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MONETARY **POLICY REPORT**

* Presented by the technical staff to the Board of Directors for its meeting on 30 April 2024.

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

The main instrument the BDBR uses to control inflation is the policy interest rate (overnight repo rate, or benchmark interest rate). Given that monetary policy actions take time to fully affect the economy and 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 is held by the Governor of the Central Bank and the Minister of Finance. The minutes of the meeting describing the positions that led the BDBR to its decision are published on the following business day. Additionally, the Monetary Policy Report (MPR)[4], produced by the Central Bank's technical staff, is published in January, April, July, and October, together with the minutes. On the Wednesday of the week following the Board meeting, the Governor clarifies concerns about the minutes, and the Bank's Deputy Technical Governor presents the MPR. This dissemination scheme[5] 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, School of Finance, Government, and International Relations, ed. 1, vol. 1, no. 69, October.

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

4 Formerly known as the Inflation Report.

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

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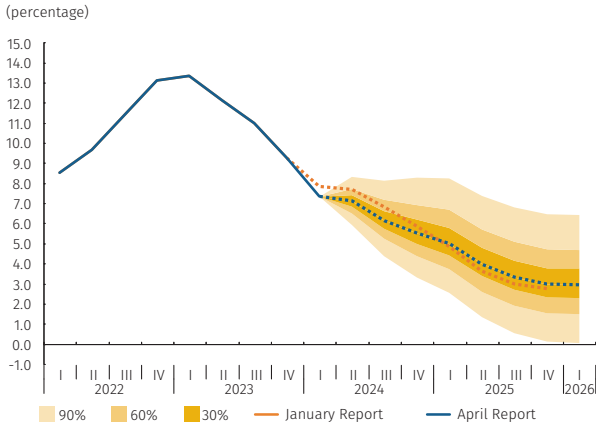
1. Summary

1.1 Macroeconomic Summary

Both headline and core[1] inflation continued to decline in the first quarter of 2024. Although both rates still exceeded the target, their descent was quicker than anticipated. The unwinding of some price-affecting shocks and the cumulative impact of monetary policy continues to aid in inflation's convergence toward 3.0% by 2025. The annual headline and core inflation rates for March were 7.4% and 6.8%, respectively, maintaining the declining trend observed since the previous year. Inflation in all major Consumer Price Index (CPI) segments decreased between December 2023 and March of this year. The goods and food baskets were the main contributors to the decline of annual inflation during this period. This behavior is explained by the peso's appreciation, an ample food supply, lower international costs and prices, and smaller adjustments in public service prices, which offset upward pressures on other items, including housing rents. This occurred amid a backdrop of contractionary monetary policy and excess productive capacity forecast for the period. In the future, weak demand, the indexation of various prices to a lower inflation rate than that of 2023, and the persistence of several factors that underpin the reported decline in inflation are projected to cause inflation to continue to gradually move towards the target. As a result, yearend 2024 headline and core inflation estimates are 5.1% and 5.5%, respectively, lower than the January Report's expectations of 5.9% headline and 5.4% core (Graphs 1.1 and 1.12). By 2025, inflation would have stabilized and end the year close to the 3.0% target. These forecasts remain highly uncertain and carry substantial upside risks. This is related to, among other things, the future movements of the exchange rate due to domestic and external factors, potential postponed adjustments to certain utilities and transportation services, and weather conditions that also influence the behavior of food basket prices.

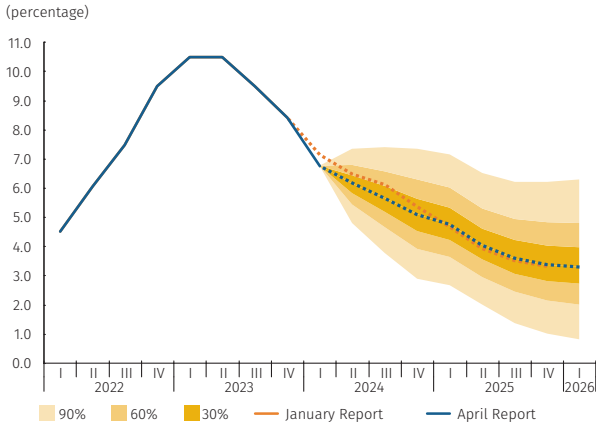
The economic slowdown in 2023 was marginally more significant than expected in the prior Report. Economic growth is projected to recover by 1.4% in 2024 and to become more noticeable in 2025. These projections will be consistent with inflation convergent toward the target. Data from the DANE's National Accounts (National Administrative Department of Statistics for its Spanish acronym) indicates that economic activity grew by 0.6% annually in 2023, less than the 1.0% predicted in the January Report. This was largely explained by a downward review in the output figures, reflected in the lower levels observed in 2021, 2022, and 2023. The declines were evidenced

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 *April Report*.
Source: DANE – calculations and projections by *Banco de la República*.

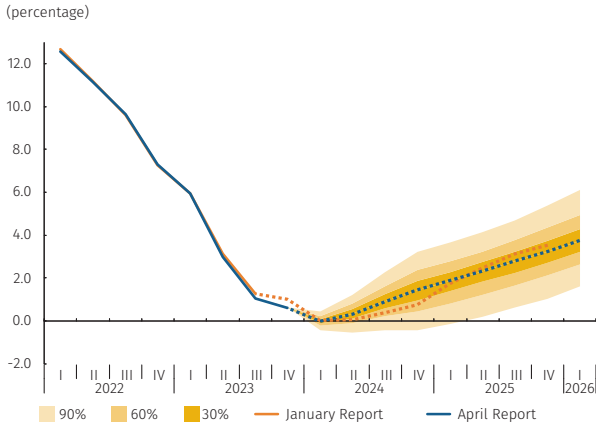
Graph 1.2
CPI excluding food and regulated items[a/, b/]
(annual change; end-of-period)



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 *April Report*.
Source: DANE – calculations and projections by *Banco de la República*.

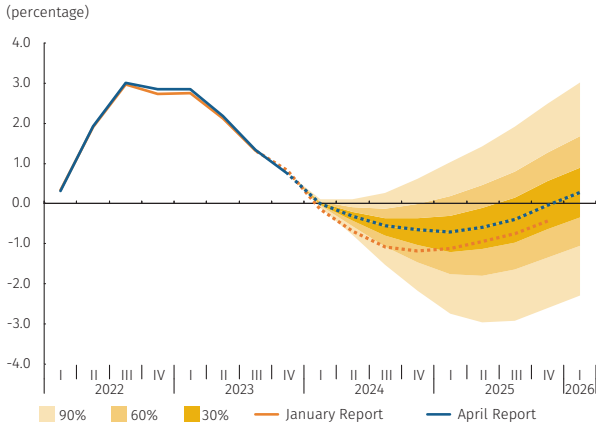
1 Excluding food and regulated items.

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 *April Report*.
Source: *Banco de la República*.

Graph 1.4
Output gap[a/, b/, c/]
(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 *April Report*.
Source: *Banco de la República*.

in net external demand, gross fixed capital formation, and public consumption, which were partially offset by an increase in private consumption. Consequently, a slowdown in the growth levels of total consumption coupled with weak investment activity led to a 3.8% decline in domestic demand, although this drop was less than anticipated (-4.3%). Economic indicators for the first quarter of 2024 suggest a quarterly growth in consumption and gross fixed capital formation that would remain close to the levels seen in the fourth quarter of 2023. The domestic demand would have improved from the behavior seen at the end of the previous year, and its annual fall would have slowed its pace. Even while net foreign demand in constant pesos would continue to be negative, it would still contribute positively to the annual variation in GDP. All of the above points to an annual GDP growth of 0.3% during the first three months of 2024, higher than the -1.0% predicted in the January Report. On the supply side, this forecast considers high levels of activity in the primary sector, thanks to a significantly greater agricultural supply than estimated in January. Economic activity will continue to improve throughout the rest of 2024 and 2025. As inflation approaches the 3.0% target, this would occur in a setting with somewhat looser external financing conditions and less stringent monetary policy over the forecast horizon. In light of this, the economic growth forecast has been revised to 1.4% (formerly 0.8%) for 2024, driven primarily by consumption and notwithstanding anticipated weak investment performance. Growth would return to 3.2% by 2025 (from the prior 3.5% forecast) as investment bounces back from the extremely low levels seen in 2024 (albeit still below 2019 levels) and external demand continues to improve gradually (Graph 1.3). The projection of excess production capacity has been slightly reduced for the forecast horizon, encompassing 2024 and 2025, and it is anticipated it will further diminish and no longer exist by the end of the period (Graph 1.4). It is important to note that some high-frequency indicators, such as the Economic Monitoring Indicator (ISE for its Spanish acronym), support the increase in the projected growth of economic activity for the first quarter of 2024, primarily due to an atypically outstanding, and in principle transitory, performance of some primary sector activities, but also due to the favorable behavior of certain services. Furthermore, these estimates continue to be subject to a high degree of uncertainty due to external factors such as worldwide political tensions and monetary policy in advanced countries as well as internal factors, including ambiguity surrounding the development and significance of the reforms proposed to Congress, the response of domestic demand to local financial conditions and potentially lower fiscal revenues.

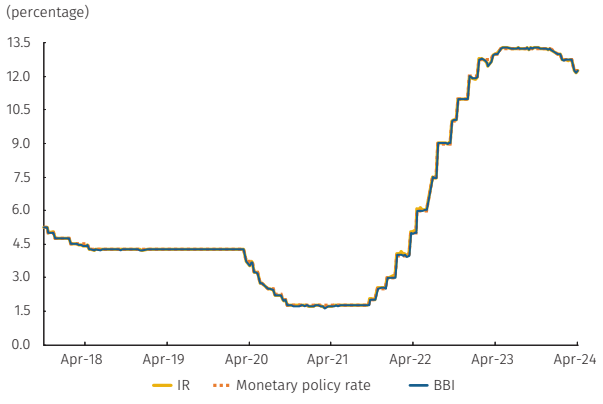
The current account deficit as a proportion of GDP is predicted to increase from the 2.7% recorded in 2023 to 3.1% by 2024. The widening of the external deficit in 2024 would be primarily explained by an increase in imported goods and anticipated lower prices for coffee and coal compared to 2023, which would result in a decline in dollar exports, even though

the outlook for global oil prices is improving. The narrowing of the external imbalance seen in 2023 and its relatively stable level anticipated for 2024, despite the expected marginal increase in the current deficit, indicate a better external position for the nation and lessen the economy's susceptibility to notable declines in the global context.

Compared to the January Report, the country's external financing conditions have improved, the rate of decline in external demand has slowed, and global inflation remains high despite decreasing at a slower pace, which is slower than expected. A reduced rate of global economic contraction and inflation reduction is projected for 2024 by several international organizations. Consequently, inflation is expected to remain above the targets set by several central banks. In the specific instance of the United States, labor market data exceeded expectations, coupled with a slower downturn in economic activity, while inflation remains above market expectations and has accelerated during the past three months. As a result, the country's futures linked to the monetary policy interest rate have recently strengthened for 2024 and 2025. Hence, this Report has revised its expectation for the Federal Reserve's interest rate trajectory upwards and now foresees staggered reductions starting towards the end of the third quarter of 2024, placing this rate in a range between 4.75% and 5.0% by yearend. Notwithstanding the above, there has been a relaxation of global financial conditions in recent months, which has been mirrored in a decline in Colombia's sovereign risk premium and in the peso's appreciation relative to that registered in the final quarter of 2023. For the rest of 2024, a decline in the terms of trade is expected, albeit one that is less than that predicted in the last Report, partly due to an improved prognosis for global oil prices. Given the unpredictable nature of international conflicts (e.g., Ukraine and the Middle East), the recent spike in geopolitical tensions, the evolution of foreign trade, external financial conditions, and the perception of Colombia's sovereign risk, among other factors, there is still a great deal of uncertainty surrounding external forecasts and their effects on the country's economy.

The contractionary monetary policy stance has contributed to ameliorating the country's macroeconomic imbalances. However, most inflation expectation measures and inflation itself continue to be higher than the 3.0% target. Economic activity indicators for the first quarter of 2024 imply that the economy would have continued to adjust and that excess productive capacity would already be present, albeit at a slightly lower level than anticipated in January. Even though employment has declined recently, the labor market still displays unemployment rates that are comparatively low when contrasted to the variable's historical values. The Colombian financial system retains levels of provisioning, solvency, and liquidity that would allow it to withstand a substantial macroeconomic contraction even as credit dynamics and loan portfolio conditions continue to deteriorate. The external position improved, and the current account deficit narrowed. Both core and headline inflation fell farther than anticipated but are still substantially above target. Most inflation expectations, especially those for a two-year horizon, remain above 3.0%. Inflation is expected to continue to drop in the future, given an environment of excess productive capacity. In a context of high inflation, inflation expectations above 3.0%, and upside risks in these variables, the macroeconomic environment suggests that monetary policy stance should be maintained in a way that encourages inflation to continue to converge toward the target so it may fall within the 3.0% +/- 1 pp range by midyear 2025. Given the decline in inflation and associated expectations, slowing of domestic demand, and a more sustainable external balance, said stance includes a decrease in the nominal monetary policy interest rate. Monetary policy could ease in so far as inflation and its expectations continue moving in the

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



a/ IR: interbank rate. BBI: benchmark banking indicator.
Sources: Financial Superintendency of Colombia and *Banco de la República*.

direction of the target and favorable conditions for the country's macroeconomic stability remain.

1.2 Monetary Policy Decision

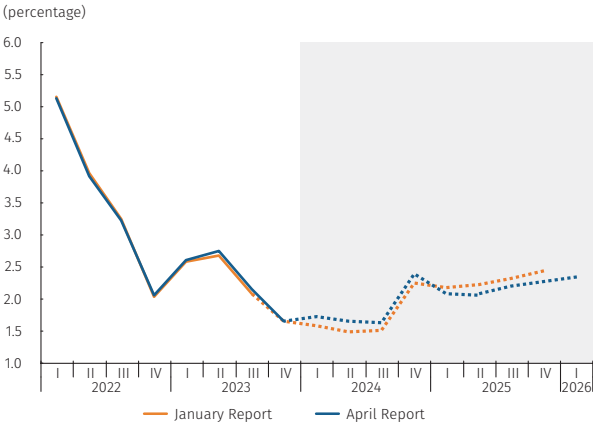
At both its March and April 2024 meetings, the Board of Directors of *Banco de la República* (BDBR) opted by majority vote to reduce the monetary policy interest rate by an additional 50 basis points, effectively bringing it to 11.75% (Graph 1.5).

2. Macroeconomic forecasts and risk analysis[1]

2.1 International outlook

2.1.1 Foreign demand

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



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

The country's relevant external demand is anticipated to decelerate in 2024 before rebounding in 2025, albeit with a less pronounced slowdown as compared to earlier projections (Graph 2.1). According to the latest International Monetary Fund (IMF) report, global economic growth in 2024 is forecasted to remain at 3.2%, consistent with 2023 figures. Regarding the country's key trading partners, it is worth noting the strength of the United States economy in 2024, driven by a strong labor market, migration, household wage growth, and promising prospects within the services and manufacturing sectors[2]. Additionally, Brazil has shown positive economic dynamics, and there have been upside surprises in China's latest economic activity indicators, which have increased confidence in its ability to achieve the annual growth target set by the government[3]. Anticipated growth for 2024 among key trading partners suggests a recovery in economies such as Chile, Peru, and, to a lesser extent, the Eurozone, following the weak economy observed in 2023. Furthermore, international financial conditions are expected to remain relatively loose compared to the previous year, with monetary policy rate cuts expected in some advanced economies during 2024. Consequently, expected growth for trading partners in 2024 has been revised slightly upward to 1.8% (compared to 1.7% in the prior Report), reflecting a deceleration from the 2.3% estimated for 2023. By 2025, growth is expected to rebound to 2.2%[4] (Table 2.1), contingent upon trading partners' inflation (Graph 2.2) converging toward their respective targets and the continuation of monetary policy rate easing cycles (Chart 2.3). Not-

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

Main partners	2022 (pre)	2023 (pre)	2024 (proj)	2025 (proj)
United States	1.9	2.5	2.1	1.7
Eurozone	3.4	0.5	0.6	1.5
China	3.0	5.2	4.7	4.3
Ecuador	6.2	2.4	0.7	2.1
Brazil	3.0	2.9	1.9	2.0
Peru	2.7	-0.6	1.9	2.6
Mexico	3.9	3.2	2.4	1.9
Chile	2.1	0.2	2.2	2.4
All trade partners[a/]	3.6	2.3	1.8	2.2

(pre): preliminary, (proj): projected
a/ Projections calculated 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 The projections presented in this chapter were made based on the Patacon and 4GM central forecast models. For details, please refer to: https://www.banrep.gov.co/es/node/149 and https://www.banrep.gov.co/en/4gm-new-model-monetary-policy-analysis-colombia

2 Preliminary data observed while compiling this report indicates that the United States GDP grew 1.6% in annualized quarterly rate in the first quarter of 2024.

3 In compiling this Report, it was observed that the Chinese economy expanded by 5.3% on an annualized basis in the first quarter of the year, surpassing both market projections and the Chinese government's targeted growth rate of 5.0% for the full year.

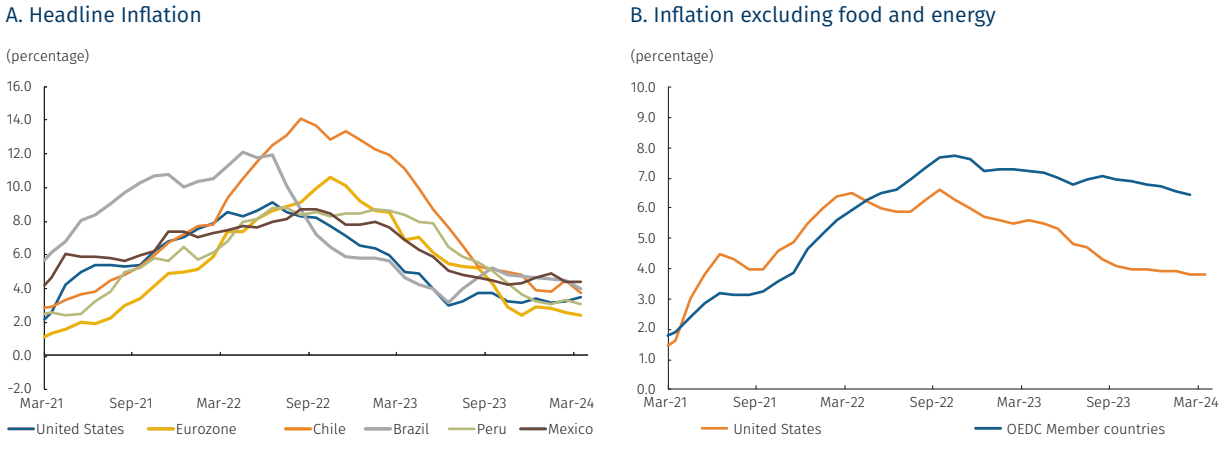
4 Nonetheless, this growth remains below the historical average of the indicator, which stood at 2.94% between 2001 and 2022.

withstanding, this projection remains subject to high uncertainty due to potential adverse weather impacts on global economic activity, ongoing geopolitical, trade, and war-related tensions, as well as heightened political uncertainty associated with the 2024 elections across the world.

2.1.2 International prices

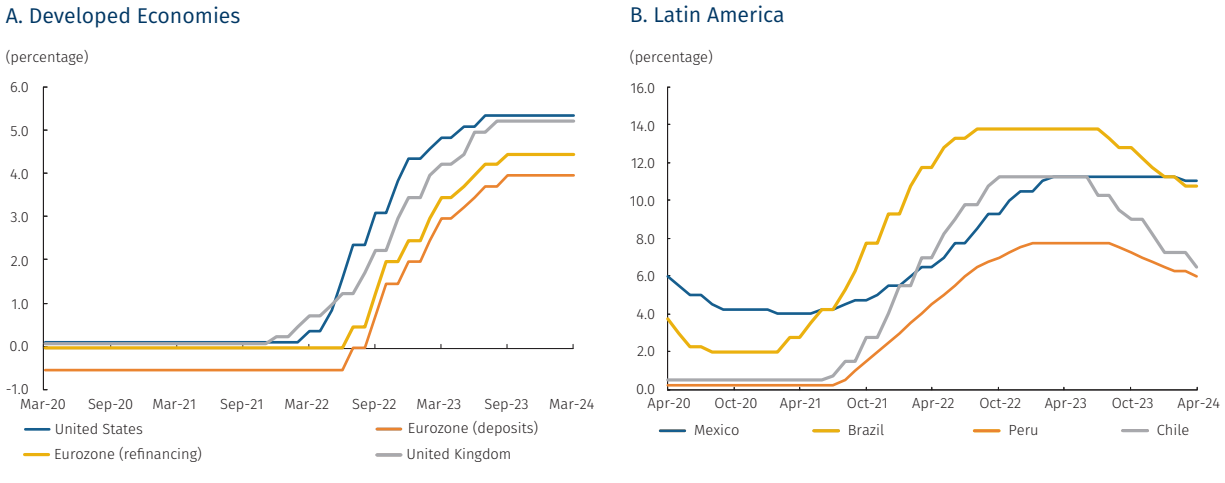
The oil price projections in the forecast horizon have been adjusted upward compared to the previous Report (Graph 2.4), driven by tight supply, increasing demand for crude oil, and escalating geopolitical tensions. During the first quarter of 2024, the average Brent crude oil price stood at USD 82 per barrel (bl), slightly below that of the fourth quarter of 2023 (USD 82.8 bl). However, prices have seen an uptick since then, reaching close to USD 89 bl by April 19. The upward trend in prices and the upward revision in the expected path of the international oil price in this Report are due, in part, to a constrained global oil supply. This restric-

Graph 2.2
Inflation, select main trading partners



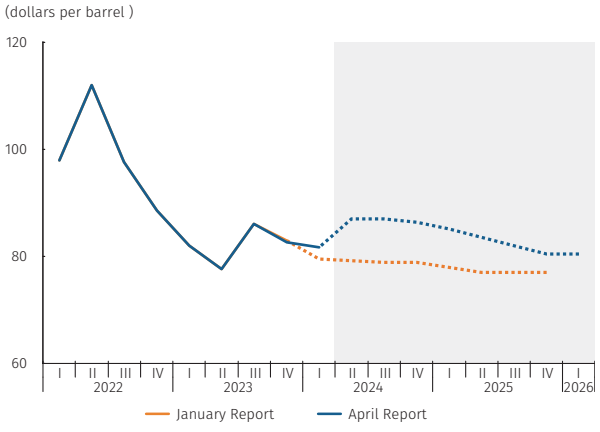
Source: Bloomberg and the Organization for Economic Development and Cooperation (OEDC).

Graph 2.3
Monetary policy interest rate, select main trading partners



Note: April 2024 includes data observed on the 19th of said month.
Source: Bloomberg.

Graph 2.4
Assumed quarterly oil price



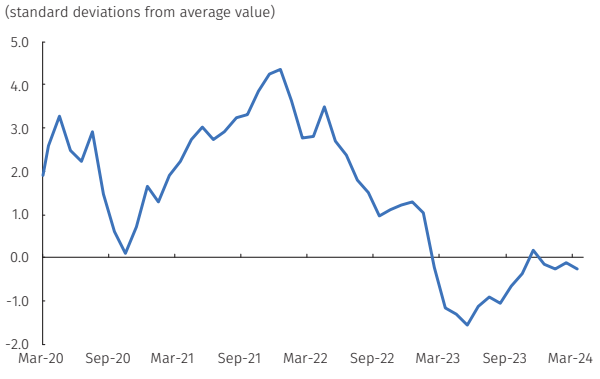
Source: Bloomberg, calculations, and projections by *Banco de la República*.

tion stems notably from crude production cuts by the Organization of the Petroleum Exporting Countries and its allies (OPEC+)[5], expected to continue throughout 2024. Additionally, observed, and anticipated reductions in oil production in Russia and certain other countries like Mexico contribute to this outlook. Also contributing to the upward revision are escalating geopolitical tensions in the Middle East, Ukrainian attacks on Russian oil refineries, increased oil demand propelled by economic activity in China and India, and rising consumption of oil derivatives. However, price increases are expected to be tempered by anticipated growth in global oil supply from non-OPEC countries, particularly the United States, alongside greater adoption of clean energy sources. Taking all factors into account, an average Brent price close to USD 86 bl in 2024 and USD 83 bl in 2025 is assumed, reflecting higher projections compared to those outlined in the January Report (USD 79 bl and USD 77 bl, respectively). Overall, high uncertainty surrounding the path of this price remains, primarily due to geopolitical conflicts impacting the oil market.

In 2024, the terms of trade are expected to decline compared to the previous year, albeit to a lesser extent than forecasted in the January Report, primarily due to anticipated increases in oil prices. For the current year, Colombia's terms of trade are projected to deteriorate year-on-year, driven by declines in international prices of key exported raw materials such as coal and coffee, coupled with rises in the dollar prices of intermediate goods imported by the country. However, the magnitude of this decline is anticipated to be less severe than previously projected, owing to expected increases in international prices of oil and gold.

Global inflation is expected to continue moderating throughout 2024 yet remain above target in countries such as the United States and the Eurozone. In 2023, global headline inflation saw significant declines primarily due to lower energy and food prices, the global economic slowdown, and a restrictive global monetary policy stance. Meanwhile, core inflation moderated more slowly, driven by reduced energy commodity prices and the gradual normalization of global supply chains (Graph 2.5), which contributed to a reduction in goods prices. However, recent headline and core inflation figures for the Organization for Economic Cooperation and Development (OECD) countries have risen due to recent international energy price hikes and persistent pressures on services prices[6]. In this context, the latest IMF Report has slightly revised upwards its projection of global inflation to 5.9% for 2024 and 4.5% for

Graph 2.5
Global Supply Chain Pressure Index[a/]



a/ For its construction the authors used international shipping indicators (Baltic Dry Index (BDI), Harpex index, among others) and certain subcomponents of the Purchase Manager Index (PMI) surveys for the Eurozone, China, Japan, South Korea, Taiwan, the UK, and the US.
Sources: Gianluca Benigno, Julian di Giovanni, Jan J. J. Groen, and Adam I. Noble, "A New Barometer of Global Supply Chain Pressures" Federal Reserve Bank of New York Liberty Street Economics.

5 In the statement released on March 3, 2024, OPEC members and their allies affirmed their commitment to voluntary oil production cuts of 2.2 million barrels per day until the end of the second quarter of 2024.

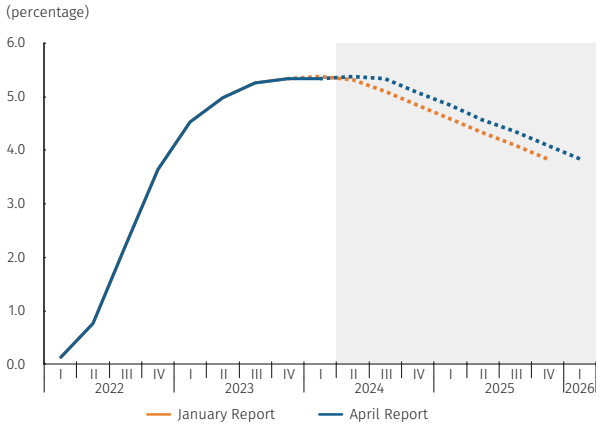
6 As of February 2024, headline and core inflation rates among OECD member countries stood at 5.7% and 6.4%, respectively, following the peak observed in October 2022 (10.7% and 7.7%, respectively).

2025, highlighting that advanced economies are expected to return to their inflation targets before emerging and developing economies. In March 2024, the United States experienced a fourth consecutive month of surprising headline inflation, reaching 3.5% (Graph 2.2), driven by recent increases in prices for local gasoline and certain services. Core inflation also exceeded expectations, standing at 3.8%. Meanwhile, in the Eurozone, the deflationary trend has persisted, with headline inflation moderating to 2.4% and core inflation falling to 2.9% by March (Graph 2.2). Throughout 2024, headline inflation in these economies is anticipated to continue declining as the monetary policy stance remains contractionary, although inflation is expected to remain above target by yearend. Short-term upside risks to this variable are foreseen, associated with geopolitical tensions that could disrupt energy markets, increased transportation costs due to issues in the Panama Canal and the Red Sea, and sustained strength in local labor markets.

2.1.3 International Financial Developmentss

The U.S. monetary policy interest rate was revised upward for the forecast horizon (Graph 2.6), driven by heightened inflationary pressures within the economy. During its April 30 - May 1, 2024, meeting, the Federal Open Market Committee (FOMC) opted to maintain its monetary policy interest rate unchanged within a range of 5.25% to 5.50%[7], aligning with previous projections (Graph 2.3). In the minutes of the March meeting, FOMC members emphasized the necessity of greater confidence in sustained convergence of inflation to its 2.0% target before considering interest rate reductions[8]. This shift occurred as inflation risks tilted from balanced to upward biased, spurred by positive surprises in recent labor market and inflation data[9]. In the weeks subsequent to these developments, futures associated with the monetary policy rate have risen for 2024 and 2025 [10], reflecting expectations of fewer rate reductions than previously estimated by the FOMC's latest projections. Consequently, the Federal Reserve's interest rate assumption for 2024 has been adjusted upward, now envision-

Graph 2.6
Assumed U.S. Federal Reserve quarterly interest rate



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

7 During its meeting on April 11, 2024, the European Central Bank (ECB) opted to maintain its benchmark interest rates unchanged for the fifth consecutive session, while the market anticipates potential reductions starting around mid-2024.

8 This stance was reaffirmed by the Federal Reserve Chairman during the press conference following the May 1st meeting.

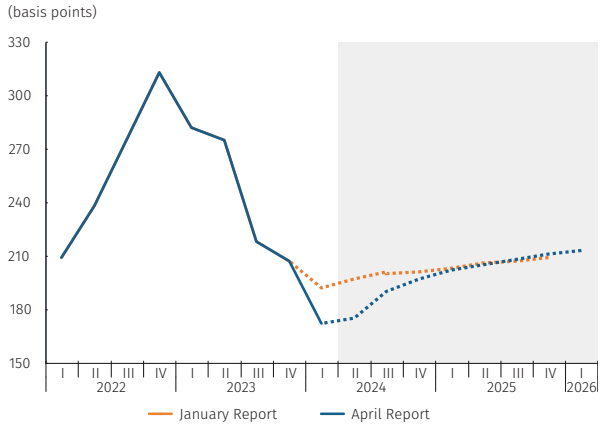
9 In its recent meetings (January, March, and May 2024), the Federal Open Market Committee (FOMC) has noted positive surprises in headline and core inflation for December, January, and February. Following the March meeting, new data revealed a further acceleration in headline inflation to 3.5% and core inflation to 3.8%.

10 As of April 19, 2024, futures linked to monetary policy interest rates for the end of 2024 and 2025 stand at 4.99% and 4.36%, respectively, compared to 4.10% and 3.48% from futures recorded on January 24, 2024.

ing two-phased reductions starting in the latter part of the third quarter, positioning the interest rate within a range of 4.75% to 5.0% by the yearend. Looking ahead to 2025, further rate cuts are anticipated, setting the reference rate within a range of 3.75% to 4.0% by yearend as inflation trends closer to its target. Despite these adjustments, uncertainty surrounding this assumption remains elevated and is linked to concerns about fiscal sustainability, potential increases in the neutral real interest rate, financial stability risks linked to banks' exposure to the commercial real estate sector, and the impact of geopolitical conflicts on international energy prices affecting domestic inflation.

In 2024 and 2025, Colombia's risk premium is expected to be lower than estimated in the January Report (Graph 2.7), driven by looser external financial conditions. During the first quarter of the year, major volatility indicators in international financial markets continued to moderate, returning to pre-pandemic levels. This trend, coupled with the end of policy rate hikes in advanced economies and positive economic performance in the United States alongside improvements in stock indexes, contributed to a relaxation in international financial conditions. Consequently, the risk premiums of several emerging countries, including Colombia, decreased during the first quarter of 2024 compared to the fourth quarter of the previous year (Graph 2.8, panel A). Specifically, Colombia's five-year credit default swap (CDS) dropped from 208 basis points (bps) on average in 4Q23 to 172 bps in 1Q24, accompanied by continued appreciation of the Colombian peso during the same period (Graph 2.8, panel B). However, the escalation of geopolitical tensions in the Middle East during the second week of April heightened market risk aversion and tension, leading to an increase in the country's risk premium from an average of 165 bps in March to 183 bps as of April 19. In light of these events, a slightly lower risk premium trajectory is assumed compared to the previous Report, averaging 184 bps for 2024. For 2025, the assumption maintains a CDS average of 207 bps[11]. This risk premium trajectory reflects an upward trend, indicating heightened uncertainty surrounding the country's fiscal outlook and an expected increase in public indebtedness over the forecast horizon. Additionally, the assumed path accounts for elevated global uncertainty and the presence of growing geopolitical conflicts on the global stage.

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

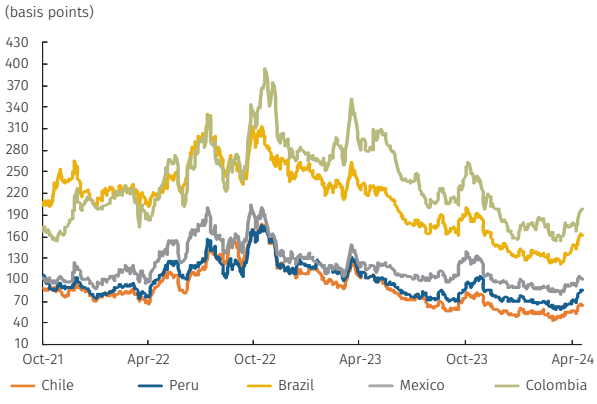


a/ Five-year credit default swaps
Source: Bloomberg, calculations, and projections by *Banco de la República*.

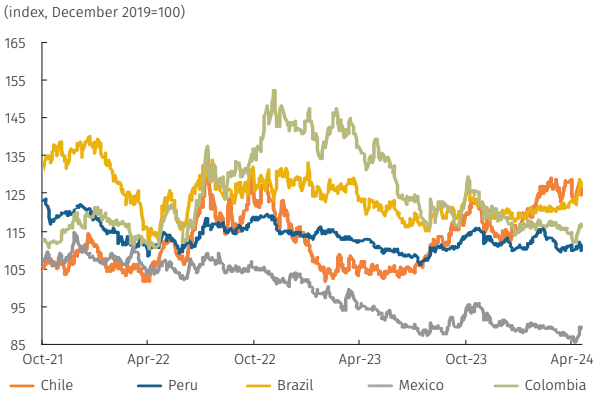
11 In the January Report, the forecast for Colombia's five-year CDS was 198 bps for 2024 and 207 bps for 2025.

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



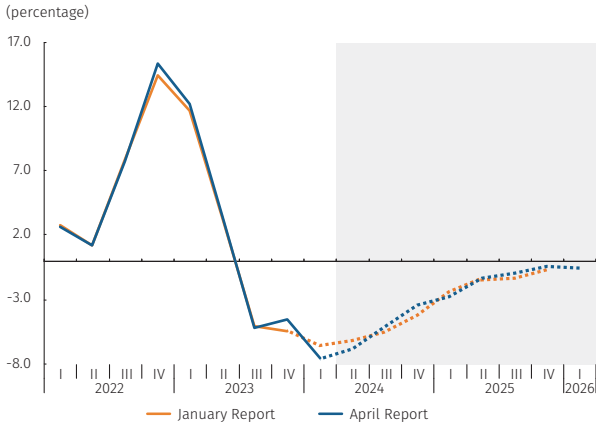
Note: Data to April 19, 2024
Source: Bloomberg, calculations by *Banco de la República*.

2.2 Macroeconomic Projections[12]

2.2.1 Inflation

Headline inflation would continue to decline through the remainder of 2024 at a slightly faster pace compared to the previous Report, converging towards the target and expected to reach 3.0% by 2025. This gradual moderation and convergence are driven by a contractionary monetary policy stance, narrowing output and real exchange rate gaps (Graph 2.9), moderating inflation expectations, and the easing of supply shocks that impacted prices in recent years. However, due to the build-up of past price pressures and their resulting inertia on inflation in Colombia, levels are anticipated to remain above target in 2024, settling at 3.0% by 2025. Compared to the January Report, the 2024 forecast path has been revised downward primarily due to weaker-than-expected results across all sub-baskets for the first quarter, except for services. Additionally, anticipated lower adjustments in the prices of some regulated items for the remainder of the year, coupled with increased disinflationary exchange rate pressures. These downward influences are expected to offset some upward pressures from the services sub-basket, reflecting slightly greater persistence in their adjustments than initially anticipated. For 2025, the headline inflation forecast has been slightly adjusted upward due to additional upside pressures in certain regulated products and food, set against a backdrop of lower excess installed capacity compared to estimates from the previous Report. These projections also account for the presence of an *El Niño* phenomenon with transitory and moderate effects on infla-

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



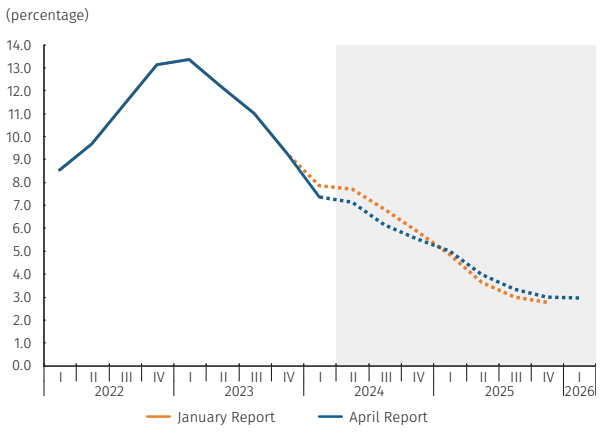
a/ The real exchange rate (RER) inflationary gap captures inflationary pressures caused by the exchange rate. Positive values imply upward inflation pressures. The gap is calculated as the deviation in the real exchange rate relative to a non-inflationary trend estimate under the 4GM monetary policy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

12 Projections are based on an active monetary policy wherein *Banco de la República*'s monetary policy interest rate is adjusted to guarantee alignment with the inflation target.

tion, alongside estimated impacts from health taxes and expected fuel price increases. Overall, headline annual inflation is anticipated to reach 5.5% by yearend 2024 and converge to 3.0% by the end of 2025 (refer to Chart 2.10).

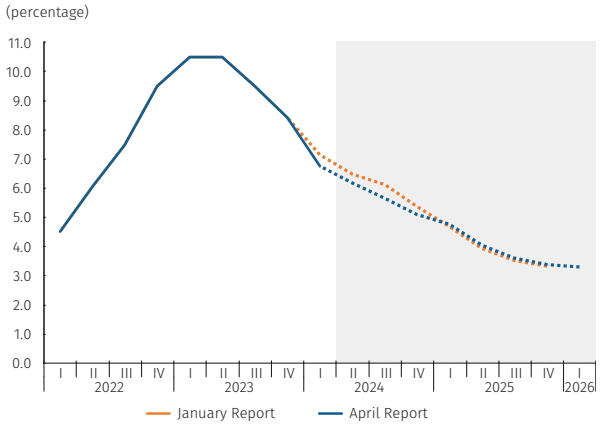
Core inflation is also expected to sustain a downward trajectory over the forecast horizon, supported in part by a notable deceleration in goods price adjustments despite expected inertia in services. The annual change in the CPI excluding food and regulated items is projected to decline at a slightly slower pace than headline inflation, nearing levels around 3.0% by the end of 2025, attributable to several contributing factors as previously outlined. Within its components, the forecast path for annual variation in the CPI for goods has been revised downward compared to the previous Report, standing at values significantly below 3.0% throughout the forecast horizon. This adjustment reflects more pronounced downward exchange rate pressures for a substantial portion of 2024, coupled with significant price reductions in certain imported goods. On the other hand, services inflation is anticipated to gradually decrease over the forecast horizon, albeit at a slightly slower pace than previously projected in the January Report. This is driven by greater inflationary persistence in key services prices at the start of 2024, particularly rents, which continue to experience declining annual variations initiated in March but at a slightly slower rate compared to projections from the January Report. Consequently, services inflation is expected to remain slightly above 4.0% by the end of 2025. Considering these dynamics, the forecast path for annual core inflation has been revised slightly downward for 2024 and maintains similar values for 2025 to those in the previous Report, projecting at 5.1% and 3.4%, respectively, by yearend (Graph 2.11).

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)

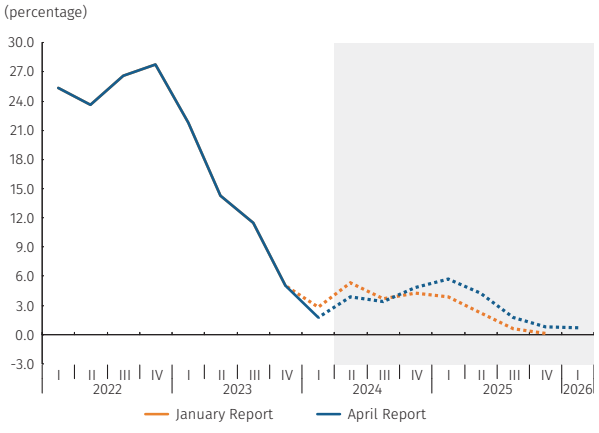


Source: DANE, calculations and projections by *Banco de la República*.

Food prices are anticipated to continue adjusting at annual rates lower than the rest of the CPI basket, thus contributing to the decline in inflation throughout 2024 and 2025. However, this basket will face certain upward pressures that will temporarily accelerate its rate of adjustment until early 2025. These pressures stem from a phase in the agricultural cycle characterized by supply contractions following the elevated levels observed in recent months, exacerbated by the current *El Niño* phenomenon, which will moderately impact prices for the next several months. Additionally, the gradual narrowing of the negative gap in the real exchange rate and temporary increases in some international prices[13] will further contribute to rising annual food inflation, aided by a low statistical comparison base. The magnitude of these upward

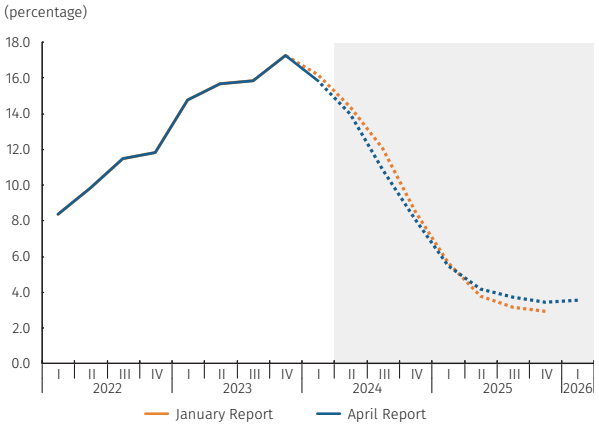
13 As of March 2024, the World Bank's international food and beverage price index continued its upward trend, primarily driven by increases in the beverage category, along with other food components like oils and flours. Cocoa remains a major contributor to this index, alongside rising coffee prices.

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



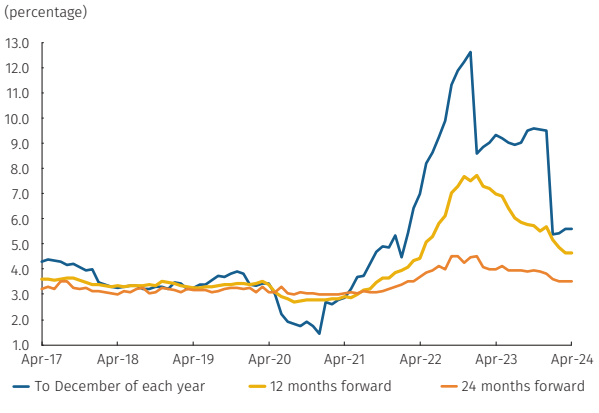
Source: DANE, calculations and projections by *Banco de la República*.

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



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

Graph 2.14
Bank and stockbroker inflation forecast[a/]



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*.

pressures exceeds earlier expectations from the previous Report, prompting a revision in the forecast path from the fourth quarter of 2024. Nonetheless, by mid-2025, the trajectory is anticipated to resume a downward trend with the normalization of the agricultural cycle and the dilution of supply shocks. The forecast also accounts for the temporary, upward impact associated with increased health taxes by the end of 2024 and 2025. Taking these factors into consideration, annual food inflation is projected to reach 4.8% by the end of 2024, gradually decreasing to 0.8% by the end of 2025 (Graph 2.12).

The prices of regulated items are anticipated to continue exerting upward pressures, albeit easing over the forecast horizon. The expected path maintains a downward trend throughout 2024 and 2025, still incorporating the effects of indexation at high but declining rates, cost and investment recognition for certain public services, and the impact of some international commodity prices on domestic prices. The forecast path for 2024 has been revised downward, considering lower observed and expected adjustments in urban transportation, electricity, and fuels. However, for 2025, there is a slight upward revision, primarily driven by anticipated higher investments in the utilities sector, which would impact consumer tariffs. Gasoline prices are expected to align with international benchmarks, and diesel (ACPM) prices are projected to gradually increase to narrow the gap with international prices, thereafter, following its trajectory. The primary inflationary effects of these adjustments will be indirect and generalized within the CPI basket, primarily affecting transportation costs. Overall, the annual variation of the CPI for regulated items is forecasted to be 8.0% by the end of 2024, decreasing to 3.4% by the end of 2025 (Graph 2.13).

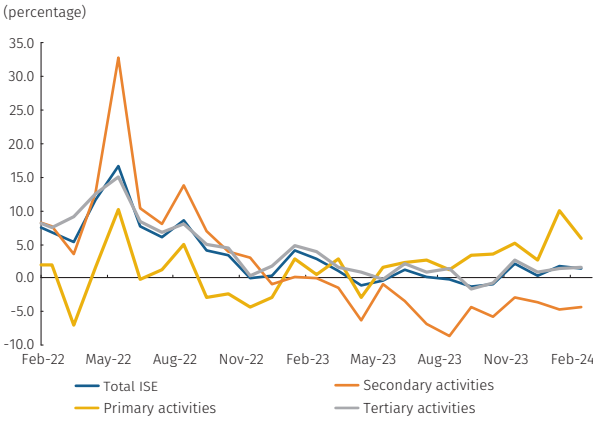
Since January, various inflation expectation indicators have experienced significant declines, with the downward trend becoming more pronounced over longer time horizons. However, most inflation expectation indicators remain notably above target across different horizons. The expectations of economic analysts, obtained from the monthly survey conducted by *Banco de la República* between April 10 and 12 (Graph 2.14), suggest yearend total median inflation expectations and inflation excluding food to stand at 5.6% and 5.8%, respectively - higher than the January survey's expectations of 5.4% for both categories. By the end of 2025, these projections drop to around 3.8% for the Eurozone and 3.7% for inflation, excluding food. Two- and five-year ahead inflation expectations reflect median expectations of 3.5% (compared to 3.6% in January) and 3.0% (unchanged from January), respectively. Results from the Quarterly Expectations Survey also indicate declines between January and April, with two-year ahead Eurozone expectations decreasing from 4.7% to 4.0% and five-year ahead expectations remaining around 4.0%. Additionally, as of April 24 estimates derived from public debt bond data, adjusted for inflationary risk and liquidity premiums

(break-even inflation: BEI). The two, three, and five-year ahead expectations are recorded at 4.5%, 4.3%, and 4.1%, respectively - down from 5.1%, 4.8%, and 4.4% in January.

2.2.2 Economic Activity

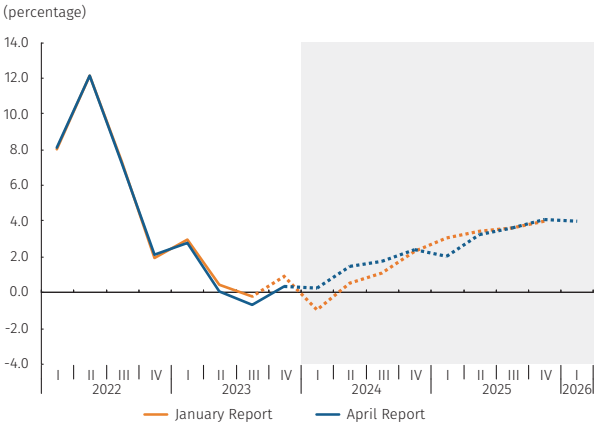
The available information suggests that the economy would have experienced stronger growth in the first quarter than anticipated in the previous Report, driven partly by transitory supply events and increased household spending dynamics. As of February, key indicators—including the Economic Tracking Indicator (ISE: Graph 2.15)—and select indicators to March, such as energy demand, the movement of ground cargo transport (Box 1), regional economic pulse (PER), and regional bank transactions, indicate higher levels of economic activity compared to the previous quarter, with an estimated annual growth rate approaching 0.3%. This represents an upward revision from that published in the previous Report (-1.0%) (Graph 2.16). The heightened economic activity is primarily attributed to strong performance in primary agricultural activities, particularly in crops other than coffee and in livestock (including pigs and eggs), which contributed significantly to quarterly growth in this sector. Tertiary activities related to electricity, gas, and water services also made positive contributions to annual GDP growth, driven by robust demand for regulated energy services. Additionally, public administration, health, education, and domestic trade in non-durable goods and services supported overall growth. In contrast, secondary sectors have largely maintained similar levels to the previous quarter, characterized by ongoing deceleration in manufacturing and stagnant performance in residential and non-residential construction. Despite this, civil works have shown some improvement due to advancements in regional projects like the first line of the Bogotá metro.

Graph 2.15
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, repairs, 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*.

Graph 2.16
Quarterly GDP[a/]
(annual change)



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

In the first quarter, domestic demand is anticipated to continue exerting a negative influence on annual growth despite a slight acceleration in total consumption compared to the second half of 2023. During this period, absorption is projected to decline year-on-year, resulting in a negative contribution to GDP growth. Among the major expenditure components, consumption is expected to be the sole contributor to positive annual growth, expanding both annually and quarterly. This growth is primarily driven by household spending, which has continued to experience marginal growth and an accelerated annual growth rate. Some of this behavior is transient, particularly due to the strong performance of the non-durable goods segment. Consumption of services, the largest component of household expenditure, has also continued to rise on both quarterly and annual levels. Conversely, consumption of durable and semi-durable goods has exhibited negative annual growth rates, albeit less pronounced than in previous quarters. Indicators related to household spending—including the

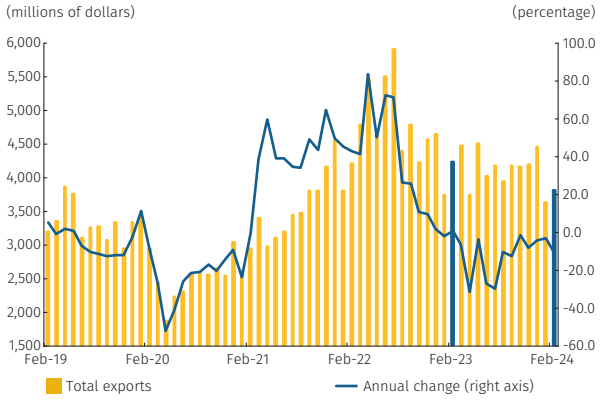
Economic Tracking Indicator (ESI), retail sales as of February, imports of consumer goods, commercial bank transactions, consumer credit disbursements, and vehicle and motorcycle registrations—support these observations. Regarding public consumption, first-quarter levels are expected to be slightly higher than the previous quarter, aligning with increased spending outlined in the Financial Plan outlined by the Ministry of Finance and Public Credit (MHCP).

Fixed investment is projected to have ceased its decline compared to the end of last year, with total investment increasing due to improved inventory performance. The reduced deaccumulation of inventories, particularly in the manufacturing and trade sectors, has contributed to the quarterly rise in gross capital formation. However, despite these improvements, a notable annual decline in investment is still anticipated. These forecasts, informed by data on imports of capital goods as of March, suggest that investment in machinery and equipment has remained at similarly low levels seen in the fourth quarter of 2023, marking a stabilization from the previous year's downward trend. Construction investment is not expected to exhibit remarkable growth, as any moderate increase in civil works, primarily driven by projects in Bogotá, is offset by declines in housing and non-residential construction segments.

Net external demand in constant pesos is anticipated to remain in negative territory, reaching levels comparable to those seen in the fourth quarter of 2023, yet making a positive contribution to annual growth. This scenario is driven by a slight decrease in exports in constant pesos compared to yearend 2023, particularly affecting basic goods such as coal, oil, and coffee, offsetting the anticipated strong performance of non-traditional external sales and services (Graph 2.17). Additionally, there has been a marginal decline in imports in quarterly terms, as indicated by preliminary data from the DIAN, continuing the path toward a significant annual decrease (Graph 2.18). Consequently, the trade imbalance in the first quarter is estimated to have remained close to those recorded before the pandemic. This adjustment represents a consolidation from the historically high deficit observed during the pandemic and up until the middle of last year. As a result, the contribution of net external demand to annual GDP change is expected to remain positive during the first quarter, underscoring ongoing adjustments in this indicator following the pandemic-related disruptions experienced in previous periods.

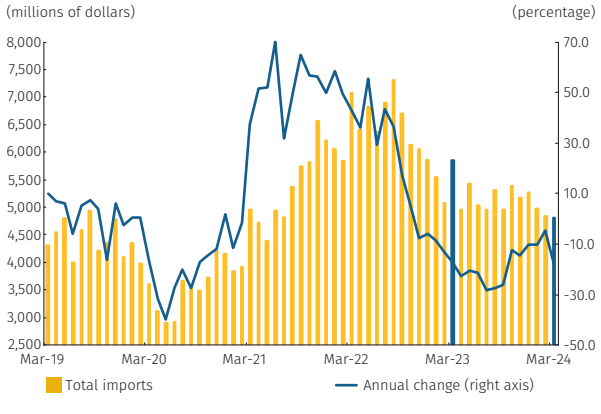
For the remainder of 2024, economic growth is anticipated to sustain a modest rate below its long-term growth potential. By 2025, a recovery is expected to unfold alongside a relaxation of monetary policy as inflation converges towards the target. Projected economic growth in 2024 will unfold amidst declining real domestic interest rates, aligning with inflation convergence and favorable external financing conditions.

Graph 2.17
Total goods exports (FOB)
(monthly)



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

Graph 2.18
Total goods imports (CIF)
(monthly)



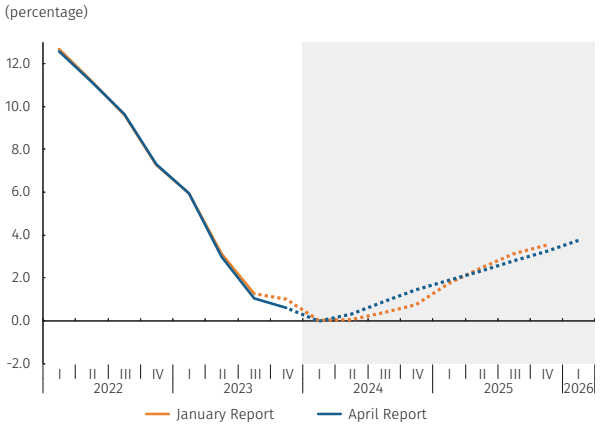
Source: DANE and DIAN (preliminary foreign trade data); calculations by *Banco de la República.*

These factors are poised to accelerate total consumption annual growth, driven by more dynamic private consumption and expanding public consumption. However, investment dynamics are expected to remain subdued, with levels even lower than those observed in 2023. This is attributed to an annual decline in investment in machinery, equipment, and housing despite a gradual recovery in civil works fueled by advances on road and local investment projects like the Bogotá metro (Box 2). On the external demand front, increased dynamism in exports is expected, with no further drops anticipated in imports. Consequently, the Colombian economy is forecasted to grow by 1.4% for the entirety of 2024 (Graph 2.19), an improvement from the previous Report's estimate of 0.8%, albeit below potential GDP levels. Looking ahead to 2025, the Colombian economy is poised for a more robust recovery, supported by reduced external and domestic financing costs, increased dynamism in domestic demand, and stronger exports. This should pave the way for annual growth of 3.2%.

In 2024, the unemployment rate is projected to increase steadily over the course of the year. It is anticipated that the national unemployment rate will average around 10.7%, with the thirteen cities averaging slightly higher at 10.8%. The information available as of February from the Integrated Household Survey (GEIH for its Spanish acronym) indicates marginal contractions in employment, accompanied by a continued rise in the inactive population in recent months, leading to a decrease in the global labor force participation rate to 63.6%. Despite the tightening labor supply, the national unemployment rate for the rolling quarter ending in February rose compared to January, reaching 10.6%[14]. Given the recent labor market trends and the economic activity projections presented in this Report, the seasonally adjusted national unemployment rate is expected to continue to rise progressively, averaging between 9.6% and 11.8% in 2024, with 10.7% as the most likely value. Similarly, urban unemployment is expected to trend upward throughout the year, reaching a most likely value of 10.8% (within a range of 9.5% to 11.9%). These figures align closely with those outlined in the previous Report for the national aggregate and represent an upward adjustment for the urban area. Considering these projections, estimates of an unemployment rate consistent with stable inflation (NAIRU: non-accelerating inflation rate of unemployment) suggest a convergence towards its long-term value over the forecast horizon, reflecting an unemployment rate gap similar to that estimated in the January Report. This would serve to mitigate inflationary pressures stemming from wage costs associated with labor market dynamics.

The economy's excess demand observed in 2022 and 2023, as measured by the annual output gap, would have been elimi-

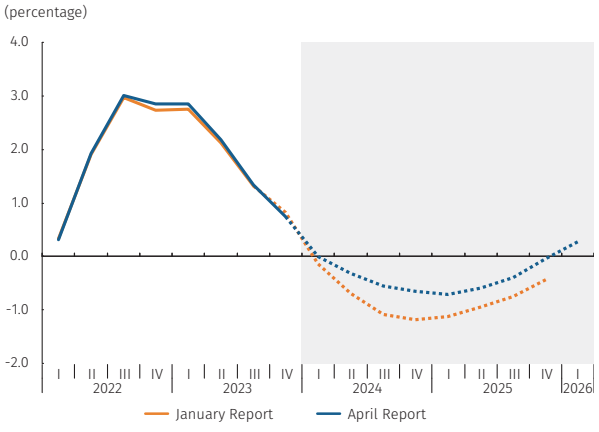
Graph 2.19
GDP, four-quarter cumulative[a/]
(annual change)



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

14 See Chapter 3 of this Report for additional information.

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*.

nated by the beginning of this year. Looking ahead, a negative output gap is projected to gradually narrow over the forecast horizon. The estimated closing of the annual output gap in the first quarter of 2024 (Graph 2.20) aligns with a domestic demand that has contracted over several quarters, particularly in investment, alongside reduced headline and core annual inflation rates, and amid tight domestic and external financial conditions. Moving forward, the economy is anticipated to begin exhibiting excess productive capacity, reflecting growth in productive activity below its potential in the context of restrictive domestic financial conditions and heightened uncertainty. By the end of 2024, the annual output gap is estimated to be around -0.7%, indicating lower projected excess capacity compared to the January Report's forecast (-1.2%). This upward revision in the gap for 2024 considers an increase in this year's GDP growth forecast due to transitory increases in potential output resulting from certain supply shocks, expected to lead to a 2.9% growth in 2024 (slightly higher than the 2.8% estimated in January). Excess productive capacity is expected to gradually diminish from the second half of 2025 as economic activity gains momentum, coupled with lower real interest rates as headline inflation continues to converge towards the target. Consequently, the output gap is expected to close by the end of that year. These revisions in potential GDP and the output gap reflect, in part, historical adjustments in the official GDP series.

2.2.3 Balance of Payments

In 2024, the current account deficit is projected to have widened to 3.1% of GDP[15]. This outcome is driven by a larger trade deficit in goods, notably due to reduced export revenues aligned with lower international prices for traditional export goods like coal and coffee compared to 2023[16], despite the upward revision of international oil prices. Additionally, imports are expected to rebound as domestic demand recovers and economic growth increases, coupled with higher international prices for imported goods compared to the previous year. However, the expansion of the current account deficit will be partly offset by the continued strong performance of tourism exports, reduced profits of some foreign direct investment (FDI) companies resulting from lower export prices (e.g., coal), and strong levels of workers' remittances[17]. From a savings and

15 For the first quarter of 2024, a projected current account deficit of approximately 2.5% of GDP is anticipated, down from the 3.9% of GDP observed in the same period in 2023. This reduction in the annual deficit is primarily attributed to a lower forecast deficit in factor income and a higher projected surplus in current transfers.

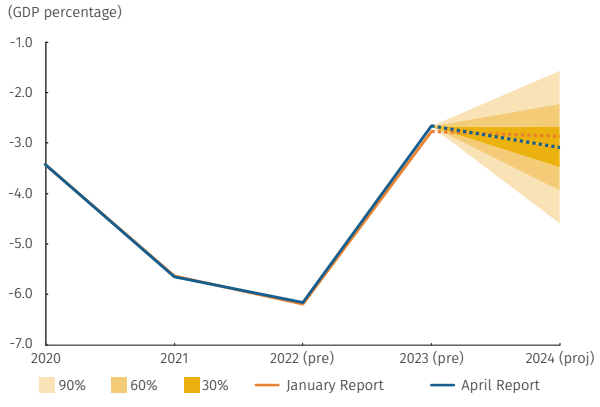
16 Furthermore, in 2024, there will not be revenues from aircraft re-exports as seen in the previous year.

17 Workers' remittances are expected to increase in 2024 due to high levels of Colombian migration abroad observed in 2022 and 2023, as well as tight labor markets in several countries where Colombian migrants reside.

investment perspective, the increased current account deficit in 2024 reflects a larger public sector imbalance compared to the previous year. Overall, there is high uncertainty surrounding these forecasts linked to the future evolution of international commodity prices, global financial conditions, external financing costs, and local and global growth risks, among other factors.

In 2024, we anticipate higher external financing needs driven by the expected widening of the current account deficit (Graph 2.21). Foreign direct investment (FDI) will remain the primary source of financing but is expected to decline compared to the previous year, reflecting lower international prices of some of the main commodities. Meanwhile, the public sector will face increased financing requirements, and the private sector will likely accumulate assets abroad. The assumption is that the country will maintain access to external resources despite the high cost of external financing. This is due to long-term interest rates in the United States remaining elevated compared to pre-pandemic levels and a risk premium for Colombia that is above its historical average.

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

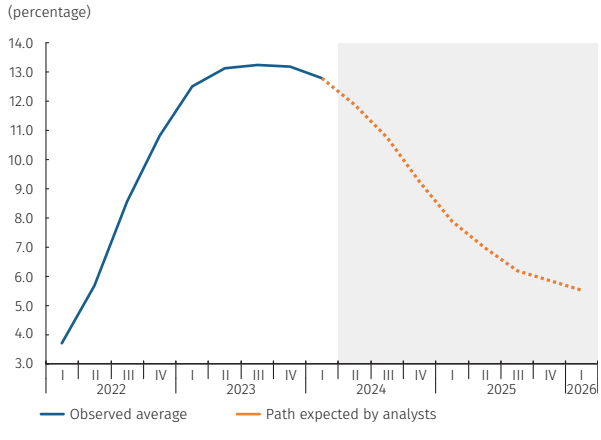


(pre): preliminary, (proj): projected
a/ The graph displays the probability distribution and its most likely path for 2023 and 2024. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode), using primarily as reference the densities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

2.2.4 Monetary Policy and Interest Rates Expected by Analysts

The median analysts' expectation for the second-quarter policy interest rate stands at 11.9% for 2024 and would reach an average of 9.25% 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 April, indicates that the policy interest rate is expected to decline gradually throughout 2024, reaching 9.25% by the fourth quarter. Looking ahead, analysts anticipate the policy rate to decrease further to 5.8% by the fourth quarter of 2025 and stand at 5.5% by the end of the eight-quarter forecast horizon. The policy rate path outlined in this Report aligns with the anticipated reduction in headline inflation and its convergence toward the target over the forecast period. Notably, this path is slightly higher, on average, for the eight-quarter horizon compared to what analysts projected in the April 2024 survey. By yearend 2025, the analysts anticipate higher inflation rates and lower GDP growth expectations relative to the figures projected by the Bank's technical staff.

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



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 April 2024.
Source: *Banco de la República.*

2.3 Balance of Macroeconomic Risks

The current risk balance is characterized by heightened uncertainty, presenting upward risks for inflation and a mixed outlook for growth. The predictive densities (PD) exercise[18],

18 Technical details on the construction of the risk balance through the predictive density exercise can be found in the paper "*Caracterización y*

which summarizes the risk balance across multiple variables within the macroeconomic forecast, indicates significant uncertainty driven by external factors affecting the economy, alongside mixed revisions concerning domestic risk factors. On the external front, the most notable revision with respect to the January Report relates to increased uncertainty and an upward bias in oil prices, largely due to resurging geopolitical tensions in the Middle East. This factor has also contributed to moderate upward pressures on international food prices and the cost of external financing. Domestically, substantial uncertainty persists regarding the impact of weather conditions on prices, especially within the regulated items basket, which maintains an upward risk balance. Additionally, there's uncertainty surrounding the level of inertia in the inflation of the services basket. However, risks associated with the goods and food baskets have diminished compared to previous Reports, leading to a reduction in the uncertainty levels in these baskets. Moreover, the risk balance for growth retains elevated uncertainty levels and incorporates a mixed outlook across the forecast horizon. Notably, except for the first quarter of the year, downside risk factors dominate throughout the projection period. These factors reflect observed declines in consumer and investor confidence, as well as a worsening in the outlook for public consumption due to slower revenue collection and low budget execution.

Externally, the escalation of geopolitical tensions poses significant risks, potentially impacting external commodity prices and the country's risk perception. The predictive densities (PD) exercise for external variables incorporates upward risks, notably in oil prices driven by the potential escalation of tensions in the Middle East and Russia, alongside possible supply cuts. These geopolitical tensions have also affected global export routes, which, coupled with adverse weather conditions, have contributed to an upward bias in international food prices. Furthermore, heightened geopolitical conflicts could elevate global risk perception, leading to increased external financing costs for emerging economies. This, combined with local financial uncertainty, explains an upward bias in Colombia's sovereign risk premium. Conversely, growth among trading partners exhibits a moderate downward bias attributed to subdued economic activity forecasts in China, ongoing international trade fragmentation, and the aforementioned geopolitical tensions. The PD exercise also identifies moderate upside risks related to the Federal Reserve interest rate and external inflation. This is driven by recent increases in U.S. energy and services prices, a persistently tight U.S. labor market, and a potentially higher neutral interest rate than previously anticipated. The recent uptick in U.S. inflation has shifted expectations toward delayed Fed rate cuts. The risk of this scenario leading to less favorable financial conditions than in the central scenario, with potential upside implications for the risk premium and exchange rate, underscores significant uncertainty in the macroeconomic outlook, particularly amid global and local economic uncertainties and less optimistic fiscal projections in Colombia.

Trajectories for both headline and core inflation face predominant upside risks, driven by increased pass-through effects from adverse weather conditions and the persistence of inflation in the services basket. The most significant upward biases in the predictive densities (PD) exercise on inflation are concentrated in the regulated items and services baskets. Regarding inflation for regulated items,

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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.

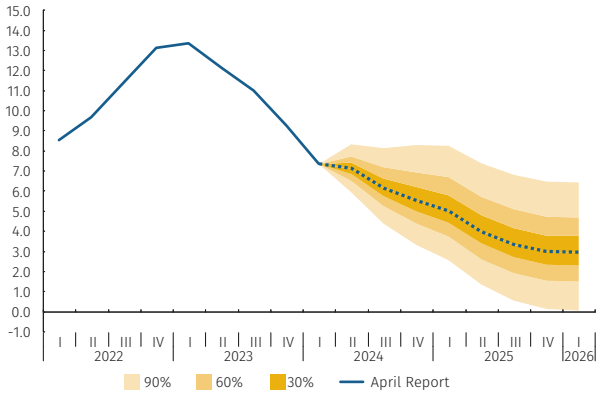
higher thermal energy production and potential rationing due to droughts could impact energy tariffs more severely than anticipated. Additionally, there are upside risks concerning fuel and public transportation prices in major cities. Regarding the services basket, upward risks stem from higher inflation inertia, potentially influenced by stronger pass-through of labor cost increases (attributed to minimum wage hikes and reduced working hours). This is evidenced by upward surprises in certain basket items, notably administrative services, and the potential impacts of a less dynamic housing supply on rents. For food prices, there is a moderate upward risk due to the heightened impacts of droughts on prices and the potential effects of geopolitical conflicts disrupting logistics chains and increasing production costs. Finally, for the goods basket, risks are balanced. Upside risk factors like escalating geopolitical tensions and increased transportation and logistics costs are offset by downside risk factors such as accelerated technological innovation and potential oversupply of goods due to pandemic-related factors impacting households.

In the short term, the path of economic activity carries an upside risk; however, for the remainder of the forecast horizon, downside risks prevail. The predictive densities exercise for economic activity exhibits an upside bias for the first quarter of 2024, driven by positive surprises in January and February's ISE records, which could imply higher-than-expected GDP growth. However, for the remainder of the forecast horizon, the risk balance remains skewed to the downside. The factors contributing to this outlook are linked to deteriorating consumer confidence, a potentially weaker labor market than anticipated, possible constraints on public consumption due to lower budget execution and tax collection, and heightened uncertainty in capital-intensive sectors that may continue to hinder investment. Moreover, the PD exercise endogenously incorporates downside risks stemming from the possibility of an extended tight monetary policy stance in response to upward price risks. These downward risks outweigh the upside risk associated with the potential underestimation of the demand component in projected growth figures for the first quarter of the year.

In summary, the risk balance maintains relatively high levels of uncertainty, resulting in upside risks for inflation and mixed risks for growth over the forecast horizon. In this context, there is a 90% probability that headline inflation will fall within a range between 3.3% and 8.3% by the end of 2024 and between 0.1% and 6.5% by the end of 2025 (Graph 2.23). Similarly, core inflation, with the same level of certainty, is expected to range between 2.9% and 7.3% at the close of 2024 and between 1.0% and 6.2% by the fourth quarter of 2025 (Graph 2.24). The probabilities that headline and core inflation will fall below 4.0% by the fourth quarter of 2024 are 13% and 22%, respectively. By the end of 2025, these probabilities increase to 65% for headline inflation and 61% for core inflation. Regarding economic activity, there is a 90% probability that annual GDP growth will range between -0.4% and 3.2% in 2024 and between 1.0% and 5.4% in 2025 (Graphs 2.25 and 2.26).

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

(percentage)

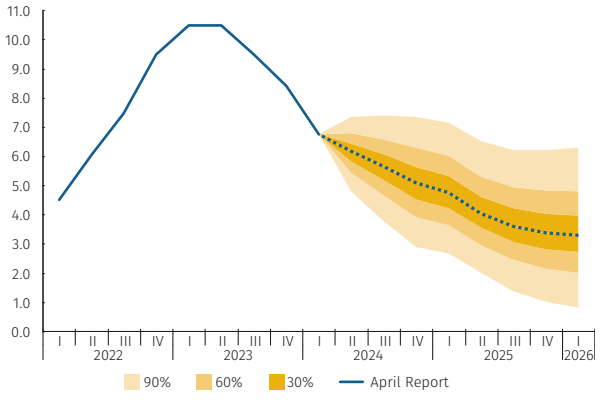


	4Q 2024	2Q 2025	4Q 2025
Mode	5.5	4.0	3.0
< Mode	45%	42%	44%
	Intervals		
<2	0.5%	10.0%	25.8%
2 a 4	12.0%	32.5%	39.4%
>4	87.5%	57.5%	34.9%

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 April 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)

(percentage)

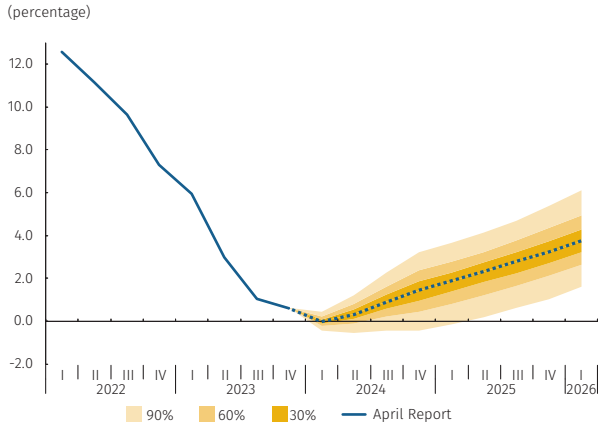


	4Q 2024	2Q 2025	4Q 2025
Mode	5.1	4.1	3.4
< Mode	50%	45%	45%
	Intervals		
<2	0.8%	4.9%	15.9%
2 a 4	20.9%	38.2%	44.8%
>4	78.3%	56.8%	39.3%

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

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

(percentage)

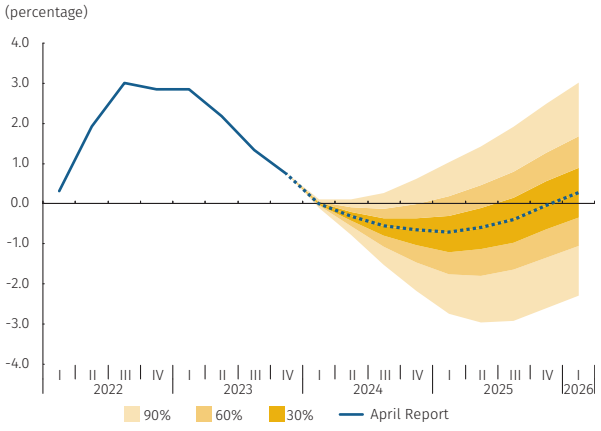


	4Q 2024	4Q 2025
Mode	1.4	3.2
< Mode	53%	51%
	Intervals	
<0	10.8%	0.6%
0 a 2	60.2%	17.3%
2 a 3,5	25.8%	41.5%
>3,5	3.2%	40.6%

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 April Report.
Source: DANE, calculations and projections by *Banco de la República*.

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

(percentage)

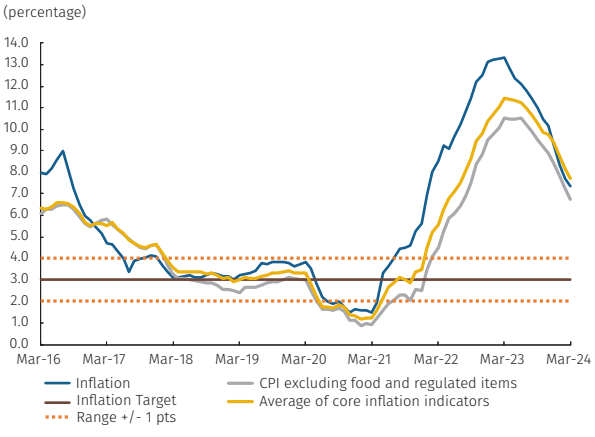


	4Q 2024	4Q 2025
Mode	-0.7	0.0
< Mode	56%	51%
	Intervals	
<-2	7.2%	10.2%
-2 a 0	75.0%	41.6%
0 a 2	17.4%	38.4%
>2	0.4%	9.9%

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 April Report.
Source: DANE, calculations and projections by *Banco de la República*.

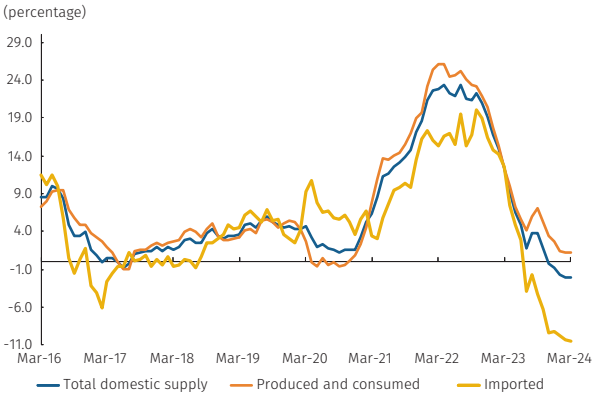
3. Current Economic Situation

Graph 3.1
CPI and core inflation indicators
(annual change)



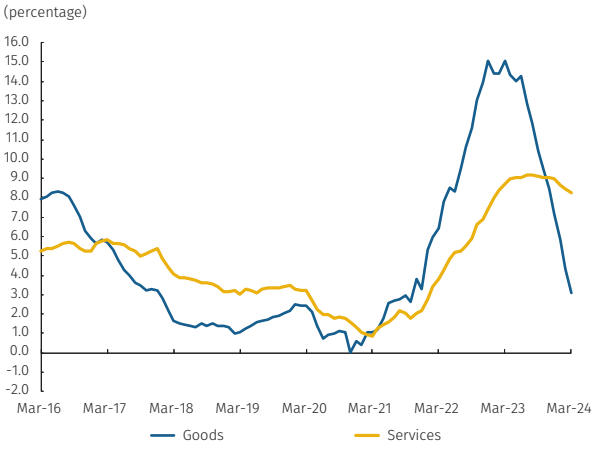
Sources: DANE and *Banco de la República*.

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*.

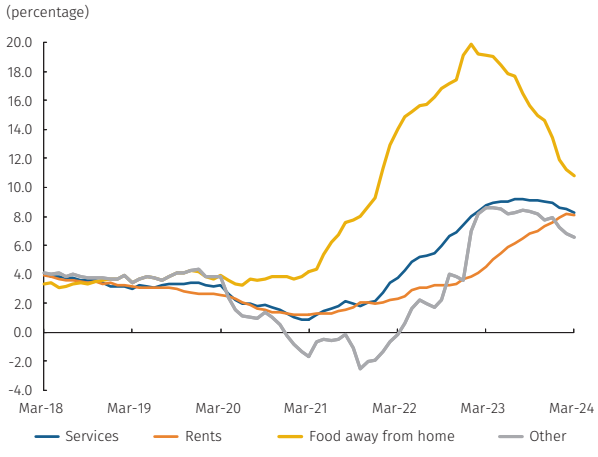
3.1 Inflation and price behavior

The first quarter of 2024 witnessed a significant decline in inflation and at a faster rate than anticipated in the previous Report. In March, inflation was at 7.4%, a decrease from the 9.3% recorded in December 2023. This decline emphasizes the year-long downward trajectory of headline inflation from the peak recorded a year ago (13.3%). Similarly, core inflation (excluding food and regulated items) also saw a fall in the first months of the year, standing at 6.8% in March (compared to 8.4% in December 2023), continuing the downward trend that began in July last year (Graph 3.1). Several factors played a role in the decline of headline and core inflation during the first quarter of the year. On the domestic front, the slowdown in demand, the presence of excess production capacity, and lower exchange rate pressures led to an amelioration in the pace of adjustment and even heralded reduction declines in a broad set of consumer price index (CPI) items. This ensued despite real increases in the minimum wage and indexation to still high inflation rates. Likewise, lower international cost pressures, despite the continuing conflicts in Ukraine and the Middle East, generally contributed to a fall in external commodity prices. The lower annual adjustment of non-labor costs also facilitated the foregoing, which is reflected in the descending dynamics in the producer price index (PPI) of domestic supply (from -0.8% in December to -2.2% in March) and its local (from 2.6% to 1.2%) and imported (from -9.2% to -10.5%) components (Graph 3.2)[1]. It is noteworthy that the drop in annual consumer inflation in Colombia has lagged behind than that recorded in some peer countries or developed economies. This can be associated with idiosyncratic factors, such as the cumulative effect of fuel and electricity tariff increases over the last twelve months.

Following several quarters of a noticeable decline, annual goods inflation approached 3.0% in March. At the start of 2023, annual goods inflation started to decline from levels near 15.0% back to 3.1% seen in March of this year (Graph 3.3). This downward trend is explained by price reductions across a broad spectrum of imported goods, raw materials, and inputs, together with the appreciation of the Colombian peso against the US dollar during the year to date and weak domestic demand. Thus, a significant portion of the upward shocks that occurred in the aftermath of the COVID-19 pandemic have ameliorated. The decreases seen in price levels of certain components within this sub-basket are particularly relevant, including mobile phones, computers, and household appliances (especially televisions and sound systems), which

1 PPI data 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*.

have experienced aggregate year-to-date price reductions of around 4.0% to 8.0%.

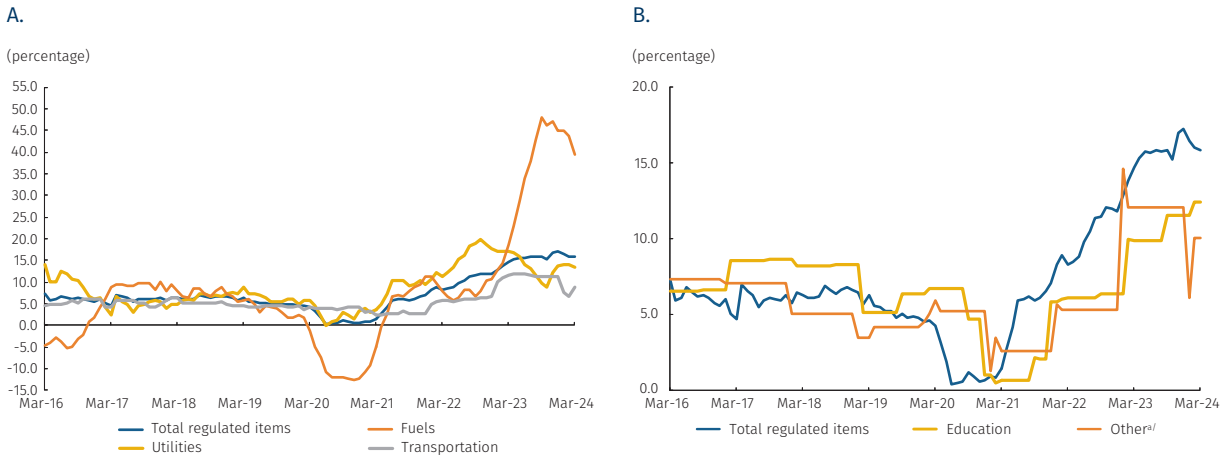
Annual inflation in services to March has also declined year-to-date, albeit at a more gradual pace. This high persistence largely explains the high level of consumer inflation in Colombia. Services inflation stood at 8.3% in March, compared to 9.0% in December 2023 (Graph 3.4). Its decline is chiefly due to the behavior of the food away from home (FAH) component, whose downward momentum between December (13.4%) and March (10.8%) reflects lower adjustments in food and utility prices seen in recent months. To a lesser extent, the subgroup identified as "Others"[2] was also placed on the services CPI due to lower price adjustments recorded in higher education. In contrast, rent was one of the few subgroups in this basket that exerted upward pressure, as its annual change rose from 7.6% in December to 8.1% in March. The behavior of this component was highly affected by the indexation of contracts to December 2023 headline inflation, as well as a fall in new housing supply, particularly in Bogotá, and the limited availability of real estate for rent in Bogotá and Medellín, partly due to a boom in foreign tourism demand.

The CPI's regulated component during the first quarter of 2024 displayed a downward trend, mostly due to lower adjustments in fuel prices. This decrease throughout the first quarter (from 17.2% in December to 15.8% in March) came about with the completion of the policy to close the gap between international and domestic gasoline prices. The last significant increase in the domestic price of gasoline was seen in January (COP 600). As retail marketing margins readjusted and the allowance for ethanol content in gasoline increased, February and March experienced smaller price increases than in January and much lower than those observed in the same period of the previous year. Consequently, the annual price adjustment of gasoline declined from 44.8% in December to 39.4% in March[3] (Graph 3.5, Panel A). Utilities, a subgroup that had been placing upward pressure on the regulated CPI, halted its growth between December (13.7%) and March (13.3%). Signifi-

2 This group primarily consists of the following items: communications, recreation, and cultural services; education (non-regulated); miscellaneous services (beauty salon services, daycare, financial services, etc.); transportation; co-ownership/property management services; domestic services; nightclubs and hotels; healthcare services; and laundry/dry cleaning services.

3 During the first quarter of last year, there were monthly adjustments in the price of fuels that surpassed year-on-year those recorded during the first quarter of this year. This was the result of a public policy implemented to bring domestic gasoline prices in line with the international market. Consequently, the annual change in the CPI of fuels fell in the year to date and brought about a reduction in the regulated segment of the consumer basket. On the other hand, on February 1, the price of gasoline increased by COP 164.49 due to the indexation of taxes and an upward adjustment in the retail margin. Additionally, on February 24, the requirement for the ethanol content in nationally distributed gasoline increased from 8.0% to 10%, engendering an additional price increase.

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

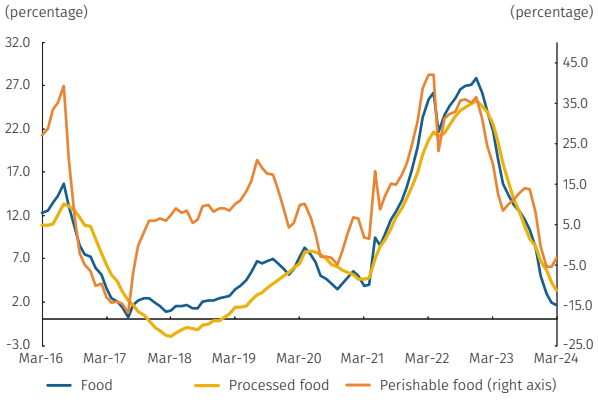


a/ Includes EPS affiliate co-payments, administrative certificates and documents, and professional fee payments
Sources: DANE, calculations by *Banco de la República*.

cant annual increases in electricity rates lessened over the past two months despite the increased use of thermal generation, a more expensive alternative than the more common hydropower. This is largely explained by a favorable statistical comparison base. Additionally, during the first quarter, the annual change in the prices of public transportation and the other subgroups fell. In contrast, education was the only regulated segment that experienced upward price pressures between December (11.5%) and March (12.4%) as a result of an unfavorable statistical comparison base because of year-on-year price declines in preschool and primary education (Graph 3.5, Panel B).

In spite of the presence of *El Niño* phenomenon, food has contributed to the slowdown of inflation so far this year. Since the end of 2022, the annual variation in food prices began to decrease, falling from levels near 27.0% at the time to 5.0% by December 2023 and ending at 1.7% by March 2024 (Graph 3.6). This descending shift is primarily associated with historically high supply levels that did not suffer a significant negative impact during the first quarter of the year owing to the lower rainfall levels resulting from *El Niño* phenomenon. This meteorological event is already waning and is expected to fully dissipate by May of this year[4]. The greater food supply was noted in the lower annual adjustment of the perishable food CPI in March (-3.4%) versus rates seen last December (-0.5%). This was further braced by lower exchange rate pressures registered so far this year, the relative normalization in international food and raw material prices, and the stabilization of logistics and transportation costs. All the above contributed

Graph 3.6
CPI for food and its components
(annual change)



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

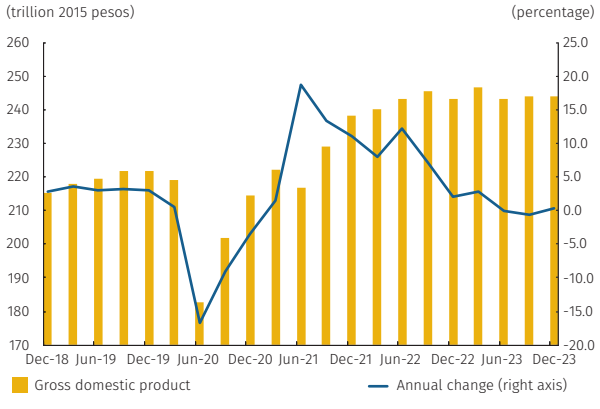
4 Further information available at: https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml

towards reducing the annual change of processed food prices from 6.7% in December to 3.4% in March and to counteract the new healthy tax on ultra-processed and sugary foods[5], which began last November.

3.2 Growth and domestic demand

The Colombian economy underwent an adjustment process in 2023, which implied slow growth throughout the year, including the fourth quarter. Expansion for all of 2023 was 0.6%, after the significant growth of 2022 (7.3%), which placed GDP at historically high levels. This lower dynamism occurred in an environment of high inflation well above the target despite its cumulative year-long decreases, a monetary policy in contractionary territory, and low business and consumer confidence indicators. In the fourth quarter in particular, annual growth in economic activity amounted to 0.3% (Graph 3.7), a lower rate than that forecast in the January Report (0.9%). This forecast error was due more to an upward revision of the figures for the same quarter of 2022 than to lower growth dynamics at the margin (annualized quarterly growth was 0.1%, according to seasonally and calendar-adjusted data) (see Box 3). This result was in line with domestic demand levels that halted its quarterly decline as private consumption once again began to expand despite the slow activity experienced by fixed investment. On the supply side, four of the twelve productive activities recorded annual drops, with the manufacturing industry sector reporting the greatest decrease. In contrast, the agricultural and the financial and insurance activities sectors grew the most in annual terms.

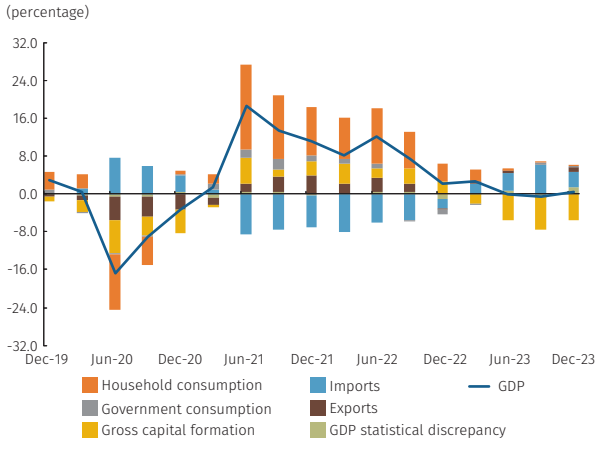
Graph 3.7
Gross Domestic Product[a/]
(quarterly and annual change)



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

Domestic demand also suffered a significant adjustment as investment fell substantially versus the high levels reached a year earlier. During 2023, absorption fell sharply by 3.8%, in contrast to the very high (and unsustainable) levels reached in 2022. Gross capital formation registered a remarkable plunge in 2023 (-24.8%) and was the greatest negative contributing factor to GDP growth that same year (Graph 3.8). This result was affected by the significant and negative inventory change component and statistical discrepancy mostly attributed to inventory reductions in manufacturing, trade, and, to a lesser extent, construction. Gross financial capital formation also declined during the year, but it did so to a lesser degree (-8.9%) (Graph 3.9). In the latter group, investment in machinery and equipment recorded the largest drop in all of 2023 (-16.2%) from historically high levels in 2022, when considerable (30.3%) growth was seen mainly in the industrial capital goods component. Investment in other buildings and structures, at low levels since the pandemic, continued to deteriorate during 2023 (-4.9%), dragged down by the poor performance of civil

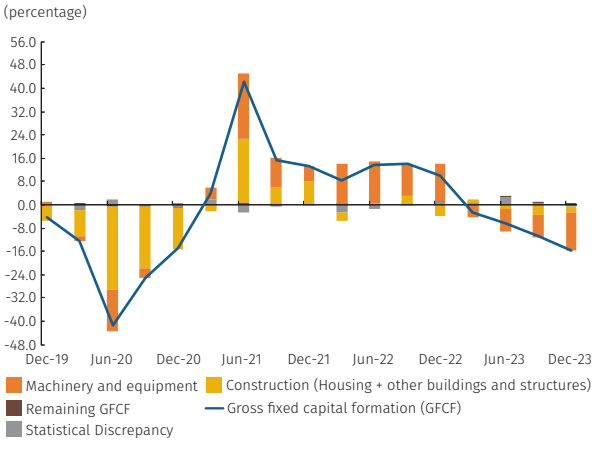
Graph 3.8
Contributions to annual changes to quarterly GDP[a/]
(annual change, contribution)



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

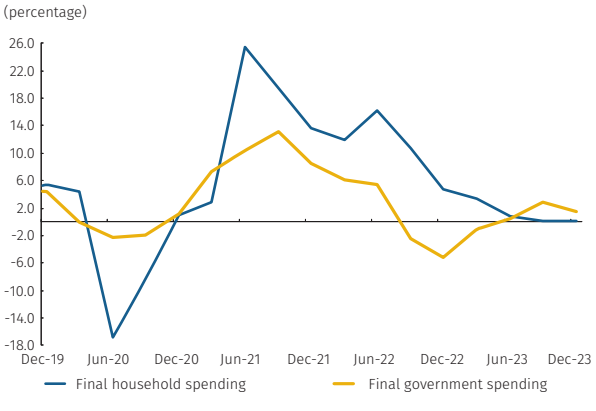
5 See Law 2277 of 13 December 2022, Title X (Tax Reform).

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



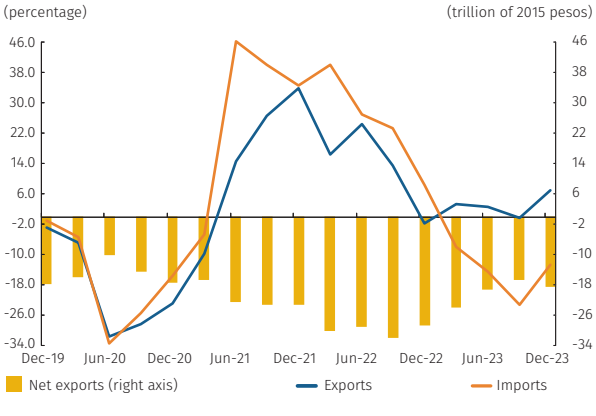
a/ Seasonally adjusted and corrected for calendar effects
Sources: DANE, calculations by *Banco de la República.*

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.*

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.*

works. For its part, investment in housing fell by -1.2% during the whole of 2023, remaining at similar rates to those recorded before the pandemic.

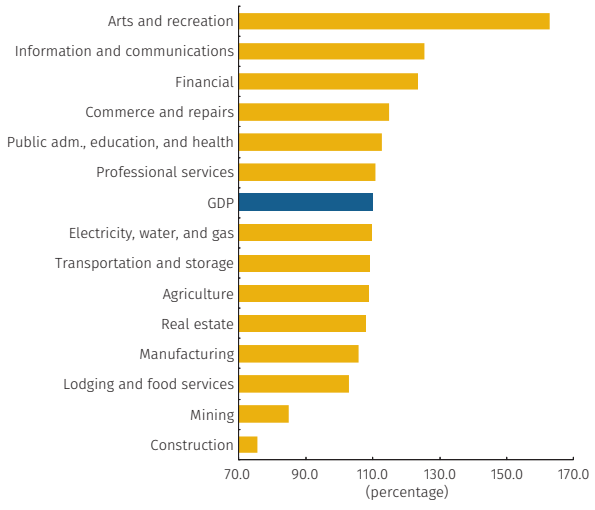
Conversely, consumption during 2023 remained high, although growing at more moderate levels than noted in 2022. Total consumption grew by 1.1% throughout 2023, driven mainly by the private component, which also increased relative to the previous year and reached levels 11.0% above those seen in 2019. Despite the above, annual growth of household consumption decelerated along the year, falling from yearend 4.7% in 2022 to 0.2% by the end of 2023 (Graph 3.10). This slowdown occurred in an environment of contractionary monetary policy, low levels of consumer confidence, and high uncertainty, coupled with a slowdown in household credit. During this year, the segments that showcased a favorable performance were services and non-durable goods, while the durable and semi-durable goods components receded after their highs of 2022. Finally, public consumption did poorly in 2023, growing by only 0.9%, exhibiting quarterly increases during the first half of the year but falling in the second semester.

Net external demand was able to favorably contribute to growth in conjunction with a slight gain in exports, notwithstanding the significant dip in imports that coincided with the decrease in investment. In 2023, a shift in foreign purchases also occurred, largely reflecting the retrenchment in local demand. Imports dropped 14.7% during the year in contrast to the historical highs seen in external purchases during 2022 (Graph 3.11), mainly explained by reduced capital goods and raw materials purchases. Exports, alternatively, grew by 3.1% in 2023, primarily because of the increase in exports of services (9.8%), oil (volume was 5.5%), and non-traditional goods (4.3%, according to quantities index data). As a result, the external deficit in constant Colombian pesos narrowed by 34.6% in 2023 year-on-year, therefore positively contributing to the yearly GDP change[6].

On the supply side, performance was heterogeneous, with some sectors experiencing significant setbacks while others enjoyed positive increases. During 2023, the secondary branches had the biggest detrimental impact on the yearly GDP change due to their annual decline of 3.7%. The latter would still be explained by the slowdown of the manufacturing sector with the retrenchment seen in the non-oil refining segment. Furthermore, the construction industry continues to sustain low levels of economic activity for both buildings and civil works (Graph 3.12). In contrast, primary and tertiary activities enjoyed annual expansions of 2.1% and 1.6%, respectively. The former was driven by the agricultural sec-

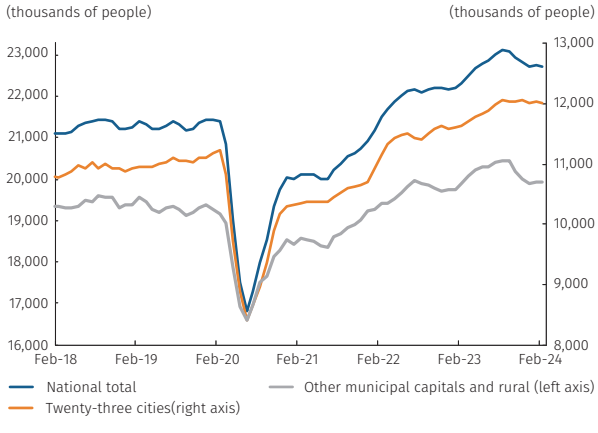
6 The trade deficit in constant pesos fell from 12.3% of GDP in 2022 to 8.0% of GDP in 2023.

Graph 3.12
Sectoral value-added levels in 4Q 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*.

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*.

tor's positive performance, mainly in crop-related activities, and by increases in coal and oil extraction. Tertiary activities boasted good results, particularly in financial and insurance services (7.9% annually), artistic and entertainment activities (7.0%), and public administration, health, and education (3.9%). However, this was offset by the negative performance of the trade, transportation, and lodging sectors, mostly due to lower momentum in trade and lodging services.

3.3 Labor Market[7, 8]

National aggregate employment continued to weaken slightly in the first months of 2024. For the rolling quarter ending in February, the results of the Integrated Household Survey (GEIH for its acronym in Spanish) showed that employment levels in rural areas stopped falling while remaining stable in urban areas and showed a slight deterioration at the margin, which led to a small drop in the national aggregate employment rate (Graph 3.13)[9]. In this same period, data showed quarterly employment reductions across several economic sectors, with transportation and communications, public administration, health, education, and construction contributing most to this decrease. In annual terms, employment continued to decelerate, although an increase of 1.8%, corresponding to 401,000 new jobs, was recorded. By geography, annual employment change in the urban and rural areas was 3.2% and 0.2%, respectively.

Salaried segment employment remained stagnant and declined slightly over the past month, while the non-salaried segment grew by 2.5%. Other sources of information on formal salaried employment corroborate these observations, including pension contributions to the Comprehensive Contribution Settlement System (PILA for its Spanish acronym) and the records of affiliates to family compensation funds (CCF for its Spanish acronym). Concurrently, non-salaried segment employment halted its decline and, although reaching levels below those observed in the second half of 2023, continued to show positive annual growth (1.2%). As a result of the above-mentioned behavior, the informal employment rate recorded a slight increase within the national aggregate and stood at 55.8%.

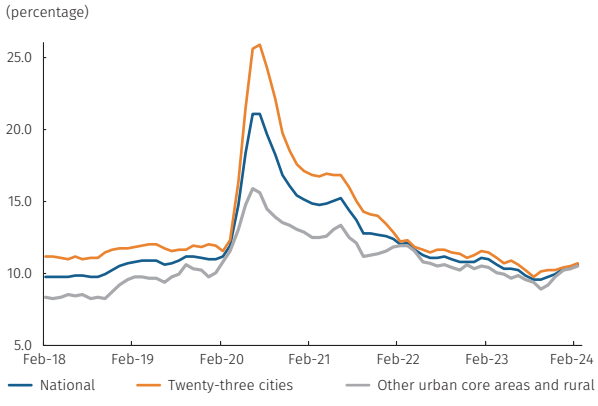
7 For a more detailed analysis of the labor market, we invite you to consult *Banco de la República's* Labor Market Report, available only in Spanish at https://www.banrep.gov.co/es/reporte-mercado-laboral

8 The data on the labor market that are shown in this section are mostly for the rolling quarter that concluded in February 2024.

9 Consistent with employment behavior, the national aggregate employment rate has decreased at the margin to 56.9%. In annual terms, employment gains of 0.2 pts were recorded.

In February, the national aggregate unemployment rate increased with respect to the previous month under a backdrop of low economic growth. In February, the seasonally adjusted national rolling quarter unemployment rate increased versus its January results and stood at 10.6%, maintaining the upward trend observed since September 2023. By geography, the urban unemployment rate and that in core urban and rural areas rose to 10.7% and 10.5%, respectively (Graph 3.15). It is noteworthy that the unemployment rate is very heterogeneous among the 23 main cities, within which Quibdó records the highest level of unemployment (25.9%) and Medellín the lowest (9.3%). Regarding unemployment differences by gender, the gender gap has narrowed in recent months and is at low levels (4.1 pts) as the unemployment rate for men increased by a greater percentage than that for women.

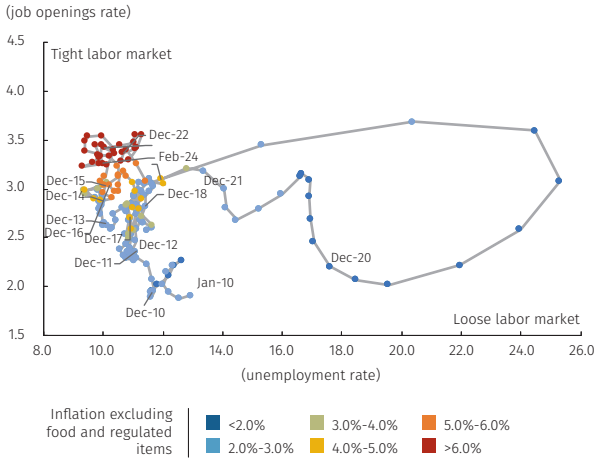
Graph 3.15
Unemployment rate by location



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

Other formal labor demand indicators continue to deteriorate amid negative hiring expectations. These signs suggest that the tightness the labor market continues to experience could ease in the coming months. The vacancy rates obtained in February from classified ads, as well as implicit GEIH hiring figures, continued to decline, consistent with that observed in salaried and formal employment levels. The fall in vacancy rates, together with hiring expectations from *Banco de la República's* quarterly Survey of Economic Expectations (EMEE for its Spanish acronym) that recorded negative results[10] below those of the third quarter of 2023, suggest decreases in formal employment in the near future. The behavior of both the unemployment rate in urban areas and the vacancy rate as a function of the Beveridge curve[11] (Graph 3.16) implies that the labor market remains tight. However, negative hiring expectations amid a backdrop of an economic slowdown would indicate that this tightness is starting to ease. Finally, with data through January, national aggregate job income shows that nominal income indices continue on an upward annual adjustment trajectory. In real terms, the median income of the salaried and non-salaried segments increased in annual terms by 2.6% and 6.9%, respectively, in an environment of decreasing headline inflation.

Graph 3.16
Beveridge curve for the seven largest cities



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

3.4 Financial and Monetary Market

During the first quarter of 2024, credit's annual nominal deceleration ceased and showed signs of stabilizing, while deposit and lending interest rates continued to fall. This behavior occurred in an environment characterized by 1) a somewhat higher domestic demand level than that recorded at the end

10 As of the fourth quarter of 2023, economic expectations fell by -1.3 pts compared to the previous quarter in the trade-off between those planning to increase or decrease their workforce in the short term.

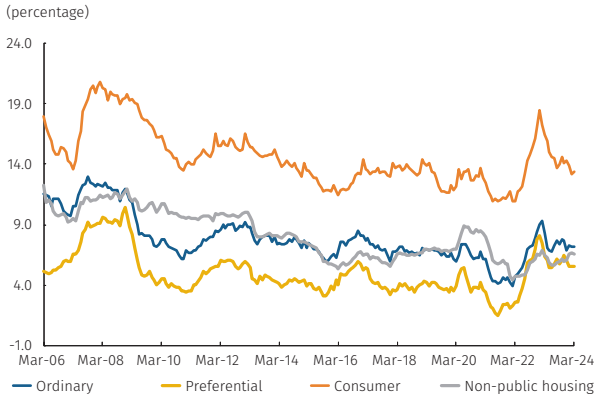
11 The Beveridge curve is a graphical representation of the relationship between unemployment and the job vacancy rate.

Table 3.1
Average monthly interest rates
(percentage)

	Dec-21	Dec-22	Jun-23	Dec-23	Mar-24
Interbank					
Interbank policy rate	2.70	11.42	13.25	13.18	12.69
Interbank overnight	2.73	11.41	13.28	13.13	12.68
BBI overnight	2.72	11.41	13.28	13.13	12.68
BBI 1-month	2.96	11.80	13.25	13.10	12.44
BBI 3-months	3.36	12.08	13.25	12.81	12.02
BBI 6-months	3.97	12.31	13.03	12.35	11.39
BBI 12-months	-	-	11.99	11.17	10.11
Deposits					
Savings	1.19	5.72	6.23	6.23	5.88
DTF 90-days	3.08	13.42	13.02	12.63	10.85
CDT* 180-days	3.71	15.58	13.30	12.90	10.87
CDT 360-days	5.10	17.08	14.17	13.19	10.88
CDT > 360-days	7.14	19.15	14.44	12.71	11.15
Credit					
Preferential	6.00	18.57	17.65	17.05	14.79
Ordinary	8.18	19.27	19.20	17.93	16.56
Non-public housing purchases	9.40	17.22	17.97	17.06	15.85
Public housing purchases	11.55	17.00	16.41	15.41	13.61
Personal loan consumption	17.51	31.23	31.65	28.16	26.39
Payroll loan consumption	11.65	19.45	19.82	19.83	18.79
Credit card	24.47	39.01	39.58	34.70	31.10

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

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



Sources: Financial Superintendency of Colombia, calculations by *Banco de la República*.

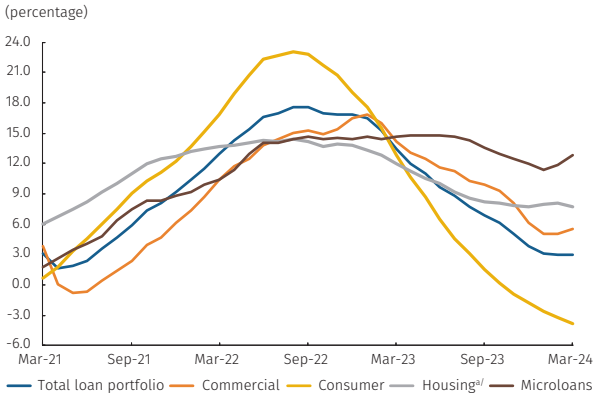
of 2023, although lower than seen in the previous year; 2) expectations of more considerable monetary policy interest rate (MPR) reductions; 3) lingering high real interest rates; 4) continued deterioration in portfolio risk indicators; and, 5) the financial entities' continued stringent requirements to procure new loans.

Money market, deposit, and credit interest continued on a downward path (Table 3.1), although still relatively high in real terms. During the first quarter, the Board of Directors of *Banco de la República* continued to reduce the monetary policy rate, with a 25-basis point (bps) cut in January and an additional 50 bps reduction in March. This was mirrored by the money market, which saw a similar reduction in overnight money market interest rates and longer maturities falling faster, in view of expectations of greater monetary policy rate cuts in the coming months. Given these expectations and under conditions of lower funding needs from credit institutions[12], predominantly in the long-term, both deposit interest rates and their term spreads registered significant decreases. Placement interest rates also registered substantial first-quarter drops in all their modalities, particularly those of preferential loans and credit cards. This occurred despite the ongoing deterioration of the Non-Performing Loans indicator (NPL), which has affected the willingness of credit institutions to grant loans. The decreases in credit interest rates would be associated with lower funding costs, the preference of financial entities to grant loans to lower-risk agencies, and continuing weak demand for loans. In real terms, placement interest rates remained relatively stable at levels still above their historical averages of the last decade (Graph 3.17). The aforementioned transpired as nominal interest rates continued to fall and, in an environment where both observed and expected inflation were declining.

The annual nominal loan portfolio growth rate stabilized during the first quarter amid lower lending rates. However, loan demand remains weak, and lending requirements are still high. Local currency loans saw an average annual growth of almost 3.0% during the first quarter of 2023, breaking the downward trend observed throughout 2023. (Graph 3.18). However, credit continues to contract in real terms (-5.3% annually in March). There is a mixed performance by loan type, with consumer loans falling at a faster pace and registering an annual reduction of 3.8% in March 2024, compared to the -1.8% recorded at the end of the previous year. Conversely, the commercial loan portfolio, although growing at an annual rate similar to that recorded at the end of 2023, has shown signs of recovery during the first quarter of the year. The annual increase seen in microloans, which remains above 10%, and

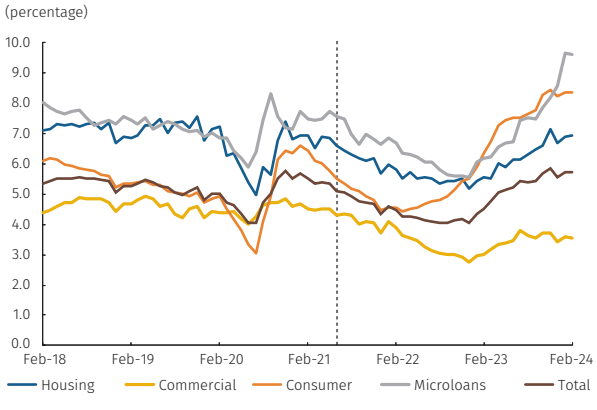
12 This decreased resource requirement is associated with a lessening of the demand for credit, a deposits portfolio that has been adjusting to stable financing regulations, and a decrease in the deposits General Directorate for Public Credit and National Treasury at *Banco de la República*.

Graph 3.18
Gross loan portfolio in Colombian pesos
(annual change, monthly averages)



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

Graph 3.19
NPL Indicator
(past due loan portfolio[a/]/total loan portfolio)



a/ Refers to unpaid loans over 60 days in arrears
Sources: Financial Superintendency of Colombia, calculations by *Banco de la República.*

stable growth in housing loans offset the weak performance of the consumer loan portfolio. In real terms, all loan modalities, with the exception of microloans, recorded annual declines from the high levels observed in the previous two years. The adjustment in domestic demand, low confidence levels, and relatively high real interest rates, among other factors, contributed to the sustained weak demand for credit. This was compounded by the stringent requirements placed by banks on new loans in all segments, as suggested by the results of the Quarterly Survey on Credit Institutions in Colombia for the fourth quarter of 2023. However, this situation shows marginal signs of improvement for consumer, commercial, and housing loans.

Credit institutions maintain adequate solvency levels well above regulatory minimums while profits continue to fall. For the whole of 2023, credit institutions recorded profits of COP 8.3 trillion, a 50% decrease relative to those noted at the end of the previous year. In a context where the non-performing loan indicator continues deteriorating for all loan types, especially consumer loans, and microloans, higher provision expense largely explains the drop in the sector's profits (Graph 3.19). Meanwhile, data as of December shows that total (18%) and basic (14.8%) solvency levels of credit institutions rebounded in the last quarter and are well above the regulatory minimums (9.0% and 4.5%, respectively).

Box 1
A Transportation Services Indicator to measure Colombian Economic Activity

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Juan Sebastián Silva-Rodríguez
Juan Felipe Carmona-Pascuales*

Transportation services play a critical role across all sectors of the economy by facilitating the movement of goods and services at all production levels. Although not all goods produced in a country require transportation due to inventory accumulation in industries and businesses or because certain services do not require physical transport; the dynamic of the transportation sector can provide valuable insights into economic activity trends during specific periods (e.g., Google's mobility indicators during the COVID-19 pandemic).

Transportation services offer the advantage of providing more timely information compared to other economic indicators. Consequently, they are often integrated into nowcasting methodologies developed by central banks and economic analysts (Cote-Barón *et al.*, 2023; Galeano-Ramírez *et al.*, 2021; Vidal *et al.*, 2015). However, while these tools are valuable, there is a need for a comprehensive indicator that summarizes the overall dynamics of transportation services and closely correlates with various macroeconomic aggregates and the economic cycle.

This section outlines the methodology used to construct the Transportation Services Index for Colombia (ISTCO for its Spanish acronym). By aggregating data on domestic transportation, ISTCO enables the timely monitoring of monthly economic activity in the country with a focus on tertiary sectors like domestic trade and service consumption (e.g., tourism). The ISTCO has been calculated since January 2015 following partially the methodology of Young *et al*. (2014) for the Transportation Services Index in the United States. This methodology is characterized by its simplicity and potential regional replication.

The subsequent sections detail the components, weighting, indexing, and aggregation method of the indicator. Additionally, the relationship between this indicator and various leading economic activity indicators, such as gross domestic product (GDP) and the Economic Tracking Indicator (ISE), is explored.

1. Indicator components

ISTCO includes domestically operated contract transport services, which involve moving goods or passengers within the country for a fee. This excludes the use of vehicles like motorcycles and taxis by private companies and non-commercial household trips. Istco is divided into three categories according to the mode of transport used: ground and pipeline, air, and water. Table B1.1 provides an overview of the main sources of information used for each of these service categories.

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* The authors are members of the Monetary Policy Deputy Management and Rosario University . The views and opinions expressed herein do not necessarily reflect those of the Bank or its Board of Directors.

Table B1.1
Main sources of information used for Istco

Mode of transport		Source	Indicator	Frequency
Ground and pipeline	Ground	National Registry of Cargo Dispatch (RNDC)	Tons mobilized by land	Monthly
		Superintendency of Transport	Number of passengers mobilized by main transport terminals	Monthly
		Urban Passenger Transport Survey (ETUP), DANE	Number of passengers mobilized	Quarterly
	Pipeline	Ecopetrol S. A. (financial and operating reports)	Tons mobilized (oil and gas)	Quarterly
	Railway	Superintendency of Transport, Ministry of Transport	Tons mobilized (coal)	Monthly
Air		*Aeronáutica Civil*	Tons mobilized	Monthly
			Number of passengers mobilized (domestic and international flights)	Monthly
Water		Superintendency of Transport, Ministry of Transport	Mobilized tons (river and cabotage)	Monthly

Source: Own calculations.

1.1 Ground and Pipeline Transport

In Colombia, a significant portion of both intermediate and final goods is transported by land. To capture these transportation flows, data from the Ministry of Transportation's National Registry of Cargo Dispatch (RNDC for its Spanish acronym) is used. This registry provides detailed information at the product level, showing the total tons and gallons moved between population centers by registered logistics companies in the country. Moreover, the RNDC data is organized by tariff heading, which allows for the grouping of transported cargo into agricultural, mining, and industrial sectors based on the four-digit International Standard Industrial Classification (ISIC, rev. 4, A. C.). The weighting of each sub-sector in terms of value-added, determined by nominal figures, is also considered.

Additionally, the movement of coal by land is supplemented by the tons transported via railway, representing shipments from La Guajira and Cesar mines to the ports, as reported by the Superintendency of Transportation. For the transport of crude oil, gas, and refined products, tonnage transported through pipelines is included based on quarterly data reported by sector companies in their financial and operational reports, as well as export records from DIAN by shipment date.

Ground transportation of passengers encompasses several components. Firstly, it includes passenger movement between municipalities via services provided by authorized or approved ground terminals, which are reported by the Superintendency of Transportation. This data is further corroborated and enhanced by examining the evolution of category I and II vehicles passing through concessioned toll roads overseen by the National Infrastructure Agency (ANI for its Spanish acronym), serving as a proxy for inter-municipal passenger movement between 2015 and 2020. Moreover, the index incorporates quarterly data on intercity transportation services within the country's twenty-three major cities[1], utilizing vehicle fleet information reported in the Urban Passenger Transport Survey (ETUP for its Spanish acronym) conducted by DANE.

1 The twenty-three capital cities included in the ETUP are the metropolitan areas of Barranquilla, Bogotá, Bucaramanga, Cali, Cúcuta, Manizales, Valle de Aburrá (including Medellín), Centro de Occidente (including Pereira), Armenia, Cartagena, Florencia, Ibagué, Montería, Neiva, Pasto, Popayán, Quibdó, Santa Marta, Sincelejo, Tunja, Valledupar and Villavicencio.

1.2 Air Transport

The air transportation services component relies on operational statistics reported by the Civil Aeronautics Department (Aerocivil), detailing the total number of passengers and tons transported on domestic and international flights.

1.3 Water Transport

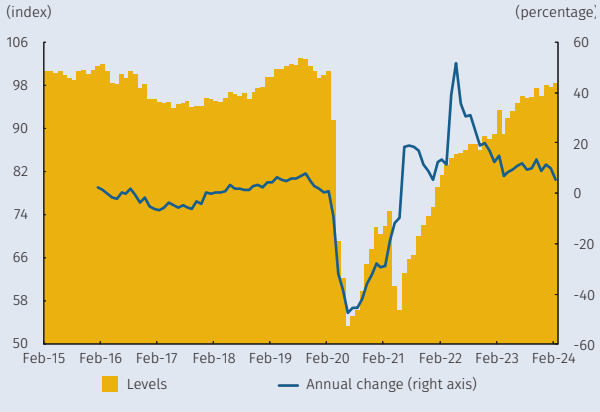
Water transport encompasses the movement of goods by vessels operated by port companies providing river and maritime cabotage services, as reflected in Colombia's port traffic statistics. These statistics are particularly valuable for complementing the transport of mining goods such as oil and coal. However, it's important to note that due to data limitations, this component does not cover passenger transportation.

2. Transportation Services Index (ISTCO)

Each component series is indexed with the average of data from 2015 as the base. For the ground and air transport indexes, the movement of goods and passengers is weighted based on their historical relationship with the nominal value added of each respective mode of transport.[2] The composite index for each transport service is then aggregated, considering its weighting within the total transport sector value from one year ago, based on the most recent[3] available publication of quarterly GDP at current prices.[4] The incorporation of a time-varying weighting structure enables the indicator to recognize historical shifts in the primary sources of economic growth, such as the recent expansion of the tertiary sector. Given the seasonal nature of transportation services, series are adjusted for seasonal and calendar effects (DAEC) using the X-13Arima-Seats method.[5] This ensures that monthly changes in ISTCO and its short-term trends are accurately captured.

Graph B1.1 illustrates the monthly trends of the indicator from January 2015 to February 2024.[6] Notably, ISTCO effectively captures the impacts of mobility disruptions on the movement of goods and passengers within the country. These disruptions include the civic strike in Quibdó (Chocó) and Buenaventura (Valle del Cauca) in May 2017, the 51-day Avianca airline pilots' strike that began in September 2017, mobility restrictions imposed during the COVID-19 pandemic in 2020, and blockades occurring in various parts of the country in 2021.

Graph B1.1
Transportation Services Index (Istco) for Colombia[a/] (monthly)
(levels and annual change)



a/ Seasonally adjusted and corrected for calendar effects
Source: Calculations by *Banco de la República.*

2 In the annual national accounts, the highest level of disaggregation available is represented by 61 groupings based on the ISIC divisions (rev. 4 A.C.). This limitation prevents us from determining the specific weighting of these activities in the value added of each mode of transport.

3 Activities that supplement transport, including warehousing, mail, and courier services are excluded.

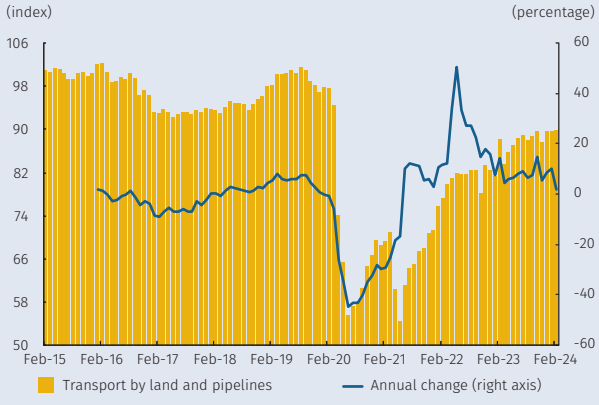
4 As of the publication of this Box, the most recent quarterly national accounts data available is from February 2024, which includes data up to December 2023.

5 This methodology enables the incorporation of exogenous variables within the Arima modeling to accurately account for Colombian holidays. It also includes adjustments for Easter and New Year within its structure.

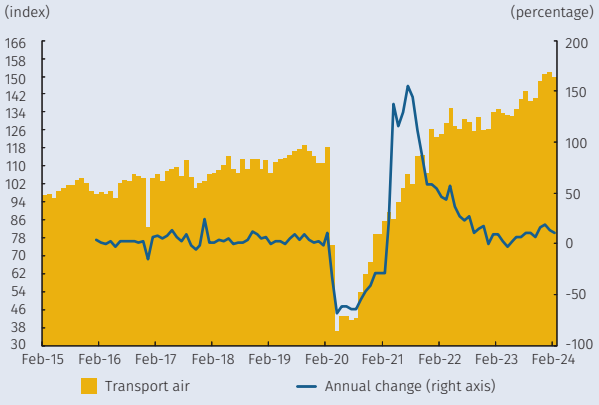
6 The data for the first quarter of 2024 regarding urban ground passenger transportation and waterborne freight transportation is preliminary.

Graph B1.2
Istco components[a/] (monthly)
(levels and annual change)

A. Transport by land and pipelines



B. Air Transportation



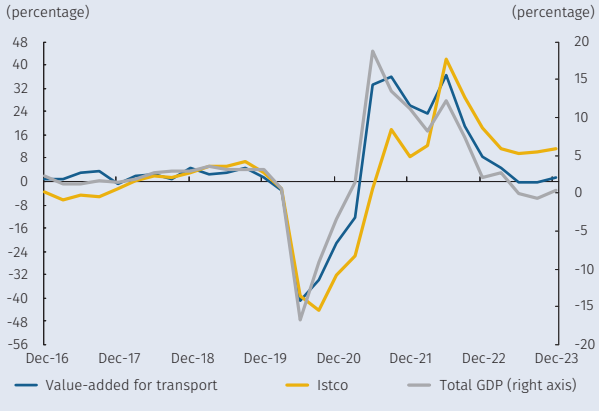
a/ Seasonally adjusted and corrected for calendar effects
Source: Calculations by *Banco de la República*.

Regarding the dynamics of individual components, the significant contraction of ground and air transport services during 2020 is notable (Graph B1.2). Specifically, activities related to ground transport have shown a slower recovery compared to the overall trend and remain below pre-pandemic levels. This is primarily due to ongoing low levels in inter-urban passenger movement and the transportation of mining products like coal and oil. In contrast, air transport services have experienced a faster recovery, reaching record-high levels, driven by robust international passenger activity despite reduced domestic passenger movement.

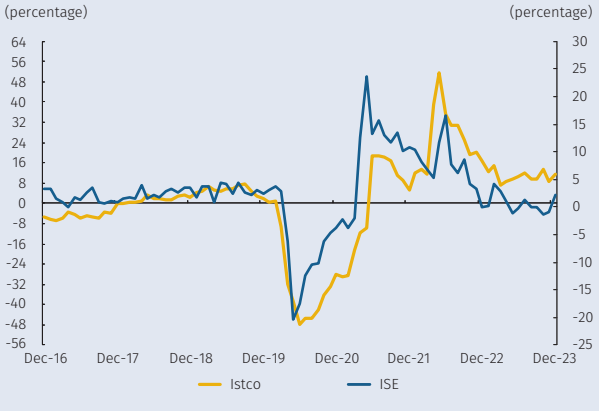
Transport services play a crucial role across both productive and consumer sectors, leading to strong annual variations closely correlated with variables like GDP (Graph B1.3, Panel A). Remarkably, this correlation with GDP is even higher than that associated with the value added of the transport sector before the pandemic (0.85 versus 0.40, respectively). Examining the period between 2020 and 2021, ISTCO demonstrates a higher sensitivity to shocks related to mobility restrictions on goods and services compared to GDP. However, its relationship with the Economic Tracking Indicator (ESI) was not as evident during the study

Graph B1.3
Relationship between Istco and several economic indicators[a/] (monthly)
(levels and annual change)

A. Quarterly GDP



B. ISE



a/ Seasonally adjusted and corrected for calendar effects
Note: Value-added for transport excludes activities including storage, mail, and courier services.
Source: DANE, Calculations by *Banco de la República*.

period (Graph B1.3, Panel B), although post-pandemic, the correlation between the series has strengthened to 0.83.

Table B1.2 displays the contemporaneous correlation of ISTCO with other key leading economic activity indicators, including real manufacturing production and various components of GDP from both the demand and supply sides. It is highlighted the strong correlation between transport services and tertiary activities, particularly retail trade and the consumption of durable goods and services. The dynamics of transport services also offer valuable insights into the behavior of the manufacturing industry, excluding coking and oil refining. Conversely, the lower correlation between agricultural activities and the consumption of non-durable goods may be attributed to potential underestimations in RNDC data. This

Table B1.2
Contemporary correlation with key indicators

Indicators	2016 - 2019	2020 - 2021	2022 - 2024
(a) Main indicators			
Gross domestic product (GDP)	0.85***	0.85***	0.82**
Economic Tracking Indicator (ISE)	0.46***	0.79***	0.83***
Primary ISE	0.10	0.80***	0.28
Secondary ISE	0.12	0.57***	0.88***
Tertiary ISE	0.55***	0.84***	0.77***
Regional Economic Pulse (PER)	0.58***	0.78***	0.73***
Industry	0.43***	0.83***	0.68***
Retail	0.78***	0.85***	0.76***
Finance	0.35**	0.82***	0.51**
Housing	0.06	0.22	0.59***
Transport	0.36**	0.84***	0.82***
Agriculture	-0.24*	-0.11	0.17
Real manufacturing production	0.22	0.60***	0.81***
Real sales, excluding fuels and vehicles	0.81***	0.59***	0.75***
Energy demand (SIN)	0.58***	0.79***	0.06
(b) Demand components			
Domestic demand	0.82***	0.84***	0.72**
Total consumption	0.54**	0.86***	0.77**
Private consumption	0.63***	0.85***	0.81**
Durable goods	0.60**	0.70*	0.81**
Non-durable goods	0.08	0.74**	0.86***
Semi-durable goods	0.33	0.69*	0.76**
Services	0.72***	0.86***	0.81**
Gross fixed capital formation	0.06	0.73**	0.74**
Export	0.09	0.94***	0.73**
Imports	0.51**	0.89***	0.60
(c) Supply sectors			
Primary sectors	0.36	0.92***	0.10
Agricultural activities	-0.56**	0.72**	0.01
Mines and quarries	0.87***	0.93***	0.19
Secondary sectors	0.16	0.74**	0.90***
Industry excluding refining	0.61**	0.72**	0.84***
Coke and refining	-0.45*	0.69*	0.52
Tertiary sector	0.66***	0.87***	0.79**

Note: the correlation is calculated based on the annual change of the seasonally and calendar-adjusted series, except for the levels reported by the PER. The color of the cells corresponds to the magnitude and direction of the correlation, values in green (red) indicate a positive (negative) and high correlation. Statistical significance at *** p<0.01; ** p<0.05; * p<0.1.
Source: DANE, XM and *Banco de la República*; own calculations.

could be due to a significant portion of goods in these sectors being transported by vehicles or trucks not accounted for by registered logistics companies.

Lastly, the available data for the first quarter of 2024 indicates ongoing growth in transportation services on both an annual and quarterly basis, driven by increased international passenger traffic and a rise in the transportation of agricultural goods other than coffee.

3. Conclusions

For nowcasting exercises conducted by central banks and economic analysts, the availability of timely and frequent indicators is essential. The Transportation Services Index for Colombia (ISTCO), which consolidates diverse sources of information related to domestic transportation services, emerges as a valuable indicator for understanding certain economic dynamics, particularly those linked to the performance of non-refining industries and domestic trade of durable goods and services. Its minimal lag further enhances its suitability for integration into short-term GDP forecasting models. Future efforts to enhance ISTCO could focus on refining cargo and passenger weighting methods for ground and air transportation components, incorporating alternative data sources to better capture the movement of agricultural goods, analyzing inventory behaviors in specific sectors, and exploring ISTCO's potential in detecting economic cycle turning points.

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Box 2
Investment Outlook and Recent Development

Camilo López
Andrés Herrera
Nicol Rodríguez
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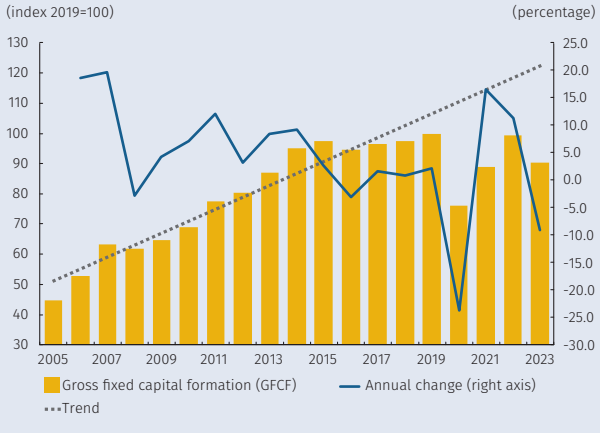
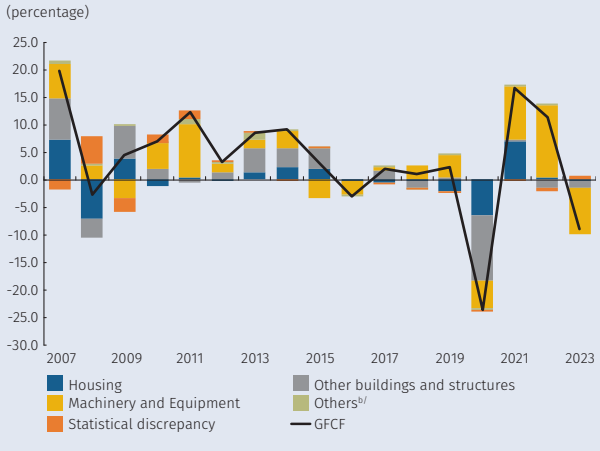
Graph B2.1
Gross fixed capital formation and its components

A. Gross fixed capital formation[a/]



B. Annual growth of GFCF and contributions



a/ The trend line uses information up to 2019.
Note: Series in constant prices, seasonally adjusted and corrected for calendar effects.
Sources: DANE; calculations by *Banco de la República*.

Investment, a crucial driver of a country's economic growth, is intricately linked with increased productive capacity and infrastructure. After a notable upturn in certain investment components in 2021 and 2022, Colombia experienced a significant investment decline in the past year. High levels of inflation, a slowdown in economic activity, a reduction in macroeconomic imbalances, low confidence, and the high cost of both internal and external financing all contributed to investment's weakening. The adjustments in public policies related to investment sectors, such as housing subsidies and energy transition policy, brought about uncertainty and further added to the decline. This Box seeks to further asses the outlook for this spending sector, describing the recent behavior of investment and its principal components and reviewing the expected evolution of some of its main determinants. It should be noted that this forward-looking analysis is subject to considerable uncertainty and revisions[1] of national data provided by the National Department of Statistics (DANE for its Spanish acronym).

1. Gross Fixed Capital Formation

With average growth rates of 5.8% between 2005 and 2019, investment in gross fixed capital formation (GFCF) increased its share of GDP from 16.7% to 21.8% in the years prior to the COVID-19 pandemic, performing well and reaching levels slightly above those suggested by its trend line (Graph B2.1, Panel A). Following the 2020 pandemic shock, GFCF enjoyed a strong rebound, exhibiting yearly adjustments above 10% and historically high levels of machinery and equipment investment through 2022. This occurred under circumstances of pent-up demand, and an expansive macroeconomic policy.

Investment in gross fixed capital formation (GFCF) performed well in the years prior to the COVID-19 pandemic, with average growth rates of 5.8 % between 2005 and 2019, reaching levels slightly above those suggested by its trend component and raising its share of GDP from 16.7 % to 21.8 % in those years (Graph B2.1, Panel A). Following the pandemic's shock in 2020, GFCF showed a strong recovery, with annual adjustments of more than 10% and historically high levels of

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1. Specifically, between 2018 and 2021, investment was the second most revised component of GDP on average, coming in behind imports but ahead of exports and final consumer consumption expenditure. The difference between the numbers in the initial national accounts release for a given time and the final release, which was made two years later, is referred to as revisions.

investment in machinery and equipment seen until 2022. This occurred amid a backdrop of expansive macroeconomic policy and pent-up demand despite a slow transition between the structuring and the completion of infrastructure programs. In 2023, investment fell by 8.9%, and its share within the national product shrank to 17.8% as contributions from all its components also diminished. In that year, machinery and equipment adjusted from those historical highs to levels closer to those observed before the pandemic. Concurrently, construction investment lagged (Graph B2.1, Panel B). This took place in an environment characterized by adjusting domestic demand, a restrictive monetary policy in the face of high levels of inflation, changes in the public policy for the allocation of housing subsidies, low levels of investment in public works, and high external and local uncertainty, among other factors.

The authors' estimates foresee that gross fixed capital formation would continue to fall year-on-year in 2024 by between 2.0% and 7.8 %, further narrowing its share in the national product.[2] Despite favorable investment activity in other buildings and structures buoyed by the execution of large regional and national infrastructure projects. This further deterioration would ensue as investment in housing and machinery and equipment items fell for the second consecutive year amid low levels of business and household confidence, fewer subsidies allocated for housing purchases, high uncertainty, and continued contractionary monetary policy seeking the convergence of inflation to the 3.0% target. By 2025, investment is expected to recover and fall to a level between 1 % and 8 %, with annual improvements in all its components. This would be consistent with a recovery process foreseen for domestic demand as external and internal financial conditions relax, external demand dynamics improve, and the structuring of new infrastructure programs intensifies.

2. Machinery and Equipment

Investments in tools or machinery for use in production are referred to as machinery and equipment. Such investments contribute significantly to the economy's overall gross capital formation and have been a major factor in explaining both the vigor of overall investment and the variable's recovery following the pandemic.

The behavior of machinery and equipment investment responds to a set of determinants widely documented in the literature (*Banco de la República*, 2023). Consequently, this exercise considers the following inputs: 1) the capital utilization cost (CUK), a measurement that includes tax aspects, relative prices of investment, and interest rates;[3] 2) economic activity, defined as GDP excluding investment in machinery and equipment, which is featured in the literature to capture the so-called "accelerator effect"; 3) the real exchange rate (RER)[4], because machinery and equipment are tradable goods; 4) the industrial confidence indicator (ICI), which capture the perception and expectations of businesspersons to realize investments; and 5) the degree of the economy openness, which can measure the level of the imported machinery and equipment purchases component and its use in exportable production. In addition to these principal factors, some literature includes additional variables that can influence investment decisions, such as the firms' access to credit, the price of oil, and uncertainty associated with return on investments. The latter could be relevant insofar as it considers the elevated importance of machinery and equipment purchases and investments made by oil sector companies in the country.

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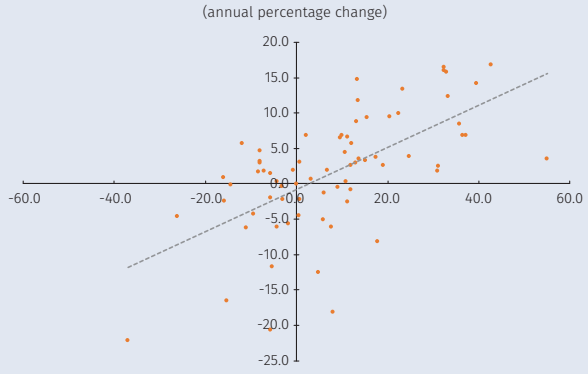
2 *Banco de la República*'s technical staff employs a battery of tools for forecasting the GFCF and its components that allow for the analysis of its performance and provide signals on its future evolution. These complement the central forecasting models, although they do not necessarily yield the same results. Some of the methodologies used are dynamic factor models, elastic net regressions, ArimaX models, unobserved component models, and FMOLS regressions.

3 The functional CUK format employed in the analysis presented here follows a methodology similar to that of Salazar and Zapata (2020). It is defined as $CUK_t = \frac{IPP_{bienes\ de\ capital,t}}{IPP_{total,t}} \times \frac{1}{(1-\tau_t^k)} \times (r_t + \delta(1-\tau_t^k))$. The first component refers to the relative price of capital goods, measured using the producer price index (PPI); the second is taxation, where τ_t^k is the effective corporate income tax rate, and the third component is interest rates net of depreciation, where r_t is the real interest rate computed using the fixed term deposit rate (DTF for its Spanish acronym), and the observed inflation δ is depreciation.

4 The real exchange rate is measured using the consumer price index (CPI) to avoid possible collinearity problems with the relative price component of the CUK, which is computed using on the PPI.

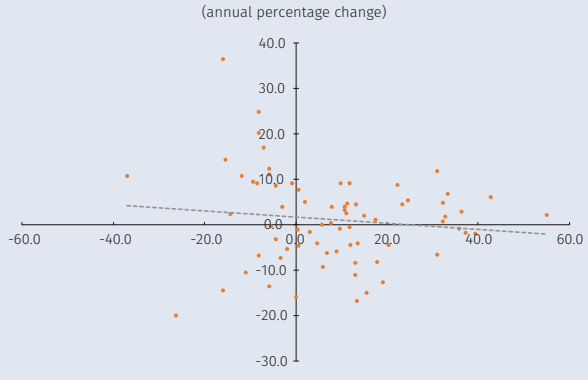
Graph B2.2
Linear relationship of investment in machinery and equipment (M&E) and some of its determinants

A. Investment in M&E versus ICI

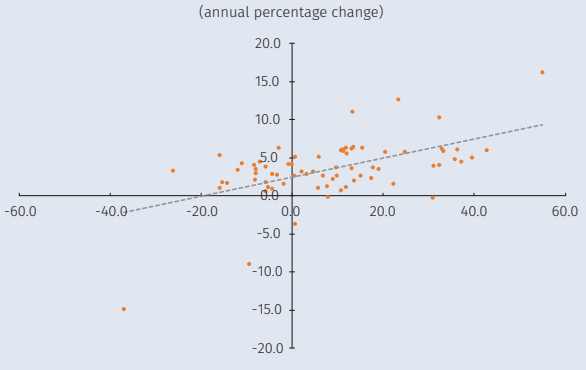


D. Investment in M&E versus CUK

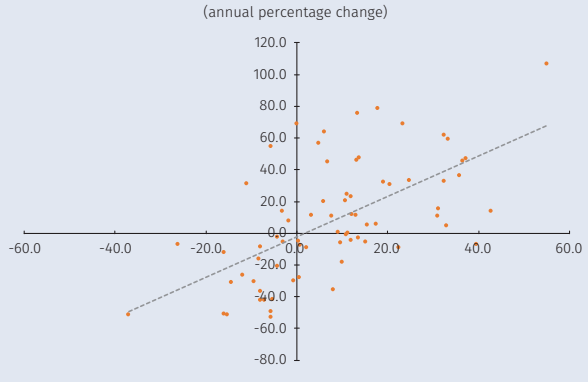
B. Investment in M&E versus RER



E. Investment in M&E versus GDP



C. Investment in M&E versus Brent



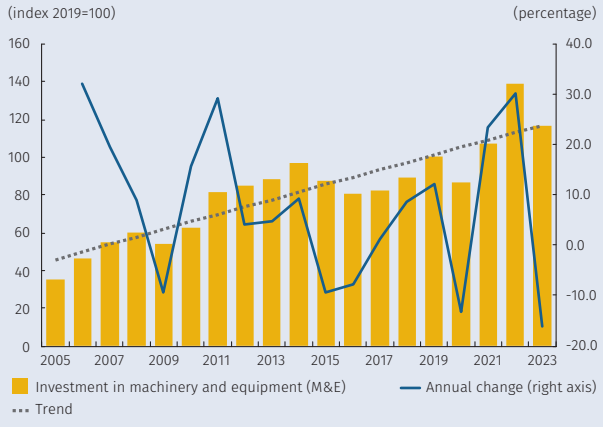
F. Investment in M&E versus imports of goods and services

Note: using quarterly information between 2006 and 2023.
Sources: DANE, Fedesarrollo, and *Banco de la República*; calculations by *Banco de la República*.

Graph B2.2 shows the linear relationship between annual variations in machinery and equipment investment (horizontal axis) and each determinant (vertical axis). The trend line provides a visual representation of the type of relationship among them. In this case, the ICI, imports, Brent price, and GDP display a positive relationship vis-a-vis investment, while RER and CUK show negative relationships.

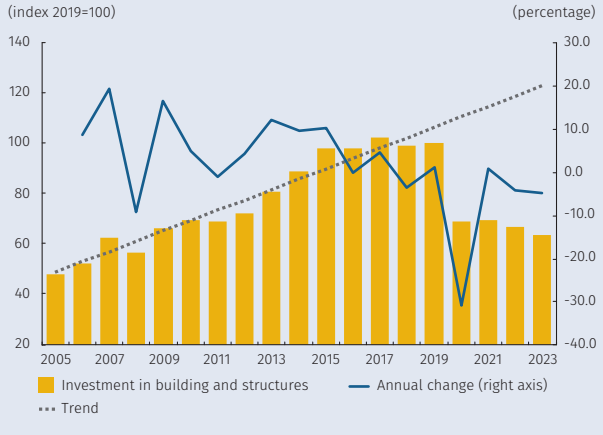
Between 2010 and 2019, investment in machinery and equipment recorded an average growth rate of 7.0% and a 34% share in gross fixed capital formation. This investment component suffered an annual drop of -13.0% in 2020 as a result of the COVID-19 pandemic shock and rebounded between 2021 and 2022, enjoying annual growth of 23.3 % and 30.3 %, respectively (Graph B2.3), increasing its average share of GFCF to 46 % during these two years. The latter took place in the context of growing domestic demand and in import and export volumes, which in turn boosted production and demand for capital goods. This ulti-

Graph B2.3
Investment in machinery and equipment[a/]



a/ The trend line uses information up to 2019.
Note: Series in constant prices, seasonally adjusted and corrected for calendar effects.
Sources: DANE; calculations by *Banco de la República*.

Graph B2.4
Investment in buildings and structures[a/]



a/ The trend line uses information up to 2019.
Note: Series is in constant prices and seasonally adjusted and corrected for calendar effects.
Sources: DANE; calculations by *Banco de la República*.

mately favored investment in machinery and equipment, particularly those related to industry and transportation equipment. A low cost of capital use driven by the fall in relative investment prices and favorable interest rates - reflecting an expansionary monetary policy stance - also contributed to the above. This was further compounded by high oil prices, which rose, on average, from USD 43 per barrel (Bl) in 2020 to USD 99 Bl in 2022.

However, by 2023, this investment component recorded a significant annual decline (16.2 %) from those historically high levels, largely as a result of reduced spending on industrial capital goods and transportation equipment. Nonetheless, their levels remain above those recorded before the pandemic. The latter occurred in the midst of a necessary adjustment process experienced by the external deficit and domestic demand. Machinery investment is expected to decrease further in 2024, with a slight improvement foreseen in 2025. The variables that would explain investment's decline this year would be the low growth of economic activity and trade, declining industrial confidence, and the high cost of capital use, among others.

3. Other Buildings and Structures

The investment component for other buildings and structures includes investment in public works and finished commercial buildings; therefore, it closely follows the construction and completion of national non-residential infrastructure. This element has traditionally represented around 35% of Colombia's investments and is, hence, the second-highest contributor to domestic investment performance. Similarly, physical infrastructure activity is characterized as one of the main drivers of economic growth, productivity, and regional integration.

Between 2013 and 2019, investment in other buildings and structures improved significantly, mainly due to the expansion of mining infrastructure as a result of high oil prices and favorable investment conditions enjoyed by this segment at the beginning of the last decade. This is in addition to an expansion in ground transportation infrastructure through fourth-generation (4G) concessions.[5] During this period, the share of this component in GFCF increased, becoming the main driver of investment growth. In recent years, investment in other buildings and structures has not recovered notably since the pandemic shock and continues at levels well below those suggested by its previous trend (Graph B2.4). This has translated into a downward projection for its investment performance (Graph B2.1, panel B), as well as a declining share of GDP - from 8.4 % in 2019 to 4.8 % in 2023- well below its historical average of 7.5 %.

The persistent contraction of this investment component is a product of weak performance in the public works category. On the one hand, the existing 4G works schedule has reached high progress levels, which implies a lower marginal investment contribution. In fact, according to the National Infrastructure Agency (ANI for its Spanish acronym), nineteen out of thirty projects have reached a completion rate above 90%. However, the pending execution of works within this program has slowed due to the difficulties associated with the con-

5 The fourth-generation concessions (4G) are Colombia's largest road infrastructure development project in recent decades. They encompass thirty road projects throughout the country, with an investment in the construction stage (CAPEX) of COP 57.7 trillion in 2022 constant pesos.

struction of certain road projects.[6] The lower 4G payments have not been offset by the structuring and implementation of other large-scale civil engineering projects or programs.

In addition, production from mines and quarries, especially oil and coal, has lagged behind pre-pandemic levels, which has also been reflected in lower mining infrastructure investment.

Although investment will continue to register lower levels than those seen before the pandemic, greater activity in public works is projected for 2024 and 2025, which would contribute towards a slight improvement in the other buildings and structures category. A further boost from large infrastructure projects is expected to happen in tandem through the execution of new projects, including the first line of Bogotá's Metro (PLM for its Spanish acronym),[7] the *Bicentenario* concessions (5G),[8] and the National Government's *Paz Total* community roads program.[9] As the project's cycle progresses, their investment contributions will increase in the upcoming years. Furthermore, departmental governors, local mayors, and the National Roads Institute (Invías for its Spanish acronym) will drive tertiary works.[10] The execution of the above projects would boost nationwide infrastructure construction during 2024 and serve to offset the lower contributions expected from the 4G concessions nearing the end of their construction cycle. This momentum would gain further traction in 2025, thanks to the expected start of new public works, as well as the execution of new stages in projects that imply greater input towards added value and investment. It is important to note that a recovery in the public works segment is contingent upon multiple factors, including adherence to work schedules, administrative effectiveness, financial closure for the projects, resource allocation, and maintaining investor confidence.

4. Housing

Housing investment refers to the amounts invested in completed residential buildings, which historically represent around 24.4% of gross fixed capital formation. Its behavior is largely determined by the performance of completions within the housing construction process. Residential construction is an activity whose value-added share is 3.5%,[11] is characterized by being labor-intensive and maintains influential backward linkages with other sectors of the economy. Specifically, building construction accounts for 4.5% of all jobs in the country and 4.7%[12] of the output of other industries, primarily manufacturing.

Before the COVID-19 pandemic, housing investment showed an average annual growth of 3.2%, with some significant increases between 2014 and 2015 due to a housing market expansion.[13] The pandemic's shock in 2020 generated a 32.7% drop in housing investment. It recovered in 2021, exhibiting a growth rate of 39.8 %, and remained stable during 2022 and

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6 Around 18 % of the resources relating to six projects show progress levels below 30 % despite having been allocated through auction in 2015. This has been ascribed to difficulties in financial closures, access problems to the territory, and security concerns, among others.

7 The first line of Bogotá's metro, whose construction began in the second half of 2023, has an aggregate investment budget (CAPEX) of COP 14.3 trillion, and its execution schedule extends through 2028.

8 The first wave of fifth-generation (5G) concessions includes fourteen multimodal infrastructure projects, whose executions extend to 2031 (Conpes 4060), with a CAPEX investment of COP 21.4 trillion in constant 2022 pesos. According to the ANI, as of March 2024, six rad projects are in the preconstruction stage, one project is under construction, and the rest of the works are in either the structuring, bidding, or tendering stage.

9 The National Government's new program aims to "(...) improve and rehabilitate 33,102 km2 of the regional road network and ancestral roads (...)" (Invías, 2023: 8), with an investment of close to COP 8 trillion to be executed as of 2022.

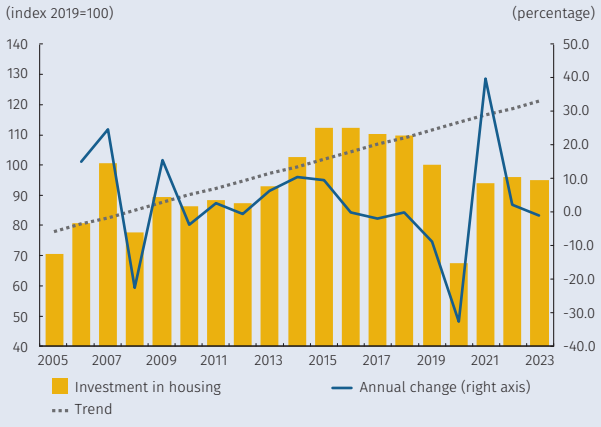
10 The regional and municipal projects that could provide additional contributions are the construction of new TransMilenio (rapid bus transport system) central lines in Bogotá and a new subway line in Medellín.

11 This applies to both residential and non-residential building construction and is measured on the supply side of the national accounts.

12 According to the 2019 input-output matrix, building construction absorbed around COP 40.7 trillion of other sectors' production for intermediate consumption.

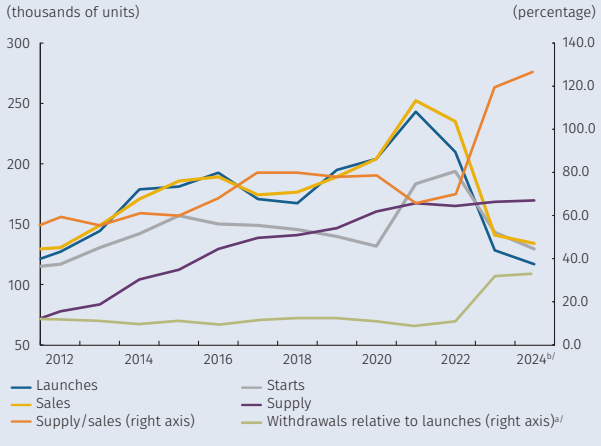
13 In the middle of the last decade, residential building construction boomed, positively affecting market indicators including sales, launches, and starts, which presented annual adjustments of more than 10%.

Graph B2.5
Investment in housing[a/]



a/ The trend line uses information up to 2019.
Note: Series is in constant prices and seasonally adjusted and corrected for calendar effects.
Sources: DANE; calculations by *Banco de la República*.

Graph B2.6
Housing market indicators



a/ Ratio of the housing units withdrawn from and new housing units launched into the market.
b/ With 12-month cumulative information to March 2024.
Sources: Camacol; calculations by *Banco de la República*.

2023 at levels close to those observed at the beginning of the last decade and well below those projected by its trend line (Graph B2.5). As a result, this component's GDP share has remained below its historical average[14] for the last two years, with a negligible contribution to investment growth (Graph B2.1, panel B).

This positive housing investment performance took place amid a favorable cycle in residential building construction, marked by a significant increase in housing demand during 2021 and 2022, explained by the ample accessibility to subsidies, comfortable financial conditions, and the availability of household savings (Graph B2.6). This drive on the demand side boosted the construction in the public housing segment (VIS) and led to a surge in the number of completed social interest housing projects, which are characterized by their smaller size and lower value added.[15] Conversely, higher demand in the non-public housing segment (non-VIS) was mainly satisfied by inventories that had been accumulated and completed in previous years and thus are not featured in the national accounts.

Since the second half of 2022, leading indicators of the new housing market have consistently weakened, suggesting reduced housing investment in 2024. Specifically, in 2023 and so far this year, sales, launches, and starts have registered annual declines ranging from 20% to 40%, which would be reflected in lower housing completions (Graph B2.6). The aforementioned behavior has resulted from several factors, including changes to the policy regarding subsidies for the purchase of VIS housing, an increase in mortgage interest rates, unfavorable outcomes related to the nation's risk and uncertainty perception, among others. These factors, in turn, have resulted in a decreased demand for housing and a drop in the creation of a new supply, which, in time, will engender a fall in project completions and, in tandem, in housing investment.

Towards 2025, housing investment would begin to improve, with a possible resurgence in housing demand driving the construction and completion of residential buildings. Sales of new housing could improve going forward, driving the construction of buildings as the continuous availability of subsidies for the acquisition of VIS housing,[16] along with more favorable macroeconomic and financial conditions. Overall, the housing market could show a slight recovery that propels residential building construction and housing investment, contributing in part to investment recovery in 2025. However, slow recovery of housing demand and persistent accumulation of inventories could moderate or delay the dynamics of this investment item.

14 Between 2021 and 2023, housing investment's share of GDP was approximately 3.8%, compared to a historical average of 4.2%.

15 According to DANE's Buildings Census (CEED for its Spanish acronym), an apartment and a non-VIS home in 2023 were, on average, 40% and 200% larger than their VIS counterparts, respectively. In addition, VIS projects tend to deliver their units in the shell and core stage, while non-VIS projects often reach further construction stages, such as completing the finishings (white box stage).

16 According to the National Development Plan, 50,000 subsidies will be available through the "Mi Casa Ya" program for the purchase of low-income housing during the 2022-2026 period.

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Box 3
Assessment of the 2023 Macroeconomic Forecast Error

Jonathan Alexander Muñoz Martínez
Julián Mauricio Pérez Amaya*

In 2023, the Colombian economy experienced a slowdown in economic activity, registering annual growth of 0.6% after the historical highs experienced in 2021 and 2022. This same year, inflation began to converge to the target, reaching 9.3 % at yearend amid a backdrop of a weakening in domestic demand, lessening upward supply pressures, less pressure from the exchange rate, and a contractionary monetary policy stance.

Economic activity for the full year surprised on the upside relative to the projections of the technical staff of *Banco de la República* (TS-Banrep) in January 2023.[1] This can be attributed in part to more resilient consumption growth, which contributed to counterweighing the initially expected decline in domestic demand. However, this unexpected increment was constrained by a larger-than-foreseen slowdown in investment at the beginning of the year. Meanwhile, stronger demand together with inflationary surprises derived from some regulated prices, particularly fuel and utilities), resulted in stronger-than-expected upward pressures on headline inflation during 2023. Nevertheless, demand pressures on core inflation (excluding food and regulated items) were more than offset by looser external financial conditions than initially expected, which supported lower price pressures from the exchange rate.

This Box applies 4GM,[2] one of the core forecasting models employed by *Banco de la República*, to analyze forecast errors of inflation and annual GDP growth in 2023. This exercise seeks to interpret and compare the implicit shocks behind the forecast errors, measured as the difference between the observed macroeconomic variables' data at the end of 2023 and the corresponding forecasts calculated by TS-Banrep in January of the same year. This analysis is similar to the one described in De Castro-Valderrama *et al*. (2021) and is part of the annual internal evaluation of the technical staff's forecasting process. The results that follow are for annual headline and core inflation, as well as GDP growth.

1. Headline and Core Inflation

Throughout 2023, headline inflation unexpectedly increased, surpassing the technical staff's January 2023 projection. On the other hand, core inflation was lower than anticipated, which meant that the TS-Banrep overestimated the upward shocks to this basket (Graph B3.1). Nevertheless, the forecast errors for both baskets were smaller than those for the exercise carried out in 2022x[3].

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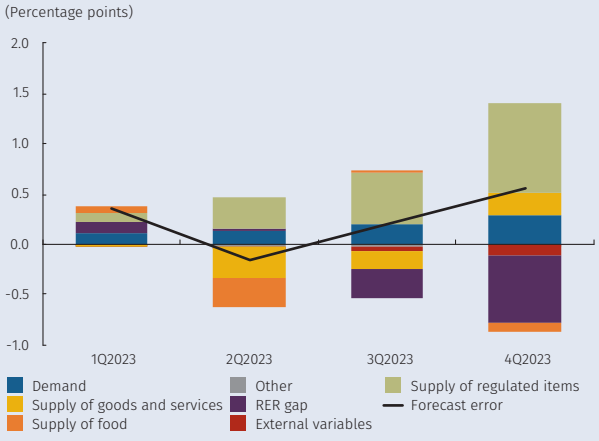
1 This Box compares the January 2023 projections against the actual recorded in 2023.

2 See https://repositorio.banrep.gov.co/handle/20.500.12134/9812

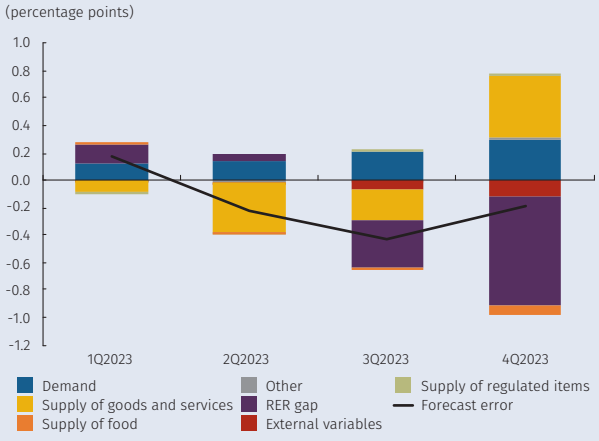
3 See Box 2 of the April 2023 Monetary Policy Report: https://www.banrep.gov.co/en/monetary-policy-report-april-2023

Graph B3.1
Inflation Forecasting Error in 2023
(Annual change end-of-period)

A. Headline inflation (annual end-of-period, percentage)



B. Core inflation (excluding food and regulated items)



Note: the forecast error is calculated as the difference between the observed value and the forecasts made in January 2023. A positive value indicates that the final value observed was higher than the forecast and, therefore, the variable was underestimated. In a given quarter, the bars represent the cumulative four-quarter shocks that explain the discrepancy between the forecast and the observed data; thus, a bar above the horizontal axis indicates that more shocks materialized than initially expected by the technical staff.
Source: Calculations by the authors.

The forecast error for core inflation was mainly explained by three macroeconomic surprises that affected prices during 2023, surpassing the technical staff's expectation: supply shocks in the goods and services baskets, those related to exchange rate pressures, and those associated with domestic demand. In particular, the first two groups of shocks recorded greater than expected declines, explained by more favorable external conditions and bigger decreases in the food basket, benefitting prices of certain services such as food away from home. Furthermore, exchange rate pressures in the second half of the year were lower than anticipated at the beginning of the year.

The forecast error shows that the technical staff underestimated headline inflation in most quarters of 2023. These upward surprises in headline inflation are primarily explained by the behavior of price adjustments in the regulated basket[4]. In particular, fuel and utilities price adjustments[5] were higher than those included in the initial macroeconomic forecast.

2. GDP growth

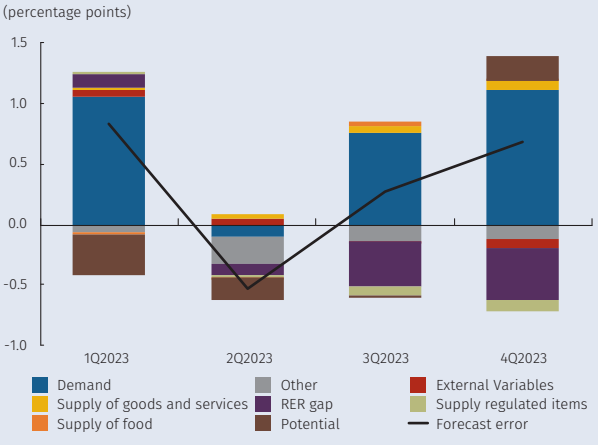
On the external front, the GDP's growth forecast at the beginning of 2023 anticipated more restrictive external financial conditions than those of the previous year. This, together with the lower dynamism of external demand, would partly explain the year-long economic slowdown. Domestically, private consumption was expected to decline from the high levels of the previous two years, along with a fall in investment activity compared to the levels of 2022.

Graph B3.2 shows that during most of 2023, annual quarterly GDP growth was higher than forecast by the TS-Banrep early in the year. This is mainly explained by positive demand shocks associated with a slower-than-expected decline in private consumption. This is mostly due to higher-than-expected consumption of services and non-durable goods. Quantitatively, these positive shocks were more significant than their negative counterparts. The latter affected economic activity growth due to the downward potential GDP estimate resulting from reduced investment levels in the last national accounts report and lower real

4 The annual change of the food basket for 2023 was consistent with the technical staff's January projection.

5 The upward surprise in utility prices was mainly explained by a higher-than-expected increase in specific components, including gas, water, water, and electricity.

Graph B3.2
Error in Growth Forecasting in 2023
Quarterly GDP growth
(Quarterly change)



Note: the forecast error is calculated as the difference between the observed value and the forecasts made in January 2023. A positive value indicates that the final value observed was higher than the forecast and, therefore, the variable was underestimated. In a given quarter, the bars represent the cumulative four-quarter shocks that explain the discrepancy between the forecast and the observed data; thus, a bar above the horizontal axis indicates that more shocks materialized than initially expected by the technical staff.
Source: Calculations by the authors.

depreciation observed (real exchange rate gap (RER)), which could have negatively affected the country's net exports.

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Appendix 1
Macroeconomic Forecasts by local and Foreign Analysts[a/, b/]

	Unit	Apr-24	Dec-24	Apr-25	Dec-25	Apr-26
Headline CPI	Monthly variation (average)	0.57	n. a.	n. a.	n. a.	n. a.
CPI excluding food	Monthly variation (average)	0.53	n. a.	n. a.	n. a.	n. a.
Headline CPI	Annual variation (average), end of period	7.13[c/]	5.62	4.67	3.90	3.61
CPI excluding food	Annual variation (average), end of period	8.26[c/]	5.65	4.46	3.70	3.47
Nominal exchange rate	COP per USD, end of period	3,850	4,000	4,012	4,100	4,050
Monetary policy rate	Percentage, end of period	11.75	8.25	6.88	5.50	5.25

	Unit	I-2024	II-2024	III-2024	IV-2024	2024	I-2025	II-2025	III-2025	IV-2025	2025	I-2026
GDP	Annual change, original series	0.3	1.1	1.6	2.0	1.2	2.3	2.4	2.5	2.6	2.5	n. a.
Unemployment	Thirteen cities, quarterly average	11.6	10.8	10.7	10.4	n. a.	11.8	10.6	10.5	10.2	n. a.	n. a.
IBR (90 days)	Effective annual rate, end of period	n. r.	10.6	9.3	8.2	n. a.	6.9	6.3	5.8	5.7	n. a.	5.5
Fiscal Deficit (GNC) [d/]	Share of GDP	n. a.	n. a.	n. a.	n. a.	5.4	n. a.	n. a.	n. a.	n. a.	4.6	n. a.
Direct Account Deficit[d/]	Share of GDP	n. a.	n. a.	n. a.	n. a.	3.0	n. a.	n. a.	n. a.	n. a.	3.4	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 April 2024.

Appendix 2
Main Macroeconomic Forecasting Variables

		Years										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Exogenous variables												
External [a/]												
GDP of trading partners [b/]	Percentage, annual var., seasonally adjusted	2.0	1.6	3.2	2.5	1.5	-6.6	8.2	3.6	**2.3**	**1.8**	**2.2**
Oil price (Brent benchmark)	Dollars per barrel, average of the period	54	45	55	72	64	43	71	99	82	**86**	**83**
Federal funds effective rate (Fed)	Percentage, average for the period	0.13	0.39	1.00	1.83	2.16	0.37	0.08	1.68	5.03	**5.29**	**4.47**
5-year Credit Default Swap for Colombia	Basis points, average for the period	184	212	129	114	99	142	142	259	246	**184**	**207**
Internal												
Neutral real interest rate for Colombia	Percentage, average for the period	1.5	1.6	1.3	1.3	1.2	1.3	1.5	2.0	2.2	**2.4**	**2.5**
Potential GDP for Colombia (trend)	Percentage, annual change	3.4	2.8	2.4	2.3	2.3	-0.1	3.9	3.6	2.7	**2.9**	**2.6**
Endogenous variables												
Prices												
Total CPI [c/]	Percentage, annual change, end of period	6.77	5.75	4.09	3.18	3.80	1.61	5.62	13.12	9.28	**5.54**	**3.00**
CPI excluding food [d/]	Percentage, annual change, end of period	5.25	5.51	5.03	3.51	3.45	1.03	3.44	9.99	10.33	.	.
CPI for goods (excluding food and regulated items)	Percentage, annual change, end of period	7.27	5.91	3.24	1.40	2.18	0.63	3.31	15.04	7.11	.	.
CPI for services (excluding food and regulated items)	Percentage, annual change, end of period	4.64	5.26	5.38	3.13	3.45	1.29	2.18	7.41	8.96	.	.
CPI for regulated items	Percentage, annual change, end of period	4.43	5.63	6.26	6.65	4.81	0.73	7.10	11.77	17.24	**8.02**	**3.39**
CPI for food [e/]	Percentage, annual change, end of period	13.08	6.65	0.48	1.87	5.80	4.80	17.23	27.81	5.00	**4.85**	**0.82**
CPI for perishable food	Percentage, annual change, end of period	26.03	-6.63	5.84	8.88	8.66	2.49	24.42	36.44	-0.47	.	.
CPI for processed food	Percentage, annual change, end of period	9.62	10.74	-0.91	-0.08	5.04	5.43	15.32	25.33	6.71	.	.
Core inflation indicators [f/]												
CPI excluding food	Percentage, annual change, end of period	5.25	5.51	5.03	3.51	3.45	1.03	3.44	9.99	10.33	.	.
Core CPI 15	Percentage, annual change, end of period	5.59	5.98	4.21	3.22	3.78	1.88	4.42	11.55	9.46	.	.
CPI excluding food and regulated items	Percentage, annual change, end of period	5.50	5.48	4.67	2.57	3.10	1.11	2.49	9.51	8.42	**5.11**	**3.38**
Average of all core inflation indicators	Percentage, annual change, end of period	5.44	5.66	4.64	3.10	3.44	1.34	3.45	10.35	9.41	.	.
Representative market exchange rate	Pesos per dollar, average for the period	2,746	3,053	2,951	2,957	3,282	3,691	3,747	4,257	4,330	.	.
Real exchange rate Inflationary gap	Percentage, average for the period	9.6	2.5	-1.7	-0.7	3.6	6.9	2.2	6.7	1.4	**-5.8**	**-1.4**
Economic activity												
Gross domestic product (sats)*	Percentage, annual change, sats	3.0	2.1	1.4	2.6	3.2	-7.2	10.8	7.3	0.6	**1.4**	**3.2**
Final consumption expense	Percentage, annual change, sats	3.4	1.6	2.3	4.0	4.3	-4.2	13.8	8.9	1.1	.	.
Household final consumption expenditure	Percentage, annual change, sats	3.1	1.6	2.1	3.2	4.1	-5.0	14.7	10.7	1.1	.	.
General government final consumption expenditure	Percentage, annual change, sats	4.9	1.8	3.6	7.4	5.3	-0.8	9.8	0.8	0.9	.	.
Gross capital formation	Percentage, annual change, sats	-1.2	-0.2	-3.2	1.5	3.0	-20.7	11.6	16.0	-24.8	.	.
Gross fixed capital formation	Percentage, annual change, sats	2.8	-2.9	1.9	1.0	2.2	-23.6	16.7	11.5	-8.9	.	.
Housing	Percentage, annual change, sats	9.5	-0.2	-1.9	-0.4	-8.9	-32.7	39.8	2.0	-1.2	.	.
Other buildings and structures	Percentage, annual change, sats	10.2	0.0	4.6	-3.5	1.1	-30.8	0.9	-4.2	-4.9	.	.
Machinery and equipment	Percentage, annual change, sats	-9.3	-7.9	1.4	8.6	12.3	-13.3	23.3	30.3	-16.2	.	.
Cultivated biological resources	Percentage, annual change, sats	2.3	13.1	0.3	-3.1	7.9	-1.8	-0.9	-12.5	4.6	.	.
Intellectual property products	Percentage, annual change, sats	1.3	-12.0	1.2	1.5	-0.7	-8.3	3.4	8.9	0.6	.	.
Domestic demand	Percentage, annual change, sats	2.4	1.2	1.1	3.5	4.0	-7.5	13.4	10.2	-3.8	.	.
Exports	Percentage, annual change, sats	1.7	-0.2	2.6	0.6	3.1	-22.5	14.6	12.3	3.1	.	.
Imports	Percentage, annual change, sats	-1.1	-3.5	1.0	5.8	7.3	-20.1	26.7	23.6	-14.7	.	.
Product gap [g/]	Percentage	0.9	0.2	-0.9	-0.6	0.2	-7.1	-0.8	2.8	0.8	**-0.7**	**0.0**
Short-term indicators												
Real production of manufacturing industry	Percentage, annual change, seasonally adjusted	2.1	3.5	0.0	2.9	1.3	-8.1	16.2	10.5	-4.7	.	.
Retail trade sales, excluding fuels or vehicles	Percentage, annual change, seasonally adjusted	6.4	2.0	-0.1	5.5	8.1	-1.5	12.3	9.2	-4.0	.	.
Coffee production	Percentage, annual change, cum. for period	16.8	0.4	-0.3	-4.5	8.8	-5.8	-9.5	-11.9	2.4	.	.
Oil production	Percentage, annual change, period average	1.5	-11.9	-3.6	1.3	2.4	-11.8	-5.8	2.4	3.0	.	.
Labor market [h/]												
Total national												
Unemployment rate	Percentage, annual change, period average	9.2	9.5	9.7	10.0	10.9	16.7	13.8	11.2	**10.2**	**10.7**	**.**
Occupancy Rate	Percentage, annual change, period average	61.3	60.5	60.0	59.1	57.7	50.4	53.1	56.5	**57.6**	.	.
Overall participation rate	Percentage, annual change, period average	67.5	66.9	66.4	65.7	64.8	60.4	61.5	63.6	**64.1**	.	.
Thirteen cities and metropolitan areas												
Unemployment rate	Percentage, annual change, period average	10.1	10.3	11.0	11.1	11.5	19.1	15.2	11.4	**10.4**	**10.8**	**.**
Occupancy Rate	Percentage, annual change, period average	62.6	61.7	60.5	59.6	58.8	50.8	53.8	58.1	**59.5**	.	.
Overall participation rate	Percentage, annual change, period average	69.6	68.8	67.9	67.1	66.4	62.7	63.5	65.5	**66.3**	.	.
Balance of payments [i/ j/]												
Current account (A + B + C)	Millions of dollars	-18,702	-12,587	-9,924	-14,041	-14,809	-9,267	-17,956	-21,367	-9,715	**-12,830**	**.**
Percentage of GDP	Percentage, nominal terms	-6.3	-4.4	-3.2	-4.2	-4.6	-3.4	-5.6	-6.2	-2.7	**-3.1**	**.**
A. Goods and services	Millions of dollars	-19,004	-13,451	-8,762	-10,556	-14,148	-13,105	-20,007	-16,588	-8,220	**-12,778**	**.**
B. Primary income (factor income)	Millions of dollars	-5,450	-5,312	-8,046	-11,442	-9,716	-4,950	-8,723	-17,087	-14,405	**-13,468**	**.**
C. Secondary income (current transfers)	Millions of dollars	5,752	6,177	6,883	7,957	9,055	8,788	10,775	12,308	12,910	**13,416**	**.**
Financial account (A + B + C + D)	Millions of dollars	-18,060	-12,339	-9,625	-12,954	-13,298	-8,113	-16,693	-20,466	-8,880	.	.
Percentage of GDP	Percentage, nominal terms	-6.1	-4.4	-3.1	-3.9	-4.1	-3.0	-5.3	-5.9	-2.4	.	.
A. Foreign investment (ii - i)	Millions of dollars	-7,403	-9,341	-10,011	-6,172	-10,836	-5,725	-6,381	-13,799	-16,235	.	.
i. Foreign Investment in Colombia (FDI)	Millions of dollars	11,621	13,858	13,701	11,299	13,989	7,459	9,561	17,183	17,446	.	.
ii. Colombian abroad	Millions of dollars	4,218	4,517	3,690	5,126	3,153	1,733	3,181	3,383	1,211	.	.
B. Portfolio investment	Millions of dollars	-9,091	-4,945	-1,800	862	24	-1,768	-4,595	427	8,657	.	.
C. Other investment (loans, other credits, and derivatives)	Millions of dollars	-1,981	1,781	1,641	-8,831	-5,820	-4,949	-6,371	-7,665	-3,020	.	.
D. Reserve assets	Millions of dollars	415	165	545	1,187	3,333	4,328	654	571	1,718	.	.
Errors and omissions (E&O)	Millions of dollars	642	247	299	1.087	1.510	1.153	1.263	901	836	.	.
Interest rates												
Policy interest rate [k/]	Percentage, period average	4.67	7.10	6.10	4.35	4.25	2.87	1.91	7.22	13.04	.	.
Policy rate expected by analysts [l/]	Percentage, period average										**11.18**	**6.72**
IBR overnight	Percentage, period average	4.7	7.1	6.1	4.3	4.3	2.9	1.9	7.2	13.0	.	.
Commercial interest rate [m/]	Percentage, period average	9.4	12.8	11.1	9.3	8.8	7.4	6.2	13.3	18.7	.	.
Consumer interest rate [n/]	Percentage, period average	17.2	19.2	19.4	17.9	16.5	15.0	14.3	21.1	27.9	.	.
Mortgage interest rate [o/]	Percentage, period average	11.0	12.4	11.6	10.6	10.4	10.1	9.1	12.9	17.7	.	.

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/ The medium term forecast corresponds to the average of the estimates obtained from the technical staff's central models (4GM and PATACON).
d/ 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.
e/ 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.
f/ Calculations by *Banco de la República*. See González, E.; Hernández, R. et al, Ibid.
g/ 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. For 2023, the change in the gap estimate is explained, in part, by an upward revision of the output gap in 2022, which in turn is due to the revisions of quarterly GDP growth by the DANE in its publication of November 2023.
h/ Rates are calculated based on seasonally adjusted annual populations.
i/ 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.
j/ Results for 2021 and 2022 are preliminary.
k/ Corresponds to the average annual monetary policy interest rate calculated with the working days of the series.
l/ 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 April 2024.
m/ Weighted average of interest rates on ordinary, treasury and preferential loans.
n/ Does not include loans granted through credit cards.
o/ 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

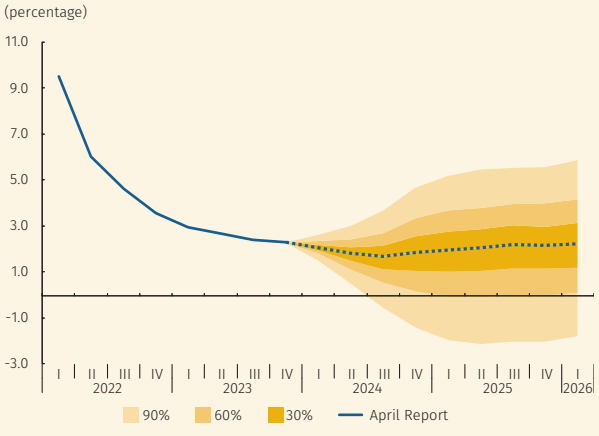
		2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Exogenous variables									
External [a/]									
GDP of trading partners [b/]	Percentage, annual var., seasonally adjusted	4.0	2.3	0.6	0.5	1.3	3.8	1.3	-0.7
Oil price (Brent benchmark)	Dollars per barrel, average of the period	67	75	76	69	64	68	62	62
Federal 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 [c/]	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 [d/]	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 [e/]	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 [f/]									
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	Pesos per dollar, average for the period	2,861	2,838	2,960	3,161	3,135	3,240	3,338	3,412
Real exchange rate Inflationary gap	Percentage, average for the period	-3.3	-3.8	-0.4	4.5	2.3	3.2	3.9	4.9
Economic activity									
Gross domestic product (sats)*	Percentage, annual change, sats	1.8	2.8	2.9	2.9	3.5	3.0	3.2	3.0
Final consumption expense	Percentage, annual change, sats	3.9	3.9	3.9	4.2	3.7	3.8	4.4	5.2
Household final consumption expenditure	Percentage, annual change, sats	3.4	3.5	3.1	3.0	3.0	3.6	4.3	5.4
General government final consumption expenditure	Percentage, annual change, sats	6.6	6.9	7.8	8.1	6.5	5.5	4.7	4.5
Formación bruta de capital	Percentage, annual change, sats	-6.5	1.2	0.4	11.8	8.5	3.5	5.2	-4.8
Gross capital formation	Percentage, annual change, sats	-1.5	2.5	1.3	1.7	7.2	4.4	1.9	-4.3
Housing	Percentage, annual change, sats	-9.4	0.2	6.0	2.9	-6.6	-7.8	-8.0	-13.1
Other buildings and structures	Percentage, annual change, sats	-6.7	-1.2	-4.8	-1.4	12.6	-1.2	1.1	-6.5
Machinery and equipment	Percentage, annual change, sats	11.9	13.7	6.8	3.1	15.1	22.3	9.9	2.1
Cultivated biological resources	Percentage, annual change, sats	-10.7	-6.7	3.7	2.1	5.6	9.8	14.9	1.6
Intellectual property products	Percentage, annual change, sats	2.6	2.4	0.7	0.4	-1.3	-1.5	-1.3	1.4
Domestic demand	Percentage, annual change, sats	1.6	3.6	3.7	5.0	4.5	3.9	4.7	3.0
Exports	Percentage, annual change, sats	0.4	-2.2	1.5	2.9	4.9	9.0	1.8	-3.1
Imports	Percentage, annual change, sats	-1.6	4.7	5.3	15.2	11.5	9.0	10.8	-1.1
Product gap [g/]	Percentage	-1.0	-0.9	-0.8	-0.6	-0.3	-0.1	0.1	0.2
Short-term indicators									
Real production of manufacturing industry	Percentage, annual change, seasonally adjusted	2.5	2.7	3.7	2.8	1.0	2.4	0.8	1.0
Retail trade sales, excluding fuels or vehicles	Percentage, annual change, seasonally adjusted	4.7	5.9	5.2	6.1	6.2	7.5	9.5	9.1
Coffee production	Percentage, annual change, cum. for period	-5.8	13.1	-13.8	-6.6	-1.9	6.6	4.9	24.1
Oil production	Percentage, annual change, period average	0.4	1.0	1.1	2.6	5.4	3.2	1.4	-0.2
Labor market [h/]									
Total national									
Unemployment rate	Percentage, annual change, period average	9.7	9.8	9.8	10.5	10.9	10.6	11.2	10.9
Occupancy Rate	Percentage, annual change, period average	59.2	59.4	59.5	58.4	58.4	57.7	57.2	57.5
Overall participation rate	Percentage, annual change, period average	65.6	65.9	65.9	65.3	65.5	64.6	64.4	64.6
Thirteen cities and metropolitan areas									
Unemployment rate	Percentage, annual change, period average	11.1	11.0	10.8	11.5	11.8	11.4	11.3	11.6
Occupancy Rate	Percentage, annual change, period average	59.7	59.9	60.0	58.8	58.8	58.9	58.7	58.7
Overall participation rate	Percentage, annual change, period average	67.1	67.3	67.3	66.5	66.6	66.5	66.2	66.4
Balance of payments [i/ j/]									
Current account (A + B + C)	Millions of dollars	-3,023	-3,471	-3,406	-4,141	-3,820	-3,219	-4,303	-3,467
Percentage of GDP	Percentage, nominal terms	-3.7	-4.1	-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	-2,615	-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	-3.2	-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	301	-114	563	761
Interest rates									
Policy interest rate [k/]	Percentage, period average	4.58	4.33	4.25	4.25	4.25	4.25	4.25	4.25
Policy rate expected by analysts [l/]	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 [m/]	Percentage, period average	9.4	9.4	9.3	9.0	9.1	9.0	8.9	8.5
Consumer interest rate [n/]	Percentage, period average	18.7	17.9	18.0	17.3	18.0	17.2	16.0	15.5
Mortgage interest rate [o/]	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/ The medium term forecast corresponds to the average of the estimates obtained from the technical staff's central models (4GM and PATACON).
d/ 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.
e/ 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.
f/ Calculations by *Banco de la República*. See González, E.; Hernández, R. et al, Ibid.
g/ 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. For 2023, the change in the gap estimate is explained, in part, by an upward revision of the output gap in 2022, which in turn is due to the revisions of quarterly GDP growth by the DANE in its publication of November 2023.
h/ Rates are calculated based on seasonally adjusted annual populations.
i/ 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.
j/ Results for 2021 and 2022 are preliminary.
k/ Corresponds to the average annual monetary policy interest rate calculated with the working days of the series.
l/ 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 April 2024.
m/ Weighted average of interest rates on ordinary, treasury and preferential loans.
n/ Does not include loans granted through credit cards.
o/ 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				2026
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
-7.0	-46.7	53.9	16.0	5.3	7.2	7.2	5.7	0.6	2.3	4.3	1.0	2.8	2.9	2.0	-1.0	**3.1**	**2.6**	**1.8**	**2.0**	**2.0**	**2.5**	**2.4**	**2.2**	**2.3**
51	33	43	45	61	69	73	80	98	112	98	89	82	78	86	83	82	**87**	**87**	**86**	**85**	**84**	**82**	**80**	**80**
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	5.33	5.33	**5.38**	**5.34**	**5.09**	**4.85**	**4.58**	**4.34**	**4.09**	**3.85**
125	206	132	104	110	131	143	185	209	238	275	314	283	275	219	207	172	**175**	**190**	**197**	**202**	**205**	**209**	**211**	**214**
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	9.28	7.36	**7.12**	**6.16**	**5.54**	**5.01**	**3.99**	**3.33**	**3.00**	**2.96**
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	10.33	8.76	.	.	.	.	.	.	.	.
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	7.11	3.08	.	.	.	.	.	.	.	.
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	8.96	8.29	.	.	.	.	.	.	.	.
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	17.24	15.78	**13.90**	**10.81**	**8.02**	**5.41**	**4.13**	**3.65**	**3.39**	**3.49**
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	5.00	1.73	**3.87**	**3.38**	**4.85**	**5.67**	**4.28**	**1.80**	**0.82**	**0.78**
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	-0.47	-3.42	.	.	.	.	.	.	.	.
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	6.71	3.41	.	.	.	.	.	.	.	.
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	10.33	8.76	.	.	.	.	.	.	.	.
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	9.46	7.64	.	.	.	.	.	.	.	.
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	8.42	6.77	**6.17**	**5.66**	**5.11**	**4.76**	**4.06**	**3.59**	**3.38**	**3.32**
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	9.40	7.72	.	.	.	.	.	.	.	.
3,540	3,850	3,731	3,662	3,559	3,695	3,847	3,882	3,910	3,919	4,384	4,812	4,758	4,424	4,044	4,074	3,921	.	.	.	.	.	.	.	.
5.7	11.8	6.6	3.4	-0.1	2.1	3.4	3.3	2.6	1.3	7.7	15.3	12.1	3.4	-5.2	-4.6	-7.6	**-6.9**	**-5.2**	**-3.5**	**-2.8**	**-1.4**	**-1.0**	**-0.5**	**-0.6**
0.5	-16.8	-9.0	-3.4	1.4	18.7	13.4	11.2	8.1	12.2	7.3	2.1	2.8	0.0	-0.6	0.3	**0.3**	**1.4**	**1.7**	**2.4**	**2.0**	**3.2**	**3.6**	**4.1**	**4.1**
3.9	-14.4	-7.4	1.0	3.4	22.5	18.4	12.7	11.1	14.4	8.3	2.6	2.7	0.8	0.5	0.4	**0.6**	.	.	.	.	.	.	.	.
4.3	-16.8	-8.4	1.0	2.8	25.4	19.5	13.7	11.9	16.2	10.7	4.7	3.4	0.8	0.2	0.2	**1.4**	.	.	.	.	.	.	.	.
0.0	-2.3	-1.9	1.2	7.4	10.4	13.2	8.5	6.1	5.5	-2.5	-5.2	-1.1	0.5	2.9	1.5	**-1.3**	.	.	.	.	.	.	.	.
-10.4	-31.0	-17.9	-23.6	-2.9	29.1	7.7	17.3	21.6	9.7	16.9	15.9	-9.9	-28.3	-33.7	-28.0	**-18.6**	.	.	.	.	.	.	.	.
-12.4	-41.4	-24.9	-14.9	3.7	42.3	15.2	13.2	8.5	13.6	14.0	10.1	-2.7	-6.4	-10.8	-15.6	**-12.0**	.	.	.	.	.	.	.	.
-25.9	-47.9	-30.4	-25.2	23.9	64.9	31.0	46.0	-0.1	3.7	7.0	-2.1	11.3	-0.9	-3.7	-10.6	**-14.3**	.	.	.	.	.	.	.	.
-10.5	-50.1	-37.4	-24.2	-15.3	32.0	0.3	-0.3	-9.0	-0.9	5.0	-10.7	-4.2	-5.3	-10.6	0.7	**-0.3**	.	.	.	.	.	.	.	.
-4.3	-37.0	-9.4	0.6	10.7	55.0	23.3	13.3	33.3	32.3	24.7	31.0	-8.4	-14.4	-16.0	-26.2	**-21.0**	.	.	.	.	.	.	.	.
2.3	1.6	-7.8	-2.8	5.6	0.9	-4.0	-6.4	-16.4	-16.4	-11.7	-4.4	2.3	6.5	6.4	3.5	**1.6**	.	.	.	.	.	.	.	.
1.4	-14.3	-11.2	-9.1	-7.0	7.8	7.8	6.4	10.6	12.4	10.2	3.0	0.6	1.6	-1.0	1.0	**-1.3**	.	.	.	.	.	.	.	.
0.5	-17.9	-9.7	-3.0	1.5	24.6	16.6	13.0	13.2	13.8	10.1	4.1	-0.1	-4.3	-6.6	-4.2	**-1.8**	.	.	.	.	.	.	.	.
-7.0	-31.6	-28.3	-22.7	-9.7	14.6	26.6	33.7	16.4	24.2	13.4	-1.8	3.3	2.7	-0.3	7.0	**1.0**	.	.	.	.	.	.	.	.
-5.6	-33.4	-25.5	-15.5	-4.7	46.1	39.8	34.4	39.8	26.7	23.3	8.4	-7.9	-14.5	-23.1	-12.8	**-9.7**	.	.	.	.	.	.	.	.
-0.2	-3.8	-6.0	-7.1	-7.1	-4.5	-2.6	-0.8	0.3	1.9	3.0	2.8	2.9	2.2	1.3	0.8	**0.0**	**-0.3**	**-0.6**	**-0.7**	**-0.7**	**-0.6**	**-0.4**	**0.0**	**0.3**
-1.5	-23.5	-7.3	0.0	6.7	27.7	20.2	12.9	11.9	20.9	7.0	3.7	-1.0	-4.5	-7.1	-6.0	.	.	.	.	.	.	.	.	.
6.4	-14.6	-3.5	5.6	4.4	19.4	15.9	10.8	12.6	21.8	5.7	-1.4	-1.8	-5.6	-4.9	-3.9	.	.	.	.	.	.	.	.	.
-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	24.9	3.5	.	.	.	.	.	.	.	.
-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	3.7	1.5	.	.	.	.	.	.	.	.	.
11.9	21	18.3	15.4	14.7	15.2	12.8	12.5	12.1	11.1	10.9	10.8	10.6	10.2	9.5	10.3	**10.6**	**10.5**	**10.6**	**10.9**	.	.	.	.	.
55.6	44.5	49	52.7	52.7	52.0	53.4	54.2	55.9	56.7	56.8	56.6	57.1	57.8	58.4	57.2	.	.	.	.	.	.	.	.	.
63.1	56.3	59.9	62.3	61.8	61.3	61.2	61.9	63.5	63.7	63.8	63.5	63.9	64.4	64.5	63.8	.	.	.	.	.	.	.	.	.
12.0	25.1	21.8	17.3	16.9	16.7	14.0	13.1	12.3	11.2	11.0	10.9	11.1	10.3	9.8	10.2	**10.7**	**10.6**	**10.7**	**11.0**	.	.	.	.	.
56.9	44.2	49.0	53.3	53.4	53.2	54.4	54.3	57.4	58.0	58.4	58.3	58.7	59.3	60.2	59.7	.	.	.	.	.	.	.	.	.
64.6	59.0	62.6	64.4	64.3	63.9	63.2	62.5	65.5	65.4	65.6	65.4	66	66.2	66.7	66.4	.	.	.	.	.	.	.	.	.
-2,295	-1,962	-2,013	-2,997	-3,106	-4,049	-4,836	-5,965	-5,516	-4,877	-6,218	-4,756	-3,133	-2,336	-1,953	-2,293	.	.	.	.	.	.	.	.	.
-3.1	-3.6	-3.0	-4.0	-4.0	-5.5	-6.0	-6.9	-6.4	-5.4	-7.1	-5.8	-3.9	-2.7	-2.0	-2.3	.	.	.	.	.	.	.	.	.
-3,098	-2,651	-3,263	-4,092	-3,689	-5,023	-5,260	-6,035	-5,076	-3,177	-4,529	-3,807	-2,344	-2,166	-1,574	-2,136	.	.	.	.	.	.	.	.	.
-1,369	-1,029	-1,172	-1,380	-1,867	-1,652	-2,339	-2,865	-3,617	-4,531	-4,795	-4,144	-3,886	-3,203	-3,747	-3,568	.	.	.	.	.	.	.	.	.
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	3,033	3,369	3,411	.	.	.	.	.	.	.	.	.
-1,735	-1,938	-1,857	-2,584	-2,789	-3,761	-4,504	-5,640	-5,037	-4,952	-5,736	-4,741	-2,779	-2,780	-1,699	-1,621	.	.	.	.	.	.	.	.	.
-2.3	-3.5	-2.8	-3.4	-3.6	-5.1	-5.6	-6.5	-5.8	-5.5	-6.5	-5.8	-3.4	-3.3	-1.7	-1.6	.	.	.	.	.	.	.	.	.
-1,924	-1,725	-258	-1,818	-1,438	-1,013	-2,528	-1,402	-3,651	-3,661	-2,959	-3,529	-3,788	-5,514	-3,632	-3,301	.	.	.	.	.	.	.	.	.
3,175	1,371	844	2,069	2,307	1,997	2,707	2,550	4,934	5,043	3,113	4,092	4,223	5,262	4,015	3,946	.	.	.	.	.	.	.	.	.
1,251	-353	586	251	869	984	179	1,149	1,284	1,382	154	563	436	-252	383	645	.	.	.	.	.	.	.	.	.
-168	-3,429	323	1,506	1,319	-6,089	851	-675	1,866	-759	-233	-447	1,111	1,519	4,531	1,496	.	.	.	.	.	.	.	.	.
528	627	-2,127	-3,976	-2,860	3,167	-2,981	-3,697	-3,379	-606	-2,703	-976	-468	815	-3,055	-312	.	.	.	.	.	.	.	.	.
-171	2,590	205	1,705	190	174	154	135	127	74	159	210	366	399	457	496	.	.	.	.	.	.	.	.	.
560	25	155	413	317	288	332	325	479	-75	482	15	354	-444	253	672	.	.	.	.	.	.	.	.	.
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	13.23	12.82	.	.	.	.	.	.	.	.
																	11.92	**10.75**	**9.25**	**7.92**	**6.96**	**6.17**	**5.83**	**5.50**
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	13.2	12.8	.	.	.	.	.	.	.	.
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	18.0	16.2	.	.	.	.	.	.	.	.
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	26.3	23.9	.	.	.	.	.	.	.	.
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	17.1	16.4	.	.	.	.	.	.	.	.

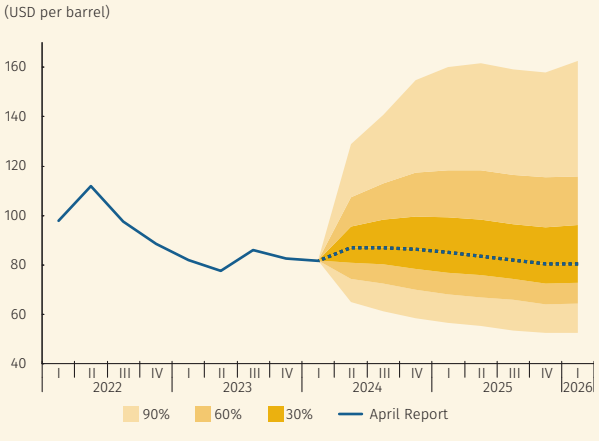
Appendix 3
Predictive Densities for other relevant Macroeconomic Forecasting Variables

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



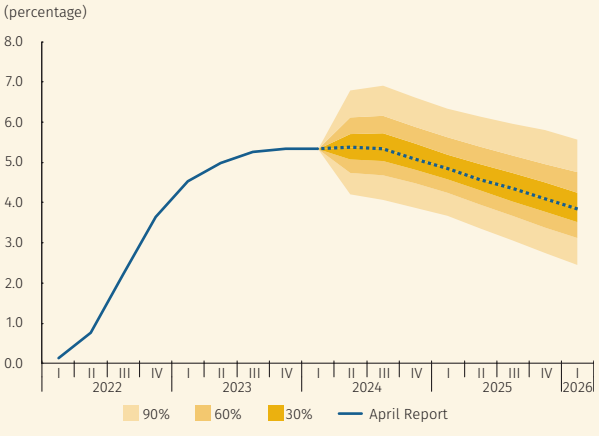
a/ The graph displays the probability distribution and its most likely path on an eight-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Sources: Bloomberg, statistics bureaus, central banks;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

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



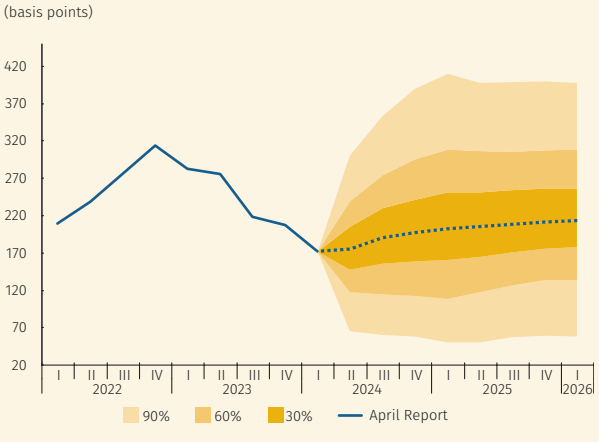
a/ The graph displays the probability distribution and its most likely path on an eight-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Source: Bloomberg, calculations and projections by *Banco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

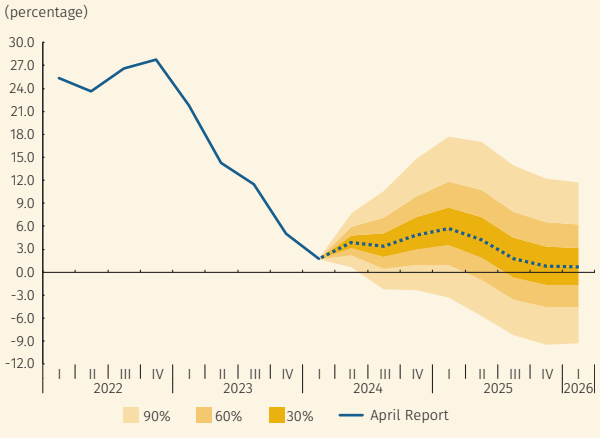
Graph A3.4
Colombia's quarterly risk premium (CDS) assumption, predictive density[a/,b/]



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*.

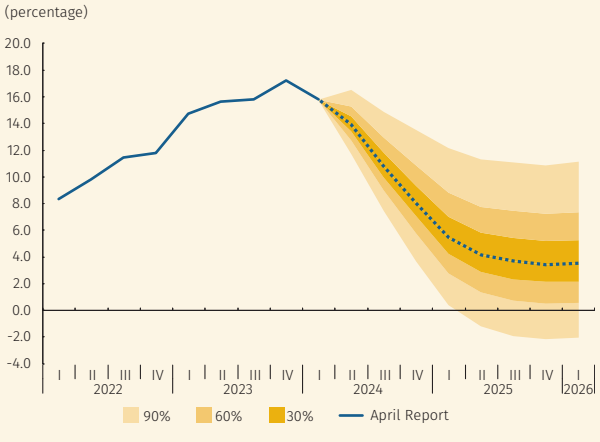
Appendix 3 (continuation)
Predictive Densities for other relevant Macroeconomic Forecasting Variables

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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