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MONETARY **POLICY REPORT**

* Presented by the technical staff to the Board of Directors for its meeting on 31 January 2025.

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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 third 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, on the second business day. On the fourth business day following the Board meeting, 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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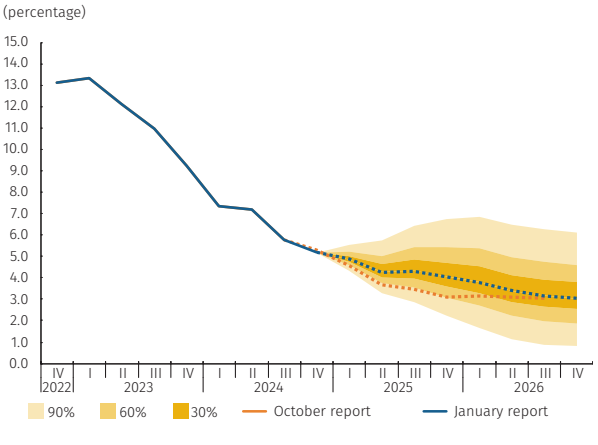
1. Summary

1.1 Macroeconomic Summary

In December, the decrease in headline inflation (5.2%) exceeded the projections of the previous Report, while core inflation (5.2%) fell in line with expectations. Looking ahead, it is anticipated that inflation will continue to converge towards the 3% target, albeit at a slower pace than projected in the previous Report, mainly due to the anticipated consequences of the minimum wage increase. Compared to the October forecasts, the more significant inflation reduction seen at the end of 2024 was driven by food prices (3.3%), which rose less than projected due to a better supply of perishable goods. The CPI for regulated items (7.3%) showed a significant slowdown, although less than forecast due to higher-than-expected gas and electricity service prices. Inflation excluding food and regulated items (5.2%) decreased in keeping with projections, reflecting the behavior of the services group, which recorded decreases in the annual price variations of rents and education. However, these were partially offset by increased tourism service prices and building management fees. The prices of goods registered a low and relatively stable annual growth of around 0.6% in the final months of the year in an environment of lower international prices and upward pressure on the exchange rate. In 2025 and 2026, headline inflation is expected to continue its convergence toward the target but at a slower pace than foreseen in October forecasts. The latter is primarily due to the real increase in the minimum wage, which is significantly higher than the labor's productivity growth. Additionally, the external and fiscal context is likely to generate greater upward pressure on the exchange rate and its pass-through to prices. The projected path of expected increases in food and regulated items was revised slightly upward. In the case of food, this rise is due to an upward trend in the prices of perishable goods, whose seasonality could have shifted. For regulated items, the revision reflects upward surprises in some public services noted at the end of 2024. However, the indexation of certain CPI groups to lower inflation and the cumulative effects of local monetary policy—reflected in an output gap still estimated in negative territory for the coming year—are anticipated to continue aiding the convergence of inflation towards the target. Considering these factors, it is anticipated that headline inflation will reach 4.1% (up from 3.1%) and core inflation 3.9% (up from 3.0%) by the end of 2025 (Graphs 1.1 and 1.2). These figures align closely with those assumed by the median of market analysts.[1]

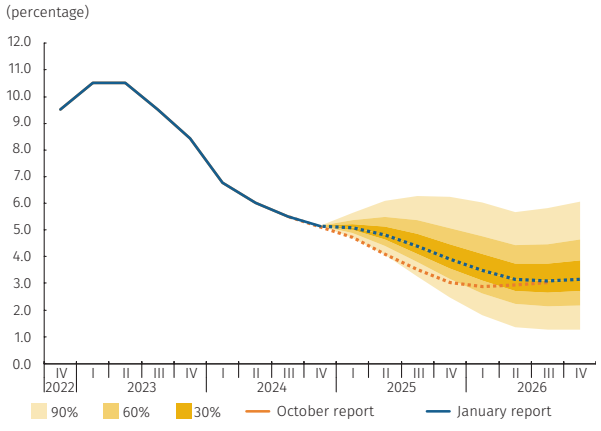
Graph 1.1
Consumer Price Index [a/b/]
(annual change; end-of-period)



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

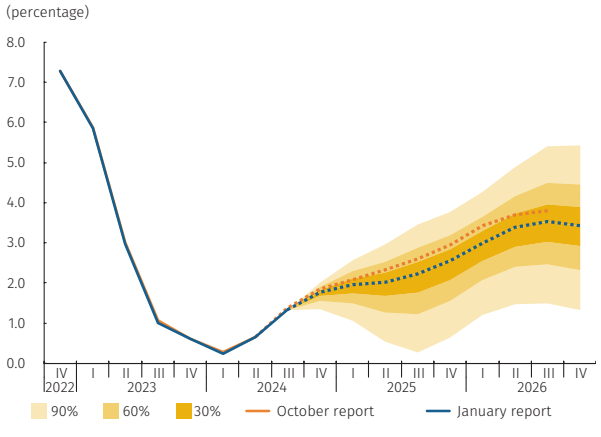
1 According to the results of the Monthly Expectations Survey conducted by *Banco de la República* among market analysts in January 2025.

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

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

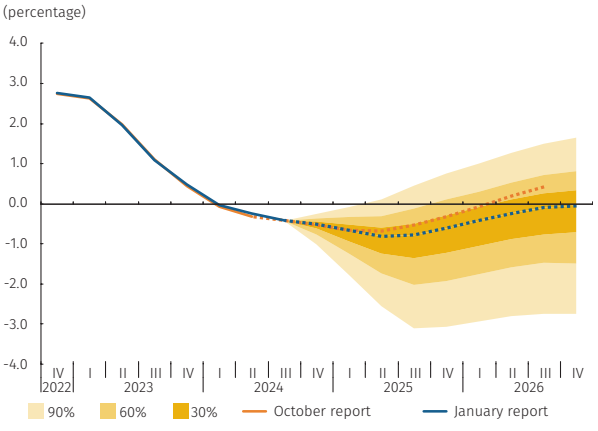


a/ This graph presents the forecast probability distribution on an eight-quarter time horizon. Density characterizes the prospective balance of risks with areas of 30%, 60%, and 90% probability surrounding the central forecast (mode), through a combination of densities from the Patacon and the 4GM monetary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

These projections continue to face high uncertainty, primarily related to the future behavior of the exchange rate, potential increases in global trade tariffs, supply shocks affecting food prices, changes in the prices of some regulated goods and services, and the increase in the minimum wage for the coming year, among other factors.

Economic activity would continue to pick up over the forecast horizon, although at a more gradual pace than projected in the October Report. Compared to October estimates, annual GDP growth for the third quarter was lower than expected (2.0% versus 2.4%), primarily due to a more negative contribution from the external trade balance, mainly associated with stronger import dynamics. Growth in domestic demand was higher than projected (3.9% versus 3.3%), marking the fourth consecutive quarter of increases, driven by private consumption and, to a lesser extent, by gross fixed capital formation (GFCF). In contrast, the weak performance of public consumption was primarily attributed to lower government subsidies for electricity consumption, associated with reduced household demand. Available figures for economic activity in the fourth quarter suggest that the economy grew at an annual rate of 2.3%. This forecast indicates that, by the end of the year, domestic demand would have continued to accelerate (4.1%), driven by the strong growth in GFCF (5.7%) spurred by an uptick in machinery, equipment, and civil construction spending, as opposed to the low levels observed a year ago. Nonetheless, consumption growth remained modest (1.4%). External demand continued to contribute negatively to growth due to increased imports (9.0%) that outpaced exports (1.4%). As a result, the 2024 economic growth forecast has been revised to 1.8%, compared to the 1.9% stated in the previous Report. In 2025 and 2026, economic activity is expected to continue on its recovery path within a less contractionary external and domestic monetary policy context, but the latter is consistent with inflation converging towards the 3% target. Economic activity would expand by 2.6% in 2025 (down from the 2.9% estimated in October) and accelerate further in 2026 to 3.4% (Graph 1.3). The downward revision for 2025 is attributed to monetary policy response in the face of increased inflationary pressures, the slight downward revision in private consumption dynamics in the figures published by DANE, and the weak performance of public consumption observed and expected for this year. Excess production capacity is anticipated to increase slightly until the second quarter of 2025 and gradually diminish over the forecast period (Graph 1.4). These estimates continue to be subject to high uncertainty, influenced by external factors such as global political and trade tensions and monetary policy in advanced economies, as well as internal factors such as uncertainty surrounding fiscal policy and domestic demand response to local financial conditions.

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



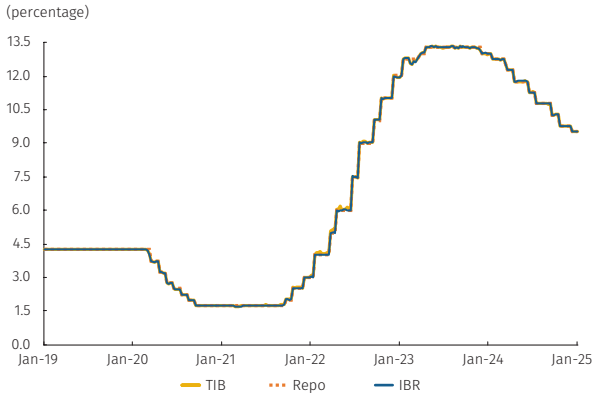
a/ The historical output gap estimate is calculated as the difference between observed GDP (four-quarter accumulation) and potential GDP (trend; four-quarter accumulation) based on the 4GM model.
b/ This graph presents the forecast probability distribution on an eight-quarter time horizon. Density characterizes 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 January Report.
Source: DANE - calculations and projections by *Banco de la República*.

It is foreseen that the country's external financing conditions will be more restrictive than anticipated in October due to a slower normalization of monetary policy in the United States and upward pressures on the risk premium. In December, the Federal Reserve (Fed) lowered the monetary policy interest rate by 25 basis points (bp), which was in line with market expectations and those of the Bank's technical staff. However, the strong performance of the labor market, favorable economic activity results, inflation above the target, uncertainty regarding the neutral interest rate, announcements of potential increases in import tariffs, and the Fed's meeting minutes, among other factors, tempered expectations of further rate reductions. Consequently, this Report assumes that the Fed will further decrease interest rates by 50 bp in 2025 and 50 bp in 2026, reaching a range of 3.75% to 4.0% and 3.25% to 3.5%, respectively. Additionally, the external neutral real interest rate (NRIR) has increased, reflecting revisions made by the Federal Open Market Committee (FOMC) in the United States. In tandem, the decline in international prices for some key exported raw materials, notably oil, coal, and nickel, has furthered the worsening of the terms of trade, a trend expected to roll into 2025. These external conditions, coupled with the observed fiscal deterioration in the country, are likely to exert upward pressure on the risk premium and its trend behavior. In 2024, the relevant external demand for the country is expected to have slowed less than anticipated in the October Report, maintaining low but relatively stable growth over the forecast horizon. The uncertainty surrounding external forecasts and their impact on Colombia's economy remains significant, given the ongoing conflicts in various regions, rising tensions in foreign trade, potential migration, tariff and fiscal measures in the United States, and concerns about Colombia's sovereign risk, among other factors

The contractionary monetary policy stance continues to support the convergence of inflation toward the target. However, observed inflation and most measures of inflation expectations remain above 3%. Economic activity indicators for the end of the year suggest that output has completed five consecutive quarters of growth, with domestic demand returning to an annual expansion behavior. The economy is still projected to have excess production capacity, contributing to disinflationary pressures. In the labor market, the unemployment rate remains at historically low levels, employment has remained relatively stable, and the real increase in the minimum wage has significantly exceeded productivity growth. Credit dynamics remain weak but have begun to recover. In 2024, the external position is expected to complete two consecutive years of current account deficit reduction as a percentage of GDP, contributing to lower external vulnerability. Nonetheless, the upward revision of the relevant external NRIR and the trend risk premium have increased the estimated local NRIR. The prospect of declining inflation, combined with a negative output gap, has

allowed for a gradual easing of monetary policy, as reflected in the Board of Directors' decisions to lower the policy interest rate. Looking ahead, inflation is expected to continue declining and converge toward 3%, but at a more gradual pace than that projected in the October Report. However, inflation expectations for December 2025 and 2026 remain above 3%. It is foreseen that excess production capacity will moderate by the end of 2026. These projected inflation and output gap dynamics are consistent with a contractionary monetary policy stance supporting the expected inflation convergence toward the target by 2026.

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



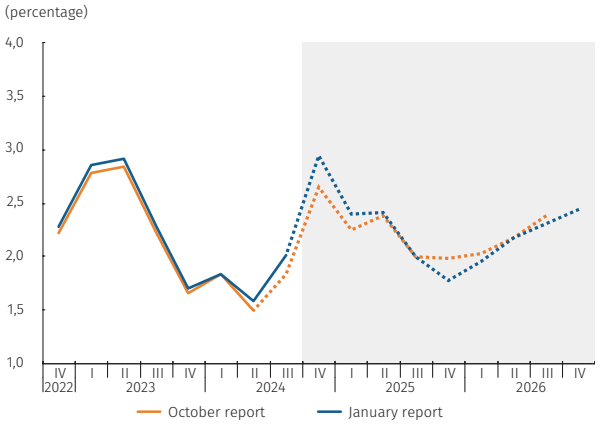
a/ IR: interbank rate. BBI: benchmark banking indicator. Repo: Monetary Policy interest rate.
Sources: Financial Superintendency of Colombia and *Banco de la República.*

1.2 Monetary Policy Decision

At its December 2024 meeting, the Board of Directors of *Banco de la República* (BDBR) determined by majority vote to reduce the benchmark interest rate by 25 basis points and keep it unchanged at 9.5% at its meeting in January of this year (Graph 1.5).

2. Macroeconomic forecasts and risk analysis[1]

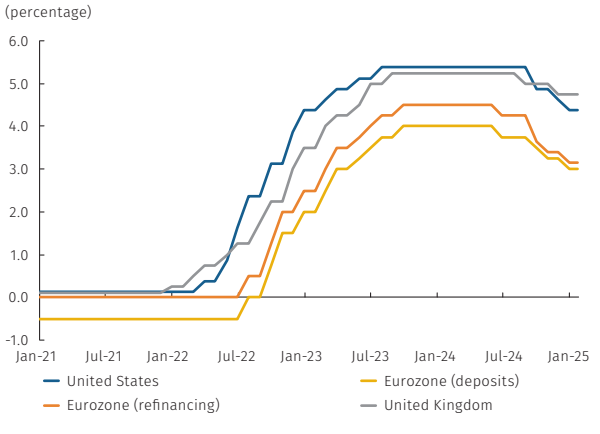
Graph 2.1
Real GDP, main trade partners
(Annualized change, projections according to full-year assumption)



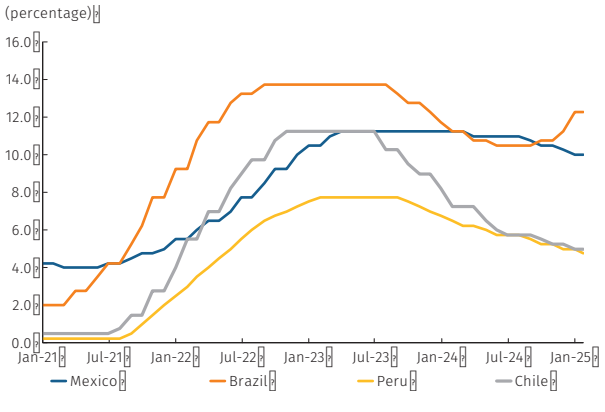
Sources: Bloomberg; statistics offices and central banks; calculations and projections by *Banco de la República*.

Graph 2.2
Monetary policy interest rate, select main trading partners

A. Developed Economies



B. Latin America



Note: January 2025 includes data observed on the 23rd of said month.
Source: Bloomberg.

2.1 International outlook

2.1.1 Foreign demand

The external demand for Colombia is expected to have slowed in 2024 compared to the previous year and maintain relatively stable growth over the next two years amid an environment of high global uncertainty (Graph 2.1). In its most recent report, the International Monetary Fund (IMF) estimated global economic growth at 3.2% for 2024 and 3.3% for 2025 and 2026, within a context of significant political, trade, and financial uncertainty, alongside divergent economic performance across countries. In the United States, economic growth accelerated to 3.1% in annualized quarterly terms in the third quarter of 2024, driven mainly by household consumption and a tight labor market. Recent indicators, particularly in the service sector,[2] signal continued economic strength. Similarly, third-quarter growth exceeded expectations of countries such as Brazil, Peru, and, to a lesser extent, the eurozone, supported by new favorable economic activity data. In China, annual growth reached 5.4% in the fourth quarter of 2024, surpassing market expectations and bringing full-year growth to 5.0%, which was in line with government targets, given fiscal and monetary stimulus measures. These developments occurred within a context of looser international financial conditions than in the previous year, moderating global inflation and additional reductions in policy interest rates among most of Colombia's trading partners (Graph 2.2). However, high trade and geopolitical uncertainty persist. Consequently, the 2024 growth forecast for the country's trading partners was revised slightly upward to 2.1%,[3] although a slowdown would be expected versus 2023. For 2025, growth is projected to remain at 2.1%, marking a downward revision from the previous Report, before increasing to 2.2% in 2026, a level still below the historical average (Table 2.1).[4] The downward revision for 2025 reflects a global economy grappling with hei-

1 The projections presented in this chapter are based on estimates from the Patacon and 4GM central forecast models. For more details on these models, see https://www.banrep.gov.co/es/node/149 and https://www.banrep.gov.co/en/4gm-new-model-monetary-policy-analysis-colombia

2 At the time this Report was being written, it became known that, according to preliminary figures, US GDP for the fourth quarter of 2024 showed an annualized quarterly growth of 2.3%, registering an economic growth of 2.8% for the whole year.

3 The October Report projected the aggregate growth for the country's main trading partners to be 2.0% in 2024 and 2.2% in 2025.

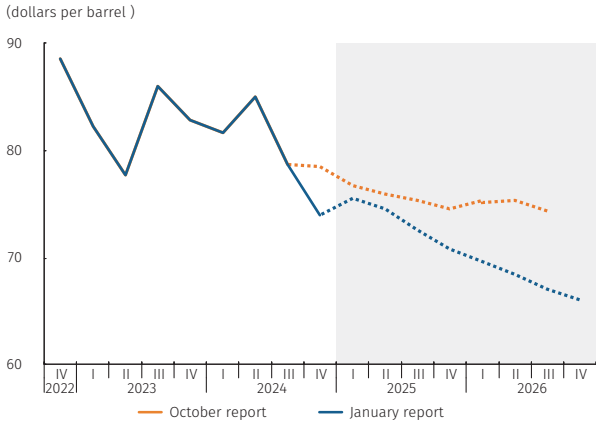
4 Historically, the average annual growth in trading partners between 2001 and 2023 is 2.9%.

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

Main partners	2023 (pre)	2024 (proj)	2025 (proj)	2026 (proj)
United States	2.9	2.8	2.2	2.0
Eurozone	0.5	0.8	1.2	1.2
China	5.2	5.0	4.0	4.0
Ecuador	2.4	0.6	1.7	2.0
Brazil	3.2	3.1	2.0	2.1
Peru	-0.3	3.1	2.6	2.7
Mexico	3.3	1.6	1.2	1.7
Chile	0.3	2.3	2.3	2.3
All trade partners [a/]	2.4	2.1	2.1	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).

Graph 2.3
Assumed quarterly oil price



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

ghtened political, fiscal, and trade uncertainty. The latter is partly attributable to potential changes in U.S. tariff policies, which could negatively impact some of Colombia's trading partners and place additional pressure on global commodity prices. Uncertainties regarding fiscal sustainability compound these concerns.

2.1.2 International prices

The oil price expectation was revised downwards compared to the previous Report due to improved prospects for global oil supply growth (Graph 2.3). In the fourth quarter of 2024, the average price of Brent crude oil was approximately USD 74 per barrel (bl), bringing the annual average to USD 80 per barrel lower than in 2023 and consistent with the observed increase in global oil supply during the year. However, as of January 24, 2025, crude oil prices increased to an average of around USD 79 bl, driven by reduced Organization for Economic Cooperation and Development (OECD) oil inventories, a harsher-than-expected winter in the Northern Hemisphere, declining Russian production, and new restrictions on Russian oil exports.[5] Similarly, voluntary production cuts by OPEC+ through the first quarter of 2025[6] have contributed to price increases. Nonetheless, price gains are expected to be limited by favorable supply conditions in non-OPEC countries, particularly the United States, Guyana, Brazil, and Norway. The scheduled elimination of OPEC+ voluntary production cuts from the second quarter of 2025 and lower expected crude oil demand from China, aligned with a projected economic growth slowdown, are also likely to temper price increases. Taking these factors into account, Brent crude is projected to average USD 73 per barrel in 2025 (down from USD 76 per barrel in the October report) and USD 68 per barrel in 2026. Uncertainty surrounding oil prices remains high due to potential OPEC+ policy changes, geopolitical tensions in the Middle East, U.S. trade and energy policies, and various market shocks.

The terms of trade would continue to deteriorate in 2025 and 2026, mainly due to the decrease in the USD prices of exported raw materials. In 2025, Colombia's terms of trade are expected to deteriorate further, following the drop of the previous year. The additional reduction in 2025 would be due

5 On January 10th, the U.S. Treasury Department's Office of Foreign Assets Control sanctioned oil tankers, insurance companies, and traders involved in oil exports from Russia, affecting the volume of these transactions.

6 There are twelve OPEC member countries, along with the following allies (OPEC+): Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan and Oman. At the meeting held on December 5, 2024, this group decided to continue with voluntary cuts of around 2.2 million barrels per day until the end of March 2025 and then gradually reduce them on a monthly basis until the end of September 2026.

to the lower international prices of some exported raw materials, notably oil, coal, and nickel. However, the reduction would be less than that envisaged in the previous Report, due to a more marked increase in the prices of coffee and gold, together with a lower expected growth in the dollar prices of intermediate goods imported by the country. In 2026, the deterioration of the terms of trade would continue, explained by the reduction in the international price of oil and coal, which would again be partially offset by the growing trend in the international prices of coffee and gold and the expected moderation of the prices in dollars of imported goods.

Global inflation is expected to continue easing in 2025, though it will remain above target in some advanced economies. In 2024, global price adjustments generally eased, albeit at a slower pace, due to temporary energy price increases, persistent service-sector inflation, and a slower decline in commodity prices. According to the IMF's most recent report, global inflation is estimated at 5.7% in 2024 and is projected to decline to 4.2% in 2025 and 3.5% in 2026. However, the IMF warns that disinflation is stalling in some economies and notes upside risks, including potential trade disruptions and supply chain disturbances amid rising protectionist policies and trade tensions. Recent headline inflation in OECD member countries stood at 4.5% year-on-year in November 2024, unchanged from the previous month. A slight rise in energy prices offset moderation in other price categories. Core inflation declined to 4.9% from 5.0% in October. In the United States, headline inflation accelerated for the third consecutive month in December, reaching 2.9%, up from 2.7% in November, which was in line with market expectations. This increase was driven by a slight acceleration in food prices and a smaller decline in energy prices. Concurrently, core inflation eased to 3.2% from 3.3% over the previous three months, surprising markets on the downside. The slowdown in core inflation was primarily attributed to lower annual price increases for services, particularly housing, though it was mainly offset by reduced deflation in core goods (Graph 2.4). For 2025, U.S. inflation is expected to remain above the Federal Reserve's 2.0%[7] target amid concerns over the impact of new tariffs, trade-related events, and financial policies. Additional pressures could stem from retaliatory measures by affected economies, unfavorable base effects, and recent increases in short-term inflation expectations.

2.1.3 International Financial Developments

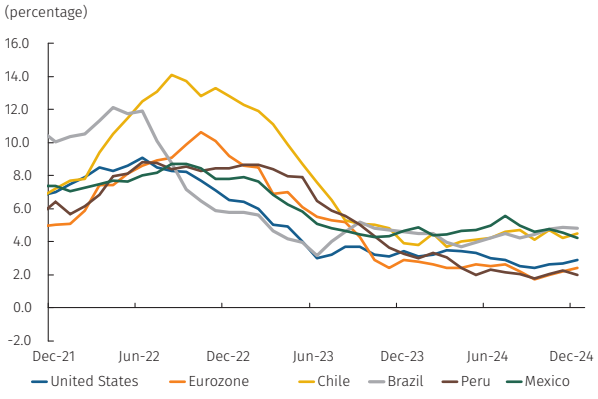
The forecast for the U.S. benchmark rate was revised upward across the forecast horizon amid rising inflation and a strong labor market (Graph 2.5). At its December 2024 meeting, the Federal Open Market Committee (FOMC) continued the monetary easing process. It reduced its monetary policy interest rate by 25 basis points, setting it within a range of 4.25% to 4.5%,[8] consistent with market expectations. In the minutes following the meeting, the FOMC indicated that

7 In the United States, according to the New York Fed's December 2024 Survey of Primary Dealers and Survey of Market Participants medians, total PCE (personal consumption expenditures) inflation is expected to be 2.4% by the end of 2025.

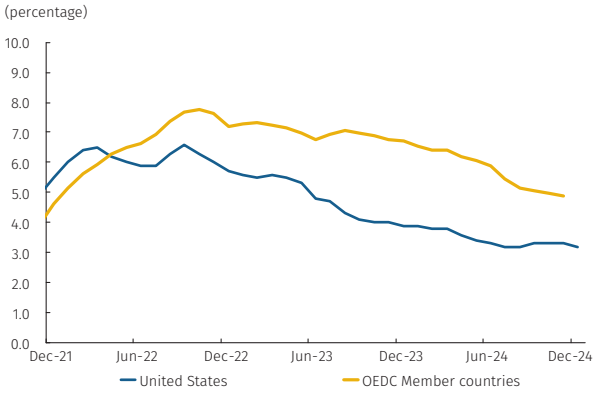
8 While this Report was drafted, the FOMC announced at its meeting on January 28–29, 2025 it would maintain the benchmark rate unchanged within the 4.25%–4.5% range, noting that economic activity continues to expand at a solid pace alongside persistently high inflation. Meanwhile, at its meeting on January 30, 2025, the European Central Bank (ECB) reduced its main policy interest rate by another 25 bp to 2.75% and its refinancing rate to 2.90%, attributing this decision primarily to observed moderation in inflation, inflation expectations, and the effective transmission of monetary policy.

Graph 2.4
Inflation, select main trading partners

A. Headline Inflation

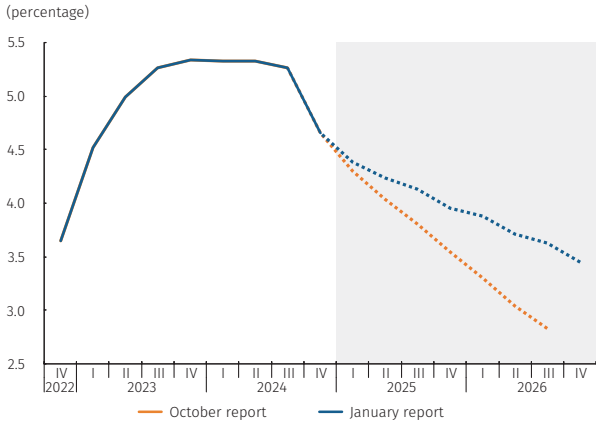


B. Inflation excluding food and energy



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

Graph 2.5
Assumed U.S. Federal Reserve quarterly interest rate



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

it expects inflation to converge toward the 2.0% target but acknowledged that the process could take longer than anticipated. Signs of a strong labor market, the possibility that future changes in trade and immigration policy could impact inflation going forward, and concerns about the country's fiscal sustainability are possible instigators. Additionally, recent acceleration in overall inflation and signs of strength in U.S. economic activity are also factors to consider. Consequently, the median of the most recent FOMC interest rate projections increased, indicating a 50-basis point reduction by 2025 (previously 100 basis points) and another 50 basis points by 2026. Likewise, the FOMC raised its headline and core PCE[9] estimates toward 2025 and 2026 but revised its unemployment estimate for 2025 downward.[10] The FOMC once again raised its long-term interest rate projection, so this Report incorporates an upward revision of the neutral external interest rate relevant to Colombia.[11] Futures linked to the monetary policy interest rate have been increasing in recent weeks amid the latest inflation and labor market data, the most recent minutes, and the FOMC projections. In particular, futures are now in more contractionary territory than in the previous Report, as they reflect a smaller reduction in the interest rate by 2025.[12] Based on this, the U.S. monetary policy interest rate assumption in 2025 now considers only two 25-basis-point reductions throughout the year, placing it within a range of 3.75% to 4.0% by yearend, representing an upward revision compared to the four reductions anticipated in the previous Report. This forecast is made within a context of high uncertainty regarding the impacts of tariff and fiscal policies on prices in the United States, the neutral interest rate level, and the country's fiscal sustainability. By 2026, two additional 25-basis-point reductions in the policy interest rate are expected, placing it within a range of 3.25% to 3.5% by yearend.

The forecast horizon assumes a risk premium for Colombia slightly higher than that projected in the previous Report

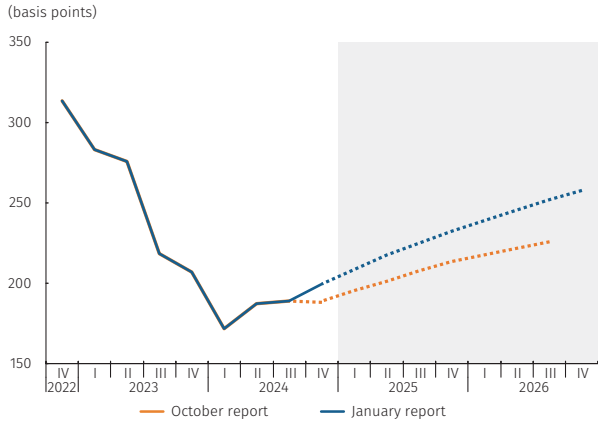
9 The PCE (Personal Consumption Expenditures) index is the Federal Reserve's preferred measure of inflation, reflecting price changes in goods and services purchased by U.S. consumers.

10 In December, the median FOMC projection for total PCE inflation increased from 2.1% to 2.5% for the end of 2025 and from 2.0% to 2.1% for the end of 2026. Meanwhile, the median core PCE projection rose from 2.2% to 2.5% for 2025 and from 2.0% to 2.2% for 2026. Additionally, FOMC members revised their 2025 unemployment rate estimate down from 4.4% to 4.3% while keeping the 2026 estimate unchanged at 4.3%. Lastly, the median long-term interest rate projection was revised upward from 2.9% to 3.0%.

11 Colombia's real neutral interest rate (RNI) is estimated for central forecasting models as the sum of the U.S. RNI and the trend risk premium under the uncovered interest rate parity condition.

12 As of January 24, 2025, futures associated with the monetary policy interest rate for the end of 2025 and 2026 increased to 3.93% for the end of 2024 and 3.71% for the end of 2025, up from 3.52% and 3.50%, respectively, as taken on October 25.

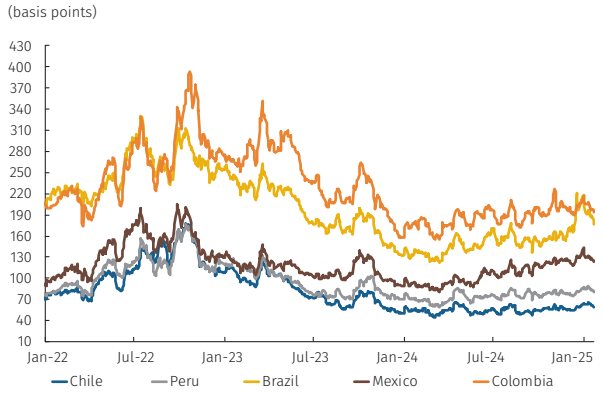
Graph 2.6
Colombia's assumed quarterly risk premium (CDS) a/



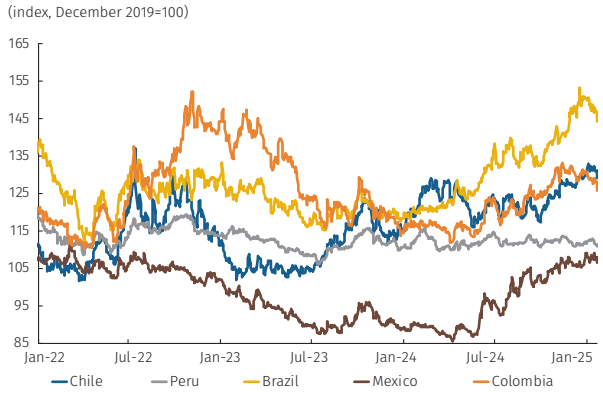
a/ Five-year credit default swaps.
Source: Bloomberg; calculations, and projections by *Banco de la República*.

Graph 2.7
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 23 January 2025.
Source: Bloomberg; calculations by *Banco de la República*.

amid increased uncertainty regarding the evolution of the external environment and local fiscal accounts (Graph 2.6). During the fourth quarter of 2024, financial markets in advanced economies continued to show reduced volatility and major stock market indicators performed favorably, supported by expectations of a less regulated environment and lower corporate taxes in the United States. However, as of January, long-term interest rates on debt securities have been rising in advanced economies, driven partly by expectations that monetary policy in the United States will remain contractionary, in line with higher expected inflation. In this context, risk premiums in the region increased during the fourth quarter of the year (Graph 2.7, panel A). In the case of Colombia, the average five-year credit default swap (CDS) increased by 11 bp, an increase similar to that of Mexico and Brazil. Likewise, the currencies of regional and other emerging economies depreciated in the fourth quarter of 2024 compared to their average values in the third quarter, particularly after the results of the U.S. election (Graph 2.7, panel B). Colombia and Mexico experienced the most significant depreciation during this period. Notably, as of January 28, the Colombian peso and the Brazilian real have partially reversed this trend, appreciating by approximately 2%, while the currencies of Peru, Mexico, and Chile have continued to depreciate. The recent currency movements in the region reflect the prevailing high uncertainty and volatility in international markets. In line with the above, the expected risk premium trajectory in this Report maintains an upward trend, reaching an average of 221 bp in 2025 and 249 bp in 2026,[13] amid expectations of higher public sector indebtedness over the forecast horizon. Additionally, there is significant global uncertainty regarding international financial conditions, global trade, and capital flows, along with a decline in oil and other export commodity prices compared to projections in the October Report. Compared to the previous Report, a slightly higher risk premium is now assumed, consistent with the increase in CDS levels observed in the region at the end of 2024 and the first weeks of 2025. This upward revision translates into a marginally higher trend risk premium in an environment of heightened uncertainty surrounding both external and domestic financial conditions.

13 In the October Report, the forecast for Colombia's five-year CDs was 204 bps for 2025.

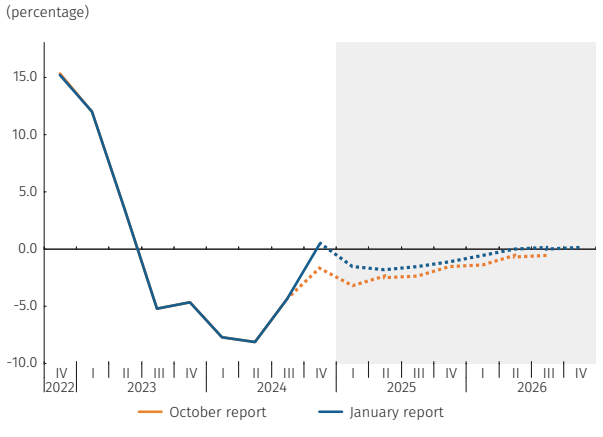
2.2 Macroeconomic Projections[14]

2.2.1 Inflation

Total annual consumer inflation is expected to continue converging toward the target over the forecast horizon, though at a slower pace than previously projected, primarily due to increased labor cost pressures. Compared to the October Report, the inflation trajectory for the next eighteen months has been revised upward, driven by the sharp rise in the real minimum wage, a less negative real exchange rate (RER) gap, higher international prices for certain foods, and adjustments in the expected cycle behavior for perishables at the end of 2025. Additionally, several prices will remain affected by indexation to a higher inflation rate at the end of 2025, which exceeds the target and slows the convergence to 3% until late 2026. Nonetheless, conditions over the next two years are expected to continue supporting the gradual reduction of inflation, ultimately reaching the 3% target within the forecast horizon. These projections account for excess productive capacity, which is foreseen to dissipate by the end of 2026, along with disinflationary pressures from a still-negative real exchange rate (RER) gap (Graph 2.8), moderating inflation expectations and the fading of most supply shocks (see Box 1). The forecasts also assume a stable food supply and moderate adjustments in electricity prices, though both remain subject to significant uncertainty and upside risks. Given these factors, the most likely inflation trajectory projects total annual inflation at 4.1% by the end of 2025 (compared to 3.1% in the October Report) and 3.0% by December 2026 (Graph 2.9).

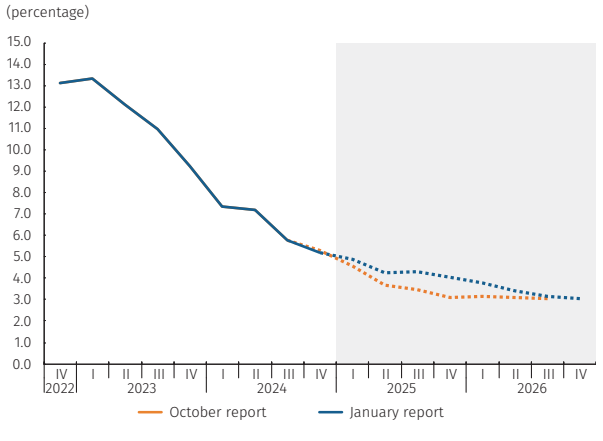
The forecast for core inflation has been revised upward compared to the previous Report, though a downward trend remains expected. Core inflation, measured as the CPI excluding food and regulated items, is projected to continue declining throughout the forecast horizon, reaching approximately 3.0% by mid-2026. This decline is driven by the previously mentioned factors, along with falling international dollar prices for manufactured goods—attributed to expected production surpluses in China—and lower projected oil prices, which would reduce international production and transportation costs. These factors would support a gradual decrease in the annual variation of service prices and relative stability in goods prices at around 1.0%. Despite these factors, the expected path for core inflation has risen compared to the last Report, mainly due to higher labor costs, which particularly impact services. This is driven by the 11% increase in the nominal minimum wage (including the

Graph 2.8
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.*

Graph 2.9
Consumer Price Index (CPI)
(Annual change, end-of-period)

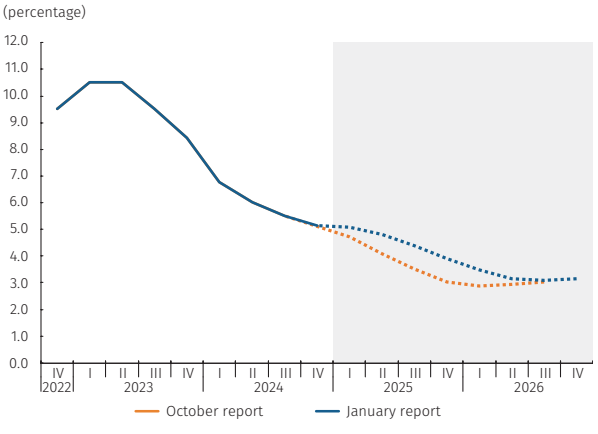


Source: DANE; calculations and projections by *Banco de la República.*

14 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.

transport subsidy), representing a significant real increase even after accounting for productivity gains (see Box 2). As a result, inflationary pressures are expected to be substantial. Additionally, labor costs have risen due to reduced working hours and extended overtime. The upward revision in the forecast also reflects a less negative real exchange rate (TCR) gap than previously estimated. This adjustment stems from the exchange rate increase in the second half of 2024 and projected less favorable external financial conditions, which would primarily affect goods prices and, to a lesser extent, service prices—particularly in tourism-related sectors. The forecast continues to account for persistent rental price adjustments, compounded by a tight housing market due to low construction activity. Given these factors, annual core inflation is now projected at 3.9% by the end of 2025 and 3.1% by the end of 2026, compared to the previous forecast of 3.0% for 2025 (Graph 2.10).

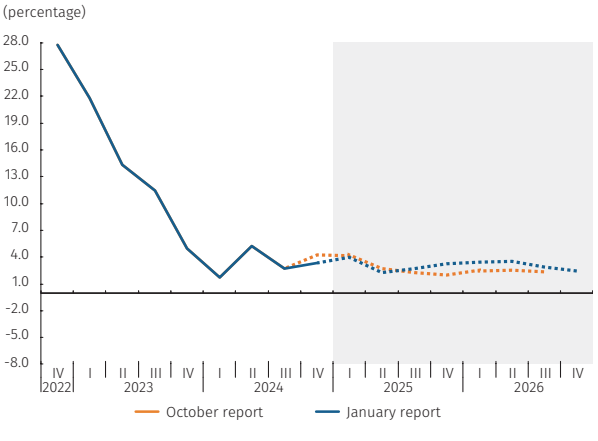
Graph 2.10
CPI excluding food and regulated items
(Annual change, end-of-period)



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

The annual variation in the CPI for food is expected to remain relatively stable, staying below 4.0% throughout the forecast horizon. However, from mid-2025 onward, it would be higher than projected in the October Report. During 2025 and 2026, food inflation is anticipated to fluctuate around 3.0%, influenced by the production cycle of perishable foods in Colombia, which is assumed to develop under normal climatic conditions. This forecast is based on the expectation that Colombia's strong agricultural supply will continue at high levels reached in 2024. It also considers the decline in input and maritime transport costs, driven by the anticipated drop in oil prices. However, the forecast path has been revised slightly upward for the second half of 2025 and part of 2026 due to more significant upward pressures from a less negative RER gap, rising international prices for some agricultural raw materials, and adjustments in the expected production cycle of perishable foods at the end of 2025. The forecast continues to anticipate a temporary upward impact from the increase in healthy taxes by late 2025. Consequently, the most likely path for the annual change in CPI for food variation is now projected at 3.3% for the end of 2025 (up from 2.0% in the previous Report) and 2.4% for the end of 2026 (Graph 2.11). However, this projection carries a high degree of uncertainty as it depends partly on the production and distribution of perishable foods, a category prone to volatility and frequent supply shocks.

Graph 2.11
CPI for foods
(Annual change, end-of-period)

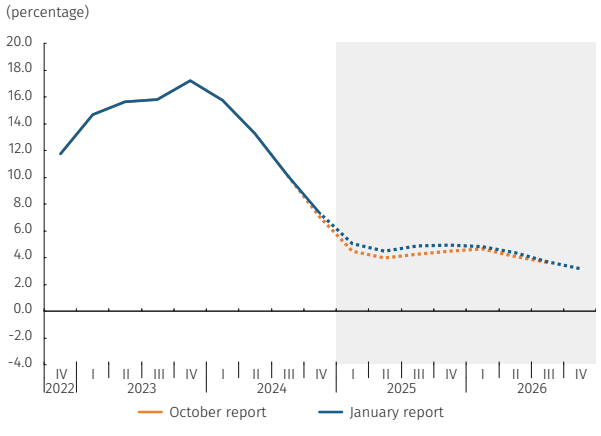


Source: DANE; calculations and projections by *Banco de la República*.

This Report continues to anticipate a significant reduction in the annual variation of regulated item prices in 2025 and 2026, with moderate energy price adjustments. Over the next two years, prices of regulated items are expected to rise by more than 3.0%, though at a considerably slower pace than in recent quarters. This reflects the effects of indexation to lower inflation rates and moderate electricity tariff forecasts while also accounting for public service

costs, infrastructure investments, and the impact of international prices on local costs. However, compared to the October Report, the forecast has been revised upwards until mid-2026 due to higher-than-expected electricity prices at the end of 2024 and reduced disinflationary exchange rate pressures, which affect items such as domestic gas. Domestic gas supply faces significant constraints, and increasing imports to meet demand makes prices more sensitive to international trends and exchange rate fluctuations. Additionally, for 2025, greater increases in public transport fares are expected following recent announcements in several cities. Considering these factors, the annual variation of the CPI for regulated items is projected at 4.9% by the end of 2025 (up from 4.5% in the previous Report) and 3.2% by the end of 2026 (Graph 2.12). However, the interplay of these variables makes the forecast highly uncertain.

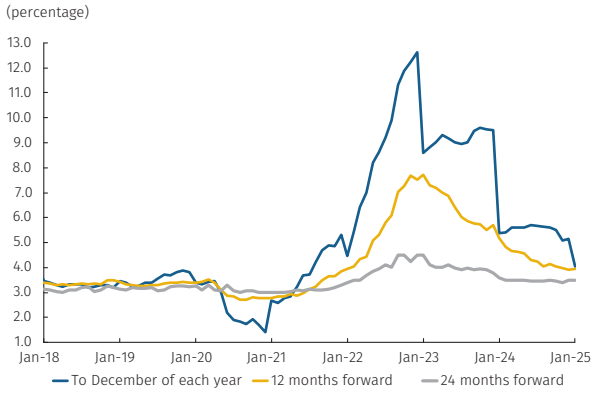
Graph 2.12
CPI for regulated items
(Annual change, end-of-period)



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

Since October, some inflation expectations have risen, remaining above 3% over a two-year horizon but continuing to trend downward toward the target over more extended periods. The expectations of economic analysts (Graph 2.13), obtained from the monthly Survey of Economic Analysts conducted by *Banco de la República* between January 10–14, suggest that the median forecast for total and core inflation by yearend 2025 would stand at 4.0% and 3.9%, respectively, both higher than in the October survey (3.8% and 3.6%). By the end of 2026, these measures are projected to be around 3.6% and 3.3%. Two- and five-year ahead headline inflation median expectations remained unchanged at 3.5% and 3.0%, respectively. The annual variation for median expectations also increased for food and regulated items, reaching 4.3% and 5.3% for the end of 2025 (compared to 3.9% and 5.0% in the October survey) and 3.7% and 4.5% for yearend 2026. Meanwhile, as of January 27, estimates based on government bonds (break-even inflation, BEI), adjusted for inflation and liquidity risk premiums, indicate higher inflation expectations with two-, three-, and five-year maturities at 4.5%, 4.3%, and 4.2%, respectively, only slightly changed from the October levels of 3.5%, 3.7%, and 3.7%.

Graph 2.13
Bank and stockbroker inflation forecast [a/]

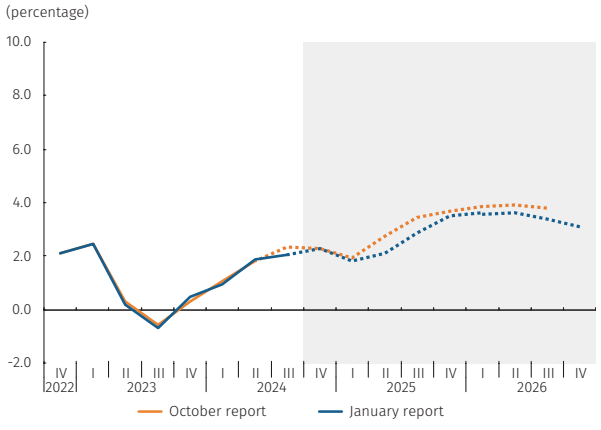


a/ Corresponds to the median response of the *Monthly survey of economic analyst expectations* conducted by *Banco de la República*.
Source: DANE; calculations and projections by *Banco de la República*.

2.2.2 Economic activity

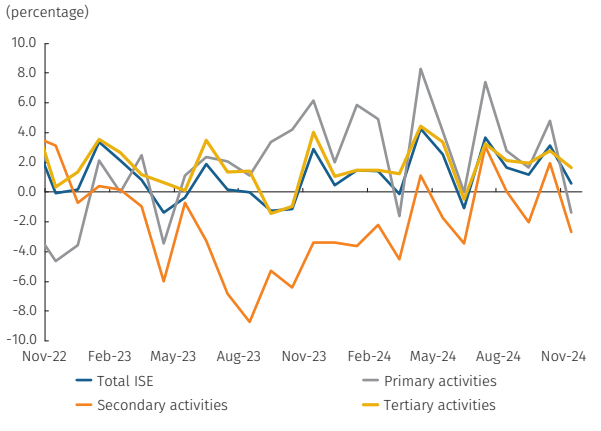
The Colombian economy is expected to sustain moderate annual growth in the fourth quarter, consistent with forecasts in the previous Report, marking an acceleration in economic activity compared to 2023. This continues the expansion trend observed since late 2023. Annual growth for the fourth quarter is estimated at 2.3%, the same as in the October Report, implying an annualized quarterly growth of 1.3% (Graph 2.14). This forecast is supported by leading economic indicators (see Box 3). In particular, the Economic Monitoring Indicator (ISE, Graph 2.15) showed an ave-

Graph 2.14
Quarterly GDP [a/]
(Annual change)



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

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.*

rage annual growth of 1.9% in October and November but recorded a quarterly decline of 0.3%, mainly due to weaker performance in mining—driven by lower coal and oil production—the manufacturing industry, and health and education services. This was partially offset by resilience in domestic trade and transportation. Given these factors, the economy is expected to grow by 1.8% in 2024, reflecting an acceleration from the 0.6% growth in 2023. However, this forecast is slightly lower than the 1.9% projected in the previous Report, mainly due to historical revisions in national accounts published by DANE in November and a decline in public consumption, which would be partly temporary.

As in previous quarters, economic expansion was mostly driven by domestic demand, which continued to gain momentum, growing at a faster pace than GDP. The gradual acceleration observed in previous quarters likely extended into the fourth quarter, with an expected annual growth of 4.1%. This performance was mainly fueled by the increase in gross capital formation. Additionally, consumption grew in annual terms, supported by private consumption, which, despite expanding at a moderate rate, remained above its pre-pandemic trend.

Investment likely continued recovering from the low levels of 2023, mostly propelled by improvements in civil works and a possible increase in inventories. During the fourth quarter, annual investment growth would have, once more, exceeded 20%, with the increase in inventory variation (which includes the statistical discrepancy) playing a significant role, similar to the third quarter.[15] Meanwhile, fixed investment likely saw a more moderate but notable annual increase of 6.3%. This recovery was primarily driven by investment in other buildings and structures, particularly in the civil works segment, with projects at the regional level, such as the first metro line (PLM) and Transmilenio in Bogotá. While investment in machinery and equipment may not have grown in absolute terms, it likely accelerated in annual terms due to a low base of comparison. In contrast, investment in housing would have continued to decline annually and remained stagnant at levels below the pre-pandemic period. Overall, investment remained well below the trend levels projected before the pandemic.

In the fourth quarter, total consumption likely continued to grow year-on-year, driven by a moderate expansion in pri-

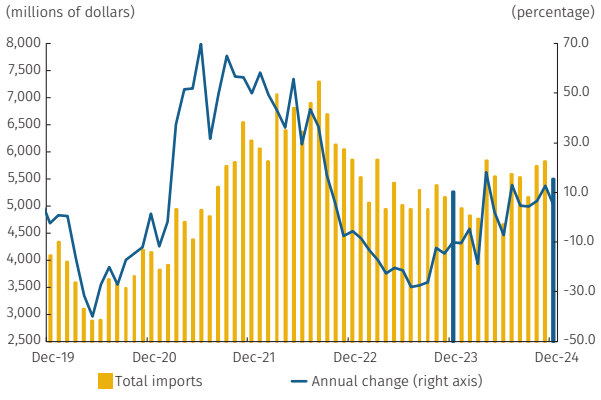
15 Inventories saw significant reductions in previous quarters but have recently recovered in line with stronger domestic demand. This is reflected in the trends of raw material imports, data from Standard & Poor's manufacturing PMI, and the flow of finished and in-process supply in the building construction sector. Additionally, the sharp increase in coffee production toward the end of the year has contributed to inventory growth.

vate consumption and a partial recovery in public consumption levels. Regarding public consumption, the forecast assumes that the sharp decline observed in the third quarter—linked to lower energy subsidy payments and reductions in personnel expenses—was partially transitory. Consequently, in the last quarter of 2024, this component would have shown some recovery, though not enough to prevent a continued negative annual growth rate. Meanwhile, household consumption would have experienced a slight increase in levels and moderate annual growth, similar to the previous quarter. By segment, both durable and non-durable consumption would have recorded annual and quarterly increases, while service consumption remained high but exhibited little annual growth due to a strong base of comparison. This trend is supported by indicators such as retail sales, consumer goods imports, commercial bank transactions, consumer credit disbursements, and vehicle and motorcycle registrations. The resilience of private consumption has occurred in a context of lower interest rates, stable employment, a moderate recovery in confidence, and higher incomes for coffee-growing families and households receiving remittances from workers abroad, among other factors. Considering these dynamics, a slight increase in both annual and quarterly total consumption rates is expected.

In the fourth quarter, the trade deficit in real pesos likely remained at the same level as in the third quarter, exceeding that of the same period in the previous year, thereby maintaining a negative accounting contribution to annual economic growth. Imports would have remained dynamic, reaching relatively high levels, surpassing those of the third quarter, and posting a lower yet still significant annual growth rate (9.0%), consistent with domestic demand trends. According to preliminary DIAN data (Graph 2.16), the main driver would have been imports of intermediate goods, particularly those destined for industrial use. Meanwhile, exports in constant pesos would have remained at historically high levels, though their annual growth would have been modest (1.6%) (Graph 2.17). Figures through November suggest annual increases in non-traditional goods exports but declines in coal, oil, and ferronickel exports. Regarding services, air passenger data indicate high tourism levels and annual growth outpacing total exports. Consequently, net external demand would have remained at a similar level to the third quarter, continuing to contribute negatively to the annual GDP variation.

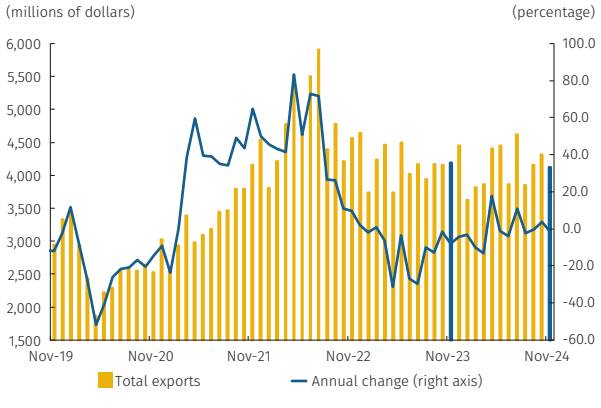
On the supply side, economic expansion in the fourth quarter likely remained concentrated in the primary and tertiary sectors. In the primary sector, both annual and quarterly growth is anticipated, driven by agricultural activities—particularly crop production, with coffee reaching historically high levels at the end of 2024—and livestock. However, this performance would be partially offset by continued moderate declines in mining, mainly due to low coal and oil production. In particular, coal was affected by temporary supply shocks linked to public order issues in some mining regions. Meanwhile, the tertiary sector would have also increased quarterly and annually, supported by growth in artistic and entertainment activities (boosted by sustained demand for event-related services and sports betting), domestic trade, transportation, and the sector of public administration, healthcare, and education. In the latter case, growth was influenced by a low comparison base. Lastly, in the secondary sector, manufacturing remained slightly above previous quarters. At the same time, construction showed improvement driven exclusively by civil works, as the buildings segment would have continued to register annual and quarterly declines.

Graph 2.16
Total goods imports (CIF)
(Monthly)



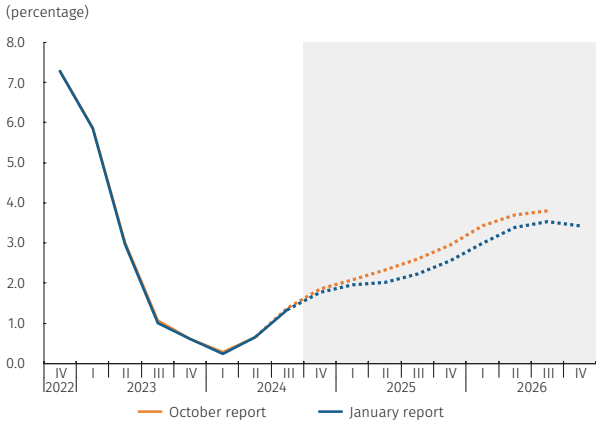
Source: DANE and DIAN (preliminary foreign trade data); calculations by *Banco de la República.*

Graph 2.17
Total goods exports (FOB)
(Monthly)



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

Graph 2.18
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.*

For 2025 and 2026, the economy is expected to continue strengthening, driven by a gradual recovery in specific investment segments and increased private consumption amid a progressively less restrictive monetary policy. This forecast assumes domestic financing costs will gradually decline over the next two years compared to 2024. It also considers that external financing channels will remain open for the country, with somewhat more favorable costs than in previous years, despite rising global uncertainty and a more restrictive U.S. trade policy. Additional factors supporting growth in 2025 include the relatively strong performance of trade partners, solid inbound tourism, and sustained high remittance inflows, further stimulating private consumption. In terms of investment, the main boost is foreseen from civil works, with progress anticipated on national 5G road projects and regional and local infrastructure initiatives, such as the Bogotá metro. Inventory accumulation would also contribute, following significant declines in previous years. Public consumption, however, is not expected to see significant growth, as it will be constrained by the need to adjust central government spending. By 2026, GDP growth is projected to accelerate to 3.4% (Graph 2.18) as monetary policy continues to ease and external financial conditions remain favorable. Given these factors, annual growth for 2025 is estimated at 2.6%, lower than the 2.9% forecast in the previous Report. This revision reflects a larger-than-expected adjustment in public spending and slightly less favorable external and internal financial conditions, partly in response to higher inflation projections. It is important to note that these forecasts remain subject to high uncertainty, as discussed in section 2.3 of this Report.

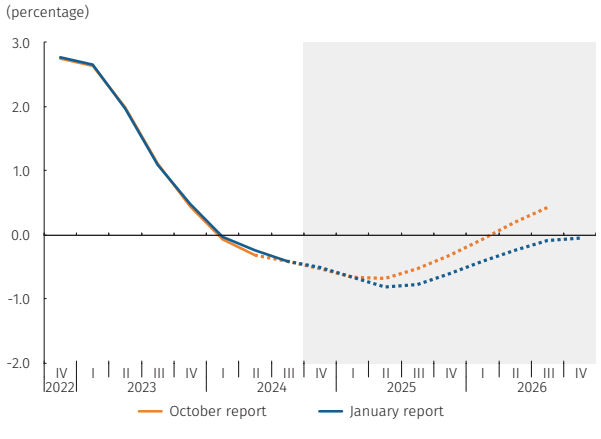
The unemployment rate is projected to remain relatively stable in 2025, with the negative gap continuing to close throughout the year. Data from the Integrated Household Survey (GEIH for its Spanish acronym) as of November indicated a stable labor market. However, the inactive population has increased in recent months, leading to a decline in the global labor force participation rate (GPR) to 63.7%. As a result, the national unemployment rate has fallen, reaching levels below its historical average. Specifically, for the rolling quarter ending in November, the unemployment rate decreased compared to August, standing at 9.8%.[16] Based on labor market trends and the economic activity projections presented in this Report, the seasonally adjusted national unemployment for 2025 is estimated to range between 8.3% and 11.4%, with 9.8% as the most likely value. In urban areas, the most likely unemployment rate is projected at 10.0% (within a range of 8.5% to 11.6%). These figures are lower than those in the previous Report for both geographic domains. Estimates of the unemployment rate consis-

16 See Chapter 3 of this Report for additional information.

tent with stable inflation (non-accelerating inflation rate of unemployment, or NAIRU) suggest that the negative unemployment gap will continue to narrow throughout the forecast period. Consequently, an unemployment gap close to zero is expected, with minimal inflationary pressures from labor market dynamics. However, regulatory pressures would persist, mainly due to minimum wage adjustments.

In 2024, the Colombian economy likely experienced a negative annual output gap. Excess production capacity is expected to persist from 2024 through the end of 2026, supporting inflation's convergence to its target. In the fourth quarter of 2024, the annual output gap likely remained negative, reflecting an economic activity level that remained below its potential despite a gradual recovery in domestic demand. During this period, excess capacity continued to contribute to the decline in both headline and core annual inflation. According to this Report, the annual output gap at the end of 2024 is estimated at approximately -0.5%, in line with the projection from the October Report (Graph 2.19). These estimates suggest a potential GDP growth of 2.7% for the entire year. Excess production capacity is anticipated to persist in 2025 but gradually correct as of the second semester as economic activity gains momentum. However, given the downward revision of GDP growth projections, the output gap for 2025 and 2026 is now expected to be slightly more negative than previously foreseen in the October Report. It is important to note that the output gap and potential output estimates presented in this Report are subject to significant uncertainty, as discussed in section 2.3.

Graph 2.19
Output gap [a/]
(four-quarter cumulative)



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

2.2.3 Balance of payments

For 2024, the current account deficit is estimated to have narrowed to 1.8% of GDP, primarily driven by a significant increase in workers' remittances and strong growth in service exports (Graph 2.20).[17] This reduction can be attributed to three key factors. First, a more significant surplus in current transfers, mainly due to higher income from workers' remittances.[18] Second, a decline in the services deficit, which likely reached historically low levels as tourism-related export revenues increased. Third, a decrease in net factor income outflows reflecting lower profit repatriation by mining and oil companies with foreign direct investment

17 For the fourth quarter of 2024, a current account deficit of approximately 1.9% of GDP is projected. This outcome would be driven by a widening trade imbalance in goods, offset by a lower services and factor income deficit, along with a larger surplus in current transfers.

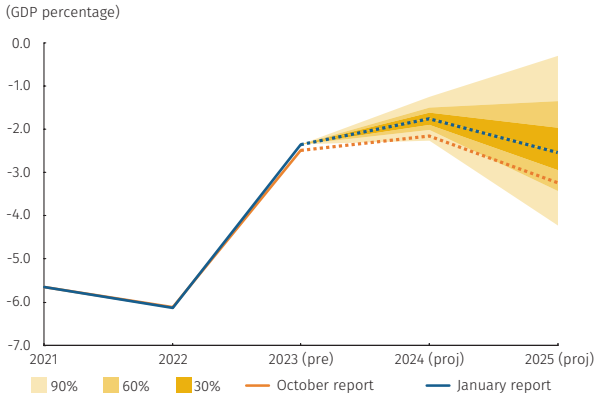
18 In 2024, workers' remittances would have increased, reflecting the high levels of Colombian migration abroad in 2022 and 2023. Additionally, labor markets remained tight in several countries where Colombian migrants reside.

(FDI). The foregoing factors more than offset the widening trade imbalance in goods. The increase in the goods-related deficit stemmed from lower export revenues and higher import expenditures. Specifically, the decline in international prices of traditional export products, such as oil and coal, reduced revenues despite a recovery in local production.[19] Meanwhile, stronger economic growth and increased domestic demand compared to 2023 contributed to higher import expenditures.

In 2025, the current account deficit is expected to widen to 2.5% of GDP, reflecting the anticipated recovery in economic activity. This increase would primarily stem from a more significant goods trade deficit, which would drive the widening of the external imbalance. Export revenues are projected to decline further, per the expected moderation in international prices for key exported raw materials. At the same time, import expenditures are set to rise due to stronger economic growth, more dynamic domestic demand, and higher projected international prices for imported inputs. Conversely, the services and factor income account deficits are expected to narrow further. In the case of services, this improvement would result from sustained growth in tourism exports and lower maritime freight payments, amid an expected decline in oil prices. Regarding factor income, outflows are likely to decrease further, driven by lower profits remitted abroad by mining and oil companies with foreign direct investment (FDI). Meanwhile, the surplus from current transfers would continue to grow, supported by increased workers' remittances. From the perspective of savings and investment aggregates, the private sector is expected to reduce its surplus in 2025, reflecting lower savings and increased investment. This decline would be partially offset by a smaller public sector deficit, as a slight improvement in the government's fiscal balance is anticipated. Finally, uncertainty remains high for these forecasts, given the volatility of international commodity prices, risks to local and global economic growth stemming from potential trade policies under the new U.S. administration, and the expected evolution of domestic and external financial conditions, among other factors.

In 2024, Colombia retained full access to external financing, with foreign direct investment (FDI) serving as the primary source of funds—a trend expected to continue in 2025. However, FDI declined in 2024 due to reduced investment in the mining and oil sectors amid falling international prices for these commodities. In 2025, FDI levels are projected to remain similar to those of 2024, as lower investments in the oil and coal sectors would be offset by increased investment in other industries, supported by stronger domestic demand

Graph 2.20
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 and 4GM models.
b/ The probability distribution is derived from the forecasting exercise of the January Report.
Source: *Banco de la República.*

19 Unlike in 2023, no revenues were recorded from aircraft re-exports in 2024.

and economic growth. Meanwhile, the public sector is expected to contribute to net capital inflows in both years amid lower observed and projected foreign sales of TES bonds and persistently high financing needs. In this context, the private sector would continue accumulating assets abroad. Finally, external financing would occur in an environment where U.S. interest rates remain above pre-pandemic levels, and Colombia's risk premium continues to exceed its historical average.

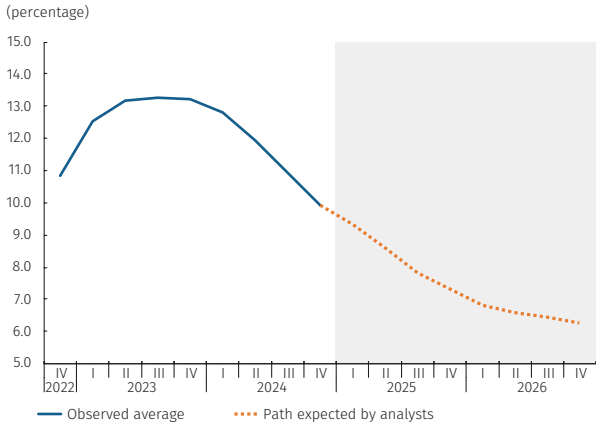
2.2.4 Monetary policy and interest rates expected by Analysts

The median analysts' expectation for the policy interest rate is 9.3% for the first quarter of 2025 and 7.3% by the fourth quarter (Graph 2.21). The median response to *Banco de la República's* monthly survey of analysts' expectations, conducted in early January, indicates a policy rate of 9.3% in the first quarter. Analysts anticipate gradual reductions, with the rate averaging 7.3% in the fourth quarter of 2025 and reaching 6.25% by the end of the forecast horizon. On average, this projected path over the next eight quarters is higher than in the October 2024 survey but lower than the trajectory implied in this Report's macroeconomic forecast. The latter incorporates the monetary policy response to the previously described inflationary shocks and an increase in the local neutral interest rate (NIR), driven by an upward revision of the external NIR relevant to Colombia and the trend risk premium.[20] Finally, by the end of 2026, the median inflation forecast from the analysts' survey suggests a higher core inflation than the Bank's technical staff projected.

2.3 Balance of macroeconomic risks

The balance of risks for inflation remains tilted to the upside, with high uncertainty levels similar to those of the previous quarter. The predictive densities (PD) exercise[21] summarizes the risk balance across multiple variables within the macroeconomic forecast and indicates a degree of uncertainty essentially unchanged from the previous quarter across most external and domestic factors. Regarding the international environment, more substantial economic activity in the United States, recent inflation increases, and the possibility of new tariffs create a moderate upward bias for U.S. inflation and, consequently, for the Federal Reserve's

Graph 2.21
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 January 2025.
Source: *Banco de la República.*

20 On average, the revision of the NIR for Colombia is 11.7 bp for the forecast horizon compared to figures from the October report.

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

interest rate trajectory. Combined with potential increases in Colombia's risk premium—driven by external factors and local fiscal challenges—this outlook suggests worsening external financing conditions for the country. Domestically, inflation risks are concentrated in prices for the food and services baskets. The latter presents a more pronounced upside risk, mainly due to the potential for greater-than-expected pass-through effects from the minimum wage adjustment to prices than envisaged in the central scenario, given the magnitude of the increase. Additionally, economic agents may anticipate a similar adjustment for the following year, further reinforcing inflationary pressures. Conversely, the balance of risks for economic growth points downward. Key downside factors include weaker prospects for public consumption stemming from lower-than-expected revenues, the need for greater fiscal adjustment, and the risk of a more prolonged contractionary monetary policy in response to persistent inflationary pressures.

On the external front, risks are skewed to the upside for external inflation, the Federal Reserve's interest rate, Colombia's risk premium, and oil prices, while downside risks dominate the growth of trading partners. Vigorous economic activity, labor market indicators in the United States, and the possibility of tariff increases under the new U.S. administration present upside risks to U.S. inflation. This could slow the normalization of U.S. monetary policy and, combined with rising estimates of the neutral interest rate, create an upward bias in the Fed's rate trajectory. In addition, Colombia's sovereign risk premium may increase due to uncertainty surrounding the international environment and the country's fiscal situation, further raising external financing costs. The PD exercise also incorporates a moderate upward bias for oil prices, driven by geopolitical tensions and disruptions to trade routes. Lastly, the outlook for trading partners is biased downward, reflecting weaker economic prospects in China and several regional countries.

The predictive densities for headline and core inflation (excluding food and regulated items) are skewed to the upside, with the most significant risk being a greater-than-expected pass-through of the minimum wage adjustment to service prices. In the PD exercise, upward risks dominate the services and food baskets, while the balance remains neutral for goods and regulated items. For services, the possibility of a stronger pass-through from the minimum wage adjustment than projected in the central forecast, coupled with potential labor cost increases due to reduced working hours, creates an upward bias. In the case of food, the main risks stem from a possible underestimation of the agricultural cycle's upward phase and the impact of extreme weather events. Meanwhile, the assessment for regulated item prices remains balanced. Upward pressures on energy, gas, and water tariffs—driven by structural issues in the sector—are expected to be offset by implementing scarcity pricing regulations for specific renewable energy sources. As for goods, potential U.S. tariff measures on countries such as China or Mexico could redirect international trade flows, increasing global supply and creating a downward risk for prices in Colombia. However, this effect could be counterbalanced by exchange rate pressures resulting from the risk of tighter external financial conditions.

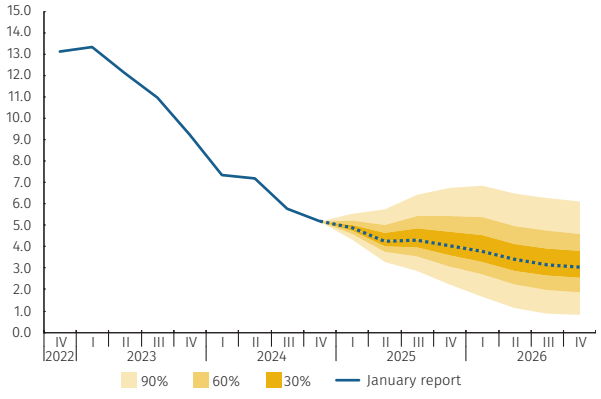
The balance of risks to economic activity remains skewed to the downside. Although the PD exercise accounts for both upside and downside risks across different components of aggregate demand, the latter predominates. Among the upside factors, the most notable is the possibility of more dynamic private

consumption in the short term, driven by the minimum wage adjustment and its impact on disposable income. However, this effect would be temporary and primarily benefit households with low-income formal workers. Conversely, several downside risks stand out. These include the likelihood of weaker public consumption due to lower tax revenues and the need for a more significant fiscal adjustment than previously announced; ongoing uncertainty in capital-intensive sectors, which could continue to weigh on fixed investment; potential changes in housing subsidy allocation programs that could dampen investment in this sector; and slower-than-expected growth in inventory accumulation. Additionally, the PD exercise endogenously incorporates the risk of a prolonged restrictive monetary policy stance in response to inflationary pressures, which outweighs the exogenous downside risks to economic activity.

In summary, uncertainty remains relatively high throughout the forecast horizon, with inflation and the monetary policy rate facing upside risks, while economic growth is subject to downside risks. Within a 90% confidence interval, headline inflation is projected to range between 2.2% and 6.8% by the end of 2025 and between 0.8% and 6.1% by the end of 2026 (Graph 2.22). Similarly, core inflation is expected to fall between 2.5% and 6.3% at the end of 2025 and between 1.3% and 6.1% by the fourth quarter of 2026 (Graph 2.23). For the fourth quarter of 2025, the probability of headline inflation falling below 4% is 38%, while for core inflation, it is 40%. By the end of 2026, these probabilities would increase to 62% and 59%, respectively. Regarding economic activity, annual GDP growth is anticipated to range between 0.7% and 3.8% in 2025 and between 1.3% and 5.4% in 2026, with a 90% probability (Graphs 2.24 and 2.25).

Graph 2.22
Consumer price index, predictive density [a/, b/]
(annual change, end-of-period)

(percentage)

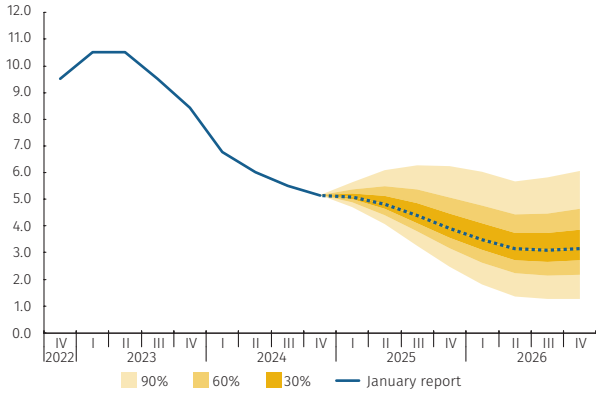


	2Q 2025	4Q 2025	4Q 2026
Mode	4.3	4.1	3.0
< Mode	39%	39%	39%
	Intervals		
<2	0%	4%	18%
2 to 4	27%	34%	44%
>4	73%	62%	38%

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

Graph 2.23
CPI excluding food and regulated items, predictive density [a/, b/]
(annual change, end-of-period)

(percentage)

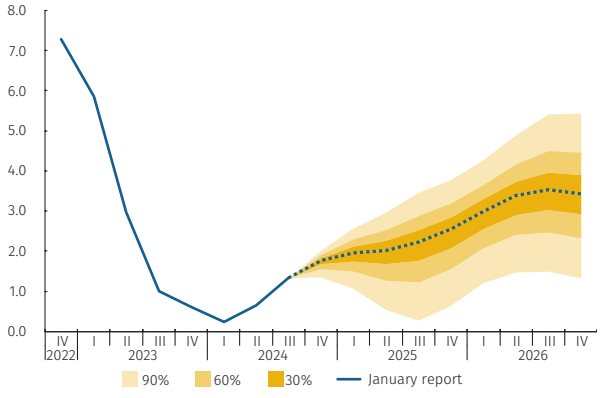


	2Q 2025	4Q 2025	4Q 2026
Mode	4.8	3.9	3.1
< Mode	36%	37%	36%
	Intervals		
<2	0%	2%	12%
2 to 4	4%	38%	47%
>4	96%	60%	41%

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

Graph 2.24
GDP, four-quarter cumulative, predictive density [a/, b/]
(annual change)

(percentage)

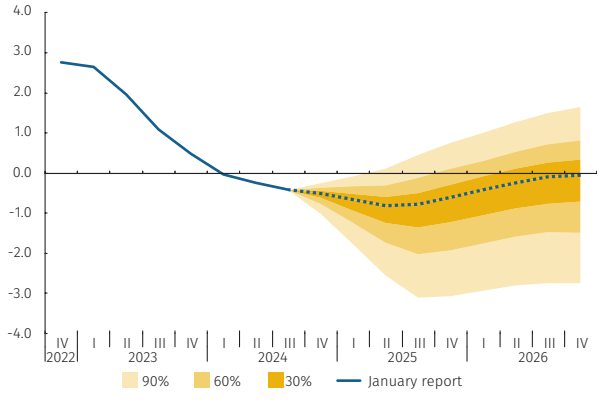


	4Q 2024	4Q 2025	4Q 2026
Mode	1.8	2.6	3.4
< Mode	65%	63%	53%
	Intervals		
<1	0%	10%	2%
1 to 2	94%	30%	11%
2 to 3	5%	39%	26%
>3	0%	21%	61%

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

Graph 2.25
Output gap, predictive density [a/, b/]
(four-quarter cumulative)

(percentage)

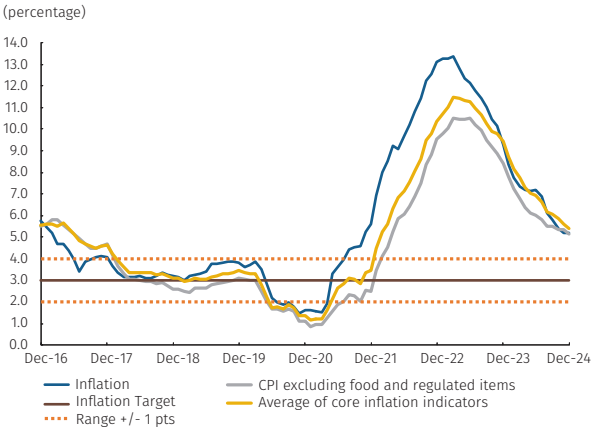


	4Q 2024	4Q 2025	4Q 2026
Mode	-0.5	-0.6	0.0
< Mode	64%	66%	65%
	Intervals		
<-3	0%	6%	4%
3 to 0	100%	77%	63%
0 to 2	0%	16%	31%
>2	0%	0%	3%

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

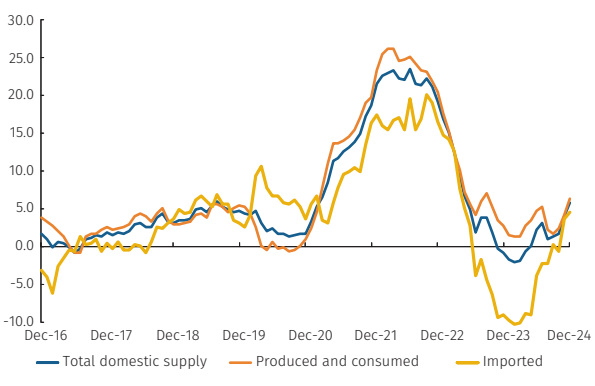
3. Current economic situation

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*.

3.1 Inflation and price behavior

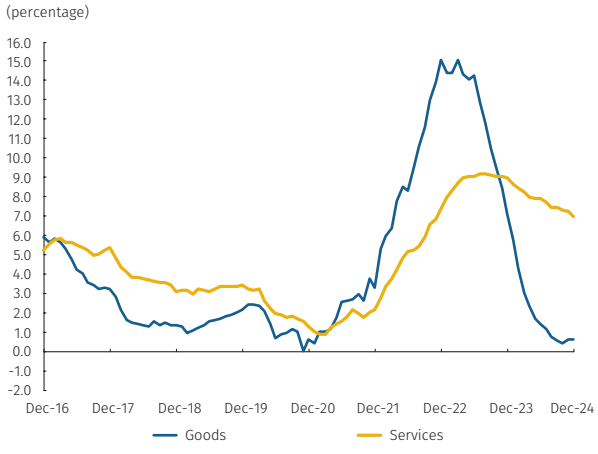
During the fourth quarter of 2024, annual headline and core (excluding food and regulated items) inflation continued to decline, although still continuing above the 3.0% target. Since its peak in March 2023 (13.3%), annual inflation has followed a downward trajectory, logging 5.8% in September and ending 2024 at 5.2% (Graph 3.1). This last figure fell below market analysts' expectations surveyed in October (5.5%)[1] and those of the technical staff noted in that same month's Report (5.3%). The technical staff's inflation forecast for yearend 2024 did not foresee a weakening in the pace of food price hikes due to improved supply experienced by perishables. The regulated items CPI registered a significant deceleration, although not as marked as predicted, due to greater-than-expected gas and electricity service prices. Core inflation (excluding food and regulated items) also continued its downward path in recent months, consistent with the expectations noted in the previous Report, closing 2024 at 5.2%, below the September figure (5.5%). The sustained decrease in inflation observed during the last months of 2024 occurred in the context of a still contractionary monetary policy stance and excess productive capacity, reflecting a lingering weakness in domestic demand. These factors offset the upward pressures that arose at the end of the year from the peso's depreciation. Consequently, despite the significant declines of both headline and core inflation throughout 2024 and the relatively low-price variation of goods and food, inflation ended the year above the 3.0% target. The latter was primarily attributed to indexation to a high 2023 inflation rate (9.3%), coupled with a significant adjustment of the minimum wage for 2024 (12.1%), which affected close to 60% of prices in the family basket, especially those of the services and regulated items sub-baskets. Furthermore, the peso's recent depreciation began to generate upward pressures on production costs, reflected in the annual change of the producer price index (PPI), which recorded a significant increase between September (1.2%) and December (5.8%). The rise impacted both local (from 1.6% to 6.2%) and imported (from 0.2% to 4.5%) components (Graph 3.2).[2]

Within annual core inflation, goods inflation remained at low levels during the fourth quarter, following significant reductions in previous quarters. There was no movement in the annual variation of the goods CPI between Septem-

1 According to the mean of survey responses to *Banco de la República*'s Monthly Survey of Economic Analyst Expectations (EME for its Spanish acronym).

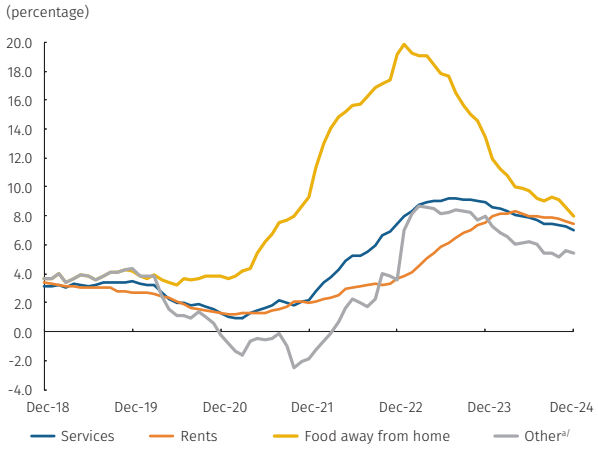
2 Provisional annual producer inflation for December supplied by DANE.

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



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

Graph 3.4
CPI for services, excluding food and regulated items (annual change)



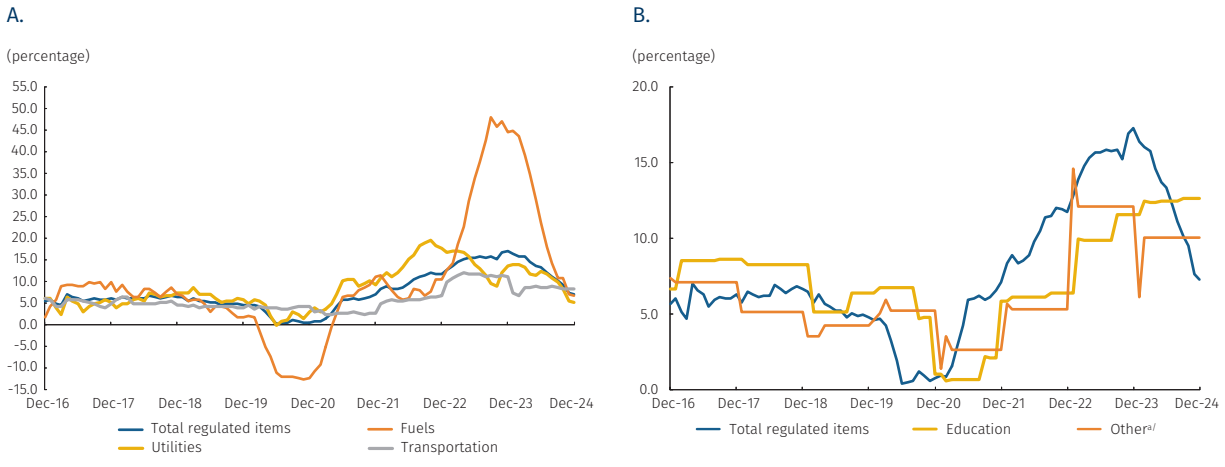
a/ This group mainly includes the following items: communication, recreation, and cultural services; education (non-regulated); miscellaneous services (hairdressing, childcare, financial, etc.); transportation; property management; domestic service; nightclubs and hotels; healthcare; and laundry services
Sources: DANE; calculations by B*anco de la República.*

ber (0.6%) and December (0.6%) after exerting significant disinflationary pressures during the first three quarters of the year (Graph 3.3). The lack of movement seen in this sub-basket during the last quarter of 2024 is mainly due to moderate consumption growth and the fall in international prices experienced by most electrical and electronic goods (e.g., cell phones, computers, televisions, washing machines, refrigerators). The previous was partially offset by the peso's depreciation during the second semester, along with recent increases in maritime transportation costs for imported goods.

In the last months of the year, services inflation continued to decline gradually, although their significantly high levels suggest a noteworthy degree of inflationary inertia. Although the annual adjustment of the services CPI fell between September (7.5%) and December (7.0%), it remained well above headline and target inflation. The indexation to 2023 inflation and the minimum wage adjustment in 2024 mainly affected services prices, some of which are tied to explicit indexation mechanisms or are labor-intensive. The latter continues to explain the inflationary inertia observed in this sub-basket during the fourth quarter. Rents exemplified this situation, as it is a basket component that is closely indexed to the previous year's inflation, thus exhibiting an annual change that fell from 7.9% in September to 7.4% in December (Graph 3.4). In addition, as mentioned in previous Reports, this is exacerbated by weak supply of new construction and housing sales. Annual price variation of food away from home decreased between September (9.3%) and December (8.0%) but nevertheless ended the year at a high level, explained by increases in certain foods and fallout from the minimum wage increase.

During the fourth quarter of 2024, annual inflation for regulated items decreased significantly, chiefly because of restraint in the pace of price adjustments for fuels and public services. The annual change in the prices of regulated items registered a significant reduction between September (10.2%) and December (7.3%), although not as substantial as forecast in the October Report. This reduction primarily reflects the smaller annual variations seen in fuels (10.8% to 6.8% in September and December, respectively) and utilities (10.0% and 5.2% in September and December, respectively) (Graph 3.5, panel A). It should be noted that the December COP 400 adjustment in the price of diesel would have had a minimal direct impact on the CPI, given its low weight within the consumer basket. For public services, the annual growth rate decrease was headed by the electricity component, as rates fell sharply (albeit not as much as previously estimated) between September (12.6%) and December (2.2%). The previous was the result of public policy actions, including an agreement with several energy marketers to reduce rates, downward adjustments in scarcity prices (maximums) in the securities exchange, and the settlement by the government

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

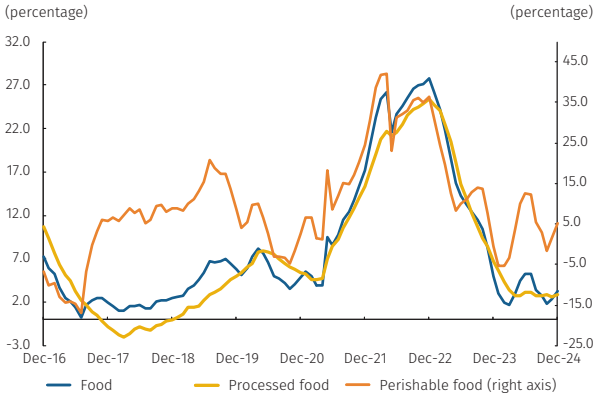


a/ Includes EPS affiliate co-payments, administrative certificates and documents, and professional fee payments
Sources: DANE; calculations by *Banco de la República.*

of subsidized rates for the lower strata, especially in the Atlantic Coast departments, among others.[3] The remaining regulated items did not experience any significant changes in the later part of the year (Graph 3.5, panel B).

Compared to the October Report estimates, the annual increase in food prices ended 2024 lower than expected but above third-quarter results. The annual change in food prices at yearend was 3.3%, above that registered in September (2.7%). This behavior reflects the varied behavior of its components. On the one hand, the annual change in perishable foods prices ended 2024 at 5.1%, higher than the figure recorded in September (2.9%). Fruits, in particular, drove up perishable prices during the last quarter of the year. On the other hand, the CPI for processed foods experienced a very slight annual increase between September (2.7%) and December (2.8%) (Graph 3.6). In the last months of 2024, the peso's depreciation, the increase in international prices of inputs, and higher transportation costs exerted upward pressure on processed food prices. In addition, many foods with high sugar and fat content (e.g., chocolate and chocolate derivatives, candies, soft drink concentrate, Jello,

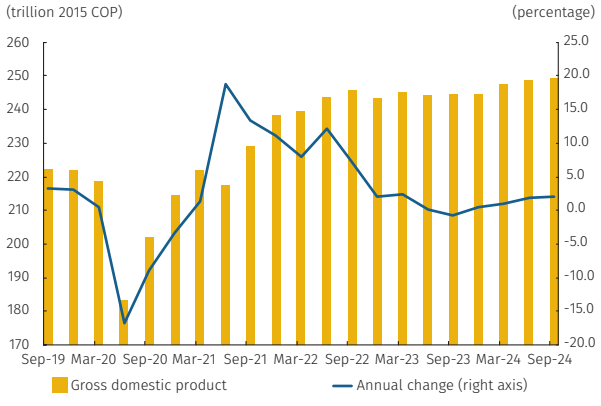
Graph 3.6
CPI for food and its components
(annual change)



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

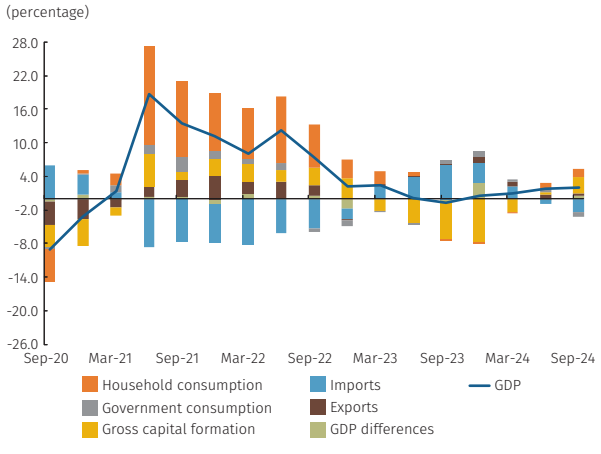
3 With CREG Resolution 101 066 of 2024, which modifies the scarcity prices of the Reliability Fee, the National Government set a rate cap on electricity prices traded on the Colombian energy market exchange. Until now, the energy exchange operated with a single scarcity price (selling price cap) for all power-generating facilities in the country. The current price (close to COP 950 for December) is set for facilities that operate with liquid fuels and liquid fuels or gas blends. This price will be updated and published by the CREG on a monthly basis, as established in articles 2, 3, and 4 of Resolution CREG 140 of 2017. For its part, the scarcity price will be COP 358 for facilities that operate with over 50% renewable resources or coal. It will be updated monthly to reflect any changes in international coal prices. See (in Spanish only): https://gestornormativo.creg.gov.co/gestor/entorno/docs/originales/Resoluci%C3%B3n_CREG_101_066_2024/

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



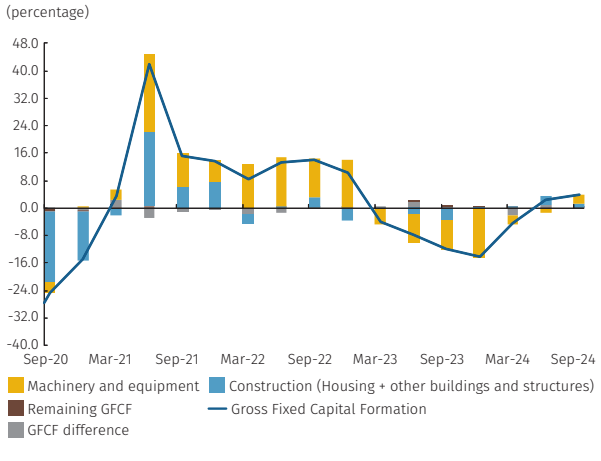
a/ Seasonally adjusted and corrected for calendar effects
Sources: DANE; calculations by *Banco de la República.*

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



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

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



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

and related products) recorded increases at the end of the year as a result of the entry into force of the second phase of the so-called healthy tax.[4]

3.2 Growth and domestic demand

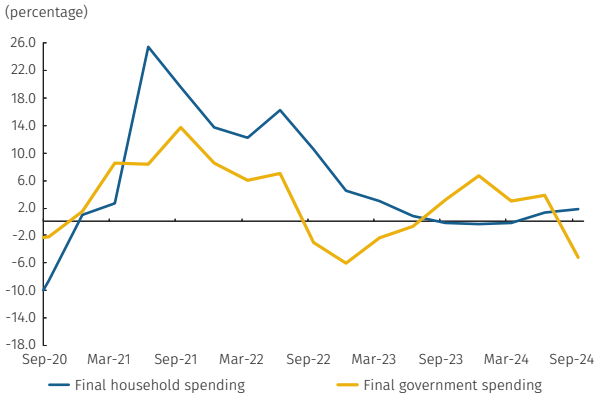
During the third quarter, GDP presented levels close to those projected. According to DANE's seasonally adjusted and corrected for calendar effects figures, in the third quarter of 2024, economic activity registered an annual growth of 2.0%, which implied an annualized quarterly expansion of 0.8% (Graph 3.7). The annual expansion of economic activity was slightly lower than predicted by the technical staff in the previous Report (2.4%), mainly due to an upward revision of the year-on-year level observed for the same period, as both the quarterly activity and level attained were comparable to expectation. On the expenditure side, the positive contribution of domestic demand was primarily explained by more significant investment in civil works and the gradual improvement of private consumption. However, public consumption and housing investment had adverse effects on growth. This performance was noted amid a backdrop of lower interest rates, declining inflation (although still above target), households with bettered disposable income, and more favorable reliability indicators. On the supply side, the sectors that mostly propelled growth were the arts, entertainment, and recreation, as well as the agricultural sector. Conversely, mining and quarrying, along with manufacturing, continued to show annual declines.

Domestic demand continued to drive third-quarter growth, led primarily by investment activity. Domestic absorption accelerated in its annual growth during this period, registering a rate of 3.9%, somewhat higher than that projected in the October Report (3.3%). The major contributor to this increase was gross capital formation (Graph 3.8), which experienced significant increases in both annual (20.3%) and quarterly (25.9% quarterly annualized) terms. By components, a statistical discrepancy was a large contributor, as well as the variation seen in inventories, which presented significant growth in the third quarter as inventories recovered in the industry and commerce segment and the residential and non-residential buildings sector. Alternatively, fixed investment, which excludes the latter component, also expanded annually and quarterly, although at more moderate rates (4.1% annual and 0.8% quarterly annualized) (Graph 3.9). The segment with the highest annual growth was investment in other buildings and structures, primarily

4 Law 2277 of 2022, titled "Healthy Taxes", imposed taxes on ultra-processed sweetened beverages and ultra-processed food products that are industrially processed and/or have a high content of added sugars, sodium, or saturated fats. See (in Spanish only): https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=199883

driven by the recovery of civil works construction, particularly those associated with regional infrastructure projects. Investment in machinery and equipment also grew on an annual and quarterly basis, impelled by the increase in imports of capital goods for industry. In contrast, investment in housing continued to decline, which would have been associated, in part, with a lower completion of non-public (non-VIS) housing.

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.*

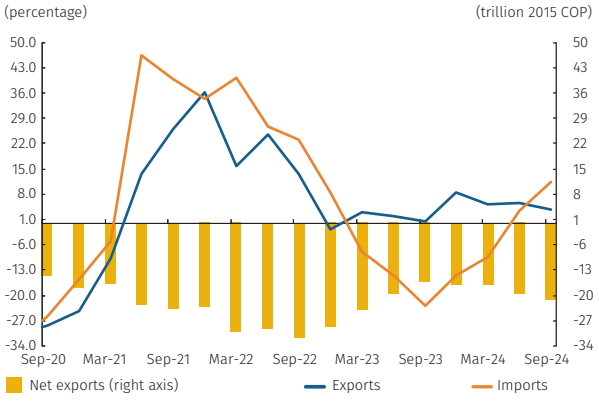
The pace of growth of total consumption was significantly below expectations, largely due to the sharp decline in public consumption. Consumption exhibited a year-on-year growth of 0.8% in the third quarter, which was much lower than projected in the October Report (2.0%), primarily attributed to the substantial decline in public consumption, both in quarterly (-29.0% quarterly annualized) and annual terms (-5.1%) (Graph 3.10). According to DANE, the leading causes of the decline in public consumption during the third quarter were the significant retrenchment in energy subsidy payouts associated with lower energy consumption and reductions in personnel expenses. On the other hand, although private consumption in the third quarter recorded an annual growth (1.9%) below expectations (2.5%), it has gradually improved since yearend 2023. However, the aggregate levels exhibit the greatest gaps with respect to the predicted pre-pandemic trend[5] (8.8% above). The acceleration of private consumption continues to take place amid a backdrop of interest rate reductions, improved loan disbursement performance, and the recovery of household disposable income. Within this aggregate, the most dynamic segment in terms of annual and quarterly variations was the consumption of durable goods. Its recovery started at the beginning of 2024 and continued into the third quarter after adjusting from the excessive levels seen in 2022. Consumption of non-durable goods and services also grew annually; in the former case, it was mainly driven by the consumption of agricultural products, eggs, and pharmaceuticals, and in the latter, by spending on leisure and gaming services. Finally, the consumption of semi-durable goods continued to decline annually and showed no increase in the margin, chiefly because of lower consumption of clothing and footwear.

In the third quarter, the real external deficit was again a negative contributor to annual GDP growth, given that imports outgrew exports. During this period, imports registered significant quarterly growth, with a very pronounced year-on-year growth (11.4%), in line with the behavior of domestic demand. Import growth mostly centered on capital goods and durable consumer goods. Alternatively, exports recorded a modest annual increase (3.8%), considerably less than that of imports. The increment in the annual growth

5 The rate of private consumption in the third quarter of 2024 outperformed by 8.8% the amount projected pre-pandemic.

rate was not reflected in increased levels of exported goods, as explained by a quarterly decline in the external sales of goods such as oil and coal. In contrast, services exports grew annually and quarterly and continued to be favored by non-resident tourism. Consequently, the external deficit in constant pesos outperformed that of the second quarter and that observed a year earlier (Graph 3.11), which again negatively contributed to the annual GDP change.

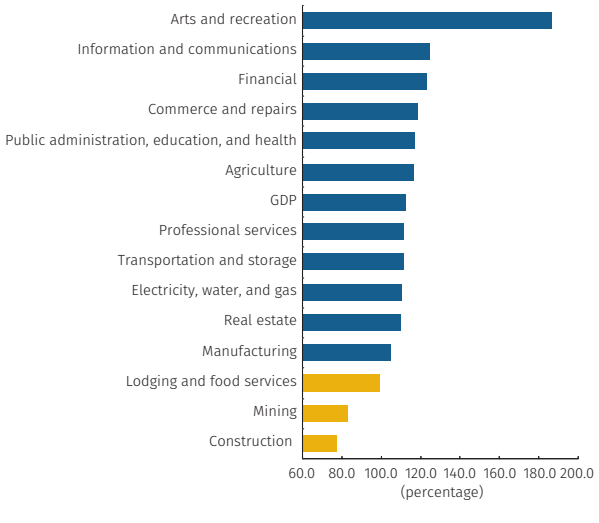
Graph 3.11
Exports, imports, and trade balance [a/]
(annual change and trillion 2015 COP)



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

On the supply side, the agricultural sector and arts, entertainment, and recreational activities were the main drivers of annual growth. During this period, the primary branches continued to expand in annual and quarterly terms (3.3% and 0.8%, respectively), reaching a historically high level (Graph 3.12). The growth of these activities is explained by the positive performance of agricultural supply, especially that associated with crops and a recovery in coffee production. In contrast, mining activities fell by 5.2% annually due to the low production of coal and oil, the latter affected by the disruptions generated by the truckers' strike and the various attacks on the infrastructure of some of the country's oil pipelines. The secondary branches completed a year with relatively stable levels and recorded a moderate annual growth of 0.5% in the third quarter. This behavior is partly explained by an adjustment process in the manufacturing sector from reaching relatively high levels in 2022 and by low performance in building construction. Conversely, civil works construction continued to recover, consistent with a resurgence in regional project construction, including the first segment of the Bogota subway. Finally, the tertiary branches recorded annual growth of 2.6%, which was again driven by a resurgence in art, entertainment, and recreational activities (14.1% year-on-year), particularly a boom in online gaming and sports betting. The performance of financial and insurance services (4.6% annual growth), healthcare services (5.0%), and commerce, transport, and lodging (1.2% annual growth) also stood out, with improved performance in real sales of the retail segment.

Graph 3.12
Sectoral value-added levels in 3Q 2024 relative to 4Q 2019 [a/]
(4Q 2019 = 100%)



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

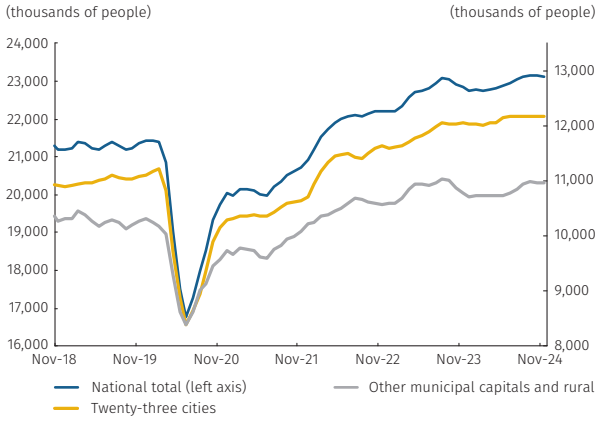
3.3 Labor market[6,7]

National aggregate employment stabilized in the last few months following the rebound observed in the second and third quarters of the year. For the rolling quarter ending in November, the results of the Integrated Household Survey (GEIH for its acronym in Spanish) showed relatively stable employment levels in the twenty-three main cities and the other municipal capitals and rural areas (Graph 3.13).

6 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.

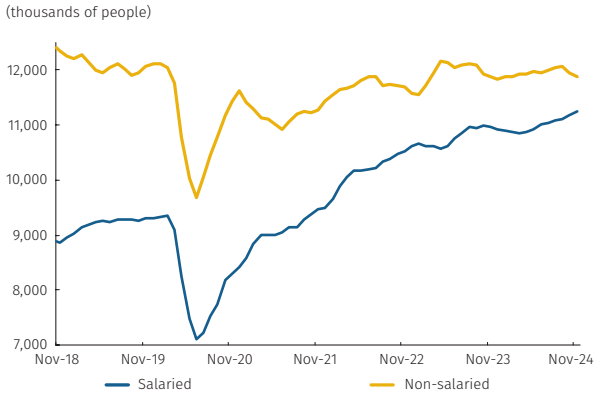
7 Labor market figures presented in this section of the Report primarily correspond to the rolling quarter ending November 2024.

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.*

Accordingly, for this period, national aggregate[8] employment registered a year-on-year increase (1.2%), driven by employment growth in other municipal capitals and rural areas (1.7%) and the urban area (0.8%). By economic sector, national annual employment growth was observed in several branches, with commerce, lodging, and manufacturing being the highest contributors to the national aggregate.

By occupation, annual employment growth was explained by positive behavior in the critical segment of salaried employment. In the second semester of 2024, salaried employment recovered significantly, with a quarterly and annual change to November of 1.5% and 2.5%, respectively (Graph 3.14). Private employees were the main sponsors of the year-on-year gains in the employment rate. However, non-salaried segment employment showed a slight contraction during the final months of the year.[9] Consequently, improvements in salaried employment further decreased the national aggregate informal employment rate, which reached 52.5% in November.

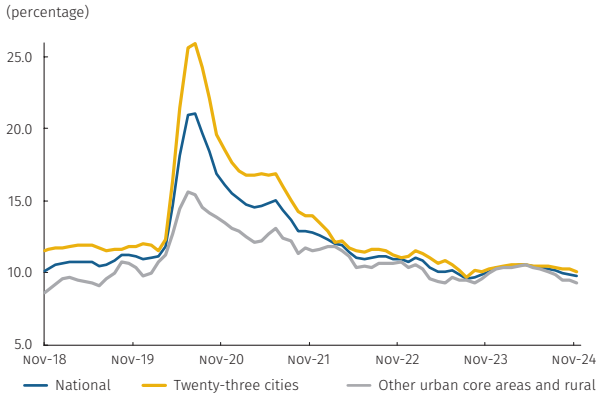
The overall labor force participation rate has decreased in recent months, consistent with recent increases in the population outside the labor force or economically inactive population. The national aggregate labor force participation rate in November was 63.7%, 0.4 pp lower than in the previous year and August 2024 levels. By geographic area, the labor force participation rate in the twenty-three main cities, other municipal capitals, and rural areas also fell, ending the period at 65.7% and 61.6%, respectively. This decrease is in line with the increase noted in recent months for the population outside the labor force or inactive, which recorded a national aggregate annual growth of 2.5%, as well as 2.6% for urban areas and 2.4% for rural areas. By gender, there has been an increase in recent months in the number of women leaving the labor force, which has resulted in a contraction of the labor force participation rate of women (-0.5 pp) versus that recorded in November of last year. Thus, women's labor force participation rate stood at 52.1% in November 2024, and the men's at 76.4%, registering a smaller annual drop (-0.2 pp).

With a more stable employment rate and the fall in the labor force participation rate, the national aggregate unemployment rate has decreased in recent months, reaching levels below its historical average. For the rolling quarter to November and drawing on seasonally adjusted data, the national unemployment rate stood at 9.8%, lower than the figure observed in yearend 2023 and August (10.2%). This

8 In line with the behavior of employment, there was no change in the unemployment rate in recent months, ending the period at 57.5%.

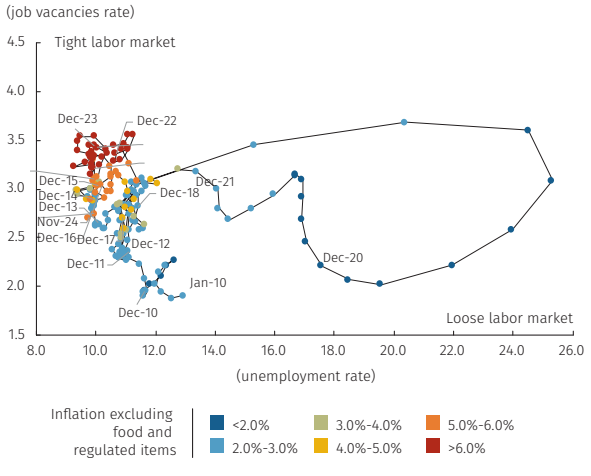
9 Rolling quarter employment figures for the informal non-salaried segment in November registered a year-on-year change of 0.1%.

Graph 3.15
Unemployment rate by location



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

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.*

decrease was mainly attributable to a 0.7 pp reduction in the unemployment rate of other municipal capitals and rural areas, which stood at 9.3%. In comparison, the urban unemployment rate stood at 10.1% (Graph 3.15). The heterogeneity of the employment rate among the twenty-three main cities stands out, with Quibdó showing the highest unemployment (27.6%) and Medellín the lowest (7.9%). Compared to the previous quarter, the unemployment rate fell slightly in most cities, with Ibagué (-3.1 pp), Riohacha (-3.0 pp), and Manizales (-1.4 pp) recording the most significant drops; in contrast, those cities with the most marked increases in the unemployment rate were Valledupar (1.7 pp), Quibdó (1.5 pp), and Popayán (0.9 pp). As for the unemployment gap by gender, after the increase observed in the third quarter, it has corrected slightly in recent months and stood at 4.5 pp in November due to a decrease in women's unemployment rate.

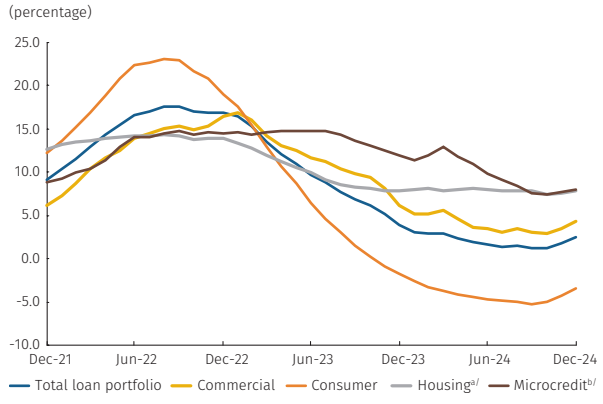
In recent months, job openings indicators have continued their downward trend, while hiring expectations have remained relatively stable and in positive territory. Regarding hiring expectations, short-term figures obtained from ManpowerGroup's Survey of Hiring Expectations and mid-term figures, in a six to twelve-month horizon, provided by *Banco de la República's* quarterly Survey of Economic Expectations (ETE for its Spanish acronym), remained stable and in positive territory, suggesting stable formal employment in the near future. In contrast, the labor demand indexes, obtained in November from classified ads and the Public Employment Service (SPE for its Spanish acronym), and those derived in October from implicit GEIH hiring figures, continued on a downward trajectory, although they remained at relatively high levels. The behavior of the unemployment rate in the urban areas and of the vacancy rate, in light of the Beveridge curve (3.16),[10] suggests a certain tightness of the labor market, given that the unemployment rate has again fallen and the job vacancy rate - although it has fallen - remains high. Finally, national aggregate data to November showed a rebound in real labor income for salaried workers at the margin, while it fell in the third quarter for non-salaried earners. In annual terms, there were gains of 5.2% in the salaried segment, while the non-salaried segment recorded an annual drop of 4.8%.

3.4 Financial and money market

During the fourth quarter of 2024, the loan portfolio recovered slightly, and interest rates in the financial system continued to fall in line with the recent monetary policy interest rate (MPR) cuts. The latter occurred in the context of eco-

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

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



a/ Adjusted housing: bank loan portfolio plus securitizations
b/Microcredit as of 01 March 2024 includes "Banco Contactar", entity that had previously operated as "Corporación de Crédito Contactar" under the oversight of the Superintendency of corporate Affairs.
Sources: Financial Superintendency of Colombia, calculations by *Banco de la República.*

Table 3.1
Interest rates
(average monthly, percentage)

	Dec 22	Dec 23	Jun-24	Sept 24	Dec 24
Interbank					
Interbank policy rate	11.42	13.18	11.75	10.75	9.70
Interbank overnight	11.41	13.13	11.75	10.75	9.70
BBI overnight	11.41	13.13	11.75	10.75	9.70
BBI 1-month	11.80	13.10	11.47	10.44	9.44
BBI 3-months	12.08	12.81	11.01	9.94	9.20
BBI 6-months	12.31	12.35	10.49	9.35	8.86
BBI 12-months		11.17	9.65	8.35	8.40
Deposits					
Savings	5.72	6.23	5.36	4.88	4.30
DTF 90-days	13.42	12.63	10.14	9.68	9.22
CDT* 180-days	15.58	12.90	10.33	9.94	9.43
CDT 360-days	17.08	13.19	10.75	9.85	9.73
CDT > 360-days	19.15	12.71	11.32	10.33	9.97
Credit					
Preferential	18.57	17.05	13.65	12.69	11.92
Ordinary	19.27	17.93	15.66	14.73	13.13
Non-public housing purchases	17.22	17.06	14.71	12.04	11.42
Public housing purchases	17.00	15.41	13.42	12.25	11.38
Personal loan consumption	31.23	28.16	24.73	23.18	21.18
Payroll loan consumption	19.45	19.83	18.14	17.41	16.58
Credit card	39.01	34.70	29.22	27.24	24.59

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

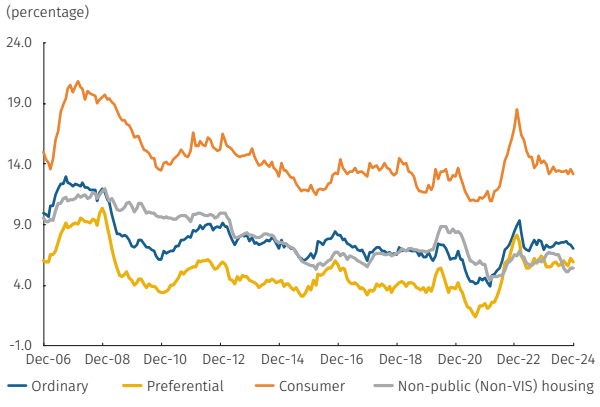
nomic activity recovery, particularly of consumption, and improved expectations of lending by banks. Requirements for new loans continued to be somewhat high, although less stringent for certain loan types. Credit risk indicators have stabilized yet remain at high levels. The financial system's profits increased, and its solvency indicators remain at adequate levels. Going forward, a recovery in loan granting is expected to continue in an environment of economic activity that is expected to continue improving.

The annual growth of the loan portfolio, which had been decreasing since 2022, regained traction in the last quarter of 2024 and registered an annual rate of 2.5% (Graph 3.17) in December. This behavior extended to all loan types, with average annual growth rates somewhat higher than those recorded in the third quarter, except for the housing loans, whose annual growth rate continued unchanged at around 7.8% throughout 2024. However, the consumer loans portfolio was the only one to record negative annual variations in 2024 and into December (-3.5%) but did not fall as much as in September (-5.3%). In real terms, consumer and commercial loans continued to register annual declines, but at lower rates than those observed in the third quarter. At the same time, housing and microcredit loans registered positive growth rates, above those of the previous quarter. In turn, data gathered from the survey of banking institutions to September 2024 suggests less restrictive requirements for granting consumer loans, while the requirements remained high for commercial, housing, and microcredit loans.[11] This, in a context of risk levels that—although more stable—remain high, recovering profitability as investments continue to have a significant share in the entities' assets.

Savings and credit interest rates continued to reflect monetary policy transmission in the context of measured recovery and decreasing inflation expectations. During the fourth quarter of 2024, the Board of Directors of *Banco de la República* continued reducing the monetary policy rate, with 50 and 25 basis-point (bp) cuts in its October and December meetings, respectively. In total, the monetary policy rate has decreased by 375 bps since the end of 2023. Money market interest rates reflect this behavior, particularly in the interbank rate (IBR or TIB for its Spanish acronym and the overnight bank benchmark index (BBI or IBR for its Spanish acronym). However, the IBRs for longer horizons have shown some setbacks, suggesting expectations of lower cuts in the benchmark rate in the coming months. Alternatively, both placement and deposit interest rates continued to show decreases in all modalities, consistent with monetary policy cuts (Table 3.1). Placement interest rates maintained a clear downward trend for most of the loan types,

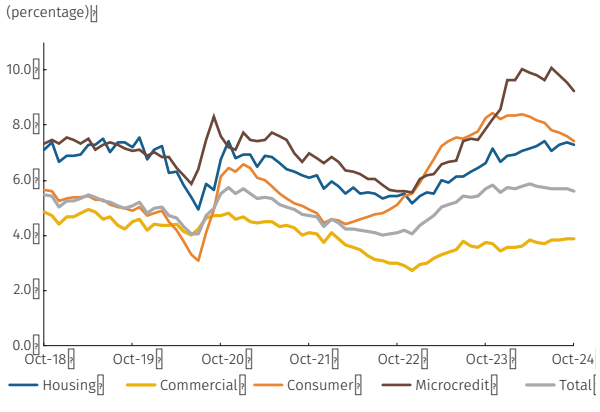
11 See the results of the Quarterly Survey of Credit Institutions in Colombia.

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



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 loans past-due over 30 days
Sources: Financial Superintendency of Colombia, calculations by *Banco de la República.*

particularly credit cards, non-payroll consumer loans, and non-public (non-VIS) housing, as both the accounts payable risk indicators and real placement interest rates stabilized in the third quarter of 2024 (Graph 3.18). Household loans registered levels below the averages of the last decade, while commercial loans remained somewhat higher or in line with their averages.

The profits of credit institutions increased during the last quarter of 2024; at the same time, the system's capital levels continue to exceed regulatory minimums. In November 2024, credit institutions' twelve-month aggregate earnings totaled COP 8.6 trillion, slightly higher than the level observed in December 2023. This slight growth in the profits of credit institutions is mainly explained by a lower provisions expense, which occurs in an environment of relative stability of the portfolio's delinquency indicator (MCI for its Spanish acronym) during 2024, though still at high levels (Graph 3.19). In the case of the consumer portfolio, the delinquency indicator showed a recovery during 2024, associated with a lower past-due portfolio for this modality. However, the indicator remains high when write-offs are included in this segment. Meanwhile, with data as of November, the total solvency levels (18.5%) and basic solvency (15.0%) of credit institutions remain stable and well above the regulatory minimums (9.0% and 4.5%, respectively).

Box 1
Instantaneous inflation in Colombia[1]

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Wilmer Osvaldo Martínez Rivera
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Gabriel Adolfo Garavito Plata*

Annual inflation is computed using the consumer price index (CPI), the twelve months included in this calculation are weighted equally. Consequently, price variations during the period analyzed may lead to an underestimation or overestimation of the significance of the information included in the most recent inflation concerning inflationary dynamics. Nevertheless, the measure of instantaneous inflation for Colombia provides an alternative to correct this bias, calculated by assigning greater weight to the most recent data and reducing the influence of more remote data through a Kernel function. This potential bias resulting from the overweighting of older data exists because information from more distant months may be less relevant for understanding the current behavior of consumer prices. In addition, we explore below the possibility of instantaneous inflation presiding over official annual inflation.

1. Biases in the CPI calculation

Since the United States Senate-appointed Boskin Commission reported its findings in 1996, it has been widely recognized that a CPI calculation employing a Laspeyres-type formula may generate biases in recording changes in consumer prices. A numerical Laspeyres index that maintains a fixed basket does not allow for the timely incorporation of new goods or the substitution of more expensive goods or services for lower-price alternatives (substitution in consumption). Nor does it allow for updating the quality of goods, incorporating new outlets, or more efficient distribution networks in the measurement. In addition, there is a bias in the selected products since statistical institutions do not collect information on the price changes of the entire consumer basket but only on those most frequently consumed goods that have a more significant impact on household spending.

Recently, Eeckhout (2023) introduced the bias of obsolete information derived from giving equal weight to each of the twelve months that comprise annual inflation. This weighing generates a particular bias due to the under-representation of the price levels of recent months, which have a greater impact on inflation dynamics. Consequently, assigning a greater weight to more recent values when calculating annual CPI variations is reasonable for gaining a clearer understanding of more contemporary price dynamics. Eeckhout (2023) calls this calculation "instantaneous inflation which will be explained below for Colombia's case.

2. Methodology

Differentiated and increasing weights will be used to offset the bias we have coined as old data bias. To determine the weights, Eeckhout (2023) suggests using the following polynomial Kernel function:

$$\kappa(\tau,\alpha)=\frac{(\mathrm{T}-\tau)^{\alpha}}{\sum_{\tau=0}^{\mathrm{T}-1}(\mathrm{T}-\tau)^{\alpha}}\mathrm{T},\forall\alpha\geq 0$$

* The authors are, in order, leading professionals, researchers, and interns in the Programming and Inflation Department. The opinions are the authors' own and do not reflect the views of *Banco de la República* or its Board of Directors.

1 This box coincides with the recent publication of the Economics Draft by Martínez et al. (2025), entitled: "Instantaneous Inflation as a Predictor of Inflation," whose content focuses on the predictive capacity of instantaneous inflation toward annual inflation for Colombia, the United States, and England. This box, in some sections, is similar to that presented in Martínez et al. (2025).

Where T-τ represents each of the periods (months), adding a parameter α to determine the magnitude of the weight of each period in the Kernel. The higher the value of α, the greater the weight of the most recent months and the lower the weight of the most remote months. When the value of α is 0 (zero), this would result in conventional inflation, where all periods (months) have the same weight. Graph B1.1 shows the behavior of the Kernel at different values of α.

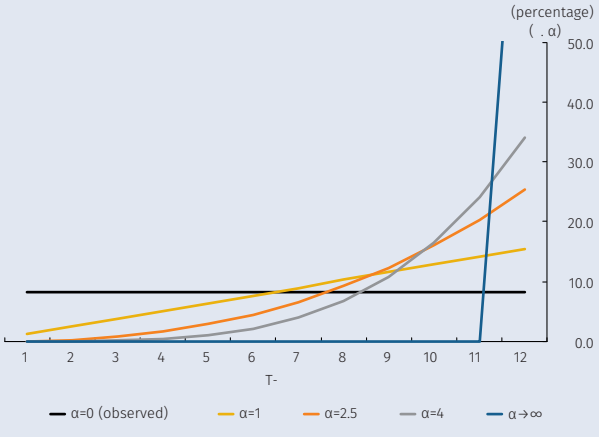
Subsequently, the Kernel is applied to the original inflation function, obtaining the following for instantaneous inflation:

$$i_t^K = \prod_{\tau=0}^{11} (1 + i_{t-\tau}^m)^{\kappa(\tau)} - 1$$

Where $(1 + i_{t-\tau}^m)$ is the monthly variation for each period.

It is essential to take into account several considerations regarding instantaneous inflation. The higher the value of parameter α, the greater the response of inflation to varied factors, such as noise that might have occurred in the data collection process or resulting from seasonal factors. Consequently, instantaneous inflation tends to be more volatile than conventional inflation, especially when very high α values are used. To counteract this, we have seasonally adjusted the CPI series used to calculate the different instantaneous inflations in this paper. Graph B1.2 (panels A and B) represents the reduced volatility once the CPI is seasonally adjusted to compute instantaneous inflation using a value of α= 2.5, selected for the reasons explained in the following section.

Graph B1.1
Kernel weights in percentages for different values of α



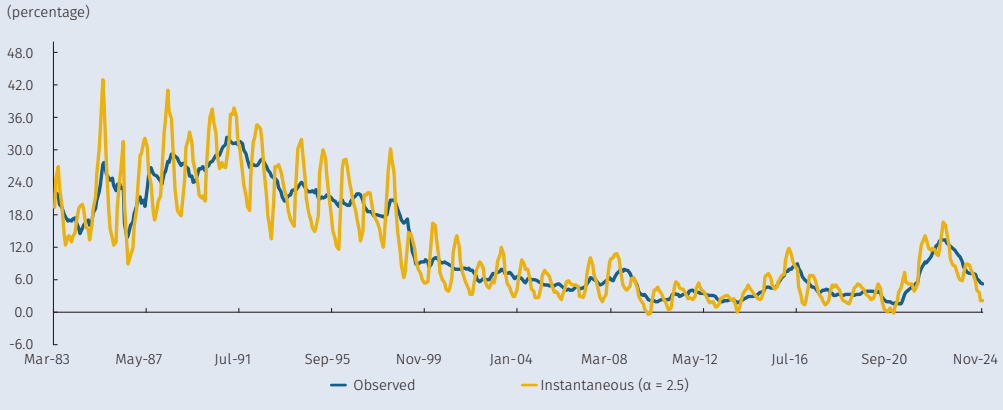
Sources: DANE; own calculations.

3. Parameter α value selection *α*

Three criteria were employed to determine an adequate value for α, considering that, although there may be an adequate range of values, using a non-integer value will provide a better approximation, counter to the selection used by Eeckhout (2023). The first criterion used in selecting α assesses its values based on a cumulative percentage of Kernel weights, choosing those that reached a threshold of 90% for

Graph B1.2
Instantaneous inflation

A. Instantaneous and observed inflation



Graph B1.2 (continued)

B. Seasonally adjusted instantaneous and observed inflation

Sources: DANE; own calculations.

τ-τ== 7, which necessitates that the cumulative weight of the six oldest periods (months) does not exceed 10% of the total weight. This criterion is met from α= 2.5 to α=100. This approach allows for identifying an α value high enough to effectively convey the most up-to-date information to consumer prices while simultaneously reducing the bias of the older information, as shown in Table B1.1.

The second criterion, the volatility of total seasonally adjusted instantaneous inflation, assesses different values of α from March 1983 to November 2023, considering those values of this parameter with the lowest variance as superior (Table B1.2, panel A). As a third criterion, the mean squared error (MSE) between observed annual inflation and its instantaneous seasonally adjusted version was calculated for different values of α, choosing again the values that minimized it (Table B1.2, panel B). Even when assigning the value of α= 2.5 to calculate instantaneous inflation, it still yields an indicator that is among those resulting in the lowest MSE for inflation forecasting.[2] Although there is a range of optimal values for α, α= 2.5 was selected based on the three criteria because it allows for excluding at least 90% of the most distant data and simultaneously has a smaller variance and mean squared error. Although a value of α<2.5 generates less volatility and a lower mean squared error, these values assign a

2 For more information see Martínez, et al (2025).

Table B1.1
Cumulative percentage of Kernel weights for different α values

T-τ	α = 0	α = 1	α = 2	α = 2,5	α = 3	α = 4	α = 5	α = 6	α = 12	α = 100
12	8.33	15.38	22.15	25.34	28.40	34.16	39.45	44.33	66.43	99.98
11	16.67	29.49	40.77	45.73	50.28	58.27	64.99	70.63	89.81	100.00
10	25.00	42.31	56.15	61.80	66.72	74.74	80.84	85.47	97.26	100.00
9	33.33	53.85	68.62	74.14	78.70	85.55	90.21	93.36	99.37	100.00
8	41.67	64.10	78.46	83.34	87.11	92.30	95.40	97.26	99.88	100.00
7	50.00	73.08	86.00	89.92	92.75	96.25	98.07	99.00	99.98	100.00
6	58.33	80.77	91.54	94.40	96.30	98.39	99.30	99.70	100.00	100.00
5	66.67	87.18	95.38	97.24	98.36	99.42	99.79	99.93	100.00	100.00
4	75.00	92.31	97.85	98.87	99.41	99.84	99.96	99.99	100.00	100.00
3	83.33	96.15	99.23	99.66	99.85	99.97	99.99	100.00	100.00	100.00
2	91.67	98.72	99.85	99.95	99.98	100.00	100.00	100.00	100.00	100.00
1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: DANE; own calculations.

Table B1.2
Variance of instant inflation and mean squared error for the different α values

A. Variance of seasonally adjusted annual instant inflation for the different α values
(March 1983 to November 2024)

	α = 0	α = 1	α = 2	α = 2,5	α = 3	α = 4	α = 5	α = 6	α = 12	α = 100
Variance	83.12	83.86	85.41	86.23	87.02	88.53	89.92	91.19	96.89	106.89

B. Mean squared error for the different α values
(seasonally adjusted instantaneous annual inflation vs. observed annual inflation)

	α = 1	α = 2	α = 2,5	α = 3	α = 4	α = 5	α = 6	α = 12	α = 100
Mean squared error	1.19	2.96	3.82	4.64	6.17	7.55	8.80	14.46	24.32

Sources: Dane; own calculations

higher weight to older information, which is not ideal. Consequently, instantaneous inflation will be calculated using an α= 2.5 value.

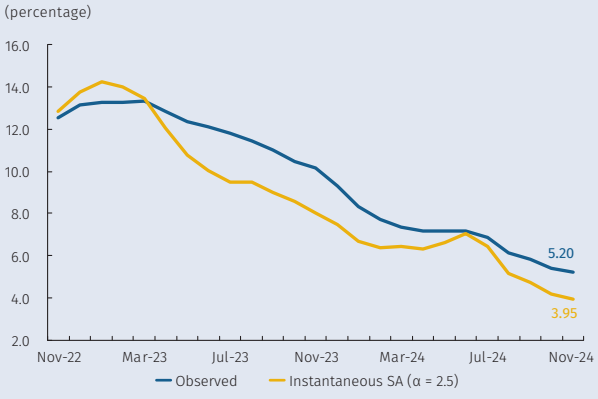
4. Results

For a better understanding of the recent inflationary dynamics, instantaneous inflation will be computed not only for the total CPI and the CPI excluding food and regulated items but also for four subcategories: goods and services (excluding food and regulated items for both), as well as food and regulated items. In addition, the coincident profile methodology proposed by Martinez et al. (2013) will be applied to assess whether instantaneous inflation serves as a leading indicator of conventional observed inflation. This methodology uses an algorithm that identifies inflection points in annualized series to identify when one series anticipates the inflection points of another and the number of periods (months) over which it does so at a 10% level of statistical significance. Graphs B1.3 to B1.8 present the calculations for each grouping, comparing observed inflation and seasonally adjusted instantaneous inflation calculated using α= 2.5.

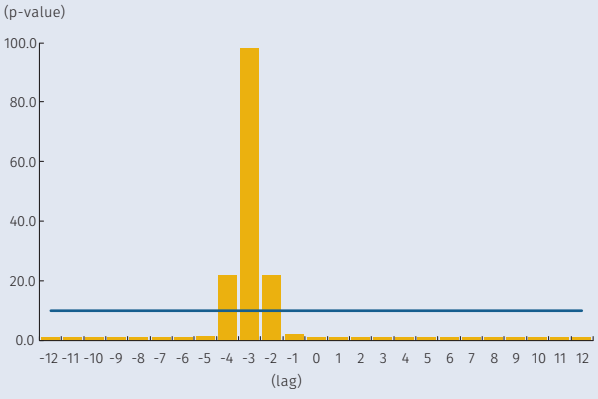
Graphs B1.3 to B1.8 suggest that seasonally adjusted annualized instantaneous inflation in November 2024 is lower than official annual inflation for all CPI segments analyzed, except for goods and core inflation excluding food and regulated items (panels A). Furthermore, it is proven that seasonally adjusted annual instantaneous inflation can anticipate annual consumer price adjustments (panel B). The results of the coincident profile graphs illustrate that seasonally adjusted annual instantaneous inflation for the total CPI and the CPI excluding food and regulated items, as well as that of the food group, have significant lags of two to four months, with a three-month lag being the most prevalent. Similarly, the services and regulated items groups present significant lags of between one and three months, with a three-month lag having the highest probability of occurrence. Finally, the seasonally adjusted instantaneous annual inflation for the goods CPI, excluding food and regulated items, foreshadows its official version by three to five months, with a four-month lag having the highest probability of occurrence. These results suggest that instantaneous inflation anticipates possible changes in the inflation of the different baskets and is a valuable indicator when attempting to anticipate inflation dynamics, which is especially helpful in the realm of monetary policy decisions. With information to November, instantaneous inflation projected possible reductions in annual food, regulated items, and services inflation and a probable variation in the trend of goods inflation, perhaps as a result of recent exchange rate pressures endured by the Colombian economy.

Graph B1.3
Instantaneous inflation for the total basket and coincident profile

A. Headline inflation



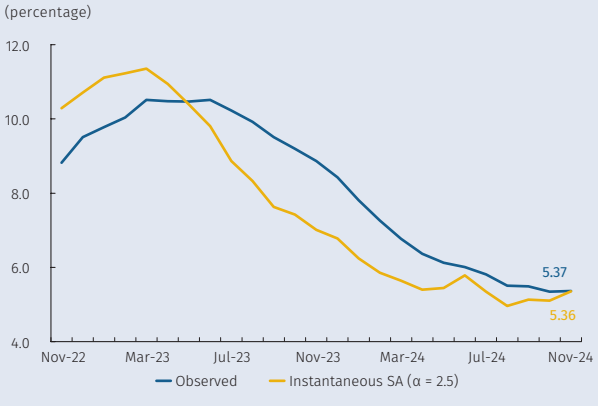
B. Coincident profile



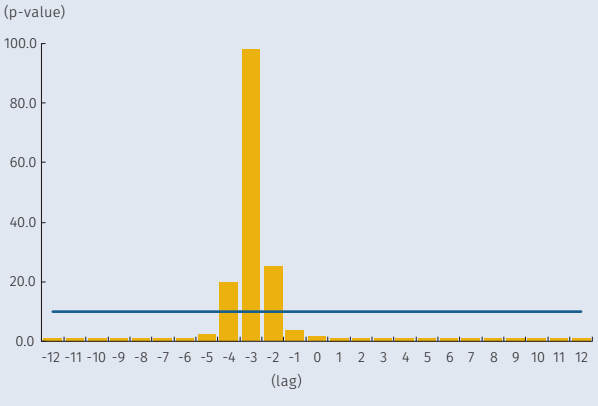
Sources: DANE; own calculations.

Graph B1.4
Instantaneous inflation for the total basket excluding food and regulated items and coincident profile

A. Core inflation (excluding food and regulated items)



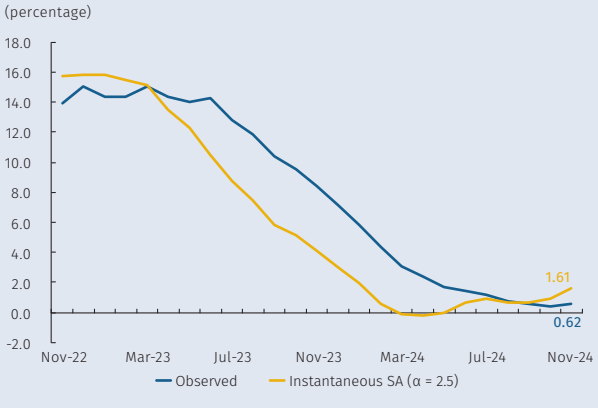
B. Coincident profile



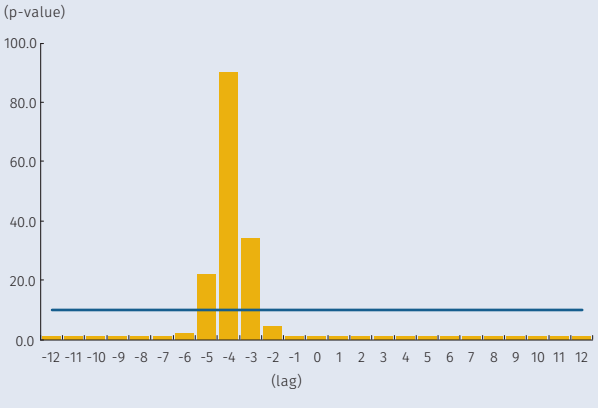
Sources: DANE; own calculations.

Graph B1.5
Instantaneous inflation for goods and coincident profile

A. Goods inflation



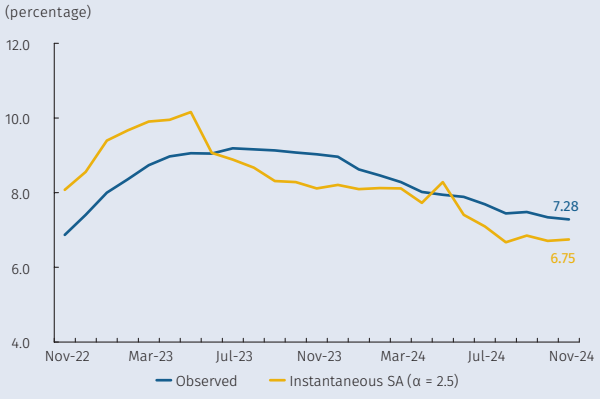
B. Coincident profile



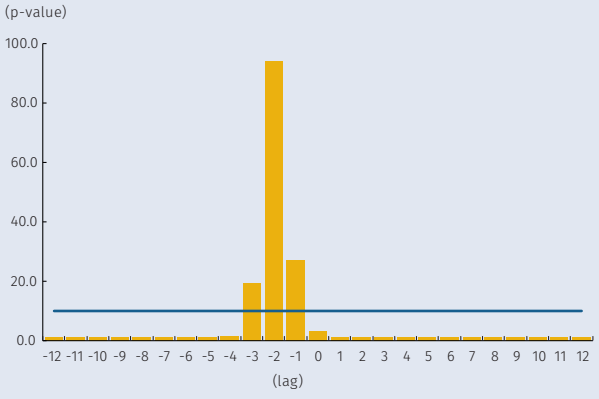
Sources: DANE; own calculations.

Graph B1.6
Instantaneous inflation for services and coincident profile

A. Services inflation



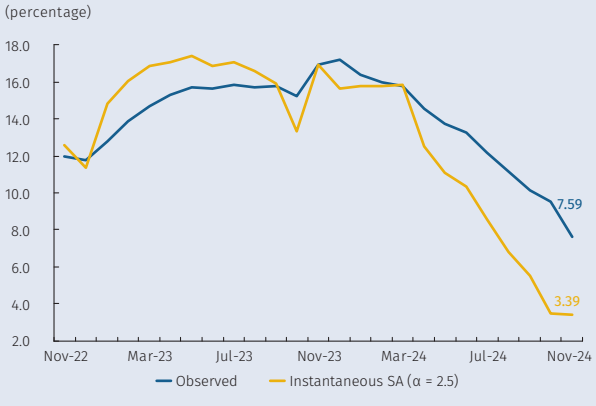
B. Coincident profile



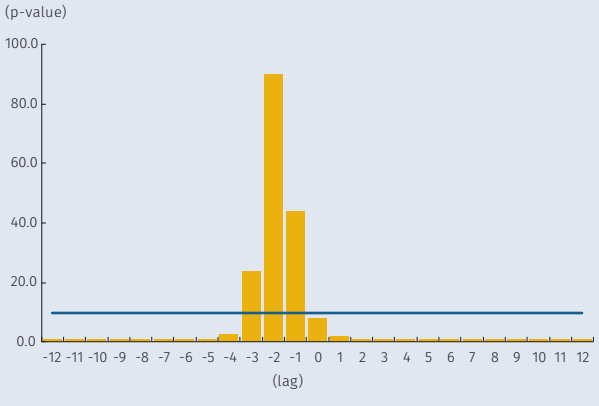
Sources: DANE; own calculations.

Graph B1.7
Instantaneous inflation for regulated items and coincident profile

A. Services inflation



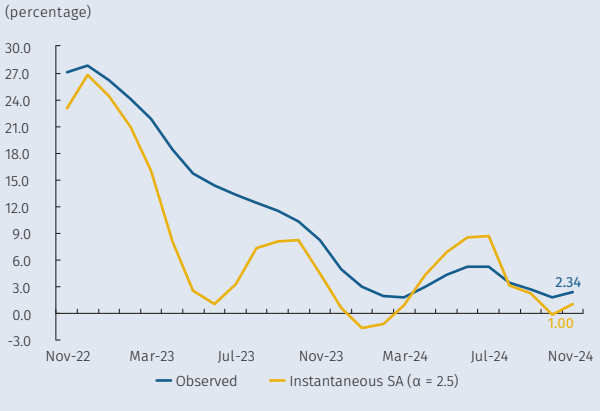
B. Coincident profile



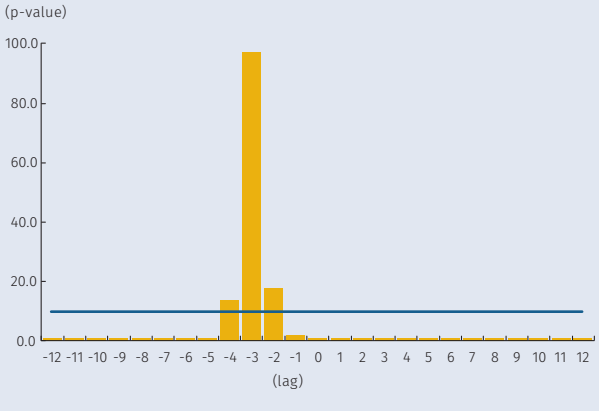
Sources: DANE; own calculations.

Graph B1.8
Instantaneous inflation for food and coincident profile

A. Services inflation



B. Coincident profile



Sources: DANE; own calculations.

5. Conclusions

The figure of instantaneous inflation captures more recent information on consumer price dynamics, providing timely data on recent inflation behavior and the likely short-term performance of annual inflation. Instantaneous inflation significantly reduces the bias that lagged data can introduce in the computation of annual inflation behavior, the most commonly used conventional inflation indicator. Moreover, incorporating novelties into the benchmark methodology, such as the use of coincident profiles to anticipate possible changes in official annual inflation trends, allows us to note that this new indicator leads the inflationary trajectory of all CPI segments analyzed. Consequently, instantaneous inflation is an ideal complementary tool for monitoring consumer prices, anticipating possible changes in the inflationary path, and providing additional information for monetary policy decision-making.

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Box 2
Estimated effects of the minimum wage on inflation in Colombia

Nicolás Martínez-Cortés
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Several studies have pointed to the influence of the minimum legal wage (SM for its Spanish acronym) on the labor market and the observed distribution of wages and prices in the economy, among other effects. In 2022, *Banco de la República* conducted a comprehensive study on the macroeconomic effects of the legal minimum wage in Colombia (Arango et al., 2022). In this Box, we summarize some of their findings and other relevant results from related literature, particularly its effects on inflation.

As pointed out by Arango et al. (2022), increases in the minimum wage can affect prices via various conduits. One is labor costs, defined as increased labor costs as a factor of production cost that can lead to a higher sale price. Another is aggregate demand, where higher worker income places upward pressure on prices through increased consumption. A third factor is inflation expectations, whereby agents may expect higher price adjustments as a consequence of the behavior of the previous conduits.

We study various methodologies to assess the impact of minimum wage increases on prices, analyzing both aggregate and microdata. In the case of aggregate data, two methodologies find similar results. An accounting exercise using an input-output matrix concludes that, on average, a 100-basis point (bp) increase in the minimum wage results in a 14 bp increase in total consumer inflation. On the other hand, an instrumental variable approach suggests that an increase of the same magnitude in the minimum wage is associated with a 14 bp increase in core inflation (measured as CPI excluding food or regulated items), that through its weight on total CPI, translates into a 10 bp increase in headline inflation. However, it should be noted that these estimates only cover a period characterized by relatively low inflation and increases in the minimum wage that do not deviate far from the total previous year's inflation and labor productivity gains. Moreover, they do not consider possible non-linearities in the response of prices to different magnitudes of minimum wage increases or consecutive increases above observed inflation plus some measure of productivity. Consequently, we suggest a cautionary approach when directly applying the results of these estimates when different conditions are present.

As for the microdata exercise, the results suggest considerable heterogeneity in the transmission of the legal minimum wage to prices across different baskets of items, with food away from home exhibiting the strongest transference. In the aggregate, excluding some regulated items and services, the median price increase following a 100 bp increase in the minimum wage is 16 bp, a pass-through that primarily happens during the four months following the minimum wage increase.

Arango et al. (2022) also analyze some macroeconomic variables' adjustments to unanticipated minimum wage shocks using a dynamic stochastic general equilibrium model. This model assumes price rigidities, incomplete financial markets, a segmented labor market including formal and informal sectors, and a central bank acting to stabilize prices. In this model, an unanticipated 100 bp increase in the minimum wage generates a rearrangement of the labor market in favor of informal employment, as well as placing downward pressures on gross domestic product (GDP), investment, and consumption, the latter especially for unskilled workers. The GDP reduction is more noticeable in the short term than the long term and generates a negative output gap compared to the baseline scenario. Concerning prices, in general equilibrium, the cost shock produced by the minimum wage increase dominates the impact

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on the output gap, increasing headline inflation by 8 bp. Table B2.1 summarizes the findings of Arango et al. (2022) and those of two other benchmark studies.

Table B2.1
Literature results for Colombia: estimated effect on total CPI of a 100-basis point (bp) increase in the legal minimum wage

Study	Methodology	Period Analyzed	Total CPI effect (bp)
Lasso (2010)	Dynamic panel	1994-2009	6
Posso-Suárez (2010)	Input-output matrix	2006	14
	Microdata and regression	2008-2019	16
Arango et al. (2022)	Instrumental variable	2003-2019	10
	Input-output matrix	2010-2019	14
	DSGE[a/] model	2008-2019	8

a/ Dynamic Stochastic General Equilibrium model.
Source: Prepared by the authors with information from various studies. The reader should reference the documents listed for additional details.

By surveying businesses, other studies have explored some microeconomic characteristics of the wage-setting process and its possible relationship with prices in Colombia. For example, Iregui et al. (2012) document that businesses adjust wages less frequently than prices and generally do not reduce the former, suggesting downward wage rigidity. The authors also mention evidence of considerable heterogeneity in the transmission of wages to prices across different sectors, particularly in those where the share of labor cost is high.[1] The literature also indicates that transmission is measured by industry-level criteria, such as sectoral aggregate labor productivity (Iregui et al., 2012) or market concentration (Heise et al., 2021). Consistent with this finding, in a more recent study, Pulido et al. (2023) focus on examining the role of wages during the sharp post-pandemic inflation increase in Colombia, finding that the minimum wage is very binding compared to other economies, concluding that substantial increases in the real minimum wage, relative to productivity, have adverse macroeconomic effects.

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1 For example, wage increases are very important in setting prices for approximately 60% of the companies surveyed in the education and health sector and in other services.

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Box 3
Energy demand as an indicator of industrial activity in Colombia

Diana Cortázar
Nicolás Villanueva*

The activities and operations of an industrial company rely largely on energy sources such as electricity and gas, in addition to other elements, including raw materials and labor. Manufacturing operations are the primary consumer of multiple energy sources within the industry sector, whereas administrative and operational procedures are secondary consumers. Therefore, the analysis of the industry's energy consumption is a proxy indicator of the real behavior of its activity level, providing noteworthy signals of the sector's economic momentum. For Colombia, the availability and timeliness of electricity and gas information enable the generation of industrial indicators with a less lag compared to official statistics, such as DANE's industrial production index (IPI), thereby facilitating the monitoring of trends and the evolution of the sector in the country.

Energy demand indices (EDI) were constructed to provide timely information reflecting Colombia's industrial activity by combining electricity and gas consumption data into a single monitoring indicator.[1] The geographic and sectoral disaggregation of the data facilitates the construction of indicators with countrywide and department-level coverage. A general indicator of industrial energy demand is calculated for each coverage level, while others focus specifically on manufacturing energy demand (excluding petrochemicals and refineries).

This Box explains the relevance of electricity and gas consumption as inputs to monitor industrial activity, offers an overview of energy components in Colombia, and outlines the methodology and results of the EDI.

1. Electricity and gas are vital inputs to gauge industrial productivity

In many countries, energy consumption is closely related to economic growth, given the broad dependence of all economic activities on this input. This relationship facilitates the construction of timely indicators based on the demand for these inputs to monitor economic activities, particularly in energy-intensive segments, such as the industrial sector. In Colombia, electricity consumption by industry is coupled with the demand for gas. Natural gas usage in the sector has become relevant for both cogeneration and consumption of thermal energy from this resource. There is also greater natural gas consumption for final and transformation uses, with gasification processes observed in specific industries, such as ceramics, chemicals, and paper.

Industrial activity and its extensive demand for these energy inputs reflect positive or negative changes in the growth of this sector in a country. Increases in consumption could indicate industrial expansion, while a decrease could signal a reduction in activity or improvements in energy efficiency. Thus, producing an indicator that jointly assesses industrial demand for these energy inputs helps in monitoring the economic performance of the sector and the country.

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* The authors are members of the Cali division of *Banco de la República*. The views and opinions expressed herein do not necessarily reflect those of the Bank or its Board of Directors.

1 The energy demand indices presented in this Box are used internally by the technical staff of *Banco de la República* and assist in analyzing the economic activity situation.

2. Energy components in Colombia

The energy consumed[2] in Colombia is predominantly derived from coal and oil, which together comprised 52% of the country's total energy consumption in 2022,[3] while electricity and natural gas accounted for 32.7% of energy consumed in the same period. Electricity and gas are characterized as cross-cutting inputs in most productive activities, with goods production exhibiting the highest demand. Specifically, the industrial production of goods consumes several energy sources (coal, biomass, oil, and derivatives, among others), with natural gas and electricity accounting for 49.9% of this segment's total energy demand.[4]

According to XM data, the industrial sector is the largest electricity consumer of all economic sectors, followed by mining and coal exploitation. Alternatively, industrial demand for gas represented a little over 26% of this product's total consumption, surpassed by the thermal generation sector, whose gas consumption to produce electricity exceeded 30% of total gas consumption.[5]

Additionally, in recent years, thermal power generation has played a crucial role in Colombia during periods of low rainfall. Since mid-2023, with the start of the most recent El Niño phenomenon, hydraulic power generation decreased while generation from thermal sources, such as gas and coal, gradually increased, ultimately providing over 50% of total energy generated.

3. Energy demand indices (EDIs)

EDIs are constructed from available information on electric power and gas. The data source for electric power in Colombia is XM-Sinergox and, for natural gas, it is the Gestor del Mercado de Gas Natural (Table B3.1).

Table B3.1
IDEM information sources

Type of Energy	Source	Variable	Unit	Frequency
Electricity	XM – Sinergox	Electricity consumption	Gwh	Daily
Natural Gas	Gestor del Mercado de Gas Natural en Colombia	Natural gas consumption	MBTY	Daily

Source: own elaboration.

Energy indicators are released with a lag of ten business days after the end of the month, which is the time required to consolidate the updated daily figures. Consequently, this group of indicators is one of the timeliest in the industry.

The availability of disaggregated information by sector and geographic department allows the construction of different indexes for industrial activity. The Industrial Energy Demand Index (IDEI for its Spanish acronym) approximates industrial production at the national level, and the Departmental Industrial Energy Demand Index (industrial IDED) is an indicator of industrial production at the department level. Additionally, two indicators were devised to monitor manufacturing activity (industrial production without oil refining and petrochemicals): the Manufacturing Energy Demand Index (IDEM for its Spanish acronym) at the national level and the Manufacturing Departmental Energy Demand Index (manufacturing IDED) at the department level. Table B3.2 details the coverage and scope of these indicators.

2 Energy consumption measures the total demand for the various energy sources, such as coal, gas, electricity, oil and biofuels, and waste. All economic sectors are reflected herein, with transportation exhibiting the highest demand, followed by industry.

3 According to data published by the International Energy Agency (IEA)

4 According to 2021 figures from Colombia's Mining and Energy Planning Unit (UPME for its Spanish acronym)

5 Data for 2024 from Colombia's natural gas market manager *Gestor del Mercado de Gas Natural*.

Table B3.2
Indicators Summary

Acronym	Coverage	Description
IDEI	National	Industrial energy demand index
IDEM	National	Manufacturing energy demand index (excludes petrochemicals and refining)
IDED industrial	By Department	Departmental industrial energy demand index
IDED Manufacturing	By Department	Departmental manufacturing energy demand index (excludes petrochemicals and refining)

Source: own elaboration.

4. National energy demand indexes

The IDEI is constructed from the weighted sum of two indexes, using the average national consumption in 2018 as the benchmark year. The contribution of each energy resource to the value-added of the "electricity, gas, steam, and air conditioning supply" sector is considered to determine the weights based on quarterly GDP data at constant prices of the previous quarter.[6] Additionally, the relative weight of industrial demand for electricity and gas compared to total demand is assessed, multiplying this value by its respective contribution to value-added. Thus, the construction of the IDEI is:

$$IDEI_t = [(ID_{Elec_t} \times W_t) + (ID_{Gas_t} \times V_t)] \text{ where } W_t + V_t = 1 \quad (1)$$

Where,

$IDEI_t$ = industrial energy demand index in month *t*.
ID_{Elec_t} = electricity demand index in month *t*.
ID_{Gas_t} = gas demand index in month *t*.
W_t = weighting of the electricity demand index in month *t*.
V_t = weighting of the gas demand index in month *t*.

The indices are constructed using the benchmark average energy demand in 2018.

$$ID_{Elec_t} = \frac{Electricity\ Demand_t}{\frac{\sum Electricty\ Demand_{2018}}{12}};\ ID_{Gas_t} = \frac{Gas\ Demand_t}{\frac{\sum Gas\ Demand_{2018}}{12}}$$

And the weightings,

$$W_t = \frac{EPEI_t}{EPEI_t + EPGI_t}; V_t = \frac{EPGI_t}{EPEI_t + EPGI_t}$$

Where

$$EPEI_t = GDP_{Electricity_r} \times (PE_t); EPGI_t = GDP_{Gas_r} \times (PG_t)$$

and:

$$PE_t = \frac{Industrial\ Electric\ Demand_t}{Total\ Electricity\ Demand_t}; PG_t = \frac{Industrial\ Gas\ Demand_t}{Total\ Gas\ Demand_t}$$ [7]

6 Fixed weighting exercises were also performed, where the demand for each energy resource is multiplied by a 2018 average price. There are no significant differences among the two indicators.

7 For the calculation of the IDEM, petrochemicals and refineries are excluded from the industrial activities in gas demand. The rest of the methodology is identical for the indicator.

Where,

$GDP_{Electricity_r}$ = national GDP of "electricity supply" in quarter *r*.
GDP_{Gas_r} = national GDP of "gas, steam, and air-conditioning supply" in quarter *r*.
PE_t = industrial sector's share of total electricity demand in month *t*.
PG_t = industrial sector's share in the total gas demand in month *t*.

Determining a base year makes it easier to follow and interpret any index changes. Additionally, available information makes it possible to calculate the indicators as of January 2015. The use of fluctuating weights over time with respect to value-added captures structural changes in the composition of the energy matrix, either through supply or demand.

5. Department-level energy demand indexes

Like the IDEI, the IDED is constructed from the weighted sum of the electricity and gas indexes computed using the demand of the industrial sector. However, the department-level index includes an additional step in the methodology, as it must compute the share of each department within the national total to examine regional differences in energy consumption.

At the department level, electricity demand disaggregated by economic sector is not available. Therefore, the electricity demand of the unregulated market,[8] which includes all major demanders of this energy input, is used as a proxy for industrial electricity demand by department. Thus, the calculation is as follows:

$$IDED_{i,t} = \left[\left(ID_{Elec_{i,t}} \times W_{i,t}\right) + \left(ID_{Gas_{i,t}} \times V_{i,t}\right)\right] \text{ where } W_{i,t} + V_{i,t} = 1$$

$$ID_{Elec_{i,t}} = \frac{\frac{Electricity\ Demand_{i,t}}{\sum Electricity\ Demand_{i\ 2018}}}{12}$$

$$ID_{Gas_{i,t}} = \frac{\frac{Gas\ Demand_{i,t}}{\sum Gas\ Demand_{i\ 2018}}}{12}$$

$$W_{i,t} = \frac{EPED_{i,t}}{EPED_{i,t}+EPGD_{i,t}}; V_{i,t} = \frac{EPGD_{i,t}}{EPED_{i,t}+EPGD_{i,t}}$$

Where,

$$EPED_{i,t} = EPEI_t \times (PED_{i,t}); EPGD_{i,t} = EPGI_t \times \left(PGD_{i,t}\right)$$

and:

$$PED_{i,t} = \frac{Unregulated\ Electricity\ Demand_{i,t}}{\sum_{i=1}^{n} Unregulated\ Electricity\ Demand_{i,t}};\ PGD_{i,t} = \frac{Industrial\ Gas\ Demand_{i,t}}{\sum_{i=1}^{n} Industrial\ Gas\ Demand_{i,t}}$$

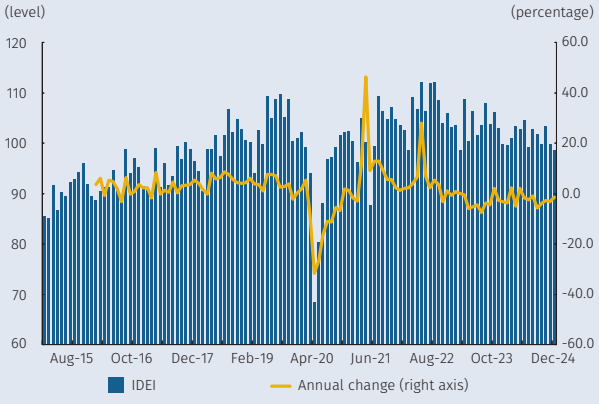
6. Comparative results

The IDEI and IDEM results capture significant events that have affected industrial and manufacturing activity in recent years (Graph B3.1). The yearly behavior observed in both panels shows the negative shock of the confinement resulting from the COVID-19 pandemic in 2020. Likewise, it identifies the adverse effects of the blockades during the national strike in May 2021, along with the strong industrial activity experienced in 2022 and its subsequent correction.

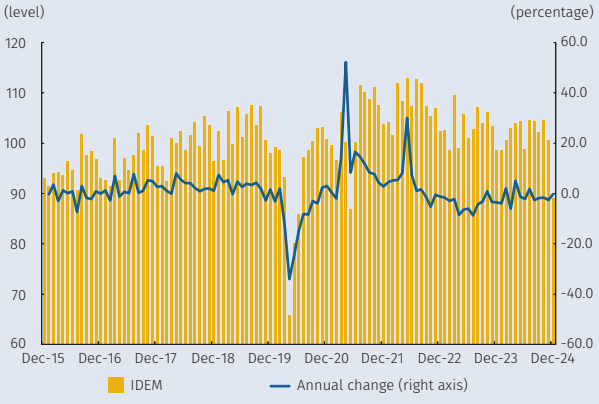
8 The non-regulated (NR) electricity market includes customers whose demand exceeds 55,000 kilowatt hours (kWh) per month or 100 kilowatts (kW) of power, and its rates are negotiated between the marketer and the customer, so prices fluctuate according to supply and demand. The largest customer of NR energy is the industrial sector, followed by mining and quarrying, while the rest of the economic sectors demand less than 2% of NR energy in the country.

Graph B3.1
National indexes of energy demand

A. IDEI



B. IDEM



Source: *Banco de la República.*

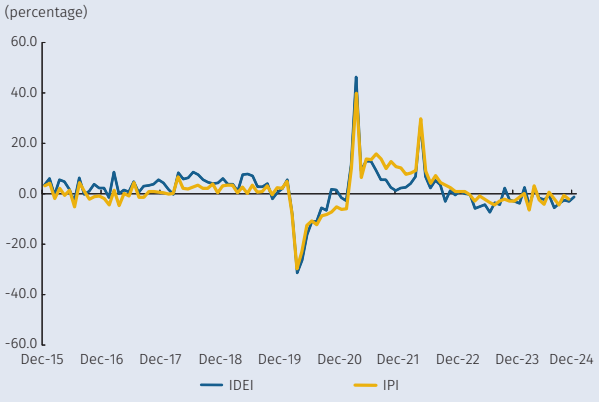
A comparison of the evolution of the IDEI with the annual change of the industrial production index (IPI) published by DANE illustrates a similarity between these two indicators, with the advantage that the former has a lag of ten working days, and the latter of about 45 calendar days (Graph B3.2, panel A). Similarly, the correlation between the IDEM and manufacturing production is observed (Graph B3.2, panel B).

As noted, the industrial sector represents one of the largest energy demanders, and the indicators provide a way to consistently monitor this activity's behavior during the analyzed period. However, it is essential to note that the differences observed between the energy demand indices and the industrial production indicators can be attributed to the characteristics of the high electricity and gas consumption sectors.

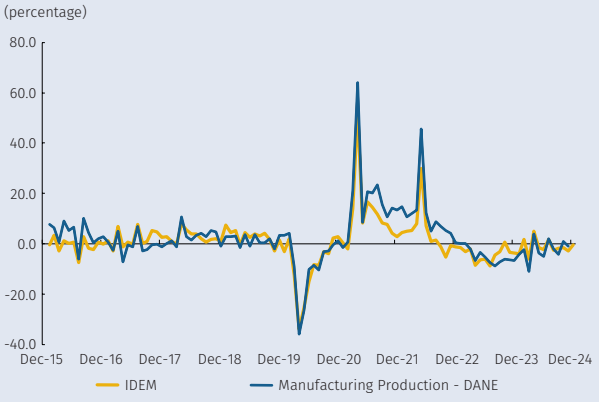
On the one hand, manufacturing sectors of plastics, iron, steel, and other electricity-intensive materials tend to significantly influence electricity consumption of this type of energy. On the other hand, activities such as mining, cement production, and glass manufacturing, which demand large volumes of gas, have a considerable weight in the consumption of this energy input. These differences in the contribution of sectors with high levels of energy consumption and those activities with more significant contributions in terms of value added can generate certain discrepancies between the energy indexes and the traditional indicators of industrial production.

Graph B3.2
Comparison of energy demand indexes and industrial indicators

A. IDEI and IPI



B. IDEM and manufacturing production (change)



Source: DANE and *Banco de la República*; calculations of the *Banco de la República.*

The industrial energy demand index (IDEI) and the manufacturing energy demand index (IDEM) show a high correlation with industrial activity indicators. Table B3.3 shows the contemporaneous correlations between the IDEI and IDEM with other leading manufacturing sector indicators. It also illustrates how those indicators are more informative than those which traditionally consider only the industrial sector's demand for electricity, especially in the recent period (post-pandemic), to the extent that they reflect the changes in the industry's production processes due to the increase in self-generation of energy from gas demand.

Table B3.3
Current correlations between energy indexes and industrial indicators

Indicators	Total	Jan-16 to Feb-20	Mar 20 to May-22	Jun-22 to Dec 24
IDEI				
Real manufacturing production	0.90***	0.59***	0.98***	0.77***
Industrial production index	0.90***	0.69***	0.95***	0.81***
Regional economic pulse (PER): Industry	0.81***	0.54**	0.86***	0.79***
Economic monitoring indicator (ISE): Secondary	0.90***	0.44***	0.96***	0.77***
IDEM				
Real manufacturing production	0.93***	0.46***	0.98***	0.68***
Industrial production index	0.91***	0.68***	0.94***	0.66***
Regional economic pulse (PER): Industry	0.78***	0.43**	0.85***	0.83***
Economic monitoring indicator (ISE): Secondary	0.90***	0.23	0.97***	0.68***
Electricity Index				
Real manufacturing production	0.94***	0.67***	0.97***	0.63***
Industrial production index	0.90***	0.84***	0.93***	0.61***
Regional economic pulse (PER): Industry	0.77***	0.69***	0.84***	0.77***
Economic monitoring indicator (ISE): Secondary	0.89***	0.50***	0.96***	0.64***

Statistical significance: * p < 0.10; ** p < 0.05; *** p < 0.01.
Note: The color of the cells corresponds to the magnitude and direction of the correlation, with green or red values indicating a positive high or negative low correlation, respectively.
Sources: DANE and *Banco de la República*; calculations by *Banco de la República*.

At the department level, the contemporaneous correlations of the changes in the industrial and manufacturing IDED with the DANE monthly manufacturing survey with territorial approach (EMMET for its Spanish acronym)[9] show a strong relationship (Table B3.4). This relationship statistic indicates that the IDED would be a valuable and timely tool to monitor industrial performance at the regional level.

The particularities of the productive structures of the different departments could explain the lower department-level correlations. The productive structure determines the composition of energy consumption in each region and, consequently, the demand for energy sources other than electricity and gas to carry out their industrial activities. For example, certain industries base their production on solid fuels, biomass, or alternative sources that are not directly reflected in the constructed indicators. For this reason, it is essential to contextualize the results considering the characteristics of local economies and their energy matrix.

9 The industrial and manufacturing IDED, both cover twenty departments and the Capital District, while the DANE statistics include twelve departments and the Capital District. Consequently, correlations can only be computed for these twelve departments and the Capital District.

Table B3.4
Contemporaneous correlations between department-level energy indices and industrial production

IDED	Industrial IDED	Manufacturing IDED
Antioquia	0.92***	0.91***
Atlántico	0.74***	0.73***
Bogotá	0.95***	0.95***
Bolívar	0.73***	0.78***
Boyacá	0.52***	0.51***
Caldas	0.85***	0.85***
Cauca	0.94***	0.94***
Córdoba	0.93***	0.93***
Cundinamarca	0.83***	0.82***
Risaralda	0.81***	0.80***
Santander	0.36**	0.72***
Tolima	0.60***	0.42***
Valle del Cauca	0.92***	0.92***

Note: correlations with EMMET for each department are calculated as of January 2019 because industrial index information is only available from 2018. The color of the cells corresponds to the magnitude and direction of the correlation, with green or red values indicating a positive high or negative low correlation, respectively.
Statistical significance: * p < 0.10; ** p < 0.05; *** p < 0.01.
Sources: DANE and *Banco de la República*; calculations by *Banco de la República*.

7. Conclusions

Electricity and gas play a pivotal role in the production of manufactured goods. An increase in the consumption of these energy resources usually occurs in tandem with a proportional increase in manufacturing output. This connection between energy demand and production suggests that monitoring electricity and gas consumption provides relevant information regarding manufacturing industry activity.

In this context, energy demand indices (EDI) are valuable and timely indicators for short-term monitoring of industrial activity. By aggregating two influential energy inputs, EDIs reliably reflect the underlying behavior dynamics of the industrial sector. Furthermore, their slight publication lag (ten working days) allows for early analysis that is highly correlated to official sector data.

Future research should consider aggregating other energy resources to expand the coverage of inputs used by the industrial sector; however, the low availability of information and disaggregation poses a serious limitation. Finally, the impact of changes in energy resource prices on demand for these resources and their implication in monitoring industrial manufacturing sector activity is worth evaluating.

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

	Unit	Jan-25	Dec 25	Jan-26	Dec 26	Jan-27
Headline CPI	Monthly variation (average)	0.82	n. a.	n. a.	n. a.	n. a.
CPI excluding food	Monthly variation (average)	0.76	n. a.	n. a.	n. a.	n. a.
CPI excluding food and regulated	Monthly variation (average)	0.63	n. a.	n. a.	n. a.	n. a.
CPI food	Monthly variation (average)	1.05	n. a.	n. a.	n. a.	n. a.
CPI regulated	Monthly variation (average)	1.41	n. a.	n. a.	n. a.	n. a.
Headline CPI	Annual variation (average), end of period	5.10[c/]	4.21	4.06	3.65	3.51
CPI excluding food	Annual variation (average), end of period	5.37[c/]	4.08	3.96	3.53	3.35
CPI excluding food and regulated	Annual variation (average), end of period	5.02[c/]	3.84	3.73	3.23	3.12
CPI food	Annual variation (average), end of period	3.91[c/]	4.10	3.97	3.70	3.60
CPI regulated	Annual variation (average), end of period	6.79[c/]	5.35	5.00	4.33	4.12
Nominal exchange rate	COP per USD, end of period	4,320	4,359	4,305	4,265	4,205
Monetary policy rate	Percentage, end of period	9.25	7.00	6.75	6.00	6.00

	Unit	IV 2024	2024	I-2025	II-2025	III-2025	IV 2025	2025	I-2026	II-2026	III-2026	IV 2026
GDP	Annual change, original series	2.3	1.8	2.4	2.4	2.6	2.8	2.6	2.9	3.0	3.0	n. a.
Unemployment	Thirteen cities, quarterly average	9.3	n. a.	10.9	10.3	10.0	9.8	n. a.	10.6	10.0	9.7	n. a.
IBR (90 days)	Effective annual rate, end of period	n. r.	n. r.	8.5	7.8	7.3	6.8	n. a.	6.4	6.1	6.0	6.0
Fiscal Deficit (GNC) [d/]	Share of GDP	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.	5.2	n. a.	n. a.	n. a.	n. a.
Direct Account Deficit[d/]	Share of GDP	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.	2.7	n. a.	n. a.	n. a.	n. a.

n.a.: Not available.
n.r.: Not relevant, given that the data has already been observed.
a/ The survey excluded the question related to the DTF starting with the April 2023 *Banco de la República's* Monthly Survey of Economic Analyst Expectations.
Expectations (EME for its Spanish acronym) conducted by *Banco de la República.*
b/ Is the response median to *Banco de la República's Monthly Survey of Economic Analyst Expectations*, except for the CPI and CPI excluding food, which are the response average.
c/ Data calculated based on the results of *Banco de la República's* Monthly Survey of Economic Analyst Expectations (EME).
d/ Positive values represent deficit and negative values represent surplus.
Sources: *Banco de la República*, Monthly Survey of Economic Analyst Expectations, conducted in January 2025.

Appendix 2
Main Macroeconomic Forecasting Variables

		Years										
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Exogenous variables												
External [a/]												
GDP of trading partners [b/]	Percentage, annual var., seasonally adjusted	1.6	3.2	2.5	1.5	-6.6	8.3	3.7	2.4	**2.1**	**2.1**	**2.2**
Oil price (Brent benchmark)	Dollars per barrel, average of the period	45	55	72	64	43	71	99	82	80	**73**	**68**
Federal funds effective rate (Fed)	Percentage, average for the period	0.39	1.00	1.83	2.16	0.37	0.08	1.68	5.03	5.15	**4.17**	**3.67**
5-year Credit Default Swap for Colombia	Basis points, average for the period	212	129	114	99	142	142	259	246	187	**221**	**249**
Internal												
Neutral real interest rate for Colombia	Percentage, average for the period	1.6	1.3	1.3	1.2	1.3	1.5	1.9	2.2	**2.4**	**2.7**	**3.0**
Potential GDP for Colombia (trend)	Percentage, annual change	2.7	2.4	2.3	2.3	-0.1	4.0	3.7	2.9	**2.8**	**2.7**	**2.8**
Endogenous variables												
Prices												
Total CPI [c/]	Percentage, annual change, end of period	5.75	4.09	3.18	3.80	1.61	5.62	13.12	9.28	5.20	**4.05**	**3.05**
CPI excluding food [d/]	Percentage, annual change, end of period	5.51	5.03	3.51	3.45	1.03	3.44	9.99	10.33	5.65	.	.
CPI for goods (excluding food and regulated items)	Percentage, annual change, end of period	5.91	3.24	1.40	2.18	0.63	3.31	15.04	7.11	0.62	.	.
CPI for services (excluding food and regulated items)	Percentage, annual change, end of period	5.26	5.38	3.13	3.45	1.29	2.18	7.41	8.96	6.97	.	.
CPI for regulated items	Percentage, annual change, end of period	5.63	6.26	6.65	4.81	0.73	7.10	11.77	17.24	7.31	**4.93**	**3.21**
CPI for food [e/]	Percentage, annual change, end of period	6.65	0.48	1.87	5.80	4.80	17.23	27.81	5.00	3.31	**3.26**	**2.44**
CPI for perishable food	Percentage, annual change, end of period	-6.63	5.84	8.88	8.66	2.49	24.42	36.44	-0.47	5.07	.	.
CPI for processed food	Percentage, annual change, end of period	10.74	-0.91	-0.08	5.04	5.43	15.32	25.33	6.71	2.80	.	.
Core inflation indicators [f/]												
CPI excluding food	Percentage, annual change, end of period	5.51	5.03	3.51	3.45	1.03	3.44	9.99	10.33	5.65	.	.
Core CPI 15	Percentage, annual change, end of period	5.98	4.21	3.22	3.78	1.88	4.42	11.55	9.46	5.45	.	.
CPI excluding food and regulated items	Percentage, annual change, end of period	5.48	4.67	2.57	3.10	1.11	2.49	9.51	8.42	5.15	**3.90**	**3.14**
Average of all core inflation indicators	Percentage, annual change, end of period	5.66	4.64	3.10	3.44	1.34	3.45	10.35	9.41	5.42	.	.
Representative market exchange rate	Pesos per dollar, average for the period	3,053	2,951	2,957	3,282	3,691	3,747	4,257	4,330	4,075	.	.
Real exchange rate Inflationary gap	Percentage, average for the period	2.5	-1.7	-0.7	3.6	6.8	2.1	6.7	1.4	-4.9	**-1.5**	**0.0**
Economic activity												
Gross domestic product (sats)*	Percentage, annual change, sats	2.1	1.4	2.6	3.2	-7.2	10.8	7.3	0.6	**1.8**	**2.6**	**3.4**
Final consumption expense	Percentage, annual change, sats	1.6	2.3	4.0	4.3	-4.2	13.8	8.9	1.0	**1.0**	.	.
Household final consumption expenditure	Percentage, annual change, sats	1.6	2.1	3.2	4.1	-5.0	14.7	10.7	0.8	**1.2**	.	.
General government final consumption expenditure	Percentage, annual change, sats	1.8	3.6	7.4	5.3	-0.8	9.8	0.8	1.6	**0.1**	.	.
Gross capital formation	Percentage, annual change, sats	-0.2	-3.2	1.5	3.0	-20.7	11.6	16.0	-25.9	**7.0**	.	.
Gross fixed capital formation	Percentage, annual change, sats	-2.9	1.9	1.0	2.2	-23.6	16.7	11.5	-9.5	**1.8**	.	.
Housing	Percentage, annual change, sats	-0.2	-1.9	-0.4	-8.9	-32.7	39.8	2.0	-1.2	**-5.1**	.	.
Other buildings and structures	Percentage, annual change, sats	0.0	4.6	-3.5	1.1	-30.8	0.9	-4.2	-4.8	**7.5**	.	.
Machinery and equipment	Percentage, annual change, sats	-7.9	1.4	8.6	12.3	-13.3	23.3	30.3	-17.6	**1.7**	.	.
Cultivated biological resources	Percentage, annual change, sats	13.1	0.3	-3.1	7.9	-1.8	-0.9	-12.5	4.6	**7.8**	.	.
Intellectual property products	Percentage, annual change, sats	-12.0	1.2	1.5	-0.7	-8.3	3.4	8.9	0.7	**-1.5**	.	.
Domestic demand	Percentage, annual change, sats	1.2	1.1	3.5	4.0	-7.5	13.4	10.2	-4.0	**1.8**	.	.
Exports	Percentage, annual change, sats	-0.2	2.6	0.6	3.1	-22.5	14.6	12.3	3.4	**4.0**	.	.
Imports	Percentage, annual change, sats	-3.5	1.0	5.8	7.3	-20.1	26.7	23.6	-15.0	**3.2**	.	.
Product gap [g/]	Percentage	0.3	-0.8	-0.5	0.3	-7.0	-0.8	2.8	0.5	**-0.5**	**-0.6**	**0.0**
Short-term indicators												
Real production of manufacturing industry	Percentage, annual change, seasonally adjusted	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	2.0	-0.1	5.4	8.1	-1.5	12.2	9.2	-4.1	.	.	.
Coffee production	Percentage, annual change, cum. for period	0.4	-0.3	-4.5	8.8	-5.8	-9.5	-11.9	2.4	23.4	.	.
Oil production	Percentage, annual change, period average	-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	9.5	9.7	10.0	10.9	16.7	13.8	11.2	10.2	**10.1**	**9.8**	**.**
Occupancy Rate	Percentage, annual change, period average	60.5	60.0	59.1	57.7	50.4	53.1	56.5	57.6	.	.	.
Overall participation rate	Percentage, annual change, period average	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	10.3	11.0	11.1	11.5	19.1	15.2	11.4	10.4	**10.1**	**10.0**	**.**
Occupancy Rate	Percentage, annual change, period average	61.7	60.5	59.6	58.8	50.8	53.8	58.1	59.5	.	.	.
Overall participation rate	Percentage, annual change, period average	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	-12,587	-9,924	-14,041	-14,809	-9,267	-17,949	-21,224	-8,623	**-7,245**	**-10,404**	**.**
Percentage of GDP	Percentage, nominal terms	-4.4	-3.2	-4.2	-4.6	-3.4	-5.6	-6.1	-2.4	**-1.8**	**-2.5**	**.**
A. Goods and services	Millions of dollars	-13,451	-8,762	-10,556	-14,148	-13,105	-20,001	-16,439	-8,113	**-10,023**	**-14,704**	**.**
B. Primary income (factor income)	Millions of dollars	-5,312	-8,046	-11,442	-9,716	-4,950	-8,723	-17,086	-13,432	**-12,710**	**-12,325**	**.**
C. Secondary income (current transfers)	Millions of dollars	6,177	6,883	7,957	9,055	8,788	10,775	12,301	12,922	**15,488**	**16,625**	**.**
Financial account (A + B + C + D)	Millions of dollars	-12,339	-9,625	-12,954	-13,298	-8,113	-16,693	-20,466	-7,848	.	.	.
Percentage of GDP	Percentage, nominal terms	-4.4	-3.1	-3.9	-4.1	-3.0	-5.3	-5.9	-2.1	.	.	.
A. Foreign investment (ii - i)	Millions of dollars	-9,341	-10,011	-6,172	-10,836	-5,725	-6,381	-13,799	-15,525	.	.	.
i. Foreign Investment in Colombia (FDI)	Millions of dollars	13,858	13,701	11,299	13,989	7,459	9,561	17,183	16,794	.	.	.
ii. Colombian abroad	Millions of dollars	4,517	3,690	5,126	3,153	1,733	3,181	3,384	1,269	.	.	.
B. Portfolio investment	Millions of dollars	-4,945	-1,800	862	24	-1,768	-4,595	427	8,663	.	.	.
C. Other investment (loans, other credits, and derivatives)	Millions of dollars	1,781	1,641	-8,831	-5,820	-4,949	-6,371	-7,665	-2,704	.	.	.
D. Reserve assets	Millions of dollars	165	545	1,187	3,333	4,328	654	571	1,718	.	.	.
Errors and omissions (E&O)	Millions of dollars	247	299	1,087	1,510	1,153	1,256	758	775	.	.	.
Interest rates												
Policy interest rate [k/]	Percentage, period average	7.10	6.10	4.35	4.25	2.87	1.91	7.19	13.04	11.40	.	.
Policy rate expected by analysts [l/]	Percentage, period average										**8.27**	**6.53**
IBR overnight	Percentage, period average	7.1	6.1	4.3	4.3	2.9	1.9	7.2	13.0	11.4	.	.
Commercial interest rate [m/]	Percentage, period average	12.8	11.1	9.3	8.8	7.4	6.2	13.3	18.7	11.7	.	.
Consumer interest rate [n/]	Percentage, period average	19.2	19.4	17.9	16.5	15.0	14.3	21.1	27.9	18.5	.	.
Mortgage interest rate [o/]	Percentage, period average	12.4	11.6	10.6	10.4	10.1	9.1	12.9	17.7	11.8	.	.

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 2022 and 2023 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 January 2025.
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 No VIS housing (housing that is not social interest housing).

Appendix 2 (continuation)
Main Macroeconomic Forecasting Variables

		2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Exogenous variables									
External [a/]									
GDP of trading partners [b/]	Percentage, annual var., seasonally adjusted	1.2	1.6	1.7	1.5	-0.7	-15.9	-6.7	-3.0
Oil price (Brent benchmark)	Dollars per barrel, average of the period	64	68	62	62	51	33	43	45
Federal funds effective rate (Fed)	Percentage, average for the period	2.40	2.40	2.20	1.65	1.23	0.06	0.09	0.09
5-year Credit Default Swap for Colombia	Basis points, average for the period	121	104	90	83	125	206	132	104
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	3.21	3.43	3.82	3.80	3.86	2.19	1.97	1.61
CPI excluding food [d/]	Percentage, annual change, end of period	3.27	3.22	3.37	3.45	3.26	1.40	1.57	1.03
CPI for goods (excluding food and regulated items)	Percentage, annual change, end of period	1.09	1.60	1.83	2.18	2.41	0.73	1.15	0.63
CPI for services (excluding food and regulated items)	Percentage, annual change, end of period	3.01	3.10	3.37	3.45	3.22	2.00	1.86	1.29
CPI for regulated items	Percentage, annual change, end of period	6.33	5.24	5.03	4.81	4.27	0.44	1.19	0.73
CPI for food [e/]	Percentage, annual change, end of period	3.24	4.96	6.49	5.80	7.19	6.55	4.13	4.80
CPI for perishable food	Percentage, annual change, end of period	9.98	15.46	17.50	8.66	9.79	2.52	-3.42	2.49
CPI for processed food	Percentage, annual change, end of period	1.43	2.18	3.57	5.04	6.46	7.75	6.40	5.43
Core inflation indicators [f/]									
CPI excluding food	Percentage, annual change, end of period	3.27	3.22	3.37	3.45	3.26	1.40	1.57	1.03
Core CPI 15	Percentage, annual change, end of period	3.24	3.34	3.66	3.78	3.64	2.17	2.33	1.88
CPI excluding food and regulated items	Percentage, annual change, end of period	2.41	2.65	2.92	3.10	2.99	1.65	1.67	1.11
Average of all core inflation indicators	Percentage, annual change, end of period	2.97	3.07	3.32	3.44	3.30	1.74	1.86	1.34
Representative market exchange rate	Pesos per dollar, average for the period	3,135	3,240	3,338	3,412	3,540	3,850	3,731	3,662
Real exchange rate Inflationary gap	Percentage, average for the period	2.3	3.2	3.9	4.9	5.6	11.7	6.5	3.3
Economic activity									
Gross domestic product (sats)*	Percentage, annual change, sats	3.2	3.3	3.2	3.1	0.4	-16.8	-9.0	-3.3
Final consumption expense	Percentage, annual change, sats	3.6	3.9	4.4	5.2	3.9	-14.4	-7.4	1.1
Household final consumption expenditure	Percentage, annual change, sats	3.0	3.5	4.3	5.4	4.6	-17.0	-8.5	0.9
General government final consumption expenditure	Percentage, annual change, sats	5.7	5.9	5.4	4.2	0.7	-2.9	-2.2	1.4
Gross capital formation	Percentage, annual change, sats	8.0	2.6	5.3	-3.6	-11.2	-31.4	-17.8	-22.6
Gross fixed capital formation	Percentage, annual change, sats	7.3	4.3	1.9	-4.3	-12.4	-41.4	-24.9	-14.9
Housing	Percentage, annual change, sats	-6.6	-8.0	-7.9	-13.2	-25.8	-48.2	-30.0	-25.4
Other buildings and structures	Percentage, annual change, sats	12.7	-1.2	1.1	-6.6	-10.3	-50.1	-37.4	-24.4
Machinery and equipment	Percentage, annual change, sats	15.0	21.4	10.2	2.9	-5.4	-37.3	-9.3	1.5
Cultivated biological resources	Percentage, annual change, sats	5.6	9.8	14.9	1.7	2.6	1.6	-7.9	-3.0
Intellectual property products	Percentage, annual change, sats	-1.3	-1.5	-1.4	1.5	1.4	-14.1	-11.0	-9.4
Domestic demand	Percentage, annual change, sats	4.5	3.8	4.7	3.0	0.5	-18.0	-9.7	-2.9
Exports	Percentage, annual change, sats	6.9	6.8	2.0	-3.1	-6.7	-30.8	-28.2	-24.3
Imports	Percentage, annual change, sats	11.5	9.0	10.9	-1.2	-5.2	-33.6	-25.6	-15.6
Product gap [g/]	Percentage	-0.3	-0.1	0.1	0.3	-0.2	-3.7	-5.9	-7.0
Short-term indicators									
Real production of manufacturing industry	Percentage, annual change, seasonally adjusted	1.0	2.5	0.8	0.9	-1.5	-23.5	-7.2	0.0
Retail trade sales, excluding fuels or vehicles	Percentage, annual change, seasonally adjusted	6.2	7.5	9.6	9.0	6.6	-14.6	-3.4	5.5
Coffee production	Percentage, annual change, cum. for period	-1.9	6.6	4.9	24.1	-13.8	-1.9	-3.6	-4.6
Oil production	Percentage, annual change, period average	5.4	3.2	1.4	-0.2	-2.1	-15.7	-15.4	-14.1
Labor market [h/]									
Total national									
Unemployment rate	Percentage, annual change, period average	10.8	10.5	11.3	11.0	11.8	20.9	18.4	15.5
Occupancy Rate	Percentage, annual change, period average	58.4	57.8	57.2	57.5	55.7	44.5	48.9	52.7
Overall participation rate	Percentage, annual change, period average	65.5	64.5	64.4	64.6	63.1	56.3	60.0	62.3
Thirteen cities and metropolitan areas									
Unemployment rate	Percentage, annual change, period average	11.8	11.4	11.3	11.6	12.0	25.2	21.8	17.3
Occupancy Rate	Percentage, annual change, period average	58.8	58.8	58.7	58.7	57.0	44.1	49.0	53.3
Overall participation rate	Percentage, annual change, period average	66.7	66.4	66.2	66.4	64.7	58.9	62.6	64.4
Balance of payments [i/ j/]									
Current account (A + B + C)	Millions of dollars	-3,820	-3,219	-4,303	-3,467	-2,295	-1,962	-2,013	-2,997
Percentage of GDP	Percentage, nominal terms	-4.8	-4.1	-5.3	-4.2	-3.1	-3.6	-3.0	-4.0
A. Goods and services	Millions of dollars	-3,138	-2,998	-4,406	-3,607	-3,098	-2,651	-3,263	-4,092
B. Primary income (factor income)	Millions of dollars	-2,615	-2,502	-2,301	-2,298	-1,369	-1,029	-1,172	-1,380
C. Secondary income (current transfers)	Millions of dollars	1,932	2,281	2,404	2,438	2,173	1,718	2,422	2,475
Financial account (A + B + C + D)	Millions of dollars	-3,520	-3,333	-3,740	-2,706	-1,735	-1,938	-1,857	-2,584
Percentage of GDP	Percentage, nominal terms	-4.4	-4.2	-4.6	-3.3	-2.3	-3.5	-2.8	-3.4
A. Foreign investment (ii - i)	Millions of dollars	-2,652	-3,626	-1,678	-2,880	-1,924	-1,725	-258	-1,818
i. Foreign Investment in Colombia (FDI)	Millions of dollars	3,394	4,090	3,163	3,342	3,175	1,371	844	2,069
ii. Colombian abroad	Millions of dollars	741	465	1,485	462	1,251	-353	586	251
B. Portfolio investment	Millions of dollars	-1,382	-282	137	1,551	-168	-3,429	323	1,506
C. Other investment (loans, other credits, and derivatives)	Millions of dollars	-1,836	48	-2,453	-1,579	528	627	-2,127	-3,976
D. Reserve assets	Millions of dollars	2,351	526	254	202	-171	2,590	205	1,705
Errors and omissions (E&O)	Millions of dollars	301	-114	563	761	560	25	155	413
Interest rates									
Policy interest rate [k/]	Percentage, period average	4.25	4.25	4.25	4.25	4.23	3.26	2.24	1.75
Policy rate expected by analysts [l/]	Percentage, period average								
IBR overnight	Percentage, period average	4.3	4.3	4.3	4.3	4.2	3.2	2.2	1.7
Commercial interest rate [m/]	Percentage, period average	9.1	9.0	8.9	8.5	8.4	8.3	7.0	6.2
Consumer interest rate [n/]	Percentage, period average	18.0	17.2	16.0	15.5	15.8	15.5	14.8	14.2
Mortgage interest rate [o/]	Percentage, period average	10.4	10.5	10.4	10.4	10.4	10.4	10.2	9.6

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.
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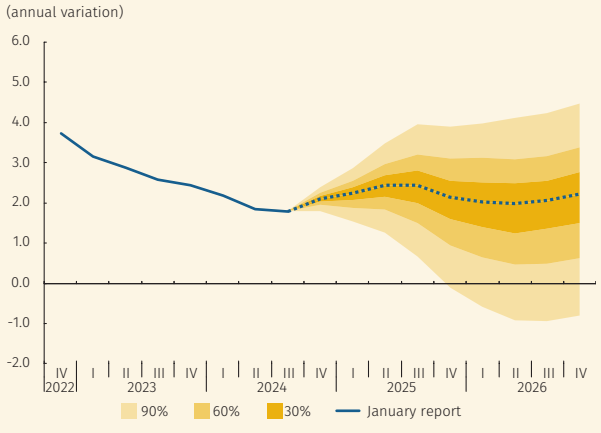
2021				2022				2023				2024				2025				2026			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
0.1	19.3	8.9	6.4	5.3	4.1	3.4	2.3	2.9	2.9	2.3	1.7	1.8	1.6	2.0	**2.9**	**2.4**	**2.4**	**2.0**	**1.8**	**2.0**	**2.2**	**2.3**	**2.4**
61	69	73	80	98	112	98	89	82	78	86	83	82	85	79	74	**75**	**74**	**73**	**71**	**70**	**68**	**67**	**66**
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	5.33	5.27	4.66	**4.38**	**4.23**	**4.13**	**3.95**	**3.88**	**3.71**	**3.63**	**3.45**
110	131	143	185	209	238	275	314	283	275	219	207	172	187	189	199	**209**	**218**	**225**	**232**	**239**	**245**	**252**	**258**
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	7.18	5.81	5.20	**4.88**	**4.28**	**4.32**	**4.05**	**3.81**	**3.41**	**3.17**	**3.05**
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	7.64	6.55	5.65	.	.	.	.	.	.	.	.
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	1.43	0.60	0.62	.	.	.	.	.	.	.	.
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	7.89	7.48	6.97	.	.	.	.	.	.	.	.
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	13.29	10.15	7.31	**5.08**	**4.50**	**4.87**	**4.93**	**4.82**	**4.39**	**3.72**	**3.21**
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	5.27	2.73	3.31	**4.01**	**2.29**	**2.71**	**3.26**	**3.43**	**3.52**	**2.92**	**2.44**
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	12.46	2.92	5.07	.	.	.	.	.	.	.	.
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	3.16	2.68	2.80	.	.	.	.	.	.	.	.
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	7.64	6.55	5.65	.	.	.	.	.	.	.	.
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	7.10	6.18	5.45	.	.	.	.	.	.	.	.
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	6.01	5.49	5.15	**5.09**	**4.82**	**4.39**	**3.90**	**3.48**	**3.14**	**3.09**	**3.14**
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	6.92	6.07	5.42	.	.	.	.	.	.	.	.
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	3,919	4,097	4.348	.	.	.	.	.	.	.	.
-0.1	2.1	3.3	3.3	2.6	1.3	7.8	15.3	12.1	3.4	-5.2	-4.6	-7.6	-8.1	-4.3	0.6	**-1.5**	**-1.8**	**-1.5**	**-1.1**	**-0.5**	**0.1**	**0.1**	**0.2**
1.4	18.7	13.4	11.1	8.0	12.1	7.3	2.1	2.4	0.2	-0.7	0.5	0.9	1.9	2.0	**2.3**	**1.8**	**2.1**	**2.8**	**3.5**	**3.6**	**3.6**	**3.4**	**3.1**
3.8	22.0	18.4	12.7	11.3	14.7	8.2	2.2	2.2	0.5	0.4	0.7	0.0	1.7	0.8	**1.4**	.	.	.	.	.	.	.	.
2.7	25.5	19.6	13.8	12.2	16.3	10.5	4.5	3.0	0.9	-0.1	-0.4	-0.2	1.4	1.9	**1.9**	.	.	.	.	.	.	.	.
8.6	8.4	13.7	8.6	6.0	7.1	-3.1	-6.0	-2.4	-0.7	3.2	6.7	3.0	3.9	-5.1	**-1.2**	.	.	.	.	.	.	.	.
-6.8	33.2	7.7	18.1	17.7	9.9	16.5	20.0	-10.6	-22.3	-33.2	-36.0	-13.8	2.0	20.3	**25.5**	.	.	.	.	.	.	.	.
3.5	42.0	15.3	13.6	8.4	13.4	14.1	10.3	-4.1	-7.7	-11.8	-14.3	-4.4	2.3	4.1	**5.7**	.	.	.	.	.	.	.	.
23.4	65.2	31.3	46.3	0.2	4.0	7.0	-2.8	8.0	-1.1	-5.1	-5.9	-5.0	-0.6	-8.5	**-6.2**	.	.	.	.	.	.	.	.
-14.9	31.8	0.3	-0.6	-8.8	-1.2	4.9	-10.5	-6.9	-5.7	-9.3	3.1	5.3	10.4	10.0	**4.7**	.	.	.	.	.	.	.	.
8.5	56.2	23.6	14.7	32.2	32.3	24.8	32.1	-8.5	-15.8	-17.8	-27.3	-5.6	-2.8	6.2	**10.6**	.	.	.	.	.	.	.	.
5.9	1.1	-4.3	-6.6	-16.0	-16.3	-12.1	-4.3	0.9	6.3	6.8	4.7	2.4	4.8	11.8	**12.0**	.	.	.	.	.	.	.	.
-7.3	7.5	7.8	7.0	10.3	13.1	10.5	2.2	-0.5	2.2	-1.5	2.5	2.2	-3.2	-2.4	**-2.6**	.	.	.	.	.	.	.	.
1.6	24.6	16.6	13.0	13.2	13.8	10.1	4.1	-0.4	-4.1	-6.6	-4.6	-2.3	1.5	3.9	**4.1**	.	.	.	.	.	.	.	.
-9.8	13.7	25.9	36.0	15.7	24.5	13.8	-1.8	3.0	1.9	0.4	8.4	5.2	5.5	3.8	**1.6**	.	.	.	.	.	.	.	.
-4.9	46.4	40.0	34.5	40.1	26.7	23.1	8.3	-8.0	-14.5	-22.8	-14.4	-9.3	3.4	11.4	**9.0**	.	.	.	.	.	.	.	.
-7.0	-4.4	-2.5	-0.8	0.3	1.9	3.0	2.8	2.6	2.0	1.1	0.5	0.0	-0.2	-0.4	**-0.5**	**-0.7**	**-0.8**	**-0.8**	**-0.6**	**-0.4**	**-0.2**	**-0.1**	**0.0**
6.7	27.6	20.1	12.9	11.9	21.0	7.1	3.6	-1.1	-4.6	-7.2	-6.0	-4.4	-3.1	-1.8	.	.	.	.	.	.	.	.	.
4.1	19.4	16.0	10.8	12.8	21.9	5.8	-1.5	-1.8	-5.6	-4.9	-4.0	-4.4	-1.7	2.8	.	.	.	.	.	.	.	.	.
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	30.3	22.9	33.9	.	.	.	.	.	.	.	.
-14.6	-5.1	-0.1	-1.7	-0.1	5.1	1.3	3.6	3.2	3.7	3.7	1.5	0.7	1.0	-1.0	.	.	.	.	.	.	.	.	.
14.6	15.1	12.9	12.6	11.9	11.0	11.1	10.8	10.4	10.2	9.8	10.3	10.6	10.4	10.0	**9.6**	**9.8**	**9.9**	**9.8**	**9.8**	.	.	.	.
52.8	52.0	53.3	54.2	56.0	56.7	56.7	56.7	57.3	57.7	58.2	57.2	57.0	57.3	57.7	.	.	.	.	.	.	.	.	.
61.8	61.2	61.2	62.0	63.6	63.7	63.8	63.5	63.9	64.3	64.5	63.8	63.8	63.9	64.0	.	.	.	.	.	.	.	.	.
16.8	16.7	14.0	13.2	12.2	11.3	11.0	10.9	11.0	10.4	9.8	10.2	10.5	10.3	10.0	**9.8**	**10.0**	**10.1**	**10.0**	**10.0**	.	.	.	.
53.5	53.1	54.4	54.3	57.5	58.0	58.4	58.3	58.7	59.2	60.1	59.7	59.7	60.0	60.1	.	.	.	.	.	.	.	.	.
64.3	63.8	63.2	62.6	65.5	65.3	65.6	65.5	66.0	66.1	66.7	66.5	66.7	66.9	66.8	.	.	.	.	.	.	.	.	.
-3,105	-4,047	-4,835	-5,962	-5,483	-4,852	-6,193	-4,696	-2,870	-2,155	-1,645	-1,953	-1,990	-1,666	-1,669	.	.	.	.	.	.	.	.	.
-4.0	-5.5	-6.0	-6.9	-6.3	-5.4	-7.0	-5.8	-3.5	-2.5	-1.7	-1.9	-2.0	-1.6	-1.6	.	.	.	.	.	.	.	.	.
-3,688	-5,022	-5,259	-6,032	-5,043	-3,150	-4,502	-3,744	-2,237	-2,128	-1,502	-2,246	-1,980	-2,287	-2,480	.	.	.	.	.	.	.	.	.
-1,867	-1,652	-2,339	-2,865	-3,617	-4,531	-4,795	-4,144	-3,727	-3,056	-3,508	-3,141	-3,341	-3,275	-3,262	.	.	.	.	.	.	.	.	.
2,450	2,627	2,763	2,935	3,176	2,829	3,104	3,193	3,094	3,029	3,365	3,434	3,331	3,897	4,073	.	.	.	.	.	.	.	.	.
-2,789	-3,761	-4,504	-5,640	-5,037	-4,952	-5,736	-4,741	-2,590	-2,699	-1,376	-1,182	-1,468	-1,070	-981	.	.	.	.	.	.	.	.	.
-3.6	-5.1	-5.6	-6.5	-5.8	-5.5	-6.5	-5.8	-3.2	-3.1	-1.4	-1.2	-1.4	-1	-0.9	.	.	.	.	.	.	.	.	.
-1,438	-1,013	-2,528	-1,402	-3,651	-3,661	-2,959	-3,529	-3,600	-5,442	-3,335	-3,148	-2,616	-1,846	-2,445	.	.	.	.	.	.	.	.	.
2,307	1,997	2,707	2,550	4,934	5,043	3,113	4,092	4,164	5,335	3,838	3,457	3,738	2,945	3,270	.	.	.	.	.	.	.	.	.
869	984	179	1,149	1,284	1,382	154	563	563	-107	503	309	1,122	1,099	826	.	.	.	.	.	.	.	.	.
1,319	-6,089	851	-675	1,866	-759	-233	-447	1,111	1,520	4,527	1,504	1,500	-275	3,602	.	.	.	.	.	.	.	.	.
-2,860	3,167	-2,981	-3,697	-3,379	-606	-2,703	-976	-467	824	-3,026	-35	-1,303	136	-3,184	.	.	.	.	.	.	.	.	.
190	174	154	135	127	74	159	210	366	399	457	496	951	914	1,046	.	.	.	.	.	.	.	.	.
316	287	331	323	446	-100	457	-46	280	-545	269	771	523	595	688	.	.	.	.	.	.	.	.	.
1.75	1.75	1.75	2.39	3.69	5.68	8.56	10.81	12.53	13.17	13.25	13.23	12.82	11.93	10.92	9.92	.	.	.	.	.	.	.	.
																9.33	**8.58**	**7.83**	**7.33**	**6.83**	**6.58**	**6.46**	**6.25**
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	11.9	10.9	9.9	.	.	.	.	.	.	.	.
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	15.1	14.2	13.0	.	.	.	.	.	.	.	.
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	22.5	21.2	20.0	.	.	.	.	.	.	.	.
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	14.9	12.8	11.6	.	.	.	.	.	.	.	.

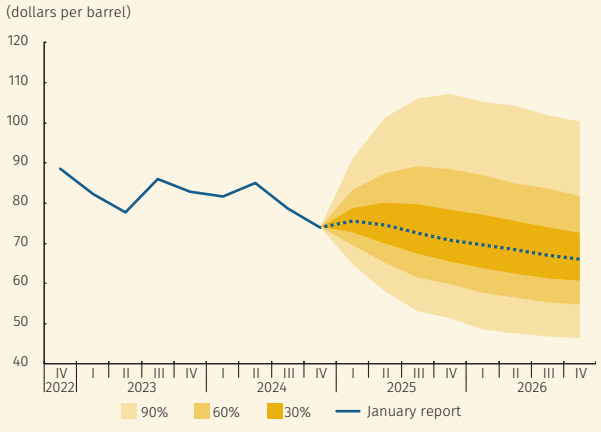
Appendix 3
Predictive Densities for other relevant Macroeconomic Forecasting Variables

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



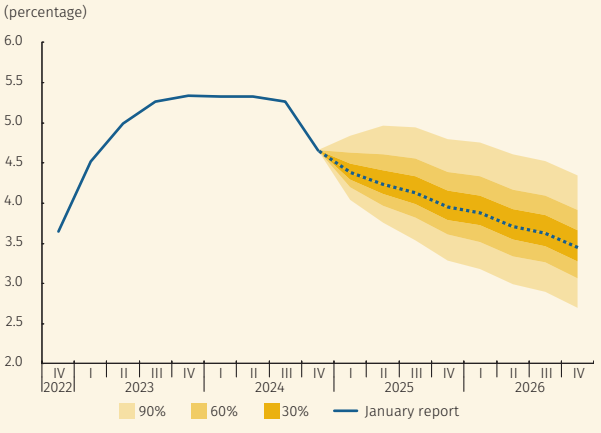
a/ The graph displays the probability distribution and its most likely path on an eight-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Sources: Bloomberg, statistics bureaus, central banks;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

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



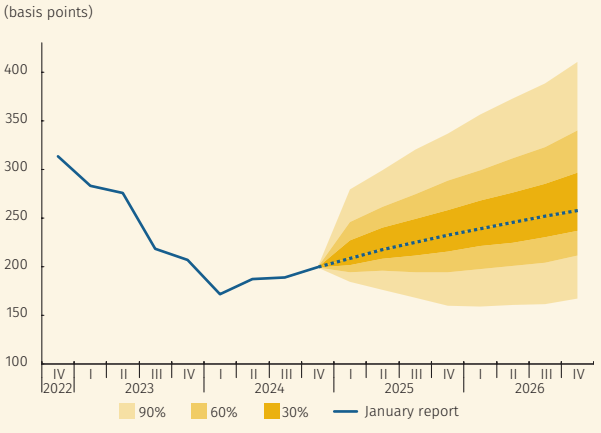
a/ The graph displays the probability distribution and its most likely path on an eight-quarter forecast horizon. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode).
Source: Bloomberg, calculations and projections by *Banco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

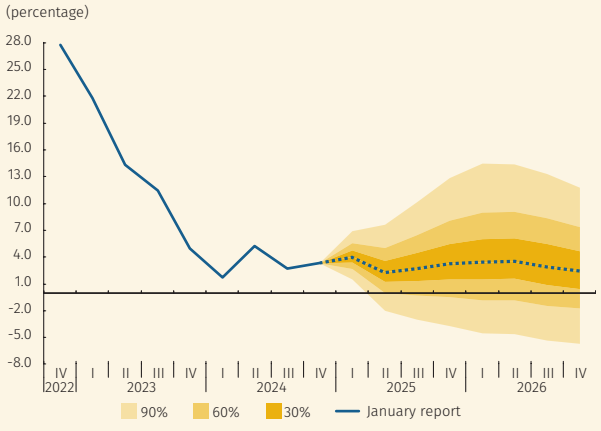
Graph A3.4
Colombia's quarterly risk premium (CDS) assumption, predictive density[a/,b/]



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*.

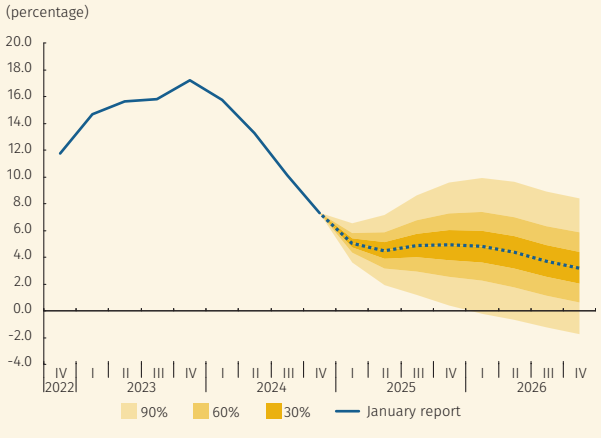
Appendix 3 (continuation)
Predictive Densities for other relevant Macroeconomic Forecasting Variables

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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