percentage, period average	9,4	9,4	9,3	9,0	9,1	9,0	8,9	8,5
Consumer interest rate [m/]	Percentage, period average	18,7	17,9	18,0	17,3	18,0	17,2	16,0	15,5
Mortgage interest rate [n/]	Percentage, period average	10,8	10,6	10,5	10,4	10,4	10,5	10,4	10,4

Note: values in bold are forecasts or assumptions.
sats: seasonally adjusted time series, modified to eliminate the effect of seasonal and calendar influences.
a/ Quarterly data in bold are assumptions based on the annual forecast of each variable.
b/ Calculated with the main trading partners (excluding Venezuela) weighted by their share of trade.
c/ Calculations by *Banco de la República*; excluding the CPI item weight for food and non-alcoholic beverages. Consult 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.
d/ Calculations by *Banco de la República*; equal to the CPI item weight of Food and non-alcoholic beverages produced by DANE (does not include the subclasses corresponding to meals outside the home). See González, E.; Hernández, R. et al, Ibid.
e/ Calculations by *Banco de la República*. See González, E.; Hernández, R. et al, Ibid.
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g/ Rates are calculated based on seasonally adjusted annual populations.
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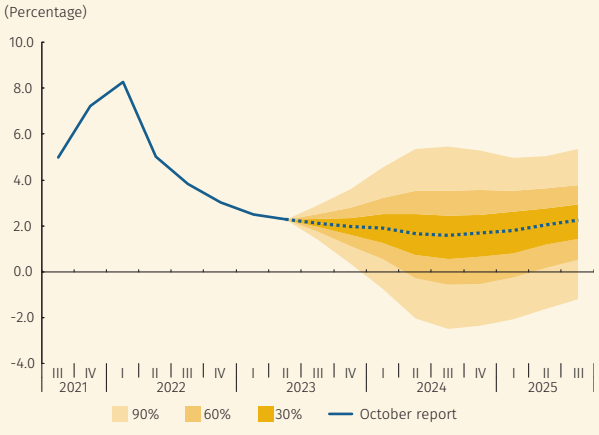
m/ Does not include loans granted through credit cards.
n/ Corresponds to the weighted average of interest rate of the disbursements in COP and UVR (real value unit for its Spanish acronym) for the acquisition of NON-VIS housing (housing that is not social interest housing).

2020				2021				2022				2023				2024				2025		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
-7,4	-43.7	50.4	12.7	5.7	5.6	5.9	4.3	1.1	1.5	3.3	2.7	0.6	2.9	**1.5**	**1.1**	**1.3**	**1.9**	**2.1**	**2.4**	**2.4**	**2.4**	**2.4**
51	33	43	45	61	69	73	80	98	112	98	89	82	78	86	**88**	**86**	**85**	**84**	**83**	**83**	**83**	**83**
1,23	0.06	0.09	0.09	0.08	0.07	0.09	0.08	0.12	0.76	2.20	3.65	4.52	4.99	5.26	**5.54**	**5.63**	**5.58**	**5.34**	**5.09**	**4.85**	**4.58**	**4.34**
125	206	132	104	110	131	143	185	209	238	275	314	283	275	219	**258**	**254**	**251**	**248**	**244**	**242**	**240**	**238**
3,86	2.19	1.97	1.61	1.51	3.63	4.51	5.62	8.53	9.67	11.44	13.12	13.34	12.13	10.99	**9.80**	**8.24**	**7.62**	**5.81**	**4.04**	**2.90**	**2.11**	**2.28**
3,26	1.40	1.57	1.03	1.06	2.70	3.03	3.44	5.31	6.84	8.33	9.99	11.42	11.62	10.88	.	.	.	.	.	.	.	.
2,41	0.73	1.15	0.63	1.05	2.57	2.97	3.31	6.41	8.30	11.57	15.04	15.08	14.26	10.44	.	.	.	.	.	.	.	.
3,22	2.00	1.86	1.29	0.89	1.61	2.01	2.18	3.79	5.21	5.93	7.41	8.73	9.04	9.14	.	.	.	.	.	.	.	.
4,27	0.44	1.19	0.73	1.52	5.93	5.94	7.10	8.32	9.80	11.46	11.77	14.72	15.64	15.81	**16.65**	**14.54**	**12.38**	**9.39**	**6.50**	**4.11**	**2.97**	**2.97**
7,19	6.55	4.13	4.80	3.92	8.52	12.40	17.23	25.37	23.65	26.62	27.81	21.81	14.31	11.47	**8.33**	**6.52**	**8.68**	**3.42**	**0.56**	**-0.39**	**-1.39**	**0.02**
9,79	2.52	-3.42	2.49	1.58	8.69	14.82	24.42	41.87	31.21	35.50	36.44	19.66	10.06	13.93	.	.	.	.	.	.	.	.
6,46	7.75	6.40	5.43	4.60	8.47	11.74	15.32	20.69	21.50	24.14	25.33	22.53	15.62	10.72	.	.	.	.	.	.	.	.
3,26	1.40	1.57	1.03	1.06	2.70	3.03	3.44	5.31	6.84	8.33	9.99	11.42	11.62	10.88	.	.	.	.	.	.	.	.
3,64	2.17	2.33	1.88	1.67	3.36	3.79	4.42	6.93	8.41	10.04	11.55	12.41	11.62	10.34	.	.	.	.	.	.	.	.
2,99	1.65	1.67	1.11	0.94	1.87	2.28	2.49	4.51	6.06	7.49	9.51	10.51	10.51	9.51	**8.36**	**7.00**	**6.16**	**5.37**	**4.24**	**3.33**	**2.69**	**2.61**
3,30	1.74	1.86	1.34	1.22	2.64	3.03	3.45	5.58	7.10	8.62	10.35	11.45	11.25	10.24	.	.	.	.	.	.	.	.
3.532	3,850	3,731	3,661	3,556	3,696	3,847	3,880	3,913	3,916	4,382	4,805	4,759	4,425	4,047	.	.	.	.	.	.	.	.
5,5	11.5	6.1	2.7	-0.7	2.6	4.2	3.9	2.8	1.2	7.8	14.4	11.6	3.3	**-5.1**	**-1.9**	**-2.4**	**-2.6**	**-2.9**	**-2.0**	**-1.4**	**-0.6**	**-0.4**
0.4	-16.8	-9.1	-3.5	1.8	19.0	13.7	11.1	8.0	12.2	7.3	2.0	3.0	0.3	**0.4**	**1.2**	**-0.8**	**0.9**	**0.7**	**2.2**	**2.9**	**3.1**	**3.5**
3.8	-13.9	-6.9	0.7	3.3	23.3	18.5	11.3	10.1	13.4	7.1	1.4	2.8	1.2	**0.6**	.	.	.	.	.	.	.	.
4.5	-16.8	-8.3	1.1	3.0	25.8	19.3	12.7	10.8	14.9	9.1	3.9	3.1	0.8	**-0.2**	.	.	.	.	.	.	.	.
0.0	-2.0	-2.1	0.9	7.6	11.3	12.8	7.8	5.6	5.7	-3.5	-6.2	-0.3	2.3	**9.0**	.	.	.	.	.	.	.	.
-11.6	-31.1	-18.1	-23.8	-4.4	31.5	7.9	20.7	18.8	13.9	18.2	16.5	-8.8	-22.2	**-26.4**	.	.	.	.	.	.	.	.
-12.8	-41.9	-25.5	-15.0	3.2	44.2	16.0	14.2	9.3	13.5	14.6	8.3	-2.2	-5.7	**-11.9**	.	.	.	.	.	.	.	.
-26.2	-48.3	-29.8	-25.1	24.7	66.7	31.5	44.8	1.7	6.3	10.1	0.4	11.2	-0.9	**-8.9**	.	.	.	.	.	.	.	.
-11.0	-50.4	-39.2	-24.7	-17.3	31.5	-1.4	4.0	-2.9	4.6	10.9	-8.9	-2.8	-4.4	**-0.7**	.	.	.	.	.	.	.	.
-5.0	-37.4	-9.1	1.2	11.6	58.0	24.7	12.2	27.1	25.2	20.6	25.2	-8.2	-13.5	**-20.6**	.	.	.	.	.	.	.	.
2.8	1.9	-8.0	-3.4	4.6	0.0	-4.0	-4.5	-11.9	-10.7	-4.8	0.9	2.2	6.1	**9.9**	.	.	.	.	.	.	.	.
-0.8	-17.2	-13.8	-11.3	-6.8	10.9	12.2	11.4	14.8	17.1	14.4	4.1	-0.2	2.0	**0.5**	.	.	.	.	.	.	.	.
0.5	-17.9	-9.8	-2.9	1.7	24.9	16.5	12.7	12.4	13.1	9.1	3.7	0.2	-3.8	**-4.5**	.	.	.	.	.	.	.	.
-7.2	-31.8	-28.6	-22.8	-9.4	15.3	28.0	36.6	19.3	27.9	16.2	-0.5	2.6	2.5	**-0.5**	.	.	.	.	.	.	.	.
-5.4	-33.2	-25.4	-15.2	-4.4	46.2	39.4	34.3	38.2	25.5	21.6	7.4	-7.6	-14.5	**-22.3**	.	.	.	.	.	.	.	.
-0.3	-3.8	-6.0	-7.2	-7.1	-4.5	-2.5	-0.8	0.3	1.8	2.9	2.6	2.6	1.9	**1.2**	**0.7**	**-0.2**	**-0.7**	**-1.2**	**-1.3**	**-1.3**	**-1.3**	**-1.2**
-1.5	-23.6	-7.3	0.0	6.7	27.7	20.2	13.0	12.0	21.0	7.0	3.7	-0.9	-4.3	.	.	.	.	.	.	.	.	.
6.2	-14.7	-3.2	5.6	5.0	19.2	15.8	10.4	12.0	21.9	5.5	-1.1	-1.8	-5.7	.	.	.	.	.	.	.	.	.
-13.8	-1.9	-3.6	-4.6	13.3	-24.7	-1.9	-18.8	-16.3	9.7	-18.2	-17.0	-0.7	-14.3	-2.1	.	.	.	.	.	.	.	.
-2.1	-15.7	-15.4	-14.1	-14.6	-5.1	-0.1	-1.7	-0.1	5.1	1.3	3.6	3.2	3.7	.	.	.	.	.	.	.	.	.
11.9	21.1	18.2	15.5	14.7	15.2	12.6	12.6	12.0	11.1	10.8	10.9	10.5	10.3	**9.3**	**10.0**	**10.4**	**10.2**	**10.2**	**10.4**	.	.	.
55.6	44.5	49.1	52.6	52.7	52.0	53.6	54.0	55.9	56.7	57.0	56.4	57.2	57.8	.	.	.	.	.	.	.	.	.
63.1	56.3	60.0	62.2	61.7	61.3	61.3	61.9	63.5	63.8	63.9	63.3	63.9	64.4	.	.	.	.	.	.	.	.	.
12.0	25.1	21.9	17.3	16.8	16.7	14.0	13.1	12.2	11.3	11.1	10.9	11.0	10.4	**9.8**	**10.6**	**11.0**	**10.8**	**10.8**	**11.0**	.	.	.
56.9	44.1	49.0	53.3	53.3	53.1	54.4	54.4	57.3	58.0	58.5	58.4	58.6	59.2	.	.	.	.	.	.	.	.	.
64.5	58.9	62.6	64.5	64.1	63.8	63.3	62.7	65.3	65.3	65.7	65.6	65.8	66.1	.	.	.	.	.	.	.	.	.
-2,295	-1,962	-2,013	-2,997	-3,108	-4,052	-4,834	-5,958	-5,478	-4,951	-6,228	-4,869	-3,385	-2,524	.	.	.	.	.	.	.	.	.
-3.1	-3.6	-3.0	-4.0	-4.0	-5.5	-6.0	-6.9	-6.3	-5.5	-7.1	-6.0	-4.2	-3.0	.	.	.	.	.	.	.	.	.
-3,098	-2,651	-3,263	-4,092	-3,691	-5,026	-5,258	-6,028	-5,058	-3,145	-4,474	-3,750	-2,350	-2,141	.	.	.	.	.	.	.	.	.
-1,369	-1,029	-1,172	-1,380	-1,867	-1,652	-2,339	-2,865	-3,597	-4,636	-4,860	-4,314	-4,133	-3,402	.	.	.	.	.	.	.	.	.
2,173	1,718	2,422	2,475	2,450	2,627	2,763	2,935	3,177	2,830	3,106	3,195	3,097	3,018	.	.	.	.	.	.	.	.	.
-1,735	-1,938	-1,857	-2,584	-2,789	-3,761	-4,504	-5,640	-5,016	-5,026	-5,710	-4,967	-2,831	-2,846	.	.	.	.	.	.	.	.	.
-2.3	-3.5	-2.8	-3.4	-3.6	-5.1	-5.6	-6.5	-5.8	-5.6	-6.5	-6.1	-3.5	-3.3	.	.	.	.	.	.	.	.	.
-1,924	-1,725	-258	-1,818	-1,438	-1,013	-2,528	-1,402	-3,630	-3,735	-2,933	-3,694	-3,823	-5,489	.	.	.	.	.	.	.	.	.
3,175	1,371	844	2,069	2,307	1,997	2,707	2,550	4,917	5,121	3,092	4,262	4,282	5,278	.	.	.	.	.	.	.	.	.
1,251	-353	586	251	869	984	179	1,149	1,288	1,387	159	567	459	-211	.	.	.	.	.	.	.	.	.
-168	-3,429	323	1,506	1,319	-6,089	851	-675	1,866	-759	-233	-463	1,103	1,529	.	.	.	.	.	.	.	.	.
528	627	-2,127	-3,976	-2,860	3,167	-2,981	-3,697	-3,379	-606	-2,703	-1,021	-418	749	.	.	.	.	.	.	.	.	.
-171	2,590	205	1,705	190	174	154	135	127	74	159	210	309	365	.	.	.	.	.	.	.	.	.
560	25	155	413	319	291	330	318	462	-75	518	-98	555	-322	.	.	.	.	.	.	.	.	.
4.23	3.26	2.24	1.75	1.75	1.75	1.75	2.40	3.69	5.68	8.56	10.81	12.53	13.17	13.25	.	.	.	.	.	.	.	.
															13.25	**12.42**	**11.50**	**10.25**	**8.92**	**7.83**	**6.92**	**6.33**
4.2	3.2	2.2	1.7	1.7	1.7	1.8	2.4	3.7	5.7	8.6	10.8	12.5	13.2	13.3	.	.	.	.	.	.	.	.
8.4	8.3	7.0	6.2	6.0	5.7	6.0	6.9	8.6	10.8	14.2	17.8	19.9	18.6	18.6	.	.	.	.	.	.	.	.
15.8	15.5	14.8	14.2	14.0	13.7	14.3	14.8	16.7	19.1	22.9	27.2	30.1	28.5	26.7	.	.	.	.	.	.	.	.
10.4	10.4	10.2	9.6	9.2	8.9	9.0	9.3	9.9	11.5	13.4	16.4	18.2	18.1	17.5	.	.	.	.	.	.	.	.

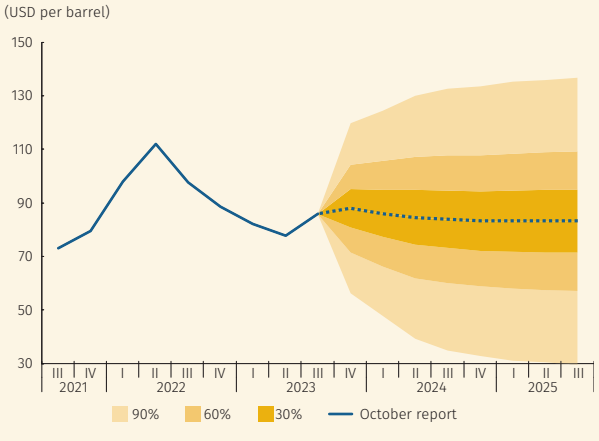
Appendix 3
Predictive densities for other relevant macroeconomic forecasting variables

Graph A3.1
Quarterly assumptions of 12-month growth of trading partners based on annual projections, predictive density[a/]



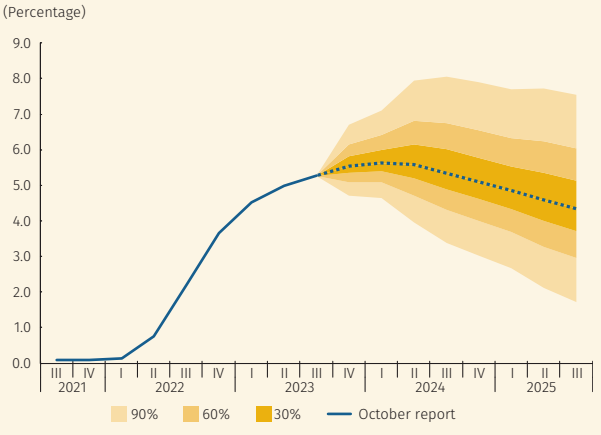
a/ The graph displays the probability distribution and its most likely path on an eight-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Sources: Bloomberg, statistics bureaus, central banks;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

Graph A3.2
Quarterly oil price assumption, predictive density[a/]



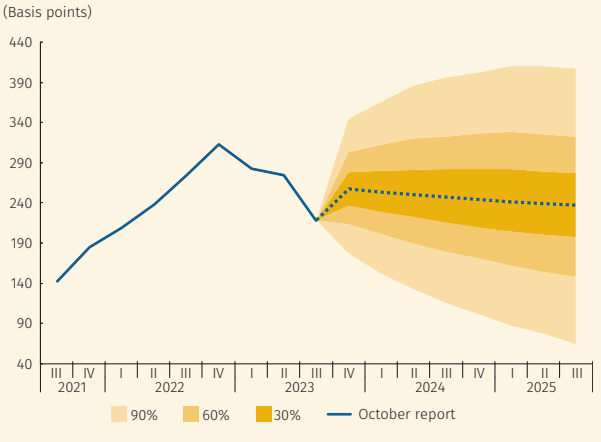
a/ The graph displays the probability distribution and its most likely path on an eight-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Source: Bloomberg, calculations and projections by *Banco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

Graph A3.3
U.S. Federal Reserve quarterly interest rate assumption, predictive density[a/]



a/ The graph displays the probability distribution and its most likely path on an eight-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 Louis, calculations and projections by *Banco de la República*.

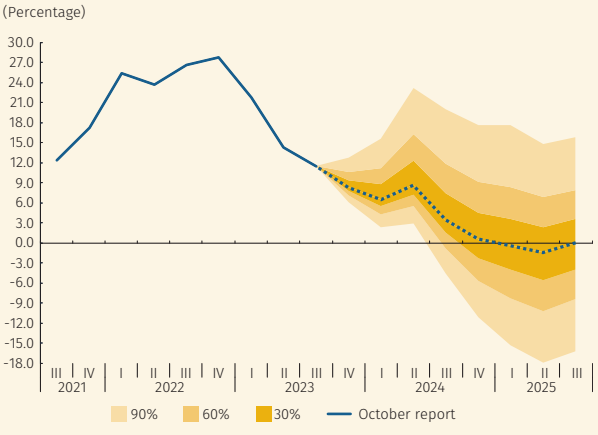
Graph A3.4
Colombia's quarterly risk premium (CDS) assumption, predictive density[a/,b/]



a/ Five-year credit default swaps
b/ The graph displays the probability distribution and its most likely trajectory on an eight-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*.

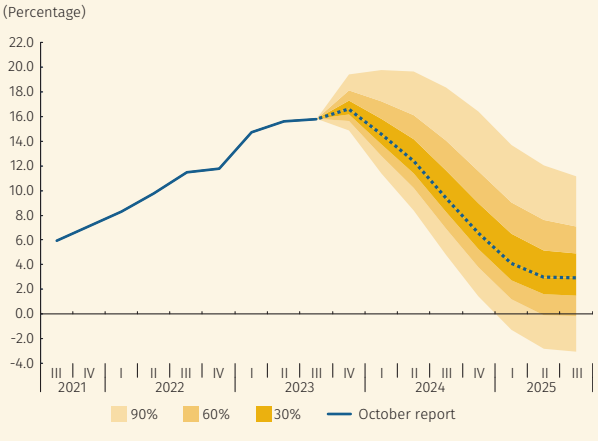
Appendix 3 (continuation)
Predictive densities for other relevant macroeconomic forecasting variables

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 an eight-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: 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 an eight-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: calculations and projections by *Banco de la República*.

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