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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 policy¹. In order to fulfill this mandate, the *Banco de la República*'s Board of Directors (hereafter BDBR) has adopted a flexible inflation-targeting scheme, by which monetary policy actions (MP) seek to lead inflation to a specific target and achieve maximum levels of sustainable output and employment.

The flexibility of this scheme allows the BDBR to maintain an adequate balance between reaching its inflation target and smoothing output and employment fluctuations around their sustainable growth paths. The BDBR has set a 3% inflation target based on annual change in the consumer price index (CPI). In the short term, inflation may be affected by factors outside of monetary policy control, such as changes in food prices due to climate-related phenomena. To factor in this reality, the BDBR has also set a ± 1 percentage point range outside its inflation target (i.e., 3.0 ± 1 pp). This range does not represent a monetary policy target, but rather reflects the fact that inflation can fluctuate around the target and will not always be equal to 3%.

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

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

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

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

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

⁴ Formerly known as the Inflation Report.

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

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1. Summary



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 4GM monetary policy models. b/ The probability distribution corresponds to the forecast exercise from the April report.

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

Graph 1.2 CPI excluding food and regulated items ^{a/ b/} (annual change, end-of-period)



a/ This graph presents the forecast probability distribution on an eight-quarter time horizon. Density characterizes the prospective balance of risks with areas of 30%, 60%, and 90% probability surrounding the central forecast (mode), through a combination of densities from the Patacon and 4GM monetary policy models. b/ The probability distribution corresponds to the forecast exercise from the April report.

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

1.1 Macroeconomic summary

Annual inflation continued to rise in the first quarter (8.5%) and again outpaced both market expectations and the technical staff's projections. Inflation in major consumer price index (CPI) baskets has accelerated yearto-date, rising in March at an annual rate above 3%. Food prices (25.4%) continued to contribute most to rising inflation, mainly affected by a deterioration in external supply and rising costs of agricultural inputs. Increases in transportation prices and in some utility rates (energy and gas) can explain the acceleration in regulated items prices (8.3%). For its part, the increase in inflation excluding food and regulated items (4.5%) would be the result of shocks in supply and external costs that have been more persistent than expected, the effects of indexation, accumulated inflationary pressures from the exchange rate, and a faster-than-anticipated tightening of excess productive capacity. Within the basket excluding food and regulated items, external inflationary pressures have meaningfully impacted on goods prices (6.4%), which have been accelerating since the last guarter of 2021. Annual growth in services prices (3.8%) above the target rate is due primarily to food away from home (14.1%), which was affected by significant increases in food and utilities prices and by a rise in the legal monthly minimum wage. Housing rentals and other services prices also increased, though at rates below 3%.

Forecast and expected inflation have increased and remain above the target rate, partly due to external pressures (prices and costs) that have been more persistent than projected in the January report (Graphs 1.1 and 1.2). Russia's invasion of Ukraine accentuated inflationary pressures, particularly on international prices for certain agricultural goods and inputs, energy, and oil. The current inflation projection assumes international food prices will increase through the middle of this year, then remain high and relatively stable for the remainder of 2022. Recovery in the perishable food supply is forecast to be less dynamic than previously anticipated due to high agricultural input prices. Oil prices should begin to recede starting in the second half of the year, but from higher levels than those presented in the previous report. Given the above, higher forecast inflation could accentuate indexation effects and increase inflation expectations. The reversion of a rebate on value-added tax (VAT) applied to cleaning and hygiene products, alongside the end of Colombia's COVID-19 health emergency, could increase the prices of those goods. The





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 4GM monetary policy models. b/ Seasonally adjusted and corrected for calendar effects.

c/ The probability distribution corresponds to the forecast exercise from the April report.

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

elimination of excess productive capacity on the forecast horizon, with an output gap close to zero and somewhat higher than projected in January, is another factor to consider. As a consequence, annual inflation is expected to remain at high levels through June. Inflation should then decline, though at a slower pace than projected in the previous report. The adjustment process of the monetary policy rate would contribute to pushing inflation and its expectations toward the target on the forecast horizon. Year-end inflation for 2022 is expected to be around 7.1%, declining to 4.8% in 2023.

Economic activity again outperformed expectations. The technical staff's growth forecast for 2022 has been revised upward from 4.3% to 5% (Graph 1.3). Output increased more than expected in annual terms in the fourth quarter of 2021 (10.7%), driven by domestic demand that came primarily because of private consumption above prepandemic levels. Investment also registered a significant recovery without returning to 2019 levels and with mixed performance by component. The trade deficit increased, with significant growth in imports similar to that for exports. The economic tracking indicator (ISE) for January and February suggested that first-quarter output would be higher than previously expected and that the positive demand shock observed at the end of 2021 could be fading slower than anticipated. Imports in consumer goods, retail sales figures, real restaurant and hotel income, and credit card purchases suggest that household spending continues to be dynamic, with levels similar to those registered at the end of 2021. Project launch and housing starts figures and capital goods import data suggest that investment also continues to recover but would remain below pre-pandemic levels. Consumption growth is expected to decelerate over the year from high levels reached over the last two guarters. This would come amid tighter domestic and external financial conditions, the exhaustion of suppressed demand, and a deterioration of available household income due to increased inflation. Investment is expected to continue to recover, while the trade deficit should tighten alongside high oil and other export commodity prices. Given all of the above, firstquarter economic growth is now expected to be 7.2% (previously 5.2%) and 5.0% for 2022 as a whole (previously 4.3%). Output growth would continue to moderate in 2023 (2.9%, previously 3.1%), converging similar to long-term rates. The technical staff's revised projections suggest that the output gap would remain at levels close to zero on the forecast horizon but be tighter than forecast in January

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. The forecast is calculated as the difference between the technical staff's GDP estimate (four-quarter accumulation) and potential GDP (trend; four-quarter accumulation) from 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 4GM monetary policy models. c/ The probability distribution corresponds to the forecast exercise from the April report.

. Source: DANE; calculations and projections by Banco de la República. (Graph 1.4). These estimates continue to be affected by significant uncertainty associated with geopolitical tensions, external financial conditions, Colombia's electoral cycle, and the COVID-19 pandemic.

External demand is now projected to grow at a slower pace than previously expected amid increased global inflationary pressures, high oil prices, and tighter international financial conditions than forecast in January. The Russian invasion of Ukraine and its inflationary effects on prices for oil and certain agricultural goods and inputs accentuated existing global inflationary pressures originating in supply restrictions and increased international costs. A decline in the supply of Russian oil. low inventory levels, and continued production limits on behalf of the Organization of Petroleum Exporting Countries and its allies (OPEC+) can explain increased projected oil prices for 2022 (USD 100.8/barrel, previously USD 75.3) and 2023 (USD 86.8/barrel, previously USD 71.2). The forecast trajectory for the U.S. Federal Reserve (Fed) interest rate has increased for this and next year to reflect higher real and expected inflation and positive performance in the labor market and economic activity. The normalization of monetary policy in various developed and emerging market economies, more persistent supply and cost shocks, and outbreaks of COVID-19 in some Asian countries contributed to a reduction in the average growth outlook for Colombia's trade partners for 2022 (2.8%, previously 3.3%) and 2023 (2.4%, previously 2.6%). In this context, the projected path for Colombia's risk premium increased, partly due to increased geopolitical global tensions, less expansionary monetary policy in the United States, an increase in perceived risk for emerging markets, and domestic factors such as accumulated macroeconomic imbalances and political uncertainty. Given all the above, external financial conditions are tighter than projected in January report. External forecasts and their impact on Colombia's macroeconomic scenario continue to be affected by considerable uncertainty, given the unpredictability of both the conflict between Russia and Ukraine and the pandemic.

The current macroeconomic scenario, characterized by high real inflation levels, forecast and expected inflation above 3%, and an output gap close to zero, suggests an increased risk of inflation expectations becoming unanchored. This scenario offers very limited space for expansionary monetary policy. Domestic demand has been more dynamic than projected in the January report and excess productive capacity would have tightened





more quickly than anticipated. Headline and core inflation rose above expectations, reflecting more persistent and important external shocks on supply and costs. The Russian invasion of Ukraine accentuated supply restrictions and pressures on international costs. This partly explains the increase in the inflation forecast trajectory to levels above the target in the next two years. Inflation expectations increased again and are above 3%. All of this increased the risk of inflation expectations becoming unanchored and could generate indexation effects that move inflation still further from the target rate. This macroeconomic context also implies reduced space for expansionary monetary policy.

1.2 Monetary policy decision

Banco de la República's board of directors (BDBR) continues to adjust its monetary policy. In its meetings both in March and April of 2022, it decided by majority to increase the monetary policy rate by 100 basis points, bringing it to 6.0% (Graph 1.5).

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

2. Macroeconomic Forecasts and Risk Analysis

Graph 2.1

Real Quarterly GDP among Trade Partners (annualized quarterly 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 Uncertainty and Geopolitical Risk Indicators

A: Geopolitical risk index (7-day moving average)



B: Global uncertainty index (7-day moving average))



Sources: Baker, Scott; Bloom; Davis, Steven and Renault, Thomas. "Twitter-Derived Measures of Economic Uncertainty," May 2021. Caldara, Dario and Matteo Iacoviello, "Measuring Geopolitical Risk," working paper, Board of Governors of the Federal Reserve, November 2021 (upcoming publication in the American Economic Review).

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2.1 International outlook

2.1.1 Foreign demand

Expected demand growth for Colombian exports has been revised downward on the forecast horizon (Graph 2.1). Average real GDP among Colombia's trade partners was similar in the fourth quarter to estimates from the January report. This suggests that trade partner output continued to recover in that period, though at a slower rate than in the third quarter. Russia's invasion of Ukraine in the first quarter of 2022 has increased global uncertainty (Graph 2.2) and according to multiple sources could lead to higher inflation and reduce global growth¹. The economic effects of COVID-19 outbreaks could exacerbate strains on global supply chains. This is especially true in China due to its zero-COVID policy (Graph 2.3). Increased inflationary pressures could imply more rapid adjustments to monetary policy in various advanced and emerging market economies. Given the above, average projected growth for Colombia's main trade partners in 2022 has been revised downward (2.8%) from the previous report (3.3%). Growth is expected to be somewhat lower in 2023 (2.4%) than forecast in January (2.6%) (Chart 2.1). These forecasts assume that the conflict between Russia and Ukraine will not escalate further to additional countries and that among Colombia's trade partners the euro zone will remain most affected.

Growth is expected to be weaker in the United States and euro zone compared to the previous forecast. COVID-19 outbreaks in these countries in the first quarter appear to have had a relatively moderate impact on economic activity². Moving forward, labor market performance³ and household savings accumulated during the pandemic should favor

- At the publication of this report, preliminary first-quarter GDP figures in the United States suggested an annualized quarterly decline of 1.4%. Growth in the euro zone would have decelerated to 0.8% in annualized quarterly terms.
- In March, the U.S. unemployment rate fell to 3.6%, and in February the euro zone unemployment rate fell to 6.8%.

In its April report, the International Monetary Fund (IMF) lowered its global growth forecast to 3.6% for 2022 and 2023, with varied performance within regions and by country. It also revised its inflation forecast for developed and emerging market economies upward. Russia's invasion of Ukraine is expected to cause a contraction in GDP for both countries. This would affect other countries with trade ties or that receive remittances from Russia and Ukraine. As both countries are significant exporters of raw materials, the conflict has affected input supply, which could deepen global supply shocks and add pressure to global inflation. The conflict has also increased volatility in financial markets and global uncertainty, and could have effects on business and investor confidence.

Chart 2.1

Economic Growth	among N	Aajor Tra	de Partn	ers ª/

Trade partners	2020 (pre)	2021 (pre)	2022 (proj)	2023 (proj)	
United States	-3.4	5.7	3.1	2.3	
Euro zone	-6.5	5.3	2.6	2.4	
China ^{b/}	2.3	8.1	4.6	5.1	
Ecuador	-7.8	4.2	2.8	2.3	
Brazil	-3.9	4.6	0.3	1.4	
Peru	-11.0	13.3	3.0	3.1	
Mexico	-8.2	4.8	1.9	2.2	
Chile	-6.0	11.7	2.2	1.7	
All trade partners ^{a/}	-6.7	7.0	2.8	2.4	

(pre): preliminary, (proj): projected

a/ Projections based on contribution of non-traditional trade. b/ GDP growth data from the first quarter of 2022 published April 17. This figure was part of a set of information used by the BDBR in its April 29 decision. However, forecasts presented here do not incorporate this new information. Sources: Bloomberg, Focus Economics, statistics offices and central banks (observed data); Banco de la República (projections and calculations).



(Standard deviations from the median)



a/ Authors use international transportation cost indices (Baltic Dry, Harpex, among others) and some components from surveys of business conditions (PMI) for the euro zone, China, Japan, South Korea, Taiwan, the UK and the U.S. Source: Gianluca Benigno, Julian di Giovanni, Jan J. J. Groen, and Adam I. Noble, "A New Barometer of Global Supply Chain Pressures," Federal Reserve Bank of New York Liberty Street Economics.

Graph 2.4

Russian and Ukrainian Export Commodity Prices (percentage, difference between January and April 2022 averages to date)



a/ Percent change between January average and average from April 1-26. Fertilizers based on North American Green Markets fertilizer price index. Sources: Bloomberg. 7

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private demand. However, private consumption could be affected by high realized and expected inflation driven by the recent spike in international fuel, commodities, and food prices resulting from Russia's invasion of Ukraine⁴, as well as by weakening consumer confidence. Despite efforts by European governments to provide households with subsidies to mitigate the effects of high inflation, the effects of the conflict on economic activity could be significant⁵. Financial conditions in the U.S. and the euro zone have also deteriorated⁶, and monetary policy is expected to be tighter on the forecast horizon. Finally, although industrial production in the U.S. and euro zone has rebounded. Russia's invasion and the reinstatement of health restrictions in China could imply new shocks on global supply. Given the above, the 2022 growth forecast for the U.S. and in particular the euro zone was revised downward (Chart 2.1).

China's growth forecast for 2022 was revised downward amid new outbreaks of COVID-19 and a weakening real estate market. China's economy grew 4.8% in annual terms in the first quarter, below the government's growth target (5.5%). The country registered its highest number of COVID-19 cases since the start of the pandemic in the first and second guarters to date. This has led to the imposition of strict quarantine measures that have accentuated strains on supply chains and global supply. Together with increased unemployment and low consumer confidence, this dynamic would be expected to affect household consumption. Some indicators also suggest a weakening housing sector⁷, and manufacturing and services business conditions in March signaled a contraction in the short term. China's external sales would also be affected by slower global growth. In response to current conditions, the Chinese government has taken measures and signaled additional steps to provide government stimulus⁸. Given all of the above, China's growth forecast was revised downward for 2022.

- 6 The Federal Reserve of Chicago's index of national financial conditions in the U.S. rose from -0.6 on 31 December 2021 to -0.38 on 15 April 2022.
 - As of March, new residential housing construction had accumulated a 20.3% annual decline, and the survey of current market conditions signaled weakening in the sector.
 - Infrastructure investment plans for this year could total USD 2.3 billion. The People's Bank of China reduced its reserve requirements for commercial banks by 25 basis points on April 15.

⁴ See Box 1 in the March 2022 Reporte de la Junta Directiva al Congreso de la República "Invasión de Rusia a Ucrania: consideraciones sobre el contexto económico internacional".

⁵ According to the European Central Bank (ECB), economic growth in the euro zone would be affected through commercial, commodities, and confidence channels. The significant contribution to output from external sales, commercial ties with Central and Eastern Europe, and Russia's role as an important provider of oil and gas are among factors that suggest a more significant impact.

Graph 2.5 Assumed quarterly oil price (Brent benchmark)



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

Average growth among Colombia's main regional trade partners was revised slightly downward⁹. Despite COVID-19 becoming more widespread in the region, the effects of the pandemic were relatively less significant in the first quarter than compared to previous waves of the virus, in large part thanks to wide vaccination coverage. Prices for some of the region's exports increased as a result of the Russian invasion of Ukraine, which would allow for improvements in national incomes. Together with the limited direct trade and financial ties between the region and Russia and Ukraine, this should limit the negative impact of the war on major Latin American economies. However, high import goods prices would limit improvements in terms of trade and, in particular, affect countries that are net importers of oil, such as those in Central America. This would be expected to exert additional pressures on inflation¹⁰ and heighten expectations for increased policy interest rates. Demand for the region's exports would also be affected by lower expected growth in major global economies, such as the United States and China. Factors such as the increase in external financing costs, limited fiscal space, and significant global uncertainty could restrict economic activity. As a result, the technical staff has revised its growth projections downward for Peru and Chile, and to a greater extent for Mexico and Brazil. By contrast, expectations for growth in Ecuador, one of Colombia's main trade partners, have improved as a result of moderate inflation and high oil prices (Chart 2.1).

2.1.2 International prices

The projected oil price was revised upward over the forecast horizon as a reflection of Russia's invasion of Ukraine, relatively low global inventory, and delays in global oil production recovery (Graph 2.5). Oil prices have been highly volatile in recent months and increased significantly above expectations from the January report (Graph 2.4). This was a consequence of Russia's invasion of Ukraine and the impact of the conflict on oil supply, given that Russia is a significant global producer of oil, natural gas, and coal¹¹. OPEC+ has had difficulties

⁹ Growth in non-traditional goods trade from Ecuador, Brazil, Chile, Mexico, and Peru, which for 2022 fell from 2.5% in the January report to 2.2% in the current report.

¹⁰ Headline consumer inflation in March was 11.3% in Brazil, 9.4% in Chile, 7.5% in Mexico, 6.8% in Peru, and 2.6% in Ecuador.

¹¹ In response to the Russian invasion of Ukraine, the United States banned imports of Russian oil, natural gas, and coal, and the United Kingdom hopes to reduce its purchases of Russian oil by the end of 2022. Large firms in the sector are also seeking to interrupt their operations in Russia. According to the U.S. Energy Information Administration (EIA) and the International Energy Agency (IEA) this would translate to a reduction in Russian production of oil and other liquid fuels.

Graph 2.6 Colombia's terms of trade index, foreign trade methodology



Sources: Banco de la República.

increasing extraction to meet its quotas and is expected to keep production cuts in place for most of this year. Investment and production increases from other countries have lagged despite high prices. On the demand side, global GDP is expected to continue to expand in 2022 in the context of low oil inventories¹², which would exert additional pressures on prices. Price pressures could be partially mitigated on the forecast horizon thanks to a combination of factors; these include downward revisions in global growth projections, guarantine measures in China in response to COVID-19 outbreaks, and high crude oil prices, all of which would be expected to moderate demand, as well as the expected increase in production by countries other than Russia and commitments from the U.S. and other members of the International Energy Agency to draw from strategic reserves. Given all of the above, the technical staff expects Brent prices to average USD 101/barrel (bl) in 2022 and USD 87/bl in 2023. This represents a significant upward revision compared to the previous report (USD 75/bl in 2022 and USD 71/bl in 2023).

Increased prices for Colombia's main exports are expected to contribute to increased terms of trade in 2022. Average terms of trade in the first two months of 2022 increased annually by 16.3% (Graph 2.6), driven in part by higher international prices for Colombian export goods such as oil, coal, and coffee. International prices are expected to continue to be high for these products -particularly agricultural goods, raw materials, and fuels due to effects associated with the Russian invasion of Ukraine. International transport costs are also expected to continue to be high, and disruptions to global supply chains are expected to persist. Colombia's net terms of trade should improve. The effects of these terms of trade dynamics on economic activity will depend partly on the observed recovery in the supply of oil, coal, and coffee, which remain below pre-pandemic levels.

Inflation in several advanced economies has continued to rise in recent months, with prospects for more persistent deviations from target rates. According to the IMF, inflationary pressures have increased and become more widespread and persistent as a result of Russia's invasion of Ukraine. As a result, annual inflation of 4.8% in advanced economies and 8.8% in emerging markets is expected for the fourth quarter of 2022. Annual headline inflation in the U.S. in March was 8.5%, the highest rate

¹² Commercial inventories in member countries of the Organization for Economic Cooperation and Development (OECD) fell to their lowest point since 2014 in the first quarter.

since December 1981¹³, and annual core inflation rose 6.5%. The IMF now projects headline inflation to be higher than in its forecasts from recent months, suggesting that price pressures will be more persistent¹⁴. This would suggest that inflation will converge above 5.0% at the end of 2022 and above 2.0% at the end of 2023. Some measures of longer-term inflation expectations are above 2.0%¹⁵. Meanwhile, annual core inflation in the euro zone was 2.9% in March, while annual headline inflation reached 7.4%¹⁶. For the end of 2022 the median response to the ECB's April analyst survey increased (5.5%) compared to earlier in the year.

2.1.3 International financial developments

The expected U.S. policy rate trajectory has been revised upward from the previous report (Graph 2.7). The Federal Open Market Committee (FOMC) raised interest rates by 25 basis points (bp) in its March meeting, in line with the technical staff's expectations. The Federal Reserve has also since March ceased new net asset purchases and announced that it would begin reducing its balance sheet in its May meeting¹⁷. According to information from the FOMC's projections, futures markets, and analyst surveys, the interest rate path should be higher than expected at the beginning of the year. This would come amid high and persistent inflation, increased inflation expectations, and low unemployment rates. Some members of the FOMC have also alluded to the possibility of more pronounced increases in the policy rate compared to the median projection from its March meeting. In the January report, the technical staff increased its projection for the U.S. benchmark interest rate to a range between 2.25% and 2.5% at the end of 2022 and between 3.0% and 3.25% at the end of 2023¹⁸. The ECB in April did not adjust its benchmark interest rate. It did, however, enter its reinvestment phase

- 13 Inflationary pressures originating in the Russian invasion of Ukraine were observed in energy and foods. Increased labor costs, an increase in housing prices and associated services (e.g., rentals), and pressures on global supply chains, with persistent high costs for international merchandise transportation, were also notable.
- 14 Increased housing prices could be a factor in this persistence. A recent behavioral analysis of this market can be found in Box 1 of this report and will be published on May 6.
- 15 Breakeven inflation rates at five and ten years, from April 21, 2022, were 3.7% and 3.0%, respectively. Forward inflation at five years was 2.7%.
- 16 The energy component increased, driven by gas prices (50.1%), liquid fuels (89.1%), and electricity (41.2%). Food prices (5.8%) and categories associated with the easing of measures in those countries also increased, as problems in global supply chains persist.
- 17 The minutes suggest a possible balance sheet reduction to USD 95 billon per month, starting gradually in the first three months.
- 18 Increases of 50 bp are expected in May and June, and four subsequent 25-bp increases are anticipated in the second half of the year (one in each meeting). Three additional adjustments in the first half of 2023 are expected.

Graph 2.7 Assumed U.S. Federal Reserve Quarterly Interest Rate



Source: St. Louis Federal Reserve; calculations and projections by Banco de la República.

Graph 2.8 Daily U.S. treasury bond curve



Sources: U.S. Department of the Treasury.

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



a/ Five-year credit default swaps

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

on value acquired under the auspices of its Pandemic Emergency Purchasing Program (PEPP). It also announced that it expects net asset purchases in the Asset Purchasing Program to conclude in the third quarter of this year. The median analyst response to the ECB's April survey suggests a less expansionary monetary policy posture compared to the January survey.

Colombia's external financing conditions were mixed in the first quarter. Interest rates on U.S. treasury bonds have increased in the year to date (Graph 2.8) amid projections for weaker global economic growth and the prospect of faster adjustments to the Fed's monetary policy. According to the IIF¹⁹, foreign portfolio investment flows to Latin America neared USD 26 million, surpassing averages from the two previous quarters. Colombia's domestic exchange balance suggests net foreign portfolio investment capital inflows of USD 843 million in the first quarter and of USD 459 million in the month through April 8, compared to net outflows of USD 1.356 billion²⁰ in the fourth quarter of 2021.

Colombia's expected risk premium for 2022 has increased from the January report (Graph 2.9). Against the backdrop of the Russian invasion of Ukraine, the primary risk indicators for advanced economies (VIX and VSTOXX) increased compared to the fourth quarter of 2021. Measures of geopolitical risk and global economic uncertainty have also risen, though they have moderated in recent weeks as the conflict has not far escalated to other countries (Graph 2.2). Risk premia and exchange rates for various Latin American countries have been less affected by these developments than other emerging market economies²¹. Colombian five-year credit default swaps increased in quarterly terms by 24 bp in the first quarter, to an average of 209 bp (Graph 2010). This was higher than observed in the fourth guarter of 2021 (185 bp) and exceeded the technical staff's estimate from the January report (198 bp)²². The Colombian peso (TRM) depreciated 0.9% in the first guarter²³. Colombia's risk premium increased despite higher oil prices and was

¹⁹ Institute of International Finance.

²⁰ Colombia's participation in one of the main fixed income indices (JP Morgan's GBI-EM Global Diversified index) increased from January to March as the result of a reduction in Russian participation and its later exclusion from this index.

²¹ The average for the first quarter of 2022 for five-year credit default swaps in Mexico rose slightly, and for Brazil, Peru, and Chile declined marginally. In this period average quarterly exchange rates increased in Brazil (6.5%), Chile (2.3%), Mexico (1.2%), and Peru (5.5%).

²² On average in March the risk premium was 206 bp. In the month through April 22, the risk premium reached 201 bp. For the same period, the average exchange rate fell from COP 3,799 to COP 3,748 to the dollar and the price of oil fell from USD 112/bl to USD 106/bl.

²³ In the month through April 22 the rate has appreciated 4.3% compared to the first-quarter average.

Graph 2.10 Five-year credit default swaps for selected Latin American countries



Note: To 25 April 2022 Source: Bloomberg; calculations by Banco de la República.

affected by global factors including the prospect of less expansionary monetary policy in advanced economies, increased global uncertainty due to the Russian invasion of Ukraine, and downside risks to global economic growth as a result of new COVID-19 outbreaks in China. Domestic factors, including macroeconomic imbalances, political uncertainty, and a below-investment grade credit rating on foreign currency debt also contributed. Given the above, Colombia's expected risk premium has increased since January, and in 2022 is now projected to average 204 bp, converging to 186 bp at the end of the forecast horizon.

2.2. Macroeconomic projections²⁴

2.2.1 Inflation

Inflationary pressures originating abroad have been stronger and longer lasting than projected in the previous report. As a result, indexation to higher prices in some instances could generate higher and more persistent inflation on the forecast horizon. International commodities and general goods prices are expected to remain at high levels as a result of the war in Ukraine, China's COVID-zero policy, and high external inflation. These factors would also suggest that global logistics and transport challenges will persist. International food prices and prices on some raw materials necessary for domestic food production have also increased significantly. This has generated sharper and more persistent increases in consumer prices in Colombia than previously anticipated, and it is a major factor behind the significant increase in the headline inflation trajectory estimate in this report. Reduced domestic agricultural supply and indexation to higher rates starting in 2023, which put upward pressure on the CPI, could compound the external shocks outlined above. Nevertheless, the technical staff projects an improvement in Colombia's terms of trade, which should contribute to the real exchange rate exerting some downward pressures on inflation on the forecast horizon (Graph 2.11). The current forecast also suggests that demand will lose dynamism over the rest of the year after highs at the end of 2021. This would bring the estimated output gap close to zero on the forecast horizon. All dynamics outlined above would come in the context of active monetary policy that continues to be adjusted to prevent inflation expectations from becoming unanchored and guarantee convergence to the target rate. The forecast also suggests that fuel prices will start to adjust beginning in the second half of 2022 and that in early 2024 the effects of tax relief measures still in place would start to

²⁴ Projections assume active monetary policy in which *Banco de la República*'s benchmark interest rate is adjusted to guarantee compliance with the inflation target.



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

Graph 2.12 Consumer Price Index (CPI) (annual change; end-of-period)

Graph 2.11



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

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



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

fade. Given all of the above, the technical staff continues to expect annual headline inflation to reach a maximum in the second quarter of this year (8.5%) before gradually receding to 7.1% at the end of 2022 and 4.8% at the end of 2023 (Graph 2.12). This forecast assumes the reversion of those price relief measures still in place in 2022 and 2023, and accounts for VAT-free days planned for this year. However, the estimate does not account for possible effects of recent tax cuts for a large number of economic sectors, nor does it consider VAT-free days that could take place in 2023. These estimates continue to include a high degree of uncertainty associated mainly with the evolution of external conditions and their effects on domestic prices, as well as with the high level of volatility exerted on inflation from VAT-free days and the end of health emergency and other tax relief measures.

The technical staff also made a significant revision to its core inflation forecast for the next two years due to more persistent external shocks than expected and indexation to higher inflation rates for 2023. Annual core inflation, measured as the annual change in the CPI excluding food and regulated items, is expected to continue to increase over the course of the year, reaching a high of 5.9% in the fourth quarter before gradually declining to 4.8% at the end of 2023. Core inflation should converge to the target rate beyond the forecast horizon (Graph 2.13). Stronger and longer-lasting external pressures were a significant factor in the technical staff's revision of the forecast trajectory, which would also be affected by indexation to higher rates of inflation in 2023 and 2024. The projection suggests that the output gap will close, assuming that domestic demand growth moderates over the course of the year. This would avert upward pressures on prices from core inflation, which reinforce external pressures and costs. Real exchange rate performance is expected to favor a reduction in inflation to a more significant degree than forecast in the previous report. This projection also accounts for existing relief measures on indirect taxes.

In addition to external pressures, the CPI for goods excluding food and regulated items (EFR) and for services EFR are expected to continue to be affected by indexation, relief on indirect taxes, and other factors. The CPI for goods EFR should continue to be affected primarily by external pressures, which would begin to recede in coming months but only disappear completely in the medium term. This would allow for a moderation in the guarterly growth rate of the CPI for this sub-basket starting in the second quarter of the year, though from much higher levels than previously anticipated. Annual rates are expected to continue to increase until the second quarter of 2022, after which they would be expected to begin to decline to somewhat below 3.0% at the end of the forecast horizon. This projection considers the dynamic of VAT-free

days scheduled for March, June, and December 2022. It also considers the reinstatement of VAT on health and personal hygiene products, given that as of the writing of this report Colombia's health emergency²⁵ status was scheduled to end on April 30. The CPI for services EFR would also continue to be affected by: 1) food costs primarily via foods away from home (FAH), which accounts for a large portion of this sub-basket (18%); 2) indexation beginning in 2023 to higher levels of inflation and its effects on important segments of the CPI for services, such as rentals (see Box 1²⁶); 3) and the return of 19% VAT on hotels, tourism, and air travel and the return of the FAH consumption tax for establishments under the simple tax rubric, all of which would begin in 2023 and affect annual variation for the year. The expected impact for 2023 of the reinstatement of this consumption tax was revised downward for this report, as a result of the fact that at the beginning of 2022 a significant number of restaurants operating under the common tax regime had already reinstated it. Given the above, annual change in the CPI for services EFR would be expected to continue to increase through the end of 2022, though at a much slower rate than last year. This would be expected to remain relatively stable in 2023, declining only by the beginning of 2024 to levels somewhat above 4.0%.

External and domestic pressures that had a larger effect on food prices in previous quarters than anticipated would begin to recede in the second and third quarters of this year. The projected trajectory of annual change in food prices has been revised significantly upward in this report. Annual variation for this sub-basket is expected to reach highs in the first quarter before falling in the second, alongside the stabilization or decline of external prices and costs and the recovery of the domestic agricultural supply. The latter should be possible thanks to positive climate forecasts and because high current prices on perishable foods should stimulate increased production despite higher costs. Prices on various perishable goods are expected to decline in annual change in food prices and stop the increase in headline inflation. At the end of 2022, annual change in the CPI for foods is expected to be 10.9%, before stabilizing in 2023 at rates that would be more compatible with the target, finishing the year around 1.9% (Graph 2.14).

The CPI for regulated items should continue to register significant increases on the forecast horizon. Annual change in the CPI for regulated items would continue to be subjected to upward pressures originating in high recent levels of the CPI, the producer price index (PPI), and international prices for some commodities, which have an effect on rate formulas for utilities and other regulated items. This CPI would also face pressure from the reposition of losses and consumer transmission of costs associated with investment from some utility companies, especially in the electricity sector. As previously suggested, some of these pressures have been greater and more persistent than previously anticipated. Some of these would recede starting in the second and third quarter of the year. However, those originating in past inflation would recede slower and with a delay, and as a result they would continue exerting relevant upward pressure on this sub-basket. In contrast to previous projections, the current forecast does not suppose adjustments

²⁵ This report does not account for the extension of health emergency status to June 30 of this year, which was announced by the President's office on 25 April 2022.

²⁶ This supplement will be published on 06 May 2022





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





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

Graph 2.16 Bank and stockbroker inflation forecast ^{a/}



a/ Median response

to fuel prices in the first half of 2022. These adjustments would instead begin in the second half of the year and continue into 2023 and 2024. However, the transmission of international oil prices on domestic fuel prices is expected to remain incomplete on the forecast horizon. Given the above, the forecast trajectory for the annual change of CPI for regulated items was revised upward and is now expected to reach a high in the middle of 2022 (8.5%) before falling to 7.5% in December 2022 and 7.4% at the end of 2023 (Graph 2.15).

Market expectations for year-end inflation increased significantly and remain above the target rate on the forecast horizon. Median analyst responses to *Banco de la República*'s monthly survey conducted from April 6-8 suggest headline inflation at the end of 2022 of 7.0% (4.5% in January's survey) and inflation excluding foods of 5.6% (3.8% in January). Survey results suggest that headline inflation and inflation excluding foods would fall to 4.1% and 3.9%, respectively, at the end of 2023. Based on information until April 22, expectations derived from government bonds (breakeven inflation, BEI) and adjusted for inflationary and liquidity²⁷ risk premia increased at two, three, and five years to 4.57%, 4.32%, and 4.01%, respectively.

2.2.2 Economic activity

First-quarter GDP would have been slightly above historical highs registered at the end of last year. Economic growth in Colombia is expected to have moderated in the first months of 2022, following strong growth registered in the fourth quarter of 2021. However, GDP levels would be higher than those projected in the January report. Available indicators for the first quarter, in particular the ISE (Graph 2.17), suggest that GDP registered only a slight increase compared to highs in the fourth quarter of 2021 (0.7% annualized quarterly terms). However, given the low basis of comparison from the first quarter of 2021, output would have grown in annual terms at a rate of 7.2% (previously 5.2%) (Graph 2.18). Information and communications, arts and recreation, commerce, repairs,

Source: Banco de la República (monthly analyst survey).

²⁷ Inflation expectations net of inflationary and liquidity risk premia are calculated as the difference between nominal rates and real rates excluding risk based on public debt markets at multiple terms (Abrahams et al., 2015; Espinosa et al., 2015). The so-called inflationary risk premium, then, is derived by subtracting the premium by term on the TES in UVR from the premium on the TES curve in pesos. The differences between these term premia can reflect uncertainty over future inflation, however it can also be influenced by friction in particular markets, such as the preference of some agents to invest in certain types of bonds. Meanwhile, the liquidity component is calculated as the difference between the liquidity premium from the TES curve in pesos and the premium from the TES curve in UVR. As a result, total BEI calculated with this methodology can be disaggregated by expected inflation, the inflationary risk premium, and a liquidity component.





a/ 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.

b/ Seasonally adjusted and corrected for calendar effects





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

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transportation and lodging, and industrial manufacturing would have been the most dynamic sectors in this period. By contrast, finance and insurance activities represent the only large segment of activity that is estimated to have contracted in annual terms, as a result of the final payment for the *Hidroituango* hydroelectric project contingency. Construction and mining registered small positive annual variations but continued to lag.

Domestic demand is expected to have continued to be dynamic alongside robust private consumption. Domestic absorption is expected to have expanded at a faster annual rate than GDP in the first quarter, registering a new increase compared to the previous guarter. This would be the result mainly of private consumption, which is expected to have registered an additional quarterly growth, though more moderate than in 2021. The ISE for tertiary activities and transaction figures from some commercial banks suggest that services consumption was again dynamic. The VATfree day would have favored consumption in durable goods and, to a lesser extent, semi-durables. However, moderation in the increase in household consumption would be due to factors such as the exhaustion of excess savings accumulated during the pandemic, reduced unsatisfied demand, the possible impact of high food prices on family spending (primarily low-income families), and the recent weakening of consumer confidence. Annual growth in public consumption is expected to have decelerated and registered a slight quarterly decline, due primarily to a reduction in personnel spending related to restrictions imposed by the law of guarantees and reduced execution of resources associated with the vaccination process. With all of the above, total consumption is expected to have grown slightly between quarters, with annual growth that remains high as a consequence of the lower basis of comparison and historical highs that have surpassed pre-pandemic levels.

Investment should have continued to recover in the first quarter, though without reaching pre-pandemic levels due to lagging recovery in the construction sector. This forecast accounts for significant capital goods exports in March (based on advance information from DIAN). This would suggest that investment in machinery and equipment grew from highs at the end of last year, and that this dynamism would continue to be associated with positive performance in the manufacturing sector and the purchase of elevated transport equipment. Residential building starts and sales figures suggest that housing investment continued to recover in the first quarter. Increased investment in other buildings and structures (including public works) is also expected, in part thanks to progress in the execution of local and regional investment plans. Despite all of the above, investment in construction is expected to remain close to 20% below pre-pandemic

Graph 2.19 Total goods exports (FOB) (monthly)



Source: DANE; calculations by Banco de la República.

Graph 2.20 Total goods imports (CIF) (monthly)



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

figures. Gross fixed capital formation would have grown in quarterly terms, but without surpassing levels from before COVID-19.

The trade deficit is expected to have remained at historical highs in the first quarter. An additional expansion in exports is not expected in the first quarter, following positive results at the end of 2021. This aggregate should continue to be driven by services and non-traditional goods sales. However, available indicators through February (Graph 2.19) point to a decline in traditional exports in quarterly terms, primarily in coal, oil and its derivatives. Given the low basis of comparison, total exports are still expected to register significant annual growth. Preliminary information to March (Graph 2.20) suggests a quarterly increase in imports, with capital goods purchases directed at industry the most dynamic component. As a result, the external deficit in constant peso terms would grow somewhat in the first quarter compared to the previous, and the contribution of net external demand on annual GDP growth in this period would again be negative.

The growth forecast for 2022 was revised upward to 5.0% (previously 4.3%) based on expectations for improved output performance in the first quarter. This projection accounts for some moderation in both public and private consumption growth, offset in part by improved investment levels. Average growth between quarters for the rest of 2022 would be close to zero. Household consumption should continue to be favored by a decline in cases and deaths associated with COVID-19, a gradual recovery in employment, and fuel price subsidies. However, several factors would start to attenuate this performance, including the gradual expenditure of excess savings, deterioration in consumer confidence amid rising inflation, political uncertainty, and tighter financial conditions. Growth in public consumption is expected to moderate over the course of the year, as stipulated by the government's Financial Plan. As for investment, gross fixed capital formation continues to be the component of domestic demand expected to be most dynamic in 2022, a result of construction continuing its recovery to near pre-pandemic levels. This would be sustained by significant expected growth in housing construction, given the evolution of government subsidy programs for social interest housing and high sales volumes registered in 2021 (see Box 1²⁸). Recovery is also expected in public works overseen by the national government and, especially, local and regional administrations, all of which are already financed and expected to begin this year. Machinery and equipment investment is projected to be high and similar to levels from 2021, in part thanks to increased investment in the mining and energy sector. Although financial conditions

²⁸ This supplement will be published on 06 May 2022.





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

are expected to tighten, terms of trade should improve, which would help drive mining exports. This would partially offset a deceleration in growth among Colombia's trade partners resulting from the global effects of the conflict in Ukraine. Given all of the above, and keeping in mind highs reached at the end of 2021, the current projection for 2022 growth would be 5.0% (Graph 2.21), higher than forecast in the January report (4.3%). High expected annual growth rates in the first half of 2022 can be explained in part by a low basis of comparison from the first half of 2021, due to effects of one of the peaks of COVID-19 and roadblocks in April and May of last year.

The unemployment rate is expected to continue to decline and average between 10.0% and 11.9% in 2022²⁹. thanks to improved projections for economic activity and a faster rate of labor market recovery. Employment has recovered at a faster rate than expected in recent months, given the better dynamics in job creation both in urban areas and in other municipalities and rural areas, as well as from a larger contribution from salaried employment. On the supply side, results from DANE's Integrated Household Survey (GEIH) Framework 2018, suggest moderate growth in the inactive working-age population in cities and a decline in this population in intermediate municipalities and rural areas. This suggests a more significant recovery in labor force participation in recent months. Despite this, increased dynamism in job creation has allowed for a significant fall in the seasonally adjusted unemployment rate, primarily in urban areas (see Section 3). Given recent dynamics and the macroeconomic scenario outlined in this report, the technical staff estimates that the national unemployment rate will continue to decline slowly, and that for 2022 it will average between 10.0% and 11.9%, with a most likely value of 10.9% (lower than estimates of 11.7% from the January report). The unemployment rate in urban areas is expected to average 11.2%, with a range between 10.2% and 12.2%. This would suggest that the urban unemployment gap would be smaller than estimated in the previous report (see April 2022's Labor Market Report), implying a tighter labor market in 2022.

Once GDP stabilizes at historical highs in 2022, the economy should start to gradually return to its long-term growth trajectory on the forecast horizon. The baseline forecast scenario for 2023 and beyond projects that international price shocks on commodities and global supply chain challenges will be overcome. The effects of the war in Ukraine, which have been especially meaningful

²⁹ These estimates were conducted based on results from the GEIH (2018 framework) and include chain linking and seasonal adjustments proposed by *Banco de la República*'s technical staff that may differ from new figures published by DANE as this report was being compiled. For more information on the changes see Box 2 of this report, which will be published on May 6.

in the short term, should also dissipate. Assuming this is the case, terms of trade should decelerate next year from present highs but remain above levels observed in previous years. This would favor investment decisions in the sector. The global economy, meanwhile, should recover its long-term rate of growth. Domestically, consumer and business confidence would be expected to recover after uncertainty associated with this year's electoral process. Infrastructure projects should get underway in the last year of local and regional administrations. Given the above, the economy is expected to grow 2.9% in 2023. If the growth forecasts for 2022 and 2023 included in this report are borne out, the annual implicit rate of growth of the economy from 2019 to 2023 would be 2.6%, lower than the long-term rate estimated before the pandemic. There remains significant uncertainty about fundamental domestic and external factors upon which this forecast is built, detailed in Section 2.3 of this report.

Excess productive capacity should have tightened faster than anticipated and is expected to remain close to zero in 2022 and 2023. The most recently available data continue to confirm a swift recovery in economic activity. GDP growth in 2021 exceeded projections from the previous report and was driven largely by private consumption. Recent indicators point in the same direction for economic activity and the labor market in 2022, suggesting a faster rate of recovery in job creation and reductions in the unemployment rate. Price information to March continues to show significant increases in headline inflation and its expectations, as well as in core inflation. These upward trends in prices have come primarily as a result of cost-related shocks, making it hard to identify the significance of demand pressures in inflation behavior. The fact that there has been no observable deceleration in the rate of price adjustments of any of the major CPI baskets suggests a low probability that there exist significant excesses in productive capacity at the beginning of the year. As a result, this report estimates the annual output gap for 2021 to have been -1.2%, slightly higher than calculated in the January report (-1.4%) (Graph 2.22). Potential output would have recovered its pre-pandemic levels and grown 4.2% in 2021. The annual output gap is expected to remain close to zero in 2022 and beyond, in line with projected economic growth (5.0%) and potential output that would grow 3.8%. There remains significant uncertainty related to these projections due to domestic and external risks signaled in Section 2.3 of this report. Particularly those associated with stronger, more persistent and widespread supply shocks in various sectors of the economy that could have effects on potential output in the short term.

Graph 2.22 Output gap^{a/} (four-quarter accumulation)



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

Graph 2.23 Annual current account ^{a/b/} (four-quarter accumulation)



a/ The graph presents the probability distribution for the forecast and its most likely path for 2022. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the baseline forecast (mode), using as a reference, mainly, the densities from the Patacon model. b/ The probability distribution corresponds to the forecast exercise in the April

2022 report.

Source: Banco de la República.

2.2.3 Balance of payments

The current account deficit is expected to decrease in 2022 to -4.7% of GDP as the result of more favorable terms of trade, among other factors (Graph 2.23)³⁰. High international commodities prices would increase the value of Colombian exports, primarily oil, coal, and coffee. Oil³¹ and mining production are also expected to recover, though without reaching volumes observed prior to the pandemic. The reduction in the deficit would be supported by expected trade partner growth and the gradual normalization in the balance of services associated with tourism. Transfer income would continue at historic highs. despite a slight moderation in remittances. The lower projected current account deficit also comes in a year that is expected to see moderation in the national government deficit. Some factors could prevent a more significant correction in the external deficit in 2022. First, goods and services imports are expected to increase during the year but moderate their growth due to a projected deceleration in domestic demand and higher financing costs. The increased value of external purchases would also reflect elevated international prices for fuels, fertilizers, and other industrial and agricultural raw materials. Second, earnings for businesses with foreign capital exporting coal and oil would be expected to recover significantly due to high expected prices for those products, partially offsetting the increase in exports. Third, payments for merchandise transport would continue to be high due to the greater volume of international trade and high international rates resulting from increased fuel costs and disruptions to global supply chains. Fourth, the international rate increases and the external debt balance would imply increased interest payments. There is significant uncertainty surrounding these estimates as a result of a changing international and domestic environment. The current account deficit forecast was revised downward from the January report (-4.9% of GDP).

Colombia should continue to have access to external financing in 2022, though under less favorable conditions than last year, amid high levels of uncertainty in international capital markets. Economic growth, the prospects of high profitability for extractive industries, and gradual recovery in domestic oil and coal production are expected to be reflected in increased inflows of

³⁰ The current account deficit would have represented 6.7% of quarterly GDP in the first quarter of 2022. The external deficit would have responded primarily to a significant trade imbalance in goods and services and increased earnings from foreign direct investment in the mining and oil sectors.

³¹ The national oil production estimate used to project the current account deficit is 777,000 bl/day on average in 2022, higher than levels registered in 2021 (736,000 bl/day) but lower than production in 2019 and 2020 (886,000 bl/day and 781,000 bl/day, respectively).

foreign direct investment (FDI). FDI would continue to recover in 2022 and gradually converge to pre-pandemic levels and financing a significant portion of the current account deficit. Capital from public acquisition offerings for the purchase of Nutresa and Grupo Sura would be expected to contribute to capital inflows in 2022, especially in terms of FDI and external debt. This, together with firms' external debt recovery, would partially offset the acquisition of external assets. Net private-sector foreign asset constitution is thus expected to moderate compared to 2021. Public sector capital would also be expected to support external financing, primarily through national government operations, which would increase its external debts. However, these inflows would be expected to moderate compared to 2020 and 2021, in line with a lower fiscal deficit projected for the year. Conditions for external financing costs have adjusted recently, as suggested by higher benchmark interest rates, the local risk premium, and the cost of peso-denominated public debt. Finally, uncertainty remains persistently high on external financing and cost projections due to the global geopolitical situation, the domestic political context, and high volatility in capital markets, among other factors.

2.2.4 Monetary policy and interest rates expected by analysts

The median analyst expectation for year-end policy rates is 7.5% for 2022 and 5.9% for 2023 (Graph 2.24). The median response to Banco de la República's monthly survey of analyst expectations from April suggests an expected policy rate of 7.5% in the fourth guarter of 2022 and 5.9% in the fourth quarter of 2023³². Interest rate increases on the forecast horizon would be compatible with the materialization of external cost shocks that have affected inflation, projections for economic activity, and tighter financial conditions than previously expected. On average, the policy rate for eight quarters implicit in the macroeconomic forecast is similar to market expectations from the April 2022 survey. However, analyst expectations for the rest of 2022 are slightly higher, and for the remainder of the forecast horizon slightly lower. Significant uncertainty persists in these projections, related to geopolitical tensions, Russia's invasion of Ukraine and its implications for commodities prices, China's management of the pandemic, the evolution of bottlenecks in global value and supply chains, international financial conditions, and the evolution of domestic economic activity. This information should be considered carefully as new data becomes available.

Graph 2.24 Average observed quarterly interest rate and rate expected by analysts ^{a/}



a/ These projections are calculated considering the quarterly average of the current rate according to the median response to the Bank's monthly economic analyst survey from April 2022 Source: Banco de la República.

³² These comparisons are based on median responses to Banco de la República's monthly analyst survey using the average rate for the quarter in progress.

2.3 Balance of macroeconomic risks

The main risks to the macroeconomic scenario laid out in this report are related to the external outlook. This section characterizes the balance of risks on the macroeconomic scenario proposed by the technical staff through predictive densities (PD)³³. The main risks considered on the policy horizon include less favorable international financial conditions; more significant effects on commodities prices as a result of Russia's invasion of Ukraine; more severe and persistent global production and distribution bottlenecks; uncertainty related to the pandemic and its effects on global and domestic economic recovery; and the evolution of Colombia's fiscal policy.

Risks related to global production and distribution bottlenecks, together with geopolitical tensions and China's management of the pandemic, suggest upside risks to inflation and higher levels of uncertainty. The risk of increased and more persistent cost pressures than considered in the baseline forecast scenario has recently become more accentuated. This has been the result of a less favorable external outlook in terms of transport costs, price pressures on raw materials, Russia's invasion of Ukraine, China's management of the pandemic, and external financing costs that could weaken further on the forecast horizon. In this context, the PD exercise incorporates higher levels of uncertainty and suggests an upside risk to core inflation, particularly in the goods basket. Other potential sources of upside risk to EFR inflation are related to more severe effects from price indexation, especially on food away from home and rentals. Projections for the food basket contain unusually high levels of uncertainty, though the balance of risks is relatively even as some upside risks that materialized in recent data have already been incorporated in the baseline forecast scenario. Within the regulated items basket, a more significant adjustment than expected to fuel prices is possible, given forecasts for oil and energy prices. There also remains a risk of higher-than-expected utility rate increases than considered in the baseline forecast scenario, given indexation processes. Given all of the above, the PD exercise suggests upside risk and increased uncertainty (wider PD bands) for the inflation trajectory on the forecast horizon compared to the January report.

Despite the upward revision on GDP growth for 2022, the PD exercise suggests a downside risk to growth due to external and internal factors. External factors include those related to financing costs, geopolitical tensions, and global production and distribution bottlenecks. These factors will be present on the forecast horizon (eight quarters) and generate downside risk to the growth forecast. Internal factors include downside risk associated with the pandemic and its effects on economic activity. Risk factors related to fiscal policy on the forecast horizon could also imply a downside risk to the projections.

The PD exercise for this report is characterized by wider forecast intervals for variables on the baseline forecast scenario, with upside risks to inflation and downside risks to GDP (Graphs 2.25-2.28). The risk factors and biases explained above suggest with 90% probability that inflation will be between 4.6% and 10.7% at the end of 2022 and between 2.0% and 8.7% at the end of

³³ Technical details on the construction of the balance of risks through the predictive density exercise can be found in "Caracterización y comunicación del balance de riesgos de los pronósticos macroeconómicos: un enfoque de densidad predictiva para Colombia" (Mendez-Vizcaino et al., 2021) and in Box 1 of the July 2021 Monetary Policy Report.





2023. Core inflation, with the same probability, would be between 4.5% and 8.5% at the end of 2022 and between 2.4% and 8.4% in December 2023. GDP growth is biased downward and is expected to range between 2.5% and 7.0% for 2022 and between -0.9% and 5.4% for 2023. The wide forecast ranges in the PD exercise reflect high levels of uncertainty on the current macroeconomic scenario due to recent events, particularly those associated with geopolitical tensions.

a/ The graph presents 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 baseline forecast (mode), using a combination of densities from the Patacon and 4GM models. Source: DANE; calculations and projections by *Banco de la República*.

97.5%

73.8%

>4

Graph 2.26 CPI excluding food and regulated items, predictive density^{a/} (annual change, end-of-period)



	Q4 2022	Q4 2023										
Mode	5.94%	4.78%										
< Mode	35.2%	38.1%										
Intervals												
< 2	0.0%	3.1%										
2 4	2.1%	20.0%										
> 4	97.8%	76.8%										

a/ The graph presents 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 baseline forecast (mode), using a combination of densities from the Patacon and 4GM models. Source: DANE; calculations and projections by *Banco de la República*.

Graph 2.27 GDP, four-quarter accumulation, predictive density^{a/, b/} (annual change)



	Q4 2022	Q4 2023
Mode	5.01%	2.87%
< Mode	56.1%	62.4%
	Intervals	
< 2	1.9%	45.1%
2 5	54.1%	47.2%
> 5	43.9%	7.6%

a/ The graph presents 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 baseline forecast (mode), using a combination of densities from the Patacon and 4GM models. b/ Seasonally adjusted and corrected for calendar effects. Source: DANE; calculations and projections by *Banco de la República*.

Graph 2.28 Output gap, predictive density^{a/, b/} (four-quarter accumulation)



	Q4 2022	Q4 2023
Mode	0.02%	0.16%
< Mode	55.0%	52.8%
	Intervals	
<-1	27.1%	32.6%
-10	27.5%	17.5%
01	25.2%	16.7%
>1	20.2%	33.3%

a/ The historical estimate of the output gap is calculated as the difference between observed GDP (four-quarter accumulation) and potential GDP (trend; four-quarter accumulation) from the 4GM model; for the forecast it is calculated as the difference between the technical staff's GDP estimate (four-quarter accumulation) and potential GDP (trend; four-quarter accumulation) from the 4GM model.

b) The graph presents 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 baseline forecast (mode), using a combination of densities from the Patacon and 4GM models. Source: DANE; calculations and projections by *Banco de la República*.

3. Current Economic Situation



Sources: DANE and Banco de la República.

CPI and core inflation indicators

Graph 3.1

3.1 Inflation and price behavior

Consumer inflation continued to rise in the first quarter, surpassing expectations. It was driven by external pressures and idiosyncratic price shocks. High inflation is a global phenomenon that for Colombia led to annual change in the CPI in March of 8.53%, close to its most recent high from July 2016 (8.97%) (Graph 3.1). Inflation continued above the 3.0% target and exceeded both the technical staff's and market expectations from the beginning of the year. This forecasting error has been most evident in food prices, though smaller price adjustments were also expected for goods, services, and regulated items. In addition to global commodity supply strains, including on agricultural raw materials, less dynamic demand and the dissipation of excess productive capacity in the first guarter would have driven annual consumer inflation. Other factors driving inflation would include the significant increase in the minimum legal wage, which was high by historical standards and indexed costs and prices to rates above the target, a contraction in agricultural supply for some temporary crops, and a significant increase in exports of some fruits and beef products. All of this came amid significantly volatility associated with the lapse of price relief measures and the implementation of VAT-free days decreed by the government. All these factors have put pressure on consumer prices and led to generalized inflation at historical highs over the year (see Box 3)³⁴.

Core inflation continued to increase in the first quarter, largely due to increased goods prices. The average of the indicators of core inflation increased significantly from December (3.45%) to March (5.59%). The CPI EFR remained low (4.51%) but increased compared to December (2.49%), surpassing the technical staff's expectations from January. Several factors contributed to an increase all of the core inflation indicators regularly monitored by *Banco de la República*. These include transportation bottlenecks, global and local shortages in commodities and agricultural raw materials, dynamic aggregate consumption, and an output gap that reflects the dissipation of excess capacity at the close of the first quarter. Indexation to higher rates of inflation, especially for services, as well as salary costs as a result of the increased legal minimum wage, would

³⁴ This supplement will be published on 06 May 2022.

Graph 3.2 CPI for goods and services, excluding food and regulated items (annual change)



Source: DANE; calculations by Banco de la República.

have put additional upward pressures on this measure of core inflation.

Annual change in the CPI for goods rose in the first quarter, reflecting high and growing pressure from costs, the exchange rate, and idiosyncratic shocks. Annual change in the CPI for goods increased significantly from December (3.31%) to March (6.41%) (Graph 3.2). This increase was due primarily to external pressures, including global supply chain bottlenecks and increases in international commodities prices, both of which have been accentuated by outbreaks of COVID-19 in China and Russia's invasion of Ukraine. Exchange rate depreciation from the fourth quarter of 2021 to the end of February 2022 also put upward pressure on prices. Domestically, the regression of downward pressures resulting from three VAT-free days in the fourth guarter of 2021, and which would be reversed in the first quarter of 2022, would be partially offset by the downward effect of the VAT-free day on March 11. Production costs for a majority of economic activities would also be expected to increase as a result of the legal minimum wage adjustment and increases in other costs, such as for energy and fuels.

Of the four large segments of the family basket, services registered the smallest annual price increase at the end of the first quarter. Services prices rose in annual terms by 3.79% in March (compared to 2.18% in December) and was the segment of the CPI that registered the smallest annual increase (Graph 3.2). This can be explained primarily by a smaller annual price adjustment in rental housing (2.3%), which only slightly increased from December (2.0%). However, there remains significant uncertainty over the possibility that a rent freeze in 2020 and contract renegotiations related to the pandemic could alter the seasonality of rental prices and lead to higher price adjustments over the remainder of the year (Graph 3.3). The "other" category (-0.2%) also contributed to the lower annual increase in the services CPI. Activities for which reopening or reactivation after the pandemic have been difficult, such as tourism packages and air transport, are worth noting. Fixed and mobile telephone communications and movie tickets also registered negative or close to zero change for the year. Upward pressures derived from external and internal shocks, together with increased indexation due to 2021 inflation, have passed through onto the CPI for services, especially in food away from home. This segment, which to March 2022 registered an increase of 14.1% and accounts for a significant portion of this CPI (8.8%) has also faced upward pressure from the partial reinstatement of a consumption tax that applied to





Sources: DANE; calculations by Banco de la República.









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

various restaurants³⁵. Significant price increases for foods and utilities, in addition to increased labor costs, also contributed to rising food away from home prices.

Regulated items prices have increased moderately in the year to date, incorporating increased commodities costs and indexation to higher rates. Regulated items prices in the family basket increased in annual terms from 7.10% in December to 8.32% in March (Graph 3.4). This was led by utilities (from 9.5% to 11.2%) and transportation prices (from 2.8% to 5.8%) (Graph 3.4, Panel A). The CPI for utilities was driven by energy, sewage and gas prices, whose annual price adjustments were above 10%. High international prices and, more recently, accumulated depreciation in the peso against the dollar have driven increases in energy (due to thermal plants that work on combustible fuels) and gas prices. Higher inflation for both producers and consumers is transmitting a significant portion of costs and rates for energy, sewage and water via indexation. Investments intended to improve service and expand coverage have also put pressure on rates. Public transportation prices rose in various cities (notably Bogotá and Medellín), putting significant inflationary pressure on the CPI. Annual change in the CPI for regulated education and the "other" category contributed upward pressure on the CPI in the first quarter (Graph 3.4, Panel B). By contrast, domestic fuel prices have been slow to pass through the rise in international oil prices which, together with a favorable basis of comparison, led to a decline in annual change in the CPI for fuels from December (11.3%) to March (8.0%)³⁶.

The CPI for foods continued its upward trend in the first quarter, driven by the cost shock on commodities and a contraction phase in the supply of some foods. Multiple domestic and international factors can explain the annual increase in food prices from December (17.23%) to March (25.37%) (Graph 3.5). First, the perishable food supply was negatively affected by roadblocks in the middle of 2021 that caused delays in planting, fertilization, and weed and pest control. This was despite a La Niña weather

³⁵ The consumption tax for food services was partially reinstated in January 2022, in accordance with the Social Investment Law. This outlined the reinstatement of indirect taxes for restaurants under the common tax regime, while the reinstatement of the tax for restaurants under the simple tax regime will begin in January 2023. See paragraph 5, Article 57 of Law 2155 published by Congress on 14 September 2021.

³⁶ There has only been one increase in domestic gasoline prices in the year to-date (January) and no price reductions. The decline in the annual adjustment in the CPI for fuels has been supported by a favorable statistical basis of comparison. In March 2021 domestic consumer fuel prices increased 1.72%, while in March of this year there was no growth.

Graph 3.5 CPI for foods and its components (annual change)



Source: DANE, calculations by Banco de la República.





Source: DANE; calculations by Banco de la República.

pattern that favored production³⁷. Together with adverse production cycles, these strains led to shortages of some tubers, vegetables, and fruits, which still persist. These conditions have been reinforced by recent global supply and distribution challenges related to Russia's invasion of Ukraine, which has made the maintenance and in some cases continuity of cultivation more difficult, not just as a result of significant price increases but also due to marked scarcity in agricultural raw materials. The most significant annual price increases and largest inflationary surprises in the family basket were concentrated in perishable foods, which in March (41.9%) surpassed margin figures from December (24.4%) by a wide margin. The annual adjustment in processed food prices (from 15.3% in December to 20.7% in March) increased as a result of the increase in domestic and imported commodities prices, international price behavior for some processed foods (vegetable oils, flour, cereals, and others) and higher costs associated with salaries, utilities, and freight. Processed foods also continued to incorporate upward pressures originating in limited livestock supply, exacerbated by an increase in beef exports.

Since the beginning of 2021, annual producer inflation has been driven by global supply chain disruptions, increases in freight costs, and by some domestic cost pressures originating in particular in limited food supplies. Annual change in the Producer Price Index (PPI) for domestic supply reached 22.5% in March³⁸, the highest rate since December 1991 (23.1%) (Graph 3.6). However, in March the increase in annual producer inflation ceased, registering a level similar to February (22.6%) though still much higher than in December (18.6%). The upward trend in producer inflation in the last year has been led by the domestic component, for which annual growth in March (26.3%) surpassed the import component (13.7%). The latter declined compared to December (16.3%), reflecting exchange rate appreciation in March and a basis of comparison that favored a reduction in price adjustments in the imports PPI. Annual change in the domestic PPI increased in the first guarter due to mining (59.7%), driven by metals and oil, which have been significantly affected by the war between Russia and Ukraine. The annual adjustment in industrial prices (16.6%) accounted for an increase in production costs related to global and domestic commodity shortages. A smaller adjustment in the domestic PPI for agriculture in March (49.4%) compared to February (53.9%) reflected an unfavorable basis of comparison, as monthly change in

³⁷ See Borradores de Economía No. 1101 from 2020: "Hechos estilizados de la relación entre El Niño, La Niña y la inflación en Colombia," at: https:// repositorio.banrep.gov.co/bitstream/handle/20.500.12134/9811/be_1105. pdf

³⁸ Producer inflation in the most recent month available is based on provisional figures DANE, which are confirmed or corrected the following month.





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

Graph 3.8 Gross domestic product and quarterly domestic demand ^{a/} (annual change)



a/ Seasonally adjusted and corrected for calendar effects Source: DANE; calculations by *Banco de la República*. March 2021 (4.4%) was far higher than observed in March 2022 (1.5%).

3.2 Growth and domestic demand

Colombia's economy recovered significantly in 2021 following the shock of COVID-19 in 2020. The economy grew 10.6% last year after contracting 7.0% in 2020. Growth in 2021 surpassed the technical staff's January projection of 9.9% for the year. As a result, GDP level for 2021 was 2.8% higher than in 2019 (Graph 3.7). Several factors were decisive in allowing for economic recovery to continue in 2021 and gain impulse in the second half of the year. These included expansionary monetary policy, accumulated savings in the most critical moments of the pandemic, dynamism in public consumption, the National Vaccination Plan, a reduction in COVID-19 cases, and the full reopening of productive and commercial activities. This came alongside significant growth in the global economy and for many of Colombia's main trade partners in particular, which facilitated export growth, especially in non-traditional exports. All of this came amid relatively loose external financial conditions. This recovery trend was maintained for most of the year, with the exception of the second guarter, when economic activity contracted temporarily due to roadblocks in April and May and a third peak of the pandemic. The roadblocks affected diverse areas of the country, but primarily the southwest, as well as various sectors, such as industry, manufacturing, ground transportation and agriculture. Some of the repercussions of these roadblocks persisted for the rest of the year. In all, there was notable growth in 2021 in arts, entertainment and recreation; commerce, repairs, transportation and lodging; industrial manufacturing; and information and communications.

Economic activity returned to a growth trajectory after being interrupted in the second guarter, driven in particular by domestic demand. A contraction in domestic absorption in the second quarter, for the reasons mentioned above, was followed by significant expansion in the third guarter that deepened further still in the fourth. As a result, domestic demand grew more than GDP in annual terms for three consecutive guarters. Domestic demand registered quarterly growth of 1.6% and annual growth of 12.3% (Graph 3.8) in the fourth quarter, rising to 8.5% above its pre-pandemic level. By components, total consumption, which grew compared to the third quarter by 4.1%, provided the largest contribution to quarterly growth in domestic demand. This was driven largely by the private component and, to a lesser extent, the public component. Gross fixed capital formation increased in quarterly terms to a very moderate degree (0.7%) and, in the fourth quarter was the only significant component

Graph 3.9 Large spending component levels relative to Q4 2019^{a/} (Q4 2019 = 100)



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





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

Graph 3.11 Quarterly gross fixed capital formation ^{a/} (annual change, contributions)

(Yearly percentual variation)



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

Gross fixed capital formation (GFCF)

of spending to remain below its pre-pandemic level (by 11.9%) (Graph 3.9).

Private consumption marked four guarters above prepandemic levels, with notable performance in semidurable goods and in services. Private consumption was 12.9% above its pre-pandemic levels in the fourth quarter, growing in quarterly and annual terms faster than GDP (4.7% and 13.4%, respectively) (Graph 3.10). Services spending provided the biggest contribution to the quarterly increase, growing by 4.8% compared to the third quarter and representing 65.4% of the annual variation in overall economic activity. Goods spending also registered a considerable increase, driven in large part by the three VAT-free days in the fourth guarter, which drove consumption of semi-durable and, to a lesser extent, durable goods. A notable recovery in private consumption over the course of the year was possible thanks to the near-complete reopening of economic sectors, spending of accumulated household savings, employment recovery, and positive dynamics in some components of available household income, such as remittances, among other factors. All of this came in the context of monetary policy that remained in expansionary territory, with low interest rates and ample credit availability. For its part, public consumption grew at high annual rates in the fourth quarter and maintained in levels close to those of the previous quarter. This was explained, primarily, by positive progress in vaccination campaigns at the of the year and, to a lesser extent, by intermediate consumption and retroactive salary payments from the previous quarter. As a result, overall consumption grew in annual terms by 13.2%, rising 12.9% higher than the fourth quarter of 2019.

Gross fixed capital formation grew less than expected in the fourth quarter, registering only a slight recovery from the third quarter and remaining considerably below pre**pandemic levels.** While investment grew significantly in annual terms (8.1%) due to a low basis of comparison, the quarterly dynamic was very limited, with levels that barely increased compared to the third guarter. Construction continued to show the most significant lag in investment. Within the sector, housing construction grew very slightly compared to the third quarter, with a slight recovery that was the result of improved performance in social interest housing construction. Investment in other buildings and structures continued to stagnate far below pre-pandemic levels, explained primarily by weak performance in public works, as suggested by supply-side figures. In contrast, investment in machinery and equipment, which is the largest subcomponent of gross fixed capital formation, maintained relatively high levels above pre-pandemic figures, but declined somewhat in quarterly terms. The satisfactory investment levels registered over the course

Graph 3.12 Exports, imports and trade balance ^{a/} (annual change and trillion 2015 pesos)



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





a/ Seasonally adjusted and corrected for calendar effects Source: DANE; calculations by *Banco de la República*. of 2021 were consistent with positive dynamism registered in capital goods imports.

The trade deficit in real peso terms declined in the fourth quarter as a result of more dynamic exports than imports. Nevertheless, the trade imbalance continued to be large compared to pre-pandemic figures. Real exports grew significantly in quarterly (11.1%) and annual terms (31.2%) in this period. The guarterly increase allowed for exports to surpass their pre-pandemic levels, and was concentrated in external sales of coal, petroleum derivatives, and services, in particular non-residential tourism. Imports grew again in guarterly terms, but to a lesser degree than exports and below expectations. The increase in this component in the fourth quarter would have been due primarily to the increase in purchases of services, commodities, and COVID-19 vaccines. The boom in imports over the course of the year came hand-in-hand with a significant recovery in domestic demand. Given the above, the fourth-quarter contribution of net external demand to annual GDP growth continued to be negative (-2.4 pp), but its downward effects were smaller than in the third quarter (Graph 3.12).

Most large components of supply surpassed their prepandemic levels in the fourth quarter. Lodging and food services, arts and recreation, and information and communications rose to an unexpected extent in the last quarter, registering levels significantly higher than prior to the pandemic. In particular, growth in lodging and food services was surprisingly strong, registering levels 37.3% higher than those of the fourth guarter of 2019 thanks to significant recovery in domestic demand, partly as a result of suppressed spending (Graph 3.13). At the end of the fourth quarter only mining and construction had yet to return to pre-pandemic levels. In the first case, both coal extraction and oil and natural gas exploitation lagged. However, high prices for these commodities allow for the expectation of a recovery on the forecast horizon, as explained in Section 2. Despite positive dynamics in housing sales, construction added value closed the year below levels from the end of 2019. This result can be explained by dynamics in building construction and in public works.

Graph 3.14 Employed population by location (seasonally adjusted monthly series)



Note: The dotted lines represent chain-linked series. Continuous lines correspond to GEIH Marco 18. Source: DANE (GEIH); calculations by *Banco de la República*.

Graph 3.15





Source: DANE (GEIH); calculations by Banco de la República.

3.3 Labor market³⁹

Recent information from the GEIH shows a more dynamic recovery in employment than that observed in the previous survey. According to results from the DANE's GEIH Framework 2018 jobs creation in the national aggregate maintained a rate of growth in the last months of 2021. The positive pace of overall recovery continued through February, with growth of 7.5% compared to the same month last year. This was due to increased dynamism both in urban areas (9.4% annually in 13 cities) and in other municipalities and rural areas. In the seasonally adjusted monthly series⁴⁰, this behavior would imply a faster recovery than suggested in the previous survey (Graph 3.14). At the sector level, employment creation in February for the national aggregate was driven in large part by vehicle sales and repairs, recreation and other services, and industrial manufacturing which, together, contributed 4.3 percentage points to annual growth.

Growth in salaried employment at the national level would be leading jobs growth. The most recent information suggests that salaried employment growth was more dynamic than observed in the GEIH Marco 2005, in line with greater pace of overall employment recovery. Improved growth in the salaried segment in recent months has come mainly from private employment, which in February contributed 5.6 percentage points to overall annual employment growth (Graph 3.15). Although the results of the new survey also suggest growth in non-salaried employment, this has lost influence in recent months as a driver of overall employment growth. These results would be in line with information from administrative registers, such the PILA pension system, professional risk enrollees and administrators (ARL) and family compensation funds,

³⁹ The analysis of the labor market in this report was conducted with results from the GEIH Framework 2018, whose results were collected simultaneously beginning in January 2021. This is done with the goal of providing historical comparisons used in provisional chain-linking, calculated by Banco de la República's technical staff, that considers the dynamic observed in the previous survey (GEIH Framework 2005), growth factors in the national census from 2018, and changes in the definition of the working-age population. It is important to note that this chain-linking does not control for potential changes induced in the new survey as a result of updates to the geostatistical framework and, as a result, is an approximation of the dynamics that could be observed in labor market statistics within the new framework. Chain-linked figures can include some margin of error, especially for periods in which large populational changes are observed, as was the case during the pandemic. For a detailed analysis of the labor market based on this chain-linking exercise, see Box 2 of this report and Banco de la República's Labor Market Report, available at https://www.banrep.gov.co/es/reporte-mercado-laboral.

⁴⁰ The labor market is seasonal, which is to say that its values are systematically higher or lower depending on the month of the year. This phenomenon needs to be isolated using statistical techniques in order to make comparisons between months in the same year. As a result, the information presented in this section corresponds to the series without those calendar effects, known as the seasonally adjusted series.





Note: The dotted lines represent chain-linked series. Continuous lines correspond to GEIH Marco 18. Source: DANE (GEIH); calculations by *Banco de la República*.





Notes: Seasonally adjusted series. Moving quarter. Based on vacancy rate estimated based on PILA pension system. Source: DANE (GFIH) and Banca de la Renública. which since the second half of 2021 would have recovered pre-pandemic levels.

Greater dynamism in employment has allowed for a continuous decline in the unemployment rate, mainly in **urban areas.** On the supply side, the new survey shows moderate growth of the population outside the labor force (inactive working-age population) in cities and a reduction of those figures in intermediate municipalities and rural areas. This has allowed for greater recovery in labor force participation in recent months, which in February grew 1.8 percentage points in the national total and 0.9 percentage points compared to the same month in 2021. However, the recovery in the supply of workers continues to come at a slower rate than employment growth, allowing for a continued decline in the unemployment rate. This has come mainly in urban areas, where supply pressures have been less significant. Given the above, the unemployment rate in its seasonally adjusted monthly series for February was 11.4% for the national total and 11.7% in Colombia's 13 largest cities (Graph 3.16). These figures were -2.4 pp and -5.0 pp lower than observed a year earlier, respectively.

Some additional figures from the demand side suggest a tighter labor market. Information from Banco de la República's monthly survey of economic expectations (EMEE) suggests greater expectations on behalf of firms for payroll increases, which would be at their highest point in 10 years. This performance would be in line with continuous growth in job vacancy indicators, calculated based on classified ads and supply in the Public Employment Service, which since 2021 have shown a recovery in demand for new jobs and in February reached historical highs. However, information from the EMEE also points to significant hiring bottlenecks, and as a result expectations have not yet translated into a greater acceleration in employment growth. Together with a reduction in the unemployment rate, this suggests that according to a Beveridge curve (Graph 3.17) the labor market in the most recent months would be less loose.

3.4 Financial and money market

Financial conditions continued to support economic activity in the first quarter in an environment of normalization of monetary policy. During this phase of normalization, which began in September 2021, the BDBR has increased interest rates by a total of 325 basis points as of March 2022. These increases have passed through on interest rates in the banking system to varying degrees. Despite this, savings and credit interest rates remain low in real terms (except those for credit cards). Household and business loans remain robust, as suggested by an acceleration in peso-denominated bank credit, with

Chart 3.1 Average monthly interest rates

	Feb- 20	Jun- 21	Sept- 21	Dec- 21	Mar- 22
Interbank					
policy rate	4.25	1.75	1.76	2.70	4.00
interbank overnight	4.26	1.76	1.79	2.73	4.06
BBI overnight	4.25	1.75	1.77	2.72	3.99
BBI 1-month	4.25	1.76	1.93	2.96	4.77
BBI 3-month	4.25	1.91	2.27	3.36	6.06
BBI 6-month	4.27	2.15	2.76	3.96	7.39
Deposits					
Savings	2.37	0.96	0.97	1.19	1.82
DTF 90-day	4.46	1.91	2.05	3.08	4.97
CD 180-day	4.69	2.21	2.45	3.71	5.63
CD 360-day	5.36	3.23	3.16	5.10	7.59
CD > 360-day	5.71	3.89	3.68	7.14	9.55
Credit					
Preferential	7.01	4.84	4.98	6.00	8.09
Ordinary	9.74	7.18	7.34	8.18	10.33
Non low-income housing construction	9.35	7.00	7.46	7.92	9.97
low-income housing construction	9.08	6.52	6.86	7.33	9.50
Non low-income housing purchases	10.50	8.88	9.06	9.40	10.32
low income housing purchases	11.89	10.41	10.98	11.55	12.23
Personal loans consumption	17.09	16.11	17.09	17.51	19.56
Payroll lending consumption	13.55	11.47	11.23	11.65	12.50
Credit card	25.48	23.87	23.49	24.47	25.39

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

Graph 3.18

Real commercial credit interest rates (average monthly data deflated with CPI excluding foods)

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

annual rates approaching nominal output growth. Credit risk indicators have moderated, though they continue to be high, and the financial system has registered adequate solvency levels.

Changes to the monetary policy rate continue to pass through on credit and savings interest rates, though with lower intensity for sight deposits and mortgage rates. However, interest rates remain low in real terms (except for credit cards). Since the beginning of the normalization process for monetary policy, one-day interbank rates have increased *pari passu* with the monetary policy rate. At longer terms these rates have risen more, possibly due to expectations for greater increases to the policy rate. Specifically, in the first quarter the benchmark banking indicator (BBI) at three and six months was on average higher than the monetary rate by 133 and 247 basis points, respectively. For deposit rates, the response to the monetary policy rate has been higher as a function of term. In fact, in terms of monthly averages, since September 2021 the increase in sight-deposit savings rates has been 86 basis points, for CD rates at 90 days (DTF) this has been 292 basis points and at terms beyond one year 587 bp (Chart 3.1). For the same period, placement rate increases have been more dispersed, with the increase for preferential loans (312 bp) followed by ordinary loans (299 bp) and mortgage loans (126 bp). Despite the increases in nominal interest rates, in real terms the monetary policy rate and placement rates remain at low levels in real terms (Graph 3.18).

Credit dynamics continue to contribute to recovery in economic activity by supporting firms' financing needs and household demand (Graph 3.19). Peso-denominated bank credit accelerated in the first guarter. Its annual growth rose from 9.2% in December 2021 to 13.0% in March 2022. Forty-seven percent of the guarterly balance increase (COP 24 trillion, 4.1%) was directed to commercial credit, and 41% to consumer credit. Annual growth in the commercial portfolio increased from 6.2% to 10.3% and included significant participation of both ordinary and preferential disbursements at less than one year. This suggests greater demand for working capital, likely related to increased production costs. For the same period, consumer credit also saw an increase in annual growth from 12.2% to 16.8%. Disbursement dynamism allows for the expectation for good performance in durable and semi-durable goods consumption in the quarter. This has been driven by the personal loan modality, with a lower share of longer-term loans. For its part, loans for housing purchases also strengthened, though to a more moderate degree, with annual growth rising during the quarter from 12.6% to 13.6%.

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

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

Credit risk is at high levels but shows signs of moderation. Credit establishments continue to increase earnings and maintain high solvency indicators. With information to January, estimated risk based on default rates and portfolio at risk indicators showed signs of improvement, but remained above pre-pandemic levels. The assimilation of weakening in the portfolio, together with an acceleration in loans, continues to drive positive results for credit establishments, whose accumulated earnings over 12 months (COP 16.7 trillion) have already surpassed by 26% those obtained in 2019 (Graph 3.20). Credit establishments continue to maintain high and stable solvency levels.

Box 1: Recent Housing Market Performance

Graph B1.1 **Real housing prices**

A. Global housing price indices (annual change)^{a/}

Sept-01 Sept-03 Sept-05 Sept-07 Sept-09 Sept-11 Sept-13 Sept-15 Sept-17 Sept-19 Sept-21 IMF -BIS

B. Annual growth in real housing prices 2021 (period average)

a/ Global price indices represent an aggregate of more than 50 countries Note: Real price indices were deflected with each country's CPI. Sources: International Monetary Fund and Bank for International Settlements

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1. The housing market and monetary policy

The inflationary phenomenon accompanying economic recovery following the crisis of COVID-19 has become a source of concern to monetary policy authorities around the world. Annual inflation has reached decade-long highs in many developed economies, primarily due to global supply chain bottlenecks and disruptions. Economic shocks in these countries have persisted longer than expected by their central banks. More persistent deviation from target inflation rates can be expected in this context, increasing the probability of an accelerated withdrawal of monetary stimulus in advanced economies. Possible imbalances generated in other markets, as is the case in numerous countries' housing markets, are also a concern and could exert additional and longer-lasting pressure on inflation.

In contrast to other economic indicators, and as opposed to expectations during a typical recession (International Monetary Fund, 2021), global housing prices increased during the COVID-19 pandemic. According to the Bank for International Settlements (BIS), the global indicator for real housing prices rose in annual terms by 2.6% in 2021 and 4.4% in 2021¹, the largest rate increases in 12 years (Graph B1.1, Panel A). In some cases, housing price increases surpassed those observed prior to the global financial crisis in 2008. In a sample of 58 economies, close to 50 registered real annual growth in housing prices in 2020 and 2021, with developed economies producing the highest increases (Graph B1.1, Panel B).

The dynamic described above could affect inflation, particularly through housing rentals prices². Significant increases in housing prices could motivate homeowners to pursue higher potential returns (rent)³. Higher housing prices could likewise limit the potential for new homeowners to enter the market, limiting affordability and putting pressure on rental demand⁴. In addition to inflationary concerns, these conditions could have additional implications for financial stability, associated with a

Amid global monetary policy that would continue to be normalized.

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Renters' desire to recover losses and discounts applied in 2020 represent additio-4 nal factors that could be putting pressure on the U.S. housing market.

The authors are members of Banco de la República's Programming and Inflation Department. The views and opinions expressed herein do not necessarily reflect those of the bank or its board of directors.

Data for 2021 corresponds to the average through the third quarter compared to the average for 2020 as a whole.

Housing-related services account for 32.80% of overall inflation in the U.S. and 11.55% in the euro zone.

probable housing market bubble that could negatively affect the financial system and the economy writ large, as was the case in 2008⁵.

In this context, monitoring potential domestic and external imbalances in housing markets are of particular interest to central banks. For example, in the United States, the persistence of high growth in housing prices could increase the risk of higher inflation. Added to other factors, this could precipitate an acceleration in the pace of monetary policy normalization in the U.S. and, as a result, lead to an increase in Colombia's external financing costs earlier than is currently expected by the market and *Banco de la República*'s technical staff.

2. International housing prices

In most of the world's economies, increases in housing prices have been driven by both supply and demand factors. Several considerations have contributed to a significant increase in housing demand, including: 1) low interest rates as part of major central bank policies adopted to mitigate the adverse effects of COVID-19; 2) fiscal support from governments intended to support household income; 3) increased savings as a result of reduced household spending on certain services during the pandemic; and 4) a preference for housing with suitable spaces for remote work, which stimulated the purchase of larger houses or second homes.

On the supply side, there have been several significant restrictions associated primarily with scarcity in the labor force and in construction materials. For example, steel and lumber prices in international markets averaged an annual growth in 2021 of 172.4% and 70.4%, respectively. This came amid supply restrictions related to climate factors⁶ and production bottlenecks, as well as increased demand for commodities alongside economic recovery and the easing of mobility restrictions. According to the Home Builders Institute (HBI), trained labor scarcity in the construction sector has been a limiting factor in improving the housing supply in the United States. This has coincided with a reduction in housing inventories in the U.S. and other countries, including Canada, New Zealand and Sweden, contributing to a market imbalance⁷.

The leading indicators of real housing sales prices in the U.S. registered double-digit annual growth in 2021, surpassing levels from before the 2008 financial crisis, when the deregulation of sub-prime housing loans and other factors provoked a collapse in the financial system (Ocampo, 2009) (Graph B1.2). Given the transmission of housing market price pressures on rentals, which tends to occur in the upward phase for housing prices and extend even beyond this period, housing-related services and its components registered significant growth acceleration in the second half of 2021. This came after a steep decline in 2020 and surpassed growth rates observed in the last decade (Graph B1.3, Panel A). Indeed, based on real estate market information (Zillow's ZORI index), rental prices registered historical highs between 2019 and 2021, increasing 9.9% (an increase of USD 156 on average) (Graph B1.3, Panel B).

Housing prices in the U.S. are expected to remain high in 2022 but increase at a slower pace than in 2020 and 2021. A smaller imbalance, though without returning to prepandemic conditions, would contribute to moderation in growth in this market. On

⁵ The Federal Open Market Committee (FOMC) most recent meeting minutes signal that increased prices in housing-related services have generated upward inflation pressure. The FOMC considered this a factor that could potentially contribute to an acceleration in the cost of living in the U.S. The European Central Bank (ECB) has signaled its concern with the increased risk of rising prices in the housing market and, through the European Systemic Risk Board, has asked for seven of the 30 countries it monitors to take financial steps to mitigate these risks.

⁶ Spring and summer are wildfire seasons in Canada and the U.S., limiting operating capacity in the lumber sector. British Columbia, which produces 16.7% of the lumber in North America, experienced flooding at the end of 2021, increasing difficulties in the dispatch of lumber orders from the port of Vancouver (Williams, 2021).

⁷ The U.S. construction sector has not recovered from the shock of 2008-2009, generating low housing inventory over the last decade. Regional planning requirements and construction regulations have contributed to insufficient inventories in Canada since 2015 (Bank of Canada, 2021). In New Zealand and Sweden, housing construction has encountered barriers in responding to population growth and new household formation, amid land use restrictions (Reserve Bank of New Zealand, 2021; Sveriges Riksbank, 2021).

Graph B1.2 Real housing prices in the United States (Indices and annual change)^{a/}

a/ Indices are deflected with the Personal Consumption Expenditures Price Index (PCEP)

Sources: Standard & Poor's, Federal Housing Finance Agency (FHFA) and Zillow; calculations by the authors

Graph B1.3

Housing rental price indicators

A. Inflation in housing-related B. Rental price index a/ services by group

a/ Indices are deflected with the Personal Consumption Expenditures Price Index (PCEP)

in Colombia (annual change)

9

10

Sources: FRED St. Louis and Zillow; calculations by the authors.

Graph B1.4

Housing prices in Colombia

A. Real housing price indices B. Real housing price growth for Colombia

Note: Real new housing prices are measured through DANE's IPVN including 30 municipalities. Banco de la República's IPVNBR for Bogotá and surrounding municipalities, Medellín, Cali and DNP's IPVN for Bogotá. Real used housing prices are measured through Banco de la República's IPVU for Bogotá and Medellín and their surrounding municipalities, and for Cali. All are deflected with the CPI excluding foods

Sources: Banco de la República, DANE and DNP; calculations by the authors.

the demand side, increased Federal Reserve interest rates and their transmission on mortgage rates would represent the main disincentive to housing sales⁸. Sales performance should nonetheless remain strong, though below levels registered in the last two years (Orton, 2022). On the supply side, the housing sales inventory is expected to recover from historically low levels this year, alongside new housing construction and the opening of more real estate availability with the end of the U.S. federal foreclosure moratorium on June 30, 2021. However, supply would not be expected to grow sufficiently to rebalance the housing market, due to persistent costs and input supply problems. According to the FOMC, housing-related services would constitute a potential source of additional inflation pressure.

3. The housing market in Colombia

Similar factors as those mentioned above have favored purchasing demand for housing in Colombia. However, housing prices have not registered significant increases compared to some advanced economies. Since 2016, real new⁹ and used¹⁰ housing price indices have registered typical and stable growth. This trend continued in 2021, with new and used housing prices averaging 2.1% and 4.2% annual growth, respectively. These figures were below those registered in other episodes of rising housing prices¹¹ (Graph B1.4).

In contrast to price performance in advanced economies, this dynamic in Colombia resulted from a greater balance between supply and demand in the country's housing market. As with the rest of the world, Colombia has seen significant growth in housing demand. Several factors have helped mitigate the effects of demand and cost pressures on housing prices. For non-public housing, these include the existence of significant inventory. For public housing, they include the availability of government subsidies and credit at low interest rates.

Public housing sales peaked in 2021, with more than 160,000 units sold. Non-public housing sales also performed very well, with sales of 67,000 units, the highest figure since 2017 (Graph B1.5, Panel A). Housing demand performance has been driven since the beginning of 2020 by the expansion of subsidy programs in 2020, 2021 and 2022¹². One of these, called *Mi Casa* Ya (My House Now), is aimed at low-income households and provides a monetary subsidy for purchasing new homes (priced between 130 and 150 times the legal monthly minimum wage). The program also offers homebuyers a hedge on credit interest

- As of March 31, mortgage rates at 30 and 15 years were much higher than in 2019. 8
- From DANE's new housing price index (IPVN for its initials in Spanish) and Banco de la República's real new housing price index (IPVNBR).
- From Banco de la República's real used housing price index (IPVU).
- 11 For example, prior to the 2008 crisis real new and used housing price indices registered increases of 11.3% and 11.5%, respectively. The composition of overall sales has changed since that period. Specifically, from 2012-2013 public and non-public housing corresponded to 46% and 54% of overall housing sales, respectively, while in 2021, the proportion was 70% to 30%.
- 12 The Compromiso por Colombia ("Commitment for Colombia") plan, announced by the national government in 2020 in response to the COVID-19 pandemic, made available 200,000 subsidies for the acquisition of housing between 2020 and 2022: 100,000 for public housing through the Mi Casa Ya ("My House Now") program and 100,000 subsidies for non-public housing purchases through the FRECH fund.

Graph B1.5

A. Housing sales by segment (12-month accumulation and annual change)

B. Disbursements for housing purchases

Sources: CAMACOL and Financial Superintendent; calculations by the authors.

Graph B1.6

Project launch, building starts and housing supply inventory by segment

a/ Twelve-month accumulation of project units that began sales in 13 regions b/ Twelve-month accumulation of projects units that began construction in 13 regions

14

c/ Twelve-month average of project units or stages available in the sales market in 13 regions

Sources: CAMACOL; calculations by the authors

rates¹³. For its part, Colombia's Reserve Fund to Stabilize the Mortgage Portfolio (FRECH for its initials in Spanish) provides subsidies to applicants who already have approved loans to purchase homes priced up to 500 times the legal monthly minimum wage. This subsidy covers a percentage of the agreed credit interest rate, leading beneficiaries to prefer the finished housing supply. In addition to these subsidies, housing demand has been driven by low interest rates (as is the case in the global context), the desire for more space and comfort, and a recomposition of spending during the pandemic. As a result, credit disbursements for homebuying registered historical highs in 2021 (Graph B1.5, Panel B).

The continuation of *Mi Casa Ya* subsidies contributed to an increase in new housing generation in the public housing sector, where key indicators (building starts and project launch) reached multi-year highs (Graph B1.6). Widely available credit for public housing construction has also contributed to this dynamic, with disbursements that in average annual terms increased 55.8% in 2021. Meanwhile, the non-public housing inventory has increased since 2015 amid reduced demand in the context of deterioration in available income from falling oil prices. This dynamic helped allow the sector meet demand registered since the middle of 2021 originating, in part, in the FRECH subsidies. Despite the fact that in 2021 launches and building starts returned to pre-pandemic levels, construction in this segment had lagged in prior years and remains far from its peak performance registered in 2015 (Graph B1.6).

Improvements in the housing market are reflected in the rotation indicator¹⁴, which determines how many months it would take to sell existing housing supply, keeping the number of available units and the rate of sales constant (Graph B1.7). In 2021, the rotation indicator for public housing returned to its 2019 average of 5.7 months, while the non-public housing indicator fell 15 months prior to the pandemic to 11.6 months. The response of the construction sector to this improved performance has come amid difficulties associated with the pandemic as well as disruptions in global supply chains and an increase in international commodities prices. The Producer Price Index (PPI) for construction materials, suggests that prices for iron and steel, metal, and glass products, all essential construction inputs, grew in 2021 by 45.1%, 19.0% and 9.4%, respectively (Graph B1.8). This could be making financial closings more difficult, especially in the public housing sector¹⁵, and could lead some builders to consider delaying or stopping some projects, which could affect future housing supply.

In sum, price behavior in the public housing segment appears to be associated with a generally balanced market and driven by subsidies, a factor that would determine both demand and supply. Moreover, price limits tied to these subsidies (135 or 150

15 Public housing units have a price limit equal to 135 times the legal monthly minimum wage or 150 times for developments in urban areas of more than a million inhabitants, leaving builders with limited room for maneuver.

¹³ For homes with incomes below four times the legal monthly minimum wage, this offers a subsidy of up to 30 times the minimum wage and a credit interest rate hedge of up to 5 percentage points.

The rotation indicator is considered to be a useful thermometer of activity in the housing market. A result above 18 months would reflect unfavorable activity, while a rotation indicator below this period would represent a healthy market.

Graph B1.7 Rotation indicator ^{a/}

a/ The rotation index is the quotient of the monthly supply inventory and the average quarterly sales. Quarterly sales average is used because monthly data tends to be more volatile. Sources: CAMACOL; calculations by the authors.

Graph B1.8 PPI for construction materials (annual change)

Sources: DANE; calculations by the authors.

Graph B1.9 Housing rental inflation and price-rent ratios

(Index. December 2018 = 100)

(Percentage)

Note: ratios correspond to quotient of housing price indices and the CPI for housing rentals

Sources: Banco de la República, DANE, DNP; calculations by the authors.

times the legal minimum wage), could restrict the responsiveness of prices to significant demand increases. Meanwhile, the nonpublic housing market has not presented imbalances that would pressure prices. This is likely because increased demand has to this point been supported by significant inventory accumulation. As a result, the Colombian housing market has not shown any evidence of an imbalance between supply and demand that would pressure prices, as has occurred in other countries.

Moving forward, the evolution of housing prices will depend on the demand side on the continuity of government subsidy programs, the evolution of mortgage credit rates, the behavior of inflation and its negative effects on available income, and political uncertainty and its effect on investment. A lapse or reduction of the *Mi Casa Ya* and FRECH programs, increased debt costs, lower purchasing power, or an increase in the country's risk perceptions could disincentivize housing acquisition. On the supply side, the persistence of high costs on construction materials would represent the main risk to the creation of new housing supply.

The CPI for rental housing grew moderately in 2020 (1.33%) amid weak demand and ample housing availability and remained stable in 2021 at 2.02% (below the average of the last 22 years of 3.38%). Moving forward, it is likely that the annual increase in the CPI for rental housing would be above the target on the forecast horizon, in large part due to its indexation at high levels of projected overall inflation (see Section 2.2.1). Another upside risk to this indicator would be the transmission of increased construction costs on new housing prices (primarily in the nonpublic housing segment). This would also lead to a tighter used housing market. Additionally, this could increase the expected return on housing investment for renters, which has been on a downward trajectory, as suggested by the ratio between housing price indices and the CPI for rental housing (Graph B1.9).

Finally, although currently housing prices in Colombia have not shown significant signs of pressure, it remains important to monitor prices in order to identify early signs of imbalances in this market. A PSY bubble detection procedure was conducted with this in mind (Phillips, Shi and Yu, 2015), allowing for the identification of multiple episodes of exuberance¹⁶ in asset prices. This methodology is based on an augmented Dickey-Fuller test and implies multiple recursive regression calculations that vary by start date, observation number, and end date¹⁷. The results of this methodology based on the IPVNBR and the IPVU (Graph B1.10) signal that, for both the used and new housing markets, the presence of episodes of exuberance during the global financial crisis of 2008 and the oil boom at the beginning of the last decade, when high growth rates in the housing market were observed. By contrast, the procedure yields no evidence of bubbles or episodes of price exuberance in recent months.

¹⁶ An episode of extended exuberance is understood as a period in which housing prices are not explained by market fundamentals but rather non-fundamental components, which could in include speculative factors.

¹⁷ The PSY procedure, proposed by Phillips et al. (2015), allows for the evaluation of whether housing prices show explosive behavior in multiple periods, through a recursive unit root ADF test with a rolling window. The test is based on the equation $yt = \mu + \delta yt-1 + \sum Pi=1 \oslash i \Delta yt-i+et$, with a null hypothesis ($H0: \delta=I$) that the series is a random walk and an alternative hypothesis ($Ha: \delta > I$) of the presence of a collapsing bubble in multiple periods.

Graph B1.510

A. PSY test results for IPVNBR

B. PSY test results for IPVU

Note: Indices deflected with CPI excluding foods. Sources: Phillips et al. (2015); calculations by the authors.

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Box 2: Methodological Updates and Primary Changes to the Comprehensive Household Survey (GEIH)

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The Integrated Household Survey (GEIH for its initials in Spanish) serves as the primary source for official statistical labor market information in Colombia. The survey, based on the geostatistical framework incorporated in Colombia's 2005 national census and referred to in this box as the GEIH-M05, has been updated in line with a new national census conducted in 2018. This update takes into account changes in demographics, territorial organization and population distribution in recent years. The new survey, referred to in this box as GEIH-M18, also incorporates recommendations from international bodies, such as the International Labor Organization (ILO) and the Organization for Economic Cooperation and Development (OECD), related to characterization of working-age populations and the statistical visibility of other groups. This update keeps Colombian labor market statistics in line with international standards.

While the GEIH-M18 includes several important updates, particularly regarding the definition of informality, the measurement of labor income, and tax payment data, this box is focused on those changes with the potential to modify the levels and/or behavior of the main labor market aggregates.

1. Primary changes to the GEIH

Data collection under the auspices of the GEIH-M18 began in parallel with the GEIH-M05 in 2021. The GEIH-M18 replaced the previous survey entirely in 2022. Among the main changes was a significant methodological redesign, which most important aspects are described below.

a. Update to the geostatistical framework

The GEIH-M05 was based on a geostatistical framework² from 2005. Demographic and population shifts in the country since then (e.g., new neighborhoods, population density) have precipitated the need for adjustments to the survey in order for it to continue to be representative of the population as a whole. The GEIH sample design has thus been updated based on the 2018 census.

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¹ This box is based on a special section in *Banco de la República's Labor Market Report*, No. 22. For a more detailed description of the changes and series effects associated with the updated GEIH-M18 framework, as well as for a provisional linkage and seasonal adjustment proposal for the main aggregates of the labor market, see the full report at: https://www.banrep.gov.co/es/reporte-mercado-laboral

² It is the sample used in the household surveys which consists of a combination of political-administrative categories and geostatistical areas and is used across all stages of the statistical operation (DANE, 2020).

Map B2.1

A. Coverage – GEIH 2005 framework

C2005 No data

B. Coverage – GEIH 2018 framework

Note: monthly data Source: GANE (GEIH); calculations by *Banco de la República*.

b. Geographical expansion

The GEIH-05 covered 23 departments plus Bogotá on a continual and monthly basis. This implied that national labor market indicators reflected the aggregate results of the territories covered but not the total number of departments in Colombia (Map B2.1, Panel A). The GEIH-M18 expands the geographical scope of the survey, adding nine department capitals in the Amazonas and Orinoco regions and on the island of San Andrés (Map B2.1, Panel B)³. For its part, coverage of small municipalities and dispersed rural populations remains unchanged from the GEIH-M05.

c. Increase in the working-age population threshold

The GEIH-M05 classified the working age as 10 years or older in small municipalities and rural areas, and as 12 years or older in urban areas. Although this definition was based on characteristics of the Colombian labor market, it contrasted with those stipulated in international agreements related to the fight against child labor. To address this disparity, the GEIH-M18 adopts ILO Convention 138, establishing the working age for young people who have met education requirements. For Colombia, this threshold was set at 15 years, with no discrepancy between urban and rural areas. Data collection on the labor conditions of young people between 5 and 17 years old will continue to be collected in the annual module for child labor.

d. Characterization of the working-age population

The new survey made changes to the characterization of working age population. These were primarily associated with a battery of questions used to classify a person as employed. It also adds questions to provide indicators of the potential labor supply in populations that were previously characterized as inactive, which is now called the population outside the labor force.

First, regarding the employed population, the GEIH-M05 included two types of non-remunerated workers: employees of a family business⁴ and non-remunerated workers who were not related to their employers. Under the GEIH-M18 the latter group is no longer considered part of the employed population, and it is now a requirement to confirm whether these workers receive payment in money or in kind. Employees in family businesses will continue to be classified as employed.

Second, the GEIH-M18 defines the employed population absent from work, in terms of the reasons for their absence and their expectations for returning to work, factors that were not considered in the GEIH-M05. The new survey asks people who are absent from their place of employment to provide the reason for that absence. If this is due to illness, employer permission, temporary leave, holidays, vacations or training, that person is automatically classified as employed. However, if the absence is

³ The nine capitals are: Mocoa, Leticia, Yopal, Arauca, San José del Guaviare, Mitú, Puerto Inírida, Puerto Carreño and San Andrés, increasing overall population coverage from 96.9% to 97.8%.

People who in the survey week worked at least one hour in a business belonging to a family member but did not receive payment.

due to other causes, such as a temporary suspension, reduction in economic activity or disruptions caused by a natural disaster, that person's employment status will depend on the expectations for their return to work. If the lapse is expected to be four months or less⁵, the person is considered to be employed. For longer periods, that person could only be classified as employed if they are working for a family business.

Finally, the GEIH-M18 introduced survey questions that allow for the identification of potential participants in the labor market⁶, in line with resolutions from the 19th International Conference on Labor Statistics (ILO, 2013). These questions classify persons out of the labor force either as unavailable job seekers, available potential job seekers, or potential job seekers who wish to work. The primary factor in characterizing this population is its interest in joining the labor force.

2. Main effects of these changes on labor market indicators

Four series were created in order to analyze the effects of the primary changes to the GEIH-M18 on labor market indicators and relevant populations: 1) the official series from the GEIH-M05, with data through December 2021; 2) the GEIH-M05 correcting for expansion factors (GEIH-M05-A), with populations estimated in line with projections from the 2018 census to allow for measurement of the effect of the discrepancy in population projections from the GEIH-M05; 3) the GEIH-M05 corrected for expansion factors and incorporating the new working-age threshold (GEIH-M05-B), which allows for the measurement of the effect of excluding young people between 10 and 14 from the working age population; and 4) the new official series (GEIH-M18) based on labor market data beginning in January 2021. It is important to note that the GEIH-M5 only includes information from 23 departments plus Bogotá, while the GEIH-M18 series also includes the nine new department capitals which have been added to the geographical scope of the survey.

Graph B2.1 shows these series for the working-age population. The first years of the series corrected for expansion factors suggest lower population levels (GEIh-M05-A) due to the fact that results from the 2018 census showed slower demographic growth. However, beginning in 2021, amid a surge in migration to Colombia from Venezuela (Tribín-Uribe et.al, 2020; Bonilla-Mejía et al., 2020), growth in the working-age population in this series becomes more significant, even surpassing the original series of the GEIH-M05.

Those series that exclude nearly 2.9 million people between 10 and 14 years old from the working-age population, based on the revised age threshold, naturally show lower levels for this population. This can be seen clearly in the difference between the series that is only corrected for expansion factors (GEIH-M05-A) and the series that is both corrected for expansion factors and incorporates the new working-age population threshold (GEIH-M05-B). The GEIH-M18 incorporates the population from

Graph B2.1 Working-age population National aggregate (Jan 2007 to Jan 2022)

The four-month time horizon established by DANE is based on Article 51 of the 5 Colombian Labor Code, which establishes that labor contracts can be suspended for no more than 120 days due to the temporary closure of the business or other reasons outside employers' control.

As a result, the inactive population is now denominated "persons outside the labor 6 force."

National aggregate (Jan 2007 to Jan 2022)

Note: monthly data

Graph B2.2

Employed population

Source: DANE (GEIH); calculations by Banco de la República.

Source: DANE (GEIH); calculations by Banco de la República.

Graph B2.4 Unemployed population National aggregate (Jan 2007 to Jan 2022)

Note: monthly data

Source: DANE (GEIH); calculations by Banco de la República.

the nine new department capitals and as a result suggests slightly higher levels for the working-age population than the GEIH-M05-B series.

Graph B2.2 suggests that correcting for expansion factors produces a slightly lower level in the employed population (GEIH-M05-A) than in the original series (GEIH-M05). In recent years this difference has been offset by the migration effects mentioned above. The effects of incorporating the change in the working-age threshold are insignificant (GEIH-M05-B), as this excludes less than 1.0% of the population that was previously considered employed, corresponding to young people between 10 and 14 years old.

As seen in Graph B2.2, the new official series for the employed population (GEIH-M18) continues to be lower than the series based on the GEIH-M05. This is despite incorporating more than 179,000 employed people based on the new urban coverage. Although the new survey considers neither absent workers who do not expect to return to work in under four months or non-remunerated workers outside of family businesses as employed, microdata calculations suggest that the effects of these exclusions is low and would not significantly explain the gap between the statistical operations. Controlling for the factors mentioned, the difference in employment levels remains around 1.2 million jobs and could be a reflection of changes in the geostatistical framework. That is to say, the redesign of the sample itself and, in general, the entire statistical operation.

Graph B2.3 reflects changes in the number of persons outside the labor force. In this case, the correction for expansion factors has little impact. The revised working-age threshold, meanwhile, generates a significant decline. On average, the difference is 2.7 million between the series correcting for expansion factors and incorporating the new working-age threshold (GEIH-M05-B) and the series that only corrects for expansion factors (GEIH-M05-A). This is due to the fact that the majority of young people between 10 and 14 are in school but in GEIH-M5 were classified as being outside the workforce (inactive).

The number of persons outside the workforce in GEIH-M18 is higher and on average suggests an increase of 1.3 million people, of which only 119,000 can be explained by the expanded geographical scope of the survey. The remaining difference would be the result of the updated geostatistical framework, as persons outside the labor force are calculated as those who cannot be classified as either employed or unemployed, and as a result this population under the GEIH-M18 behaves inverse to the employed population.

The unemployed population changes when comparing the different scenarios of the GEIH-M05 (Graph B2.4) and its level estimated under GEIH-M18 is similar for 2021 even after adding 37,000 unemployed people as part of the expanded geographical scope of the survey.

References

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Box 3: Inflation Diffusion in Colombia

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Inflation consists of a generalized increase in the price level of goods and services in an economy. This box presents some indicators that seek to establish the diffusion and magnitude of the consumer price increases that have led to a notable annual change in Colombia's CPI in recent quarters.

After a period of relative price stability from 2010 to 2014, with annual inflation between 2.0% and 4.0%, a series of economic shocks created an ample base for consumer price increases that led to a surge in inflation to almost 9.0% in July 2016. Those shocks included a fall in oil prices at the end of 2014 (leading to significant peso depreciation), tax reform in 2016 (increasing VAT from 16% to 19%), an extensive trucker's strike in mid-2016, and an intense El Niño weather pattern in 2015 and 2016.

The following box assesses various indicators of inflation diffusion with the goal of monitoring the breadth and magnitude of changes in consumer prices. As shown in Graph B3.1, from 2011 to the middle of 2014 between 30.0% and 55.0% of the subcategories of the consumer basket registered price increases above the target inflation rate. From the second half of 2014 to the middle of 2016 inflation became significantly more generalized, as the portion of consumer basket categories registering annual growth above 3.0% reached a historical high in June 2016. Subsequently, and until the beginning of the COVID-19 pandemic in February 2020, the generalization of price increases above the target rate declined to levels close to those observed prior to the El Niño weather pattern in 2016.

As explained in Section 3 of this report, recent external events, together with some idiosyncratic factors, drove annual consumer inflation from a historical low of 1.61% in December 2020 to 8.53% in March 2022. Diverse indicators suggest that this increase has been the result of price increases in a wide range of goods and services in the consumer basket¹.

Once the worst phase of the pandemic was overcome, roadblocks in May and June 2021, a contraction in agricultural supply, and disruption to global supply chains, together with recovery in consumption and the lapse of some government price relief measures, caused generalized and significant magnitude price increases. In December 2021 close to 68.0% of the components of the family basket exceeded the target inflation rate of 3.0%. With data through March 2022, with the upward effects on consumer prices derived from the Russian invasion of Ukraine already

Graph B3.1 Portions of the consumer basket registering annual price change above and below 3.0%.

Source: DANE; calculations by the authors.

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¹ A similar exercise to the one proposed in this supplement can be found here: https://www.cnb.cz/en/monetary-policy/monetary-policy-reports/boxes-and-articles/Two-phenomena-of-the-current-high-inflation-intense-and-broad-based-price-growth/

Graph B3.2 Distribution of annual price change by range

Note: Monthly data Source: DANE: calculations by the authors.

Source: DANE; calculations by the authors.

Graph B3.3

Evolution of annual change in major segments of the CPI and their components

2

Source: DANE; calculations by the authors

apparent, that ratio rose to above 80%, a level not registered since the high-inflation episode of 2015-2016 (Graph B3.1).

Graph B3.2 shows how price growth was distributed across the consumer basket prior to the pandemic, as well as in 2021 and in 2022 so far. In December 2019, prior to the health emergency, 34.6% of CPI sub-categories registered annual price increases above the 2.0%-4.0% range. However, at the end of 2021 this percentage had risen to 57.7%. With data through March 2022, close to 77.0% of items had exceeded this range, with 20% of segments registering annual change above 14.0%.

Of a total of the 188 segments of the CPI, in March 2022 176 (94%) registered positive annual change. Within the segments that registered higher price increases (above 14.0%) are foods, food away from home, electricity, car insurance, bicycle tires and equipment, and cleaning and maintenance supplies. By contrast, few items showed negative annual price changes. These include men's and women's apparel, information and communications technologies, mobile phones, and information processing devices.

Graph B3.3 shows the distribution of annual inflation in the consumer basket seasonally adjusted and corrected for calendar effects. These results suggest that at the beginning of 2021 close to a quarter of the consumer basket was registering monthly increases above 0.5%. Since then, there has been a marked generalization of price increases at significant rates of growth. In March 2022 close to 46.0% of the sub-categories of the CPI registered monthly growth above 0.5%.

Graph B3.4 is a heat map showing the magnitude of the inflationary phenomenon, grouped by the main aggregates of the CPI that are regularly analyzed by the Bank (foods, regulated items, goods and services) for each month from 2014 to March 2022². The heat map shows an increase in the annual change in prices for a majority of categories. However, price growth for utilities and fuels (within regulated items), perishable and processed foods and food away from home (in services) were all particularly noteworthy, growing in recent months in annual terms by more than 10%.

The recent increase in inflation, which has approached highs from mid-2016, can been characterized by sharp price increases and significant dispersion in the consumer basket. Distinct measures of the distribution and intensity of adjustments in the CPI analyzed in this box suggest that price increases in the Colombian economy, especially in the consumer basket, have not been concentrated in a small number of categories but instead have become generalized, and accompanied by historically high monthly and annual increases.

With the entry into force of a new definition of the family basket (base December 2018 = 100), *Banco de la República* periodically began to monitor prices in four large segments of the consumer basket and their components: goods, services, foods, and regulated items. For more information, see Borrador de Economía, No. 1122, "Nueva clasificación del Banrep de la canasta del IPC y revisión de las medidas de inflación básica en Colombia". https://repositorio/banrep.gov.co/bitstream.hand-le/20.500.12134/9881/be_1122.pdf?sequence=10&isAllowed=y

Annex 1

Macroeconomic Projections from Local and Foreign Analysts ^{a/b}

			l	Jnits			Apr-22	Dec	-22	Apr-23	Dec-23	3	Apr-24		
Total CPI		Monthly Var	iation (av	erage)			0.77	n.	a.	n. a.	n. a.		n. a.		
CPI excluding food	ls	Monthly Var	iation (av	erage)			0.52	n.	a.	n. a.	n. a.		n. a.		
Total CPI		Annual Varia	ation, end	of period	l (average)	8.71 ^{c/}	7.0	4	4.63	4.19		3.78		
CPI excluding food	1	Annual Varia	ation, end	of period	l (average)	5.53 ^{c/}	5.6	5	4.16	3.84		3.45		
Nominal Exchange	e Rate	Pesos per d	ollar, end	of period			3,785	3,7	55	3,719	3,703		3,662		
Policy Rate		Percentage,	end of pe	eriod			6.00	7.5	0	7.00	5.63		5.25		
	Unida	ides	I-2022	II-2022	III-2022	IV-2022	2022	I-2023	II-2023	III-2023	IV-2023	2023	I-2024		
GDP	Annual variati series	ion, original	6.5	7.6	4.3	2.1	4.8	2.3	3.2	3.3	3.5	3.2	n. a.		
Unemployment	Thirteen cities of period	s, average	12.8	12.3	11.9	11.2	n. a.	12.1	11.4	11.0	10.5	n. a.	n. a.		
IBR (90 days)	Effective annu end of Period	ual rate,	n. r.	7.3	7.9	7.7	n. a.	7.3	7.0	6.2	6.0	n. a.	5.6		
DTF	Effective annual rate, end of Period		n. r.	6.8	7.5	7.7	n. a.	7.5	7.1	6.5	6.0	n. a.	5.7		
Fiscal Deficit (NCG) ^{d/}	al Deficit Percentage of GDP G) ^{d/}			n. a.	n. a.	n. a.	6.2	n. a.	n. a.	n. a.	n. a.	4.8	n. a.		
Current Account Deficit ^{d/}	Percentage of	GDP	n. a.	n. a.	n. a.	n. a.	4.7	n. a.	n. a.	n. a.	n. a.	4.5	n. a.		

n. a: not available.

n. a: not available.
n. r: not relevant given that data is already observed.
a/ Starting with the Monetary Policy Report from April 2020, the survey of foreign and local macroeconomic analysts has been suspended and data corresponding to the Central Bank's Monthly Survey of Economic Analyst Expectations is included.
b/ Corresponds to the median response from the Central Bank's Monthly Survey of Economic Analyst Expectations, except for the CPI and CPI excluding food, which correspond to averages.
c/ Data calculated based on the results of the Bank's Monthly Survey of Economic Analyst Expectations.
d/ Positive values represent deficit and negative values represent surplus.
Source: Monthly Survey of Economic Analyst Expectations, Banco de la República, April 2022.

Annex 2

							Years					
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Exogenous variables												
External */ Trade partners GDP */ Oil price (Benchmark Brent) Federal funds (Fed) effective interest rate Credit default swaps at 5 years for Colombia Domestic	Percentage, annual change, seasonally adjusted Dollars per barrel, average for period Percentage, average for period Basis points, average for period	3.6 109 0.11 113	2.7 99 0.09 101	2.1 54 0.13 184	1.6 45 0.39 212	2.6 55 1.00 129	2.5 72 1.83 114	1.4 64 2.16 99	-6.7 43 0.36 141	7.0 71 0.08 142	2.8 101 1.14 204	2.4 87 2.94 188
Colombia real neutral interest rate Potential (trend) GDP Endogenous variables	Percentage, average for period Percentage, annual change	1.5 4.3	1.4 3.9	1.5 3.3	1.6 2.7	1.3 2.4	1.3 2.3	1.2 2.5	1.3 0.1	1.5 4.2	1.8 3.8	1.9 2.7
CPI Total CPI total CPI texcluding food ^{c/} CPI tradables CPI non-tradables CPI regulated items CPI food ^{e/} CPI perishables CPI processed Core inflation indicators ^{e/}	Percentage, annual change, end of period Percentage, annual change, end of period	1.94 2.46 0.86 3.67 1.56 -0.23 -0.16 -0.24	3.66 3.28 1.75 3.34 4.89 5.24 16.74 2.54	6.77 5.25 7.27 4.64 4.43 13.08 26.03 9.62	5.75 5.51 5.91 5.26 5.63 6.65 -6.63 10.74	4.09 5.03 3.24 5.38 6.26 0.48 5.84 -0.91	3.18 3.51 1.40 3.13 6.65 1.87 8.88 -0.08	3.80 3.45 2.18 3.45 4.81 5.80 8.66 5.04	1.61 1.03 0.63 1.29 0.73 4.80 2.49 5.43	5.62 3.44 3.31 2.18 7.10 17.23 24.42 15.32	7.14 7.46 10.92	4.79 7.36 1.91
CPI excluding food Core 15 CPI CPI excluding food and regulated items Average of all core inflation indicators MER Inflation gap in the real interest rate	Percentage, annual change, end of period Percentage, annual change, end of period Percentage, annual change, end of period Percentage, annual change, end of period Pesos per dollar, average for period Percentage, average for period	2.46 2.47 2.73 2.55 1,869 -1.0	3.28 3.19 2.82 3.10 2,001 -0.3	5.25 5.59 5.50 5.45 2,746 9.5	5.51 5.98 5.48 5.66 3,053 2.4	5.03 4.21 4.67 4.64 2,951 -1.8	3.51 3.22 2.57 3.10 2,957 -0.8	3.45 3.78 3.10 3.44 3,282 3.6	1.03 1.88 1.11 1.34 3,691 6.2	3.44 4.42 2.49 3.45 3,747 2.6	5.94 0.0	4.78 · · -1.9
Economic activity												
Gross domestic product Final consumption spending Final household consumption spending Gross capital formation Gross fixed capital formation Housing Other buildings and structures Machinery and equipment Cultivated biological resources Intellectual property products Domestic demand Exports Imports Output gap " Short-term indicators Real industrial production Retail commerce sales excluding fuels and vehicles Coffee production Labor Market" National Total Unemployment rate Overall participation rate Themes and the participation rate Description and the participation pa	Percentage, annual change, s.a.c.e. Percentage, annual change, seasonally adjusted Percentage, annual change in accumulated production for the period Percentage, annual change, average for period Percentage, seasonally adjusted, average for period Percentage, seasonally adjusted, average for period	5.1 5.4 4.6 8.9 7.8 8.5 6.4 12.3 4.8 6.6 19.6 5.9 4.7 8.5 0.8 -1.3 4.6 40.6 6.6	4.5 4.3 4.2 4.7 12.0 9.2 10.4 9.6 9.2 -1.3 5.1 6.0 -0.3 7.8 1.4 1.6 8.4 11.5 -1.9	3.0 3.4 3.1 4.9 -1.2 2.8 9.5 10.2 -9.3 2.3 1.3 2.4 1.7 -1.1 1.0 2.0 6.4 16.8 1.6	2.1 1.6 1.6 1.6 1.2 -2.9 -0.2 -2.9 -0.2 -3.5 0.4 3.7 2.0 0.4 -11.7 9.5 58.8 65.0	1.4 2.3 3.6 -3.2 1.9 -1.9 4.6 1.4 0.3 1.2 1.1 2.6 1.0 -0.6 0.0 -0.1 -0.3 -3.7 9.6 58.7 64.9	2.6 4.0 3.2 7.4 1.5 1.0 -0.4 -3.5 8.6 -3.1 1.5 3.5 5.8 -0.3 2.7 5.4 -4.5 1.4 9.9 5.81 64.5	3.2 4.3 5.3 3.0 2.2 -8.9 1.1 12.3 7.9 -0.7 4.0 3.1 7.3 0.4 1.4 8.8 2.4 10.7 57.0 63.8	-7.0 -4.2 -5.0 -0.6 -20.5 -23.3 -30.9 -13.4 -1.8 -10.8 -7.5 -22.7 -20.5 -7.1 -8.1 -1.7 -5.8 -11.8 -11.8 -11.8 -11.8 -11.8 -11.7 -5.8 -11.8 -11.8 -11.7 -5.8 -11.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -5.8 -11.8 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11.7 -11	10.6 14.1 14.6 12.1 9.9 9.11.2 22.6 -3.0 19.0 5.1 10.2 13.3 14.2 27.5 -1.2 15.8 11.9 -9.5 -5.8 -3.3 13.8 5.31 61.5	5.0	2.9
Thirteen cities and metropolitan areas Unemployment rate Employment rate	Percentage, seasonally adjusted, average for period Percentage, seasonally adjusted, average for period				10.2 60.2	10.8 59.3	10.9 58.8	11.3 58.2	18.6 50.5	15.1 53.8	11.2	•
Overall participation rate	Percentage, seasonally adjusted, average for period				67.0	66.5	66.0	65.6	62.0	63.4		
Current account (A+B+C) Percentage of GDP A. Goods and Services B. Primary income (factor income) C. Secondary income (factor income) Percentage of GDP A. Foreign investment (i+ii) i. Foreign in colombia (FDI) ii. Colombian abroad B. Portfolio investment C. Other investment C. Other investment D. Reserve assets Errors and omissions (E and O)	Millions of dollars Percentage, nominal terms Millions of dollars Millions of dollars S) Millions of dollars Percentage, nominal terms Millions of dollars Millions of dollars	-12,365 -3,2 -3,250 -14,002 4,887 -11,740 -3.1 -8,558 16,210 7,652 -7,438 -2,690 6,946 626	-19,819 -5.2 -12,332 -12,108 4,622 -19,292 -5.1 -12,270 16,169 3,899 -11,565 106 4,437 526	-18,702 -6.4 -19,004 -5,450 5,752 -18,060 -6.2 -7,403 11,621 4,218 -9,091 -1,981 415 642	-12,587 -4.5 -13,451 -5,312 6,177 -12,339 -4.4 -9,341 13,858 4,517 -4,945 1,781 165 247	-9,924 -3.2 -8,762 -8,046 6,883 -9,625 -3.1 -10,011 13,701 3,690 -1,800 1,641 545 299	-14,041 -4.2 -10,556 -11,442 7,957 -12,954 -3.9 -6,172 11,299 5,126 862 -8,831 1,187 1,087	-14,808 -4.6 -14,146 -9,717 9,055 -13,298 -4.1 -10,836 13,989 3,153 24 -5,820 3,333 1,509	-9,207 -3.4 -13,156 -4,839 8,788 -8,191 -3.0 -5,803 7,459 1,656 -1,792 -4,925 4,328 1,016	-17,833 -5.7 -20,501 -8,054 10,722 -16,679 -7.3 -6,041 9,402 3,362 -4,405 -6,887 654 1,154	-16,529 -4,7 -14,13 -13,149 10,755	,
Interest rates Policy rate ^{II} Policy rate expected by analysts ^{II} IBR Commercial interest rate ^{III} Consumer interest rate ^{III} Mortgage rate ^{III}	Percentage, average for period Percentage, average for period	3.43 3.4 8.7 17.9 11.1	3.88 3.8 8.7 17.3 11.1	4.67 4.7 9.4 17.2 11.0	7.10 7.1 12.8 19.2 12.4	6.10 6.1 11.1 19.4 11.6	4.35 4.3 9.3 17.9 10.6	4.25 4.3 8.8 16.5 10.4	2.87 2.9 7.4 15.0 10.1	1.92 1.9 6.2 14.3 9.1	6.04	6.77

Note: values in bold represent a projection or assumption. SACE: seasonally adjusted and corrected for calendar effects. a/ quarterly data in bold correspond to an assumption based on the annual projection of each variable. b/ Calculated for the largest trade partners (excluding Venezuela) by non-traditional dollar exports from Colombia. c/ Calculations by *Banco de la República* based on its mev classification; excludes the division of the CPI for food and non-alcoholic drinks. See González, E.; Hernández, R.; Caicedo, E.; Martínez-Cortés, N.; Grajales, A.; Romero, J. (2020), "Nueva clasificación del Banrep de la canasta del IPC and revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, *Banco de la República*, available at: https://investiga.banrep.gov.co/

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(4) Calculations by *Banco de la República*, based on its new classification; equal to the division of the CPI for food and non-alcoholic drinks produced by DANE (does not include sub-categories corresponding to food away from home). See González, E; Hernández, R; Caicedo, E; Martínez-Cortés, N; Grajales, A; Romero, J. (2020). "Nueva clasificación del Banrep de la canasta del IPC and revisión de las medidas de inflación básica en Colombia," Borradores de Economia, no. 122, *Banco de la República*, valiable at: https://investiga.banrep.gov.co/es/be-1122.
(4) Calculations by *Banco de la República*, valiable at: https://investiga.banrep.gov.co/es/be-1122.
(4) Calculations by *Banco de la República*, valiable at: https://investiga.banrep.gov.co/es/be-1122.
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(5) Corresponds to the gas inflación básica en Colombia," Borradores de Economia, No. 122, *Banco de la República*, valiable at: https://investiga.banrep.gov.co/es/be-1122.
(7) The historical estimate for the gas is calculated as the difference between observed and potential (trend) GDP resulting from the 4G monetary policy model; forecast is calculated as the difference between the technical staff's GDP estimate and potential (trend) GDP from the 4G model.
(a) doub er reolmendations of the sixth balance of payments manual proposed by the International Monetary Fund (IMF). See additional information and methodological changes at: http://www. banrep.gov/co/balanza-pagos.
(i) Results for 2019, 2020, and 2021 are preliminary.
(j) Corresponds to the quartery average monetary policy rate calculated with the working days of the series.
(k / These projections are

Annex 2 (continued)

Main Macroeconomic Forecast Variables

			20)17			20	18			20)19			20	20			20	21			20)22			202	23		2024
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Exogenous variables																														
External ^{a/} Trade partners GDP ^{b/} Oil price (Benchmark Brent) Federal funds (Fed) effective interest rate Credit default swaps at 5 years for Colombia Domestic	Percentage, annual change, seasonally adjusted Dollars per barrel, average for period Percentage, average for period Basis points, average for period	2.3 55 0.70 144	3.4 51 0.95 130	3.0 52 1.15 127	2.9 61 1.20 113	2.4 67 1.45 99	3.4 75 1.74 113	0.9 76 1.92 110	0.7 69 2.22 132	1.3 64 2.40 121	3.0 68 2.40 104	1.6 62 2.19 90	-2.2 62 1.64 83	-7.0 51 1.26 125	-44.4 33 0.06 206	50.2 43 0.09 132	12.4 45 0.09 104	6.0 61 0.08 110	4.9 69 0.07 131	6.3 73 0.09 143	3.4 80 0.08 185	1.2 98 0.12 209	1.6 108 0.77 215	2.3 102 1.58 200	2.6 96 2.08 193	2.4 91 2.58 190	2.4 87 2.92 188	2.4 86 3.13 186	2.4 84 3.13 186	2.4 82 3.13 186
Colombia real neutral interest rate Potential (trend) GDP Endogenous variables	Percentage, average for period Percentage, annual change																													
Prices CPI Total CPI excluding food ^{er/} CPI tradables CPI nor-tradables CPI regulated items CPI food ^{er/} CPI processed CPI processed CPI processed	Percentage, annual change, end of period Percentage, annual change, end of period	4.69 5.55 5.69 5.87 4.71 1.46 -13.09 6.28	3.99 5.40 4.28 5.55 6.33 -1.21 -14.72 3.29	3.97 4.86 3.46 5.02 6.10 0.59 -0.32 0.84	4.09 5.03 3.24 5.38 6.26 0.48 5.84 -0.91	3.14 3.97 1.67 4.09 6.28 -0.06 7.13 -2.01	3.20 3.73 1.39 3.79 6.21 1.11 8.47 -0.91	3.23 3.67 1.39 3.60 6.35 1.47 9.51 -0.72	3.18 3.51 1.40 3.13 6.65 1.87 8.88 -0.08	3.21 3.27 1.09 3.01 6.33 3.24 9.98 1.43	3.43 3.22 1.60 3.10 5.24 4.96 15.46 2.18	3.82 3.37 1.83 3.37 5.03 6.49 17.50 3.57	3.80 3.45 2.18 3.45 4.81 5.80 8.66 5.04	3.86 3.26 2.41 3.22 4.27 7.19 9.79 6.46	2.19 1.40 0.73 2.00 0.44 6.55 2.52 7.75	1.97 1.57 1.15 1.86 1.19 4.13 -3.42 6.40	1.61 1.03 0.63 1.29 0.73 4.80 2.49 5.43	1.51 1.06 1.05 0.89 1.52 3.92 1.58 4.60	3.63 2.70 2.57 1.61 5.93 8.52 8.69 8.47	4.51 3.03 2.97 2.01 5.94 12.40 14.82 11.74	5.62 3.44 3.31 2.18 7.10 17.23 24.42 15.32	8.53 5.31 6.41 3.79 8.32 25.37 41.87 20.69	8.54 8.51 20.54	7.89 7.99 16.73	7.14 7.46 10.92	5.37	4.94 7.22 2.64	4.88 7.41 2.14	4.79 7.36 1.91	4.20 6.30 1.80
CPI excluding food CPI excluding food and regulated items Average of all core inflation indicators MER Inflation gap in the real interest rate	Percentage, annual change, end of period Percentage, annual change, end of period Percentage, annual change, end of period Percentage, annual change, end of period Pescos per dollar, average for period Percentage, average for period	5.55 5.63 5.81 5.66 2,924 -3.1	5.40 5.16 5.13 5.23 2,920 -3.2	4.86 4.49 4.50 4.62 2,975 -0.7	5.03 4.21 4.67 4.64 2,986 -0.2	3.97 3.45 3.28 3.57 2,860 -3.4	3.73 3.24 2.99 3.32 2,839 -3.8	3.67 3.19 2.87 3.24 2,961 -0.4	3.51 3.22 2.57 3.10 3,160 4.5	3.27 3.24 2.41 2.97 3,135 2.2	3.22 3.34 2.65 3.07 3,242 3.4	3.37 3.66 2.92 3.32 3,337 4.1	3.45 3.78 3.10 3.44 3,413 4.9	3.26 3.64 2.99 3.30 3,532 5.1	1.40 2.17 1.65 1.74 3,850 11.1	1.57 2.33 1.67 1.86 3,731 6.1	1.03 1.88 1.11 1.34 3,661 2.8	1.06 1.67 0.94 1.22 3,556 -0.9	2.70 3.36 1.87 2.64 3,696 2.9	3.03 3.79 2.28 3.03 3,847 4.4	3.44 4.42 2.49 3.45 3,880 4.0	5.31 6.93 4.51 5.58 3,913 2.8	5.48	5.56 -1.0	5.94 -1.5	5.34 -2.4	4.86 -2.0	4.86 -1.6	4.78	4.21 -1.4
Economic activity	· · · · · · · · · · · · · · · · · · ·																													
Gross domestic product Final consumption spending Final consumption spending Final government overhead spending Gross capital formation Gross sheed capital formation Housing Other buildings and structures Machinery and equipment Cultivated biological resources intellectual property products Domestic demand Exports Imports Output gap " Short-term indicators Real industrial production Retail commerce sales excluding fuels and vehicles Coffee production Oil production Labor Markets" National Total Unemployment rate Employment rate Employment rate Employment and the topolitan areas Unemployment areas	Percentage, annual change, s.a.c.e. Percentage, annual change, seasonally adjusted Percentage, annual change, seasonally adjusted Percentage, annual change, seasonally adjusted Percentage, seasonally adjusted, average for period Percentage, seasonally adjusted, average for period	1.3 2.2 2.0 2.4 0.5 12.7 1-1.6 -4.5 21.8 -3.4 1.0 1.2 3.9 0.2 -0.7 0.2 13.0 -11.6 58.8 58.0 10.6	1.5 2.3 2.1 3.2 -2.0 1.5 -0.6 5.1 -4.1 -1.9 1.7 1.3 5.6 1.8 0.0 -0.6 -0.2 -17.2 -5.2 9.5 59.0 9.5 59.0 10.9	1.3 2.6 2.4 3.8 -4.7 5.8 -4.4 6.9 -10.6 9.7 0.3 3.4 0.9 -0.3 1.1 -0.2 17.1 1.5 9.7 58.5 64.8 11.2	12 2.2 17 5.1 -6.5 0.8 -13.2 4.8 7.8 -4.6 2.8 0.2 -2.5 -0.6 0.2 -0.4 -10.1 1.9 9.7 58.3 6.6 10.7	2.3 3.9 3.0 7.5 -5.7 -0.7 -8.2 8.6 -11.3 2.5 1.6 -0.5 -1.6 -0.5 -1.6 -0.5 2.0 4.6 -5.8 0.7 -5.8 0.7	2.1 4.1 3.9 6.1 2.0 1.9 -1.3 14.1 -6.3 2.5 3.6 -2.4 4.8 -0.6 2.9 5.8 13.1 1.2 9.8 58.3 64.6 10.8	2.8 3.9 3.1 7.8 -0.4 5.5 7.0 3.9 0.9 3.5 1.4 5.2 -13.8 1.1 9.7 58.4 6.7 10.7	3.0 4.0 2.9 8.0 10.7 1.5 3.6 -1.0 5.4 2.2 0.2 5.1 2.6 6.1 -6.6 2.6 10.3 57.5 10.3 57.5 10.3 57.5 10.3	2.9 3.4 3.0 5.6 10.2 8.3 -5.4 13.5 15.5 5.8 -0.7 4.5 11.3 -0.2 1.1 6.4 -1.9 5.3 10.5 57.8 5.8 -0.7 4.5 11.3 -0.2 11 6.4 -1.9 5.3	3.5 4.4 3.6 6.5 2.5 3.2 -9.9 -1.6 18.2 9.8 3.6 9.8 -1.8 3.6 9.8 -1.8 3.6 0.1 2.4 7.6 6.6 3.2 2.4 7.6 6.6 3.2 10.5 55.7 56.7 4.4 5.7 2.5 56.7 2.5 10.1 2.4 10.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2	3.0 4.4 4.3 5.0 4.6 1.7 -8.7 0.0 10.9 15.0 10.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1	3.3 5.1 5.4 4.0 -4.8 -4.0 -11.4 -6.2 4.8 1.4 0.8 3.1 -2.6 -0.8 0.4 0.8 3.1 -2.6 -0.8 0.4 1.3 9.0 24.1 -0.2	0,4 4,3 5,0 0,5 -11,6 -8,9 -20,6 -8,9 -20,6 -4,1 1,0 -3,4 0,8 -7,2 -6,3 -0,2 -1,0 6,4 -1,3,8 -2,1 -1,14 5,5,5 5,5,7 -1,14	-16.5 -12.6 -15.2 -1.7 -35.6 -41.6 -42.2 -47.7 -35.6 -17.8 -35.6 -17.8 -32.2 -33.2 -3.7 -23.6 -14.7 -1.9 -15.7 -21.1 43.8 55.4 -24.6	-8.6 -7.9 -9.1 -2.0 -16.4 -24.3 -3.1.2 -3.3.7 -10.9 -8.5 -12.4 -9.4 -9.4 -28.5 -5.9 -7.4 -3.8 -3.6 -15.4 -15.4 -18.0 -48.7 -15.4	-3.4 -0.3 -0.4 0.7 -18.9 -18.5 -27.3 -28.8 -1.5 0.7 -3.4 -4.6 -14.1 -15.5 52.1 -15.5 52.1 -15.5 52.1 -15.5 -2.1 -15.5 -2.1 -14.1 -15.5 -2.1 -14.1 -15.5 -2.1 -14.1 -15.5 -2.1 -14.5 -14.5 -15.5 -2.1 -16.7 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.3 -16.7 -17.1 -17.3 -16.7 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1 -17.1	2.1 2.9 2.1 6.3 0.9 -1.3 13.9 -1.6 1 8.2 10.9 0.6 2.0 -8.6 0.2 -6.9 6.6 4.4 13.3 -14.6 14.1 53.3 -14.6	17.5 22.9 25.1 14.2 30.0 36.3 36.7 22.6 51.8 64 12.8 23.9 12.8 23.9 12.8 23.9 12.6 51.8 64 12.8 23.9 15.1 47.1 -4.6 27 19.1 -24.7 -5.1 15.5 51.6 61 16.8	13.3 19.0 20.1 15.1 6.9 10.3 18.5 16.1 18.5 16.6 14.8 17.4 24.3 39.5 -2.7 19.9 15.4 -1.9 -0.1 12.8 53.5 61.3 14.2	10.7 13.2 13.4 12.7 7.0 8.1 25.1 7.3 1.6 13.7 13.7 13.2 31.4 -2.4 7.3 13.7 13.7 13.2 31.4 -1.2 12.6 10.2 -1.8.8 -1.7 12.8 53.8 61.7 13.3	72 9.4 9.9 8.3 -1.5 0.3 8.4 9.1 17.3 -0.4	10.1	3.7	-0.5	0.8	2.6	3.6	4.5	3.6
Employment rate Overall participation rate	Percentage, seasonally adjusted, average for period Percentage, seasonally adjusted, average for period	59.8 66.8	59.5 66.8	59.1 66.5	58.9 65.9	58.8 66.0	59.0 66.1	59.1 66.2	58.1 65.6	58.3 65.8	58.2 65.5	58.0 65.3	58.3 65.8	56.8 64.2	43.8 58.1	48.5 61.8	53 64.1	53.9 64.3	53 63.7	54.1 63	54.4 62.7	:	:	:	:	:	:	•	:	:
Balance of payments ^{M/I} Current account (A+B+C) Percentage of GDP A. Goods and Services B. Primary income (factor income) C. Secondary income (current account transfers) Financial account (A+B+C+D) Percentage of GDP A. Foreign investment (i+ii) i. Foreign in Colombia (FDI) ii. Colombian abroad B. Portfolio investment (loans and other credits and derivatives) D. Reserve assets Errors and omissions (E and O)	Millions of dollars Percentage, nominal terms Millions of dollars Millions of dollars Millions of dollars Millions of dollars Percentage, nominal terms Millions of dollars Millions of dollars	-3,490 -4.7 -2,730 -2,286 1,527 -2,986 -4.0 -1,743 2,459 700 182 -1,518 93 503	-2,426 -3.2 -2,551 -1,558 1,684 -2,625 -3.5 -1,217 2,492 1,288 -2,178 617 154 -199	-2,561 -3.3 -1,993 1,759 -2,379 -3.0 -4,112 4,957 698 -424 2,031 126 181	-1,449 -1.7 -1,154 -2,208 1,914 -1,635 -2.0 -2,939 3,793 700 620 512 173 -186	-3,023 -3.7 -1,840 -2,922 1,739 -2,876 -3.5 -910 1,982 746 1,715 -3,817 137 146	-3,471 -4.2 -2,557 -2,784 1,870 -2,719 -3,3 -2,273 3,773 545 350 -945 150 752	-3,406 -4.0 2,672 -2,769 2,035 -3,487 -4,1 -2,375 2,704 708 482 -1,763 169 -81	-4,141 -4.9 -3,487 -2,967 2,313 -3,872 -4.6 -615 2,839 1,656 -1,684 -2,305 732 270	-3,821 -4,8 -3,137 -2,616 1,932 -3,520 -4,5 -2,652 3,394 823 -1,382 -1,886 2,351 301	-3,218 -4.1 -2,997 -2,502 2,281 -3,333 -4.2 -3,626 4,090 758 -282 48 526 -115	-4,302 -5,3 -4,405 -2,301 2,404 -3,740 -4,6 -1,678 3,163 1,124 137 -2,453 254 562	-3,466 -4.1 -3,606 -2,298 2,438 -2,706 -3.2 -2,880 3,342 595 1,551 -1,559 202 760	-2,286 -3.1 -3,113 -1,346 2,173 -1,759 -2.4 -1,947 3,175 1,380 -168 526 -171 526	-1,933 -3.5 -2,654 -997 1,718 -1,955 -3.6 -1,743 1,371 365 -3,429 628 2,590 -22	-2,000 -3.0 -3,279 -1,143 2,422 -1,875 -2.8 -2.76 844 431 323 -2,126 205 125	-2,988 -3,9 -4,111 -1,353 2,475 -2,602 -3,4 -1,836 2,069 501 1,482 -3,952 1,705 387	-2,937 -3,9 -3,768 -1,619 2,450 -2,474 -3,3 -1,403 2,353 831 1,319 -2,579 190 463	-3,966 -5.5 -5,147 -1,446 2,627 -3,852 -5.3 -979 2,037 833 -6,080 3,033 174 114	-4,794 -6.1 -5,458 -2,099 2,763 -4,797 -6.1 -2,581 2,854 707 831 -3,201 154 -3	-6,136 -7.0 -6,128 -2,890 2,883 -5,556 -6,4 -1,078 2,158 720 -475 -4,139 135 579		- - - - - - - - - - - - - -							
Interest rates Policy rate ^{i//} Policy rate expected by analysts ^{i//} IBR Commercial interest rate ^{i//} Consumer interest rate ^{m//} Mortgage rate ^{m/}	Percentage, average for period Percentage, average for period	7.38 7.4 12.8 20.1 12.5	6.56 6.6 11.6 19.7 12.3	5.48 5.5 10.6 19.0 11.3	4.99 5.0 10.0 18.7 10.9	4.58 4.6 9.4 18.7 10.8	4.33 9.4 17.9 10.6	4.25 4.3 9.3 18.0 10.5	4.25 4.3 9.0 17.3 10.4	4.25 4.3 9.1 18.0 10.4	4.25 4.3 9.0 17.2 10.5	4.25 4.3 8.9 16.0 10.4	4.25 4.3 8.5 15.5 10.4	4.23 4.2 8.4 15.8 10.4	3.26 3.2 8.3 15.5 10.4	2.24 2.2 7.0 14.8 10.2	1.75 1.7 6.2 14.2 9.6	1.75 1.7 6.0 14.0 9.2	1.75 1.7 5.7 13.7 8.9	1.75 1.8 6.0 14.3 9.0	2.41 2.4 6.9 14.8 9.3	3.69 3.7 8.6 16.7 9.9	5.67	7.33	7.50	7.50	7.08	6.58	5.92	5.54

 Morgage rate**
 Percentage, average for period
 12.5
 12.3
 11.3
 10.9
 10.8
 10.5
 10.4

 Note: values in bold represent a projection or assumption.
 SACE: seasonally adjusted and corrected for calendar effects.
 a) quarterfy data in bold correspond to an assumption based on the annual projection of each variable.
 b)
 claculated for the largest trade partners (excluding Venezuela) by non-traditional dollar exports from Colombia.
 c/
 claculations by Banco de la República based on its new classification; excludes the division of the CPI for food and non-alcoholic drinks. See González, E; Hernández, R; Caicedo, E; Martínez-Cortés, N; Grajales, A; Romero, J.

 (2020). "Nueva clasificación del Banrep de la canasta del IPC and revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, Banco de la República, available at: https://investiga.banrep.gov.co/es/be-1122.

 (d)
 claculations by Banco de la República, escalada e

I/ Results for 2019, 2020, and 2021 are preliminary.
 I/ Corresponds to the quarterly average monetary policy rate calculated with the working days of the series.
 K/ These projections are calculated as the average rate that would be active en each year according to the median of the analyst response to the Central Bank's monthly economic analyst survey from April 2022.
 I/ Weighted average by rate amounts for ordinary, treasury, and preferential credit.
 M/ Excludes credits granet through credit cards.
 N/ Weighted average per interest rate amounts for disbursements in pesos and UVR for non-social housing credit.

Annex 3 Predictive Densities for other Relevant Macroeconomic Variables

Graph A3.1

Supposed quarterly trade partner 12-month growth based on annual projections a/

a/ The graph presents 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 baseline forecast (mode).

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

Graph A3.2 Assumed quarterly oil price a/

a/ The graph presents 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 baseline forecast (mode).

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

Graph A3.3 Assumed U.S. Federal Reserve quarterly interest rate a/

a/ The graph presents 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 baseline forecast (mode).

Sources: Federal Reserve of St. Louis; calculations and projections by Banco de la República.

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

a/The graph presents 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 baseline forecast (mode), using a combination of densities from the Patacon and 4GM models. b/ Five-year credit default swaps. Sources: Bloomberg; calculations and projections by *Banco de la República*.

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Annex 3 (continued) **Predictive Densities for other Relevant Macroeconomic Variables**

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

a/The graph presents 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 baseline forecast (mode), using a combination of densities from the Patacon and 4GM models. Sources: DANE; calculations and projections by *Banco de la República*.

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

a/The graph presents 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 baseline forecast (mode), using a combination of densities from the Patacon and 4GM models. Sources: DANE; calculations and projections by *Banco de la República*.

April 2022

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