MONETARY
POLICY
REPORT

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MONETARY
**POLICY
REPORT**

Banco de la República
Bogotá, D. C. (Colombia)

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Monetary Policy in Colombia

Banco de la República (the Central Bank of Colombia) is required by the Constitution to maintain the purchasing power of Colombia's currency in coordination with general economic policy[1]. In order to fulfill this mandate, 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 inflation[2], the BDBR assesses the inflation forecast and inflation expectations vis-à-vis the inflation target, as well as the current situation and outlook of the economy, in order to determine their value.

The BDBR meets once a month, producing monetary policy decisions in eight of its meetings (January, March, April, June, July, September, October, and December). In principle, no such decisions are made in the BDBR's four remaining meetings (February, May, August, and November)[3]. At the end of the meetings in which monetary policy decisions are produced, a press release is published and a press conference held by the Governor of the Central Bank and the Minister of Finance. The minutes of the meeting describing the positions that led the BDBR to its decision are published on the following second business day. Additionally, the Monetary Policy Report (MPR)[4], produced by the Central Bank's technical staff, is published on the business day following the BDBR's meeting in January, April, July, and October. On the Wednesday of the week following the Board meeting, the Governor clarifies concerns about the minutes, and the Bank's Deputy Technical Governor presents the MPR. This dissemination scheme[5] seeks to deliver relevant and up-to-date information to contribute to better decision-making by the agents of the economy.

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

2   For further details, see M. Jalil and L. Mahadeva (2010). "Transmission Mechanisms of Monetary Policy in Colombia", Universidad Externado de Colombia, 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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01/ Summary

1.1 Macroeconomic summary

Economic activity has recovered faster than projected, and output is now expected to return to pre-pandemic levels earlier than anticipated. Economic growth projections for 2021 and 2022 have been revised upward, though significant downward bias remains. (Graph 1.1). Colombia's economy returned to recovery in the third quarter after significant supply shocks and a third wave of COVID-19 in the second. Negative shocks affecting mobility and output were absent in the third quarter, and some indicators of economic activity suggest that the rate of recovery in demand, primarily in consumption, outpaced estimates from the July *Monetary Policy Report* (MPR) in the context of widely expansive monetary policy. Several factors are expected to continue to contribute to output recovery for the rest of the year and into 2022, including the persistence of favorable international financial conditions, an expected improvement in external demand, and an increase in terms of trade. Increasing vaccination rates, the expectation of higher levels of employment and the consequent effect on household income, improved investment performance (which has not yet returned to pre-pandemic levels), and the expected stimulus from monetary policy that would continue to be expansive should also drive economic activity. As a result, output is estimated to have returned to its pre-pandemic level in the third quarter (previously expected in the fourth quarter). Growth is expected to decelerate in 2022, with excess productive capacity projected to close faster than anticipated in the previous report. Given the above, GDP growth projections have been revised upward for 2021 (9.8%, range between 8.4% and 11.2%) and 2022 (4.7%, range between 0.7% and 6.5%). If these estimates are confirmed, output would have grown by 2.3% on average between 2020 and 2022. This figure would be below long-term sustainable growth levels projected prior to the pandemic. The revised growth forecast for 2022 continues to account for a low basis of comparison from this year (reflecting the negative effects of COVID-19 and roadblocks in some parts of the country), and now supposes that estimated consumption levels for the end of 2021 will remain relatively stable in 2022. Investment and net exports are expected to recover at a faster pace than estimated in the previous report. Nevertheless, the downward risks to these estimates remain unusually significant, for several reasons. First, they do not suppose significant negative effects on the economy from possible new waves of COVID-19. Second,

Graph 1.1
Gross domestic product, 4-quarter accumulated[a, b, c]
(annual change)
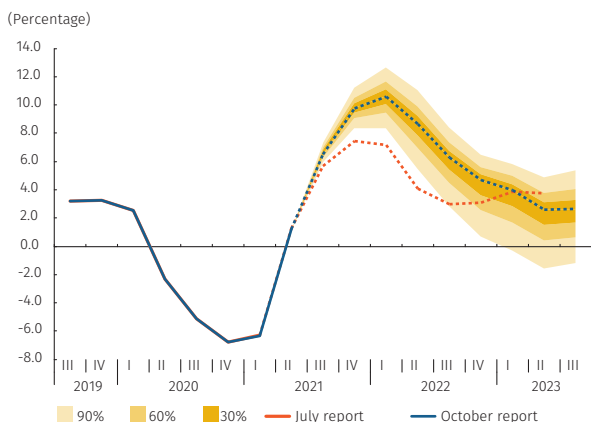
(Percentage)

a/ This graph presents the probability distribution of the forecast on an 8-quarter time horizon. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability surrounding the central forecast (mode), through a combination of the densities of the Patacon and 4GM monetary policy models.
b/ Seasonally adjusted and corrected for calendar effects.
c/ The probability distribution corresponds to the forecast exercise in the October report.
Source: DANE; calculations and projections by *Banco de la República*.

Graph 1.2
Consumer price index [a/, b/]
(annual change, end-of-period)

(Percentage)

| | 90% | | 60% | | 30% | | ▬▬ July report | ▬▬ October report |

a/ This graph presents the probability distribution of the forecast on an 8-quarter time horizon. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability surrounding the central forecast (mode), through a combination of the densities of the Patacon and 4GM monetary policy models.
b/ The probability distribution corresponds to the forecast exercise in the October report.
Source: DANE; calculations and projections by *Banco de la República.*

Graph 1.3
CPI excluding food and regulated items [a/, b/]
(annual change, end-of-period)
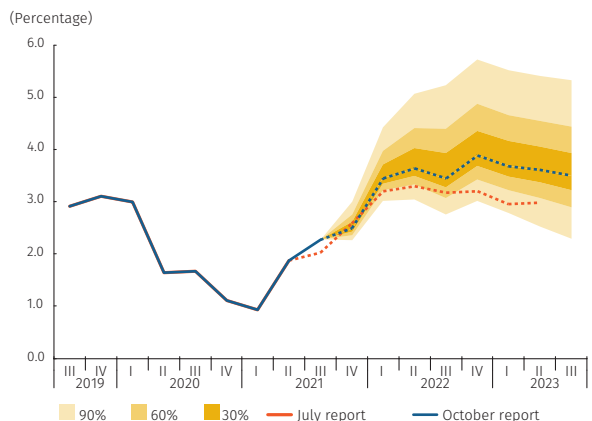
(Percentage)

| | 90% | | 60% | | 30% | | ▬▬ July report | ▬▬ October report |

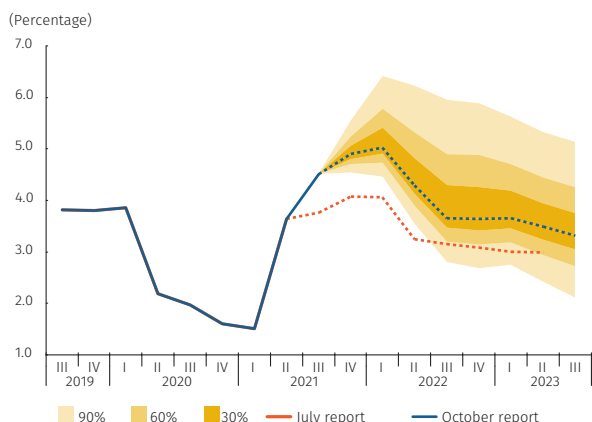a/ This graph presents the probability distribution of the forecast on an 8-quarter time horizon. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability surrounding the central forecast (mode), through a combination of the densities of the Patacon and 4GM monetary policy models.
b/ The probability distribution corresponds to the forecast exercise in the October report.
Source: DANE; calculations and projections by *Banco de la República.*

because private consumption, which has already surpassed pre-pandemic levels by a large margin, could perform less favorably than estimated in this forecast should it reflect a temporary phenomenon related to suppressed demand as service sectors re-open (e.g. tourism) and private savings accumulated during the pandemic are spent. Third, disruptions to supply chains could be more persistent than contemplated in this report and could continue to affect production costs, with a negative impact on the economy. Finally, the accumulation of macroeconomic imbalances could translate to increased vulnerability to changes in international financial conditions or in international and domestic economic agents' perception of risk in the Colombian economy, representing a downward risk to growth.

A higher-than-expected increase in inflation, the persistence of supply shocks, and reduced excess productive capacity have led to an increase in inflation projections above the target on the forecast horizon (Graph 1.2). Inflation increased above expectations to 4.51% in the third quarter, due in large part to the price behavior of foods and regulated items, and to a lesser extent to core inflation. Increased international prices and costs continue to generate upward pressure on various sub-baskets of the consumer price index (CPI), as has the partial reversion of some price relief measures implemented in 2020 in response to the COVID-19 pandemic. The inflation forecast has been revised upward due to external shocks that have proved more persistent than anticipated in the previous report and the effects of inflation indexation on some prices. Furthermore, excess productive capacity is expected to tighten at a faster pace than previously forecast, which would reduce downward pressures on core inflation. Given the above, overall year-end inflation is expected to reach 4.9% in 2021 and 3.6% in 2022. Core inflation (excluding foods and regulated items) for the same period is now forecast to be 2.5% and 3.9% (Graph 1.3), respectively, an increase due partly to temporary shocks associated with tax measures, such as the Colombian government's VAT-free days[1]. These estimates retain a wide margin of uncertainty, partially associated with the magnitude of excess productive capacity and the speed with which it can be expected to tighten. Additional

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1   The 2021 forecast takes into account the three VAT-free days already decreed by the government, which could lead to significant declines in the CPI for this basket in the last quarter of the year. The 2022 forecast does not consider VAT-free days, as their dates or numbers have not yet been confirmed (the Social Investment Law considers three VAT-free days per year). This would be expected to generate a mechanical increase in core inflation in the fourth quarter of 2022, given the basis of comparison from this year.

sources of uncertainty are rooted in increased price and measurement volatility based on an extension of Colombia's health emergency status and tax relief measures approved as part of the government's Social Investment Law (*Ley de Inversión Social*) (e.g. VAT-free days), which could make estimating core inflation on the forecast horizon more difficult. A final source of uncertainty is based on the risk of more persistent supply shocks that would affect inflation expectations or increase indexation in some baskets of the CPI relative to the forecast.

International demand as it pertains to Colombia is expected to continue its recovery, amid increased pressure on global inflation rates. International financial conditions should continue to be favorable, though external financing costs are expected to increase on the forecast horizon. Growth among Colombia's major trade partners was higher than expected in the first half of the year, amid significant advances in vaccination programs, ample international liquidity, and a recovery in the trade of goods. Nevertheless, the propagation of new strains of COVID-19 and the persistence of global supply chain issues have moderated growth forecasts for the rest of 2021. Given the above, the growth forecast for Colombia's major trade partners has been revised from 6.0% to 6.3% for 2021 and from 3.5% to 3.4% in 2022. Colombia's terms of trade have increased due primarily to increases in oil, coffee, and coal prices, and despite increases in the price of goods and services imports. Oil prices are still expected to decline as challenges in gas and coal markets diminish, and as the global supply of crude oil increases. Increased freight prices and disruptions to supply chains continue to generate significant increases in global production costs, which, together with a recovery in global demand, has put upward pressure on external inflation. Numerous emerging market economies have begun to normalize monetary policy in this context. In the United States, markets expect higher inflation for 2021 and part of 2022, with tapering beginning at the end of this year and a first increase in the monetary policy interest rate at the end of 2022. Another increase would be expected in the middle of 2023. For its part, Colombia's sovereign risk premium has been higher than in the previous quarter, and the forecast in this report supposes a faster convergence to levels above its 15-year average, due in part to the accumulation of macroeconomic imbalances. International financial conditions are expected to continue to be loose, though to a lesser degree than projected in the previous report. The expected increase in Colombia's external financing costs could be more significant if upward pressures on inflation in the United States persist and the Fed normalizes monetary policy earlier than anticipated.

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

(Percentage)
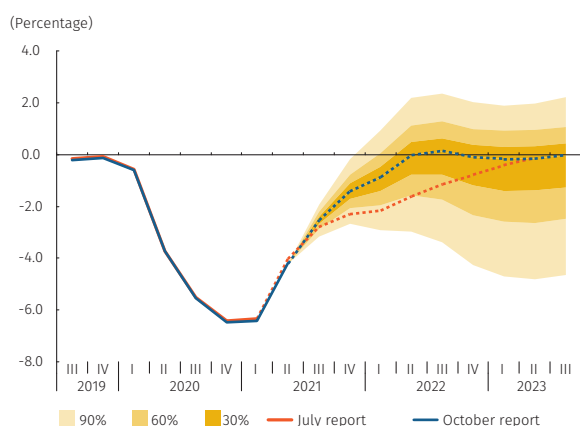
a/ The historical output gap estimate is calculated as the difference between observed (4-quarter accumulation) and potential (trend, 4-quarter accumulation) GDP based on the 4GM model; the forecast gap is calculated as the difference between the technical staff's GDP estimate (4-quarter accumulation) and potential (trend, 4-quarter accumulation) GDP based on the 4GM model.
b/ This graph presents the probability distribution of the forecast on an 8-quarter time horizon. The density characterizes the prospective balance of risks with areas of 30%, 60% and 90% probability surrounding the central forecast (mode), through a combination of the densities of the Patacon and 4GM monetary policy models.
c/ The probability distribution corresponds to the forecast exercise in the October report.
Source: DANE; calculations and projections by *Banco de la República.*

In general, uncertainty remains unusually high in the global context, due to unknowns over the evolution of the pandemic, the persistence of disruptions to global supply chains, the impact of the energy crisis, and more significant deceleration in China, among other factors.

Excess productive capacity has tightened faster than expected in the previous report (Graph 1.4). Overall and core inflation are both on growth trajectories, expected inflation has increased (though it remains close to 3% in the medium term), and monetary policy continues to be expansive. The unexpectedly high rate of economic growth and the evolution of some prices in the economy suggest that excess capacity is tightening faster than previously expected. At the same time, the improved performance of domestic demand has been reflected in an expansion of the current account deficit. Core inflation continues below 3%, but is trending upward, while expected inflation has increased but remains close to 3% in the medium term. However, the risk of more persistent supply shocks that would increase prices and affect inflation expectations, lead to higher indexation, and move inflation away from the target more persistently has increased. The labor market continues to be loose, though figures from September showed more significant recovery than previously expected. Given the above, the output gap is expected to remain negative, though to a lesser degree than previously forecast, while the temporary supply shocks that have affected inflation are now expected to be more persistent. As a result, the technical staff expects that the trade-off between excess productive capacity and inflation above the target to continue, but with a balance of risks inclined toward higher inflation rates.

Graph 1.5
Monetary Policy interest rate, interbank rate and IBR [a/]
(weakly data)

(Percentage)
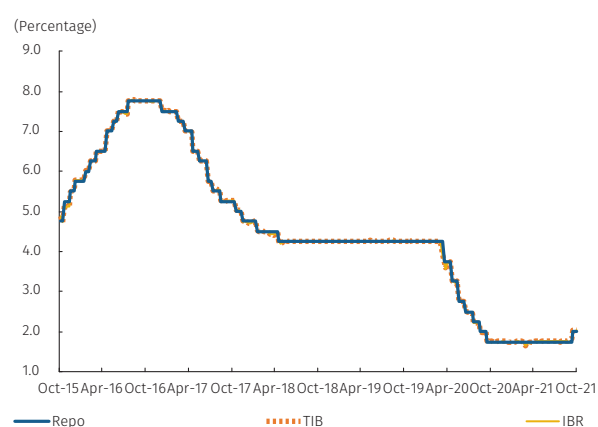
a/ IR: interbank rate; IBR: banking reference indicator; Repo: monetary policy rate.
Sources: Financial Superintendent of Colombia and *Banco de la República.*

1.2 Monetary policy decision

Banco de la República's board of directors (BDBR) decided to begin normalizing monetary policy in its meeting in September 2021. In its September and October meetings the BDBR decided by majority to increase the monetary policy interest rate by 25 and 50 basis points, respectively, to 2.5% (Graph 1.5).

02/ Macroeconomic Forecasts and Risk Analysis

2.1 International Outlook

External variables are expected to continue to favor Colombia's economic recovery despite uncertainty from COVID-19, tightening international financial conditions, and the risk of persistent disruptions to global supply chains. Trade partner GDP growth should continue to recover after better-than-expected second-quarter performance in several Latin American economies. Increased dynamism in the region would drive demand for Colombian goods and services, partially offsetting lower growth forecasts in advanced economies, such as China and the United States. Overall, Colombia's trade partner GDP is now expected to grow annually by 6.3% in 2021, an upward revision from the July report (6.0%). The technical staff expects 3.4% growth in 2022. International transportation costs, elevated food prices, and supply chain disruptions continue to generate inflationary pressures. These occur alongside increased oil prices in October and higher expected prices on the forecast horizon, amid energy crises in Europe and Asia, and high market prices for natural gas and coal. Inflation forecasts for 2021 and 2022 have been revised upward compared to the previous report. The U.S. Federal Reserve (Fed) is expected to begin tap ering at the end of this year, with an initial increase of U.S. interest rates likely at the end of 2022. A second increase is expected at the end of the second quarter of 2023. Colombia's risk premium is projected to converge to above 15-year averages more quickly than forecast in previous reports, amid an accumulation of macroeconomic imbalances and recent stress events in international financial markets. These forecasts include greater uncertainty than usual, which is detailed in Section 2.3 and Annex 3 of this report. As a result, significant volatility or sudden changes to the external outlook cannot be ruled out.

2.1.1 Foreign Demand

The technical staff revised its forecast for annual trade partner GDP growth upward, partly in response to positive second-quarter performance. A recovery in foreign demand in the second quarter was driven primarily by results in the United States. GDP growth was also unexpectedly strong in Latin America despite an intensification of the pandemic. The United States, the euro area, and China have faced outbreaks of COVID-19 since the third quarter. Disruptions to global supply chains have persisted. An ongoing energy crisis due to gas shortages in Europe, energy rationing in China, and substantial increases in international oil, gas, and coal prices would also be affecting these countries. By contrast, some Latin America and Caribbean countries have recorded reductions in COVD-19 cases since the third quarter and have continued reopening their economies. Prices for these countries' export commodities have remained above pre-pandemic levels. Given the above, average growth among Colombia's trade partners should continue its recovery in the second half of the year, though at a lower quarterly rate of expansion than projected in the July report (Graph 2.1). For all of 2021 average growth among Colombia's trade partners is forecast at 6.3%, compared to 6.0% in the previous report. This recovery

Graph 2.1
Real Quarterly GDP among Trade Partners
(annualized quarterly change; projections according to full-year assumption)
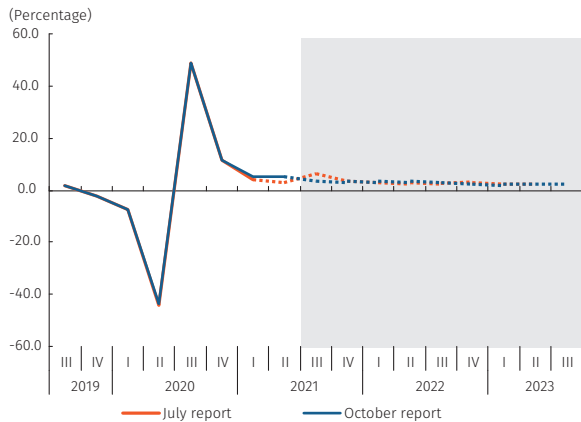
Sources: Bloomberg, statistics offices, and central banks; calculations and projections by *Banco de la República*.

Graph 2.2
Quarantine and Social Distancing Index
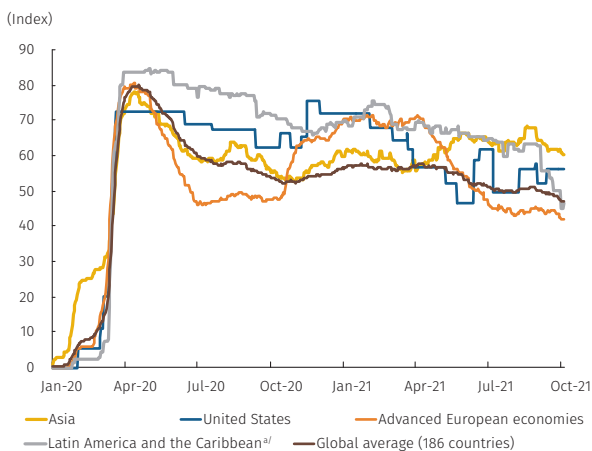
a/Average of Brazil, Chile, Ecuador, Mexico, and Peru
Source: Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips, and Beatriz Kira (2020). Oxford COVID-19 Government Response Tracker, Blavatnik School of Government. Use Policy: Creative Commons Attribution CC BY standard; calculations by *Banco de la República*. Data to 04 October.

is expected to continue in 2022 (3.4%), driven in part by progress in vaccination campaigns (Chart 2.1). The rate of expansion would be expected to be lower than in 2021 due to base effects and a reduction in fiscal and monetary stimulus in many economies. These forecasts vary significantly among countries and sectors due to differences in the impact of the pandemic and the measures implemented to address it.

The delta variant and bottlenecks in certain markets have limited recovery in the United States. Coronavirus cases and deaths have risen in the U.S., largely due to vaccine hesitancy and the spread of the delta variant. This affected mobility and economic reopening in the third quarter (Graph 2.2). Retail sales figures and consumer confidence fell, while recovery in the labor market slowed. High inflation rates and the end of some fiscal support measures would also be affecting real household income. Meanwhile, persistent disruptions to global supply chains have continued to limit growth in industrial output and exports. Hurricane Ida also limited U.S. growth in the third quarter. Given the above, the U.S. growth forecast for 2021 has been revised downward from the previous report (Chart 2.1). By contrast, vaccination campaigns in major euro area economies have helped mitigate the effects of new COVID-19 outbreaks. The easing of mobility restrictions, labor market improvement, high levels of consumer confidence, and favorable financial conditions have all supported private consumption. However, European natural gas shortages have driven prices to decade highs, and the possible effects on consumer prices are a point of concern[1]. Manufacturing and construction, in particular in the automotive industry, continue to be significantly affected by production bottlenecks and limited input availability. Given the above, and considering the unexpected positive performance in second quarter, the growth forecast for the euro area in 2021 has been revised slightly upward. Overall, the expectation that economic activity in advanced economies will recover in 2022 remains, as global supply challenges are addressed and economies continue to reopen in the context of gradual reduction in fiscal and monetary stimulus.

Economic activity in China decelerated in the third quarter. China's GDP grew annually in the third quarter by 4.9%. In annualized terms, it climbed by 0.2% compared with 1.3% in the previous quarter. Strict social distancing requirements to combat the delta variant, as well as flooding in some parts of the country, likely explain part of the slowdown. Global supply chain

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1   Governments in major euro area economies have responded to price increases with direct transfers, price controls, and tax reductions.

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

Trade partners	2019 (pre)	2020 (pre)	2021 (proj)	2022 (proj)
United States	2.3	-3.4	5.8	4.2
Euro area	1.5	-6.5	4.9	4.5
China [b/]	6.0	2.3	8.2	5.6
Ecuador	0.0	-7.8	3.1	2.4
Brazil	1.4	-4.1	5.0	2.1
Peru	2.2	-11.0	11.9	3.4
Mexico	-0.2	-8.3	5.9	3.1
Chile	0.9	-5.8	10.6	2.4
All trade partners [a/]	1.4	-6.7	6.3	3.4

(pre): preliminary, (proj): projected
a/ Projections based on contribution of non-traditional trade
b/ Third-quarter GDP growth was published on October 17. This data point was included in the information used by Banco de la República's board of directors in its decision on October 29. However, the forecasts presented here do not include this information.
Sources: Bloomberg, statistics offices and central banks (observed data); Banco de la República (projections and calculations).

Graph 2.3
Economic Activity and selected Regional Export Commodity Prices

A: Export commodity prices [a/]

(Index, December 2019 = 100)

B: Monthly economic activity indicator

(Index, 2019 = 100)

a/ Updated October 22, 2021.
Sources: Bloomberg and Datastream; calculations by Banco de la República.

issues, a gradual withdrawal of government stimulus, energy rationing, and certain regulations in housing and credit markets may also have limited output and could continue to have an effect on growth. Business conditions in the manufacturing sector deteriorated in September, suggesting a short-term contraction. Meanwhile, business conditions in the service sector improved in September compared to August, in line with reduced health restrictions. China's expected GDP growth has been revised downward for 2021 in light of lower growth in the third quarter and persistent supply challenges (Chart 2.1).

Economic activity in several Latin American and Caribbean countries was unexpectedly strong in the second quarter. However, new strains of COVID-19 and reduced impulse from the external sector represent downside risks to recovery. Second-quarter economic performance among Colombia's regional trade partners was mixed, but outperformed expectations as the effects of the pandemic diminished and government measures in some countries supported private consumption. COVID-19 cases and deaths fell in the region in the third quarter compared to the second (except in Mexico), thanks to progress in vaccination campaigns and limited exposure to the delta variant. As a result, countries such as Chile, Brazil, Peru, and Ecuador continued to reopen their economies and reduce social distancing measures (Graph 2.2), on average allowing for increased population mobility compared to the previous quarter. In general, high export commodity prices have likely contributed to increased national revenues compared to 2020 (Graph 2.3, Panel A). As a result, some countries in the region have seen improvements in monthly economic activity indicators (Graph 2.3, Panel B) and/or labor markets, although unemployment rates remain above pre-pandemic levels. Overall, average growth projections for 2021 were revised upward for some economies as a result of unexpectedly positive second-quarter performance and positive recent trends (Chart 2.1). Recovery in these countries is expected to continue to be supported by economic reopening. However, reductions in monetary stimulus in response to higher recorded and expected inflation, limited fiscal space, lower growth among large trade partners such as China and the United States, and social and political tension in the region could limit growth.
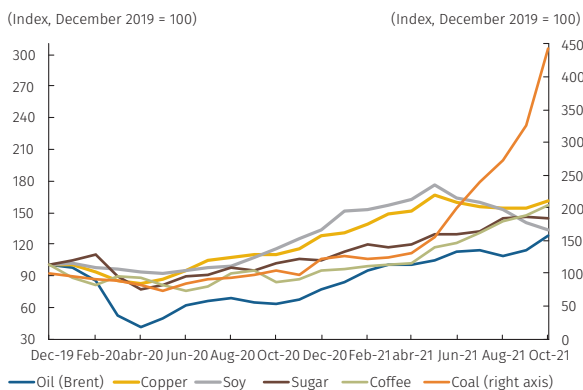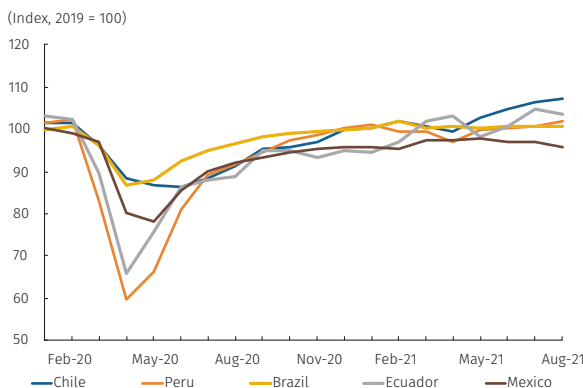
Graph 2.4
Assumed Quarterly Oil Price

(Dollars per barrel)
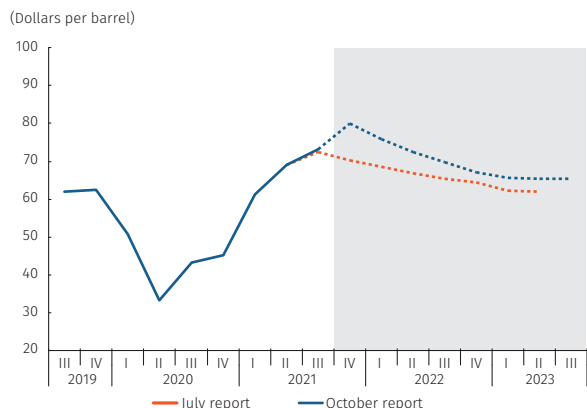
Source: Bloomberg; calculations and projections by *Banco de la República*.

Graph 2.5
EU Natural Gas Inventory usage and International Prices

A: EU natural gas inventory usage (percentage of monthly inventory) a/

B: International natural gas price
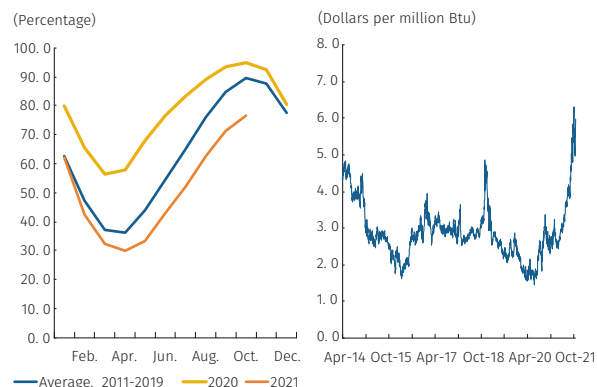
a/ To October 24, 2021
Sources: Aggregated Gas Storage Inventory and Bloomberg.

Graph 2.6
Colombia's Terms of Trade Index, Foreign Trade Methodology

(Index 2019=100)

Sources: *Banco de la República*.

2.1.2 International Prices

The assumed oil price has been revised upward on the forecast horizon, with Brent benchmark prices per barrel (bl) expected to average close to USD 71 in 2021 and 2022. The average oil price (Brent) in the third quarter was USD 73.20/bl, near projections from the July report. However, prices have averaged close to USD 83.00/bl through October 22, an unexpected increase due to a rise in substitution demand amid natural gas shortages in Europe (Graph 2.5, Panels A & B) and limited coal availability, which has affected energy production in China and India. These challenges come as programs are put in place in an effort to transition to cleaner forms of energy. Economic reopening in some countries is also contributing to high oil prices, alongside the onset of the northern hemisphere winter. The effects on U.S. production from Hurricane Ida, persistent supply restrictions from the Organization of Petroleum Exporting Countries and its allies (OPEC+), and a modest response from other producing countries to the recovery in prices would also affect oil prices. By contrast, additional outbreaks of COVID-19 and global supply chain issues, which appear to have influenced economic recovery among major hydrocarbons consumers such as the U.S. and China, would have limited an even more significant rise in oil prices. Given the above, expected oil prices have been revised upward along the entire forecast horizon, with averages reaching a high of USD 80/bl in the fourth quarter before starting to decline as production recovers with the withdrawal of OPEC+ supply limits, increased extraction in other countries such as the U.S. and Canada, and the dissipation of challenges in natural gas and coal markets.

Increased oil prices favored Colombia's terms of trade. Terms of trade grew at an annual rate of 11% in August, driven in part by higher international prices for oil, coffee, and coal, all of which rose above pre-pandemic levels (Graph 2.3, Panel A). Even so, Colombia's terms of trade remained somewhat lower than at the end of 2019 (Graph 2.6) due to high international prices for imports amid global supply chain disruptions and scarcity of goods and inputs. Colombia is also a net importer of goods transportation services, for which costs have increased significantly. This would limit recovery in terms of trade for goods and services. Increased coal and oil prices would favor recovery of terms of trade on the forecast horizon.

Year-end inflation in the United States and euro area is expected to be above target rates. Annual inflation in the United States exceeded market expectations at 5.4% in September, with energy prices (fuel and energy services) a significant contributing factor. Upward

price pressures continued to be observed for vehicles, transportation services, foods, and housing rentals, among other products. This can be explained in part from a low annual basis of comparison, increased labor costs, and persistent supply shocks associated with COVID-19, as supply chain disruptions and elevated international goods transportation costs. This comes in the context of economic recovery and significant monetary and fiscal stimulus. Market surveys suggest that overall inflation levels will be higher in coming quarters than was expected in recent months. High current levels of inflation could also be more persistent than anticipated, converging near to the target at the end of 2022 (2.3%). Core inflation in the euro area increased from 1.6% to 1.9% from August to September, while overall annual inflation rose from 3.0% to 3.4%, values not seen since 2008. This came in the context of high energy costs, increased economic reopening, and global supply chain disruptions, and was affected by a low basis of comparison. Expected inflation for 2021 increased to above 3.0%, while for year-end 2022 the market expects inflation below the 2.0% target. In general, recent developments in gas, oil, and coal prices have generated, at least in the short term, additional inflationary pressure in these countries.

2.1.3 International Financial Conditions

The U.S. Federal Reserve is expected to make its first increase to the policy rate at the end of 2022, with another adjustment in June 2023 (Graph 2.7). The Fed and other central banks in advanced economies have continued to administer market liquidity[2] in recent months. On September 22 the Federal Open Market Committee (FOMC) chose to hold its interest rate at a range between 0.0% and 0.25%, in line with the technical staff's expectations. In the minutes of its September meeting the FOMC suggested that a reduction in the rate of expansion of its balance sheet (tapering) could begin in the middle of November or in December of this year and end in the middle of 2022. According to the chairman of the Board of Governors, the increase in rates is not expected to begin before that this process has been completed. At the same time, members of the FOMC revised their annual growth and fourth-quarter employment projections downward. They revised their inflation expectations for 2021 and 2022 upward due to the effects of production bottlenecks, which have been more significant and persistent than previously

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

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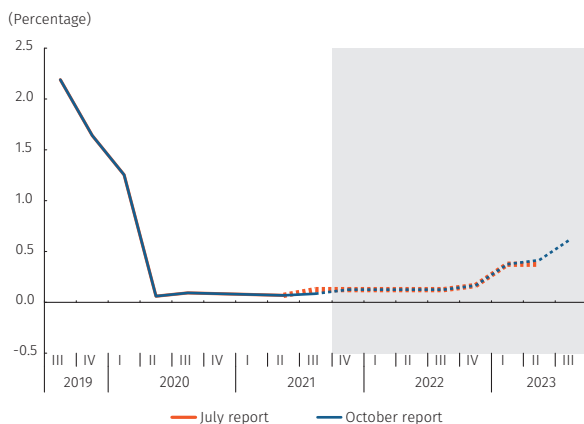
Source: St. Louis Federal Reserve; calculations and projections by *Banco de la República.*

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2   On September 9 the European Central Bank (ECB) slightly reduced the pace of its pandemic emergency purchase program (PEPP). On October 28 it left official interest rates unchanged and maintained activities in the framework of its Asset Purchasing Program (APP), as well as its reinvestment policies and longer-term financing operations.
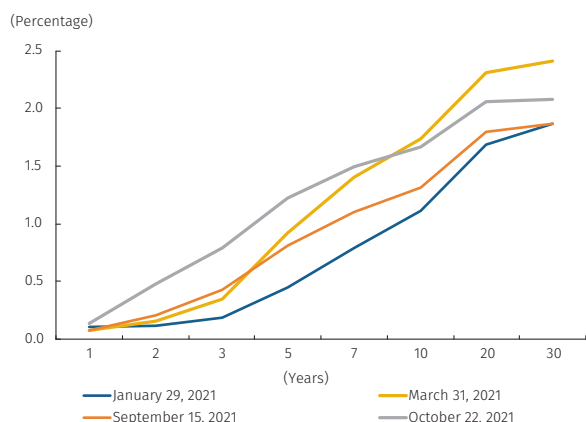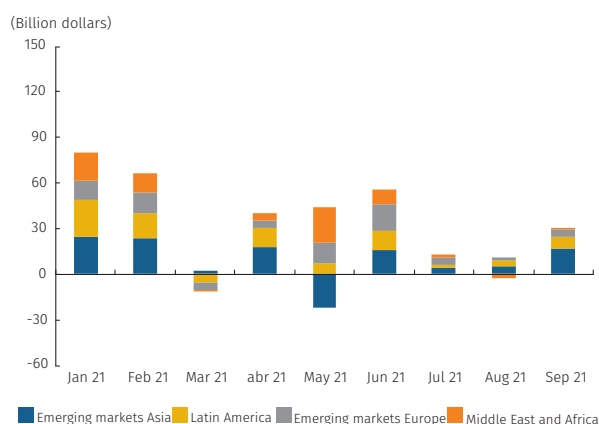
anticipated. Overall, the FOMC projections show consensus on rate stability for the remainder of 2021, and for 2022 and 2023 suggest a less expansive policy stance[3]. Meanwhile, analyst surveys and futures markets suggest an increase in the Fed's interest rates on the forecast horizon, though with significant dispersion [4]. This report forecasts a stable U.S. policy rate in 2021 and part of 2022, with a first increase of 25 bp in December 2022 and a second in June 2023, implying an increased trajectory compared to the July report.

External financial conditions remain favorable but have tightened since the previous report. Perceived risk in Colombia's economy has increased. Long-term interest rates on U.S. treasury bonds fell in part of the third quarter on expectations for transitory inflationary pressures, mixed economic data, continuity in the Fed's treasury bond purchases, and increased risk perceptions associated with the spread of the delta variant and its possible effect on global output. However, since the end of September and through October 22 interest rates have trended upward on all points of the yield curve (Graph 2.8, Panel A). This came as the Fed's monetary policy was expected to become less expansive, alongside concerns that inflationary pressures could be more persistent than initially forecast. Net capital flows to emerging markets diminished[5] in the third quarter compared to the previous two periods, due to the net outflow of equity investments and reduced flows to fixed-income instruments (Graph 2.8, Panel B). This came as the Fed announced the beginning of tapering, and amid inflationary pressures and fiscal imbalances in emerging market economies. More recently, this has included increased risk perceptions associated with the Chinese real estate market. Domestic exchange balance data for Colombia suggests a deceleration in net capital inflows in the foreign investment portfolio. About USD 85 million entered the country in the third quarter, below the USD 2.4 billion recorded in the previous quarter.

Colombia's risk premium in 2021 and 2022 is expected to be higher on the forecast horizon compared to the July report, while convergence levels on the forecast horizon remain unchanged (Graph 2.9). The Colombian

Graph 2.8
U.S. Treasury Bonds and Capital Flows to Emerging Markets

A: Daily U.S. treasury bond curve

B: Net foreign investment flows to emerging economies [a/]

a/ investment flows in stock and debt instruments
Sources: U.S. Department of the Treasury and Institute of International Finance (IIF).

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3   For year-end 2022, the median survey response for the interest rate range midpoint increased from 0.13% in June to 0.25% in September. For year-end 2023 forecasts, the median response rose from 0.63% to 1.00%, with a high degree of dispersion.

4   For year-end 2021, 2022 and 2023 the median of the New York Federal Reserve's Market Participants and Primary Dealers surveys from September consider a policy rate of 0.13%, 0.13% and 0.63%, respectively. During the writing of this report, the expected interest rate from futures markets increased to 0.08%, 0.49%, and 0.92%, respectively.

5   Institute of International Finance (IIF)

Graph 2.9
Colombia's assumed Quarterly Risk Premia (CDS) [a]

(Basis points)
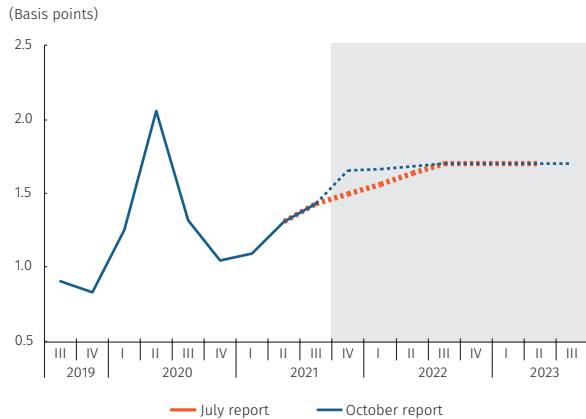
a/ Five-year credit default swaps
Source: Bloomberg, calculations and projections from *Banco de la República*.

Graph 2.10
Nominal Exchange Rate Behavior and Risk Premia for selected Latin American Countries

A: Five-year credit default swaps

(Baisis points)
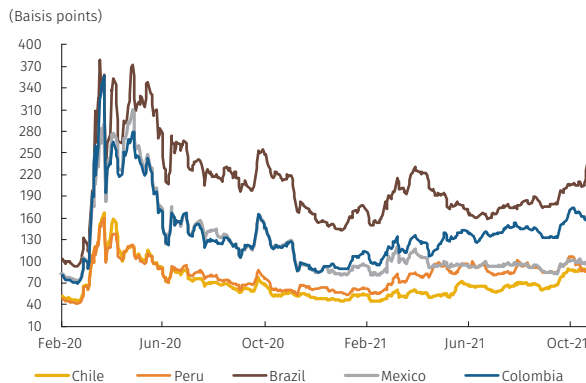
B: Nominal exchange rate

(Index, December 2019 = 100)
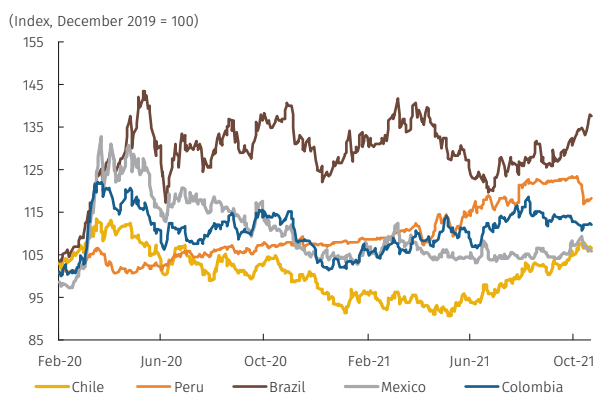
Note: to October 22
Source: Bloomberg; calculations by *Banco de la República*

peso depreciated in average quarterly terms by 4.0% in the third quarter, while five-year credit default swaps (CDS) on average increased to 143 bp. This was more than in the previous four quarters and similar to the technical staff's expectations from the July report (Graph 2.10). The increase in the risk premium occurred in large part starting in the last week of September, rising above 170 bp at the beginning of October. Through October 22, the premium remained above levels from the first half of the year. The increase in the risk premium came amid tensions in international financial markets associated with the risk of default from Evergrande (the second largest real estate company in China), uncertainty over debt ceiling negotiations in the United States, the expectation of a less expansive monetary policy from the Fed, and concerns over the energy crisis and its possible effects on inflation. These global factors also affected risk premiums in other emerging market economies, including in Latin America. Given the above and considering increases in Colombia's public and external debts compared to pre-pandemic levels, risk premiums between the fourth quarter of 2021 and second quarter of 2022 are expected to be higher than estimated in the previous report, later stabilizing at 170 bp at the end of the forecast horizon.

2.2 Macroeconomic Projections[6]

2.2.1 Inflation

Overall inflation is now expected to exceed projections from the July report and remain above the target over the entire forecast horizon (Graph 2.11). This projection partly reflects the transitory effects on inflation of tax measures (e.g., VAT-free days) and the lapse of some price relief measures (e.g. on the consumption tax at the beginning of 2023). It also reflects the likelihood of more persistent temporary supply shocks and excess productive capacity that is expected to tighten faster than anticipated, reducing downward pressure on prices. Overall annual inflation increased in the third quarter to 4.5% in September and is expected to continue to rise through early 2022. Inflation should then start to converge toward the target, although this process is expected to be slower than forecast in the July report. External pressures are expected to be somewhat more persistent than forecast in July. Alongside a reactivation of demand and a faster-than-expected tightening of excess productive capacity, this has led to an upward revision to the overall inflation trajectory in the central

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6   The results suppose an active monetary policy in which *Banco de la República* adjusts the benchmark rate to guarantee compliance with the inflation target.

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

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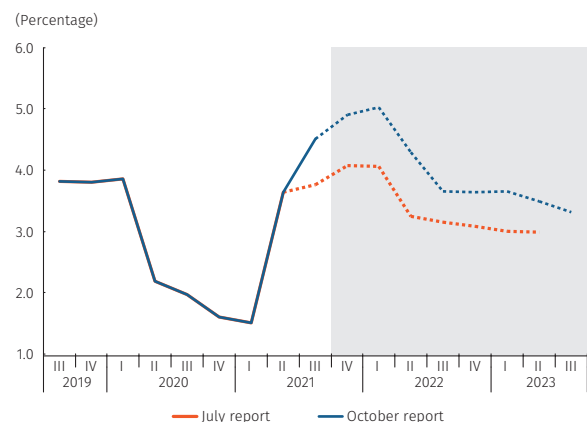
Source: DANE; calculations and projections by *Banco de la República.*

forecast scenario; indexation to higher levels of inflation would also be a factor. By contrast, the current forecast continues to include a reduction of downward effects associated with temporary relief measures on indirect taxes implemented in 2020, and also incorporates the effects of the Social Investment Law (*Ley de Inversión Social),* in particular an extension of relief measures for various services and VAT-free days. When in 2022 the VAT-free days will take place, their pass-through effects on prices, household spending related to those events, and the measurement of their effects add uncertainty to inflation forecasts. Given all of the above, overall year-end inflation in 2021 is forecast at 4.9% on the central forecast scenario, and at 3.6% for 2022. Inflation is expected to continue to decline in 2023, converging to the target and reaching 3.3% in the third quarter. Uncertainty in these estimates is significant, in part due to the difficulty of correctly measuring the magnitude of excess productive capacity and the speed with which it will tighten. Potential inflation volatility related to VAT-free days and other price relief measures, detailed in Section 2.3, represent additional factors to consider.

Projected core inflation has also increased in the medium term, in large part due to external shocks that have been more persistent than expected, indexation to higher levels of inflation, and an output gap that is likely exerting less downward pressure on prices than anticipated. The introduction of VAT-free days at the end of 2021, which would imply temporary upward effects on annual inflation at the end of 2022, is another consideration. Core inflation, measured as headline inflation excluding food and regulated items, maintained its upward trend, rising to 2.3% in September. This indicator is expected keep an upward trend over the course of 2022, settling above the target due primarily to diverse temporary supply shocks. These include global production and supply issues, challenges in international commercialization and transportation, the reversion of some relief measures on indirect taxes and prices, VAT-free days, and other factors. The current forecast assumes that these shocks will continue to affect annual inflation over the course of the next two years, and their decline and convergence to the target would come beyond the forecast horizon. This delayed convergence compared to previous forecasts also reflect revised estimates concerning the output gap, which is now expected to cease to exert downward pressures on prices earlier than projected in previous reports, considering recent demand performance.

Goods and services prices are expected to continue to be affected by temporary external and domestic shocks that could add to core inflation volatility and make identifying persistent demand and indexation

Graph 2.12
CPI Excluding Food and Regulated Items
(annual change; end-of-period)

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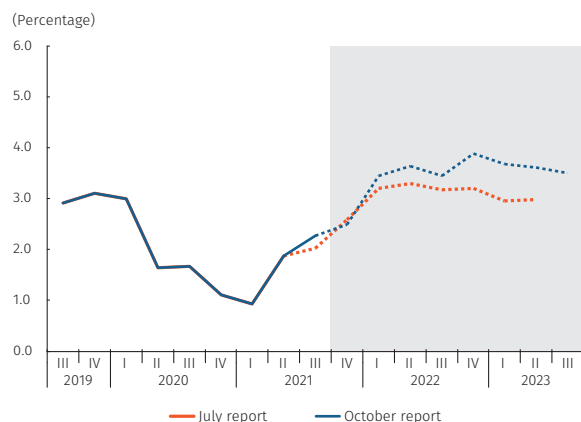
Source: DANE; calculations and projections by *Banco de la República.*

Graph 2.13
Quarterly RER Inflationary Gap [a/]

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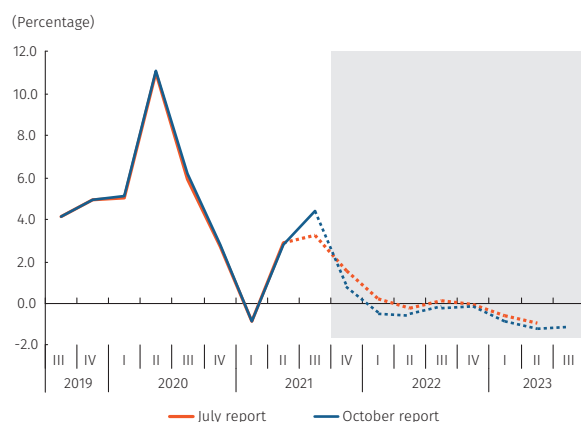
a/ The real inflationary exchange rate gap (RER) captures inflationary pressures from the exchange rate. Positive values imply upward pressures on inflation. The gap is calculated as the deviation in the real exchange rate compared to a non-inflationary trend estimate under the 4GM monetary policy model.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

pressures more difficult. Projections for the CPI for goods excluding food and regulated items take into consideration a recent extension of health emergency measures until November 30. These included a continued VAT exemption on cleaning and personal hygiene products, among other measures. The forecast also takes into account the national government's three VAT-free days scheduled for this year, which could generate significant declines in this CPI in the fourth quarter and a subsequent reversion in the first quarter of 2022[7]. Projections for both the CPI for goods excluding food and regulated items and the CPI for services excluding food and regulated items consider the external pressures mentioned above, which are expected to be transitory and begin to dissipate in the middle of 2022. These pressures would affect the CPI for services excluding food and regulated items mainly via an adjustment in foods away from home (FAH), due to food prices. The forecast for the CPI for services excluding food and regulated items also considers changes to the duration of relief measures on indirect taxes on FAH and services related to tourism and hotels, which were extended through the end of 2022 by the Social Investment Law. The forecast also incorporates the effect of higher inflation indexation for some services with significant weight in the CPI, as is the case with housing rentals. Given all of the above, core year-end inflation is now expected to be 2.5% for 2021 and 3.9% for 2022, after which it is expected to begin to converge to the 3.0% target (Graph 2.12). Part of the high levels of expected core inflation can be explained by one-time shocks associated with the reversion of certain price relief measures, which should dissipate beyond the forecast horizon. Finally, recent exchange rate performance rate is expected to be reflected in a positive real exchange rate gap in 2021, similar to projections from the previous report (Graph 2.13). This would be expected to exert some upward pressure on domestic prices, which should dissipate at the end of this year.

Annual change in the CPI for foods is expected to increase in the fourth quarter of 2021, rising above projections from the previous report, before declining in 2022 and ending the year below 2.0%. The annual change in the CPI for foods continued to increase beyond expectations in recent months, ending September at 12.4% and generating significant upward

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7   The aggregate effect of the three VAT-free days considered in the current projection is higher than estimated for the fourth quarter of 2020, which included just one VAT-free day in November. This increase is derived from the measurement methodology for the CPI. By contrasts, the forecasts do not account for VAT-free days in 2022 and beyond, as the dates and total number of days planned are not yet known (the Social Investment Law references three days per year).

Graph 2.14
CPI for Foods
(annual change; end-of-period)

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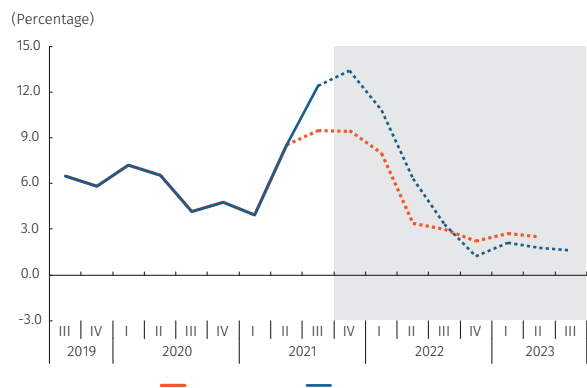
Source: DANE; calculations and projections by *Banco de la República.*

Graph 2.15
CPI for Regulated Items
(annual change; end-of-period)

(Percentage)

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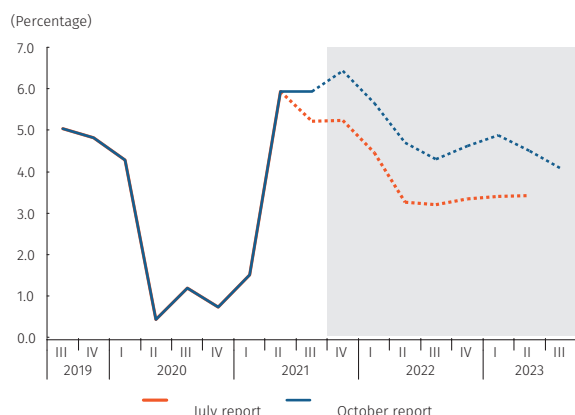
Source: DANE; calculations and projections by *Banco de la República.*

Graph 2.16
Bank and Stockbroker Inflation Forecast

(Percentage)

To December   12 months forward   24 months forward
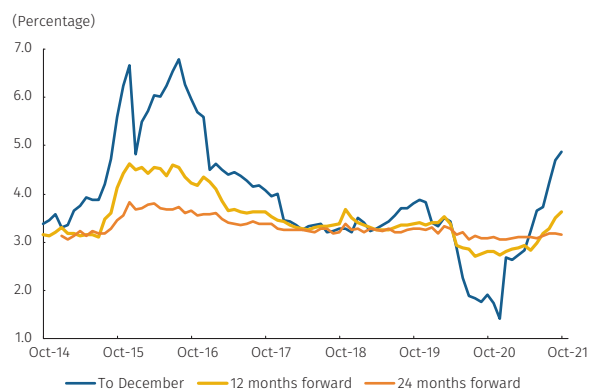
Source: *Banco de la República* (monthly analyst survey).

pressure on overall inflation. This came as the result of more significant and long-lasting external pressures than previously anticipated, which were associated with global supply chain disruptions, commodities prices, and significant increases in transport costs. Limited domestic supply also played a role. Both external pressures and limits on domestic supply, especially on meat products and some perishable items affected by rainfall, are expected to persist in coming months. Together with a relatively low basis of comparison from the previous year, this would be expected to increase annual growth in this CPI for the rest of the year, ending 2021 somewhat above 13.0%. Nevertheless, these pressures are expected to begin to recede slowly in 2022 as international prices decline. Alongside the expectation of favorable climate conditions, this would allow for annual change in the CPI for foods at the end of 2022 of 1.2% in the central forecast scenario, remaining close to 2.0% for the rest of the forecast horizon (Graph 2.14). Recent increases in various commodity prices, including oil, and the possibility of more persistent global supply chain challenges are not considered in this forecast, and would present significant upward risks in the medium term.

The CPI for regulated items is expected to continue to grow at relatively significant annual rates on the forecast horizon, exceeding expectations from the previous report as a result of higher levels of indexation and more persistent external pressures. Annual change in the CPI for regulated items has remained high in recent months (close to 6.0%), a reflection primarily of a faster-than-expected withdrawal of price relief measures implemented last year to address the pandemic. The unexpected transmission of costs associated with investments made by some utility companies likely also played a role. The revised forecast for the CPI for regulated items accounts for more significant upward pressures, originating in the CPI and PPI through indexation mechanisms related to utility rates and other regulated services. The forecast also assumes more prolonged international pressures on fuel prices, which are likely to affect domestic prices. Given all of the above, the annual change in the CPI for regulated items is expected to remain somewhat higher than 6.0% in 2021, later trending downward to between 4.0% and 5.0% at the end of 2022 (Graph 2.15). However, these forecasts do not consider the complete transmission of international fuel prices onto domestic prices, which, should it occur, would lead to a significant increase in the CPI for regulated items in coming years given the current gap between domestic prices and levels that would fully reflect current international prices and the exchange rate.

Graph 2.17
Quarterly GDP [a/]
(annual change)
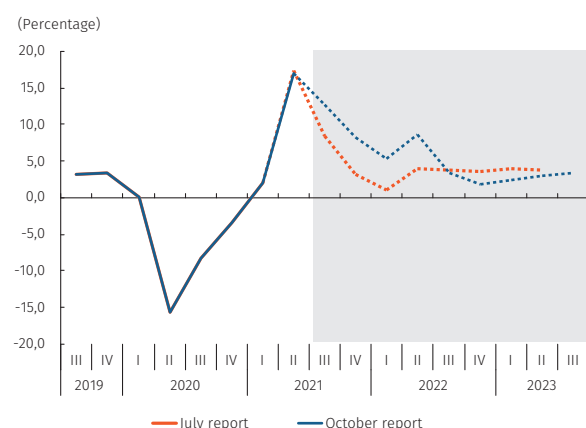
a/ Seasonally adjusted and corrected for calendar effects
Source: DANE; calculations and projections by *Banco de la República.*

Graph 2.18
GDP, Four-Quarter Accumulation [a/]
(index, Q4 2019 = 100)
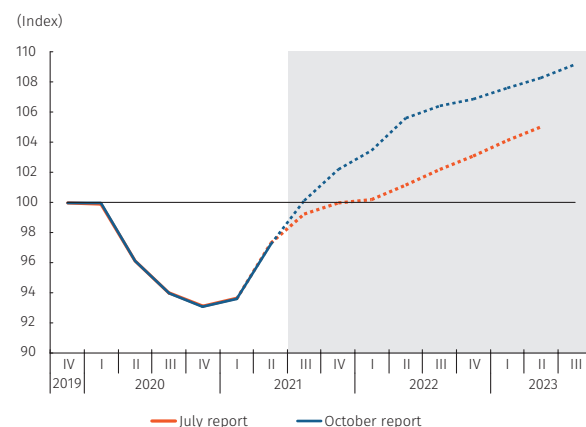
a/ Seasonally adjusted and corrected for calendar effects
Source: DANE; calculations and projections by *Banco de la República.*

Market inflation expectations increased compared to the July report, though they remain close to the target in the medium term. The Bank's monthly survey of analyst expectations, conducted from October 7-12 (Graph 2.16), suggests overall inflation of 4.9% in 2021 and 3.5% in 2022. This represents an increase from July (3.7% and 3.3%, respectively). Analysts' average expectations regarding inflation excluding foods also increased, though to levels close to the target at 3.5% for the end of 2021 (previously 3.0%) and 3.2% for the end of 2022 (previously 3.1%). Expected values based on public debt (break even inflation, BEI), adjusted for inflationary and liquidity risk premiums[8] suggest expected inflation in October[9] at two, three and five years of 3.05%, 3.17% and 3.37%, respectively.

2.2.2 Economic Activity

Available data suggests that GDP growth became more dynamic in the third quarter, following the negative effects of roadblocks and a third wave of COVID-19 earlier in the year (Graph 2.17). Second-quarter growth (17.0% annually, seasonally adjusted and corrected for calendar effects, SACE)[10] was affected by a third wave of COVID-19 and roadblocks in certain parts of the country. This was in line with the technical staff's expectations and led to a decline in economic growth in quarterly terms. Sector-level data suggests that these negative shocks likely dissipated in the third quarter, and that the economy likely returned to a growth trajectory with 12.7% annual growth, significantly higher than forecast in the July report (8.4%). These results were likely driven, in part, by progress in the national vaccination campaign and a reduction in COVID-19 cases and deaths, alongside consumer adaptation to pandemic conditions and rapid sector-level recovery facilitated by ample financial conditions and liquidity at historically low real rates. If this forecast is confirmed, annual GDP will have recovered to pre-pandemic levels in the third

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8   Inflation expectations net of inflationary and liquidity risk premiums 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 premiums 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 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.

9   Through October 22, 2021

10   Original series of 17.6%

Graph 2.19
Total Goods Exports (FOB)
(monthly)

(Millions of dollars)   (Percentage)
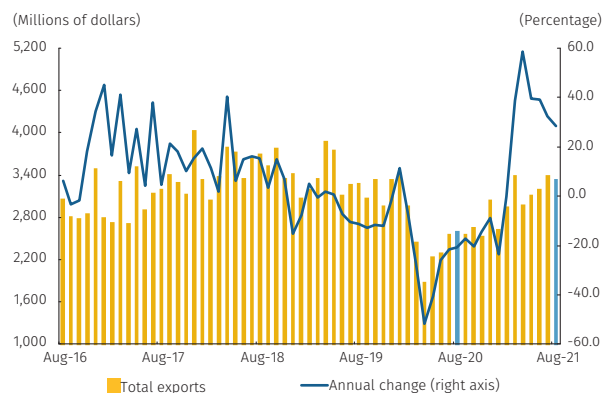
Source: DANE; calculations by *Banco de la República*.

Graph 2.20
Total Goods Imports (CIF)
(monthly)

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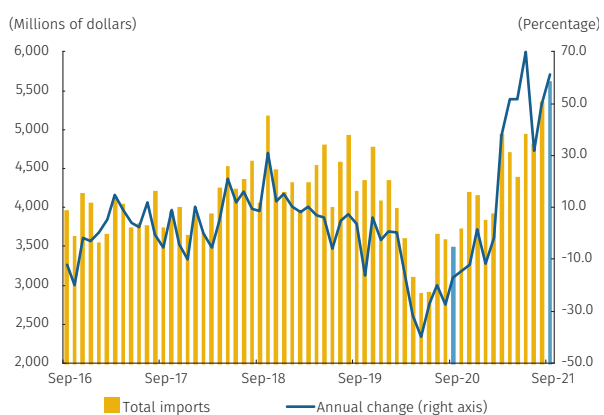
Sources: DANE and DIAN (results from foreign trade advances); calculations by *Banco de la República*.

Graph 2.21
GDP, Four-Quarter Accumulation[a]
(annual change)
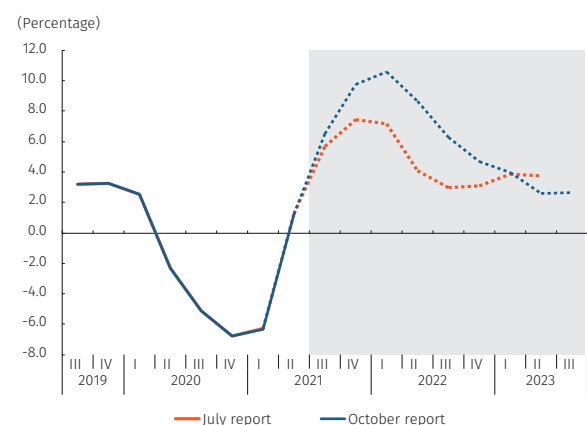
(Percentage)

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

quarter, earlier than estimated in the previous report (Graph 2.18).

Third-quarter growth appears to have continued to be reflected in positive domestic demand performance, especially in private consumption. Domestic demand is estimated to have continued to grow in the third quarter both in annual and quarterly terms, reaching annual growth close to 20% at levels significantly higher than those registered before to the pandemic. Spending on services, where significant dynamism from April-June is expected to have continued into the third quarter, likely contributed to this result. This forecast supposes a smaller contribution to domestic demand from public consumption than in the second quarter, in part due to a reduction in the pace of COVID-19 vaccine purchases. Nevertheless, public consumption is expected to have grown at a significant annual rate. Meanwhile, investment appears to have recovered part of its second-quarter losses, but likely continued to lag behind pre-pandemic levels, particularly in the construction sector. Import figures from September (from DIAN's foreign trade data advances) suggest that investment in machinery and equipment would have grown significantly in annual and quarterly terms. Investment in housing and other buildings and structures would barely have recovered to first-quarter levels, remaining well below 2019 levels. Overall, domestic demand in the third quarter is expected to have grown in annual terms at a faster rate than GDP (16.2% compared to 12.7%), far surpassing pre-pandemic levels.

A deterioration in the trade deficit in real peso terms in the second quarter is expected to have continued in the third, given a limited recovery in exports and significant import dynamism. Final data from August and provisional information from September (DIAN advances) suggest that exports recovered only modestly in the third quarter (Graph 2.19), remaining significantly below pre-pandemic levels. The quarterly expansion can likely be explained above all by positive performance in coffee, non-traditional goods, and services exports. Oil and coal exports, however, continue to be low, limiting growth in total exports. Meanwhile, after a significant increase in the second quarter (to above pre-pandemic levels), import growth is expected to have moderated in the third quarter, as suggested by advance DIAN data from September (Graph 2.20). Here the quarterly increase can likely be explained primarily by consumer and capital goods purchases. The significant acquisition of COVID-19 vaccines likely also contributed to import growth, although this would not have been as significant a factor as in the second quarter. Given the above, the trade deficit in constant peso terms likely remained at

Graph 2.22
Total ISE and by Sector [a/ b/]
(annual change)

(Percentage)

— Total ISE   — Primary activities
— Secondary activities   — Tertiary activities
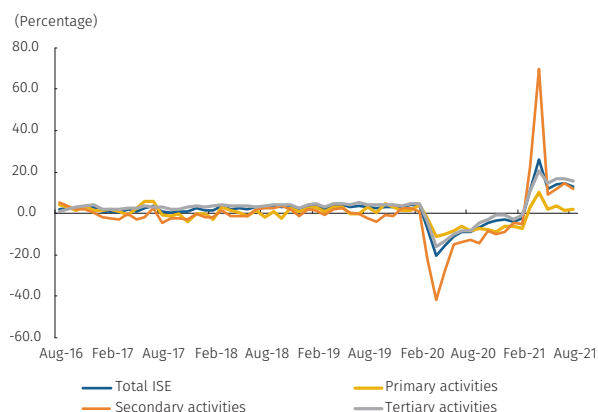
a/ Primary activities: agriculture, hunting, forestry and fishing, mine and quarry exploitation. Secondary activities: manufacturing industries and construction. Tertiary activities: electricity, gas, and water supply; commerce, repairs, transportation, and lodging; information and communications, financial 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.
Source: DANE; calculations by *Banco de la República.*

historically high levels, reflected largely in the recovery in private domestic demand.

An upward revision in the third-quarter GDP estimate, due to more dynamic domestic demand than projected in the July report, also contributed to an increase in the 2021 overall growth forecast (Graph 2.21). This projection supposes that the national vaccination plan will continue, reducing the incidence of COVID-19 cases and in deaths. It also assumes that there will not be an additional need for restrictions on mobility, and that the full reopening of lagging economic sectors will continue as agents continue to adapt to pandemic conditions. Based on these assumptions, recovery in domestic demand would be expected to continue in the fourth quarter, despite the fact that this would continue to be uneven among sectors and that employment growth would remain less dynamic than output growth and that investment growth would trail consumption. The monthly Economic Monitoring Indicator (ISE, by its initials in Spanish) (Graph 2.22) suggests uneven performance among sectors. Monetary policy that is expected to be expansive for the rest of the year, as well as higher available household savings than usual and positive performance in remittances, are also expected to contribute to this recovery. Externally, it is expected that Colombia's export performance will improve at the end of the year, given favorable terms of trade and expansion in trade partner economies. Given the above, the current forecast for GDP growth in 2021 is 9.8%, higher than projected in July (7.5%).

Economic growth is expected to decelerate in 2022, with GDP expansion closer to long-term rates. A low basis of comparison from the first half of 2021, investment recovery toward pre-pandemic levels, the expectation of favorable terms of trade, and the forecast recovery in global economic activity would likely explain a significant part of expected growth in 2022. Despite decelerating, growth is expected to increase to 4.7% in the central forecast scenario, significantly above projections from the July report (3.1%). This revision accounts for a low basis of comparison for the first half of 2021 and is due primarily to traction from the significant recovery in economic activity in the second half of the year. The revised forecast assumes that part of the increase in consumption in the second half of 2022 will have been transitory, reflecting suppressed demand and supported by household savings accrued over the last two years. Nevertheless, consumption levels are expected to be sustained by a continued recovery in household income, as jobs figures continue to improve and the gap between employment and economic activity growth tightens. This growth forecast also accounts for a bigger push on demand from investment, principally in construction,

where the gap compared to pre-pandemic levels is expected to be overcome in 2022. Factors supporting this expectation include elevated housing sales in the year-to-date, the contribution from Colombia's social housing program, execution and finalization of already budgeted infrastructure projects, and an increase in investment in extractive industries, all of which are expected to begin to be reflected in increased construction activity next year. An upward revision of expected oil and other commodity prices, which should stimulate diverse segments of both private and public spending, would also contribute to the increase. Meanwhile, exports are expected to continue to be driven by a gradual recovery in foreign demand, an increase in commodities production, including in oil and coal, and by an expected recovery in demand for tourism services from abroad. An improvement in expected export performance compared to imports would be reflected in a reduction in the trade deficit for goods and services, which would support growth in 2022. No additional negative economic effects from COVID-19 are anticipated in the central forecast scenario, and monetary policy is expected to remain expansionary alongside loose international financial conditions. The current projection includes the technical staff's preliminary estimate of the effects on aggregate demand of a fiscal reform similar to the Social Investment Law approved by Congress.

Based on recent labor market performance and economic activity forecasts, the national unemployment rate is expected to decline gradually, finishing the year around 12.2% and averaging between 10.0% and 13.0% in 2022. After stagnating in the first half of the year, employment grew again in July and August, driven in large part by employment in rural areas and in secondary cities. Employment grew gradually in major cities, driven largely by the formal sector. After a decline in the second quarter, labor force participation has recovered in the absence of additional mobility restrictions and thanks to the gradual reopening of schools and childcare services. Employment growth, however, outpaced the increase in labor force participation, causing the unemployment rate to continue to fall in August to its lowest point since the start of the pandemic. Although labor demand has corrected significantly, it remains below pre-pandemic levels (see Section 3). Based on these observations and the central forecast scenario in this report, the technical staff estimates that the national unemployment rate will continue to decline for the remainder of 2021, ending the fourth quarter around 12.2%. As a result, the average unemployment rate for 2021 would be between 13.3% and 14.0%, with a most likely value of 13.6%. This represents a downward correction compared to the July report (range between 13.7% and 15.0%). The unemployment rate is expected to continue to decline at a gradual rate in 2022, averaging between 10.0% and 13.0%, with 11.4% as the most likely estimate. These projections continue to be surrounded by high levels of uncertainty, as they may vary depending on the risk factors signaled in this report.

The faster rate of observed and expected recovery in the Colombian economy suggests that remaining excess productive capacity would be significantly reduced, closing earlier than forecast in the July report. Ample excess productive capacity has persisted since the start of the pandemic, as the result of negative shocks affecting aggregate demand more so than supply. This would be supported by the deceleration of prices for some goods and services that were not protected by tax reductions or other

Graph 2.23
Output Gap [a/]
(four-quarter accumulation)
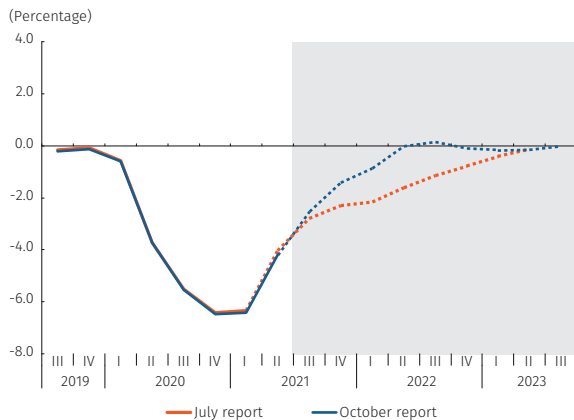
a/ The historical estimate of the output gap is calculated as the difference between observed GDP (four-quarter accumulation) and potential GDP (trend; four-quarter accumulation) from the 4GM model; for the forecast it is calculated as the difference between the technical staff's GDP estimate (four-quarter accumulation) and potential GDP (trend; four-quarter accumulation) from the 4GM model.
Source: Banco de la República.

Graph 2.24
Annual current account [a/ b/]
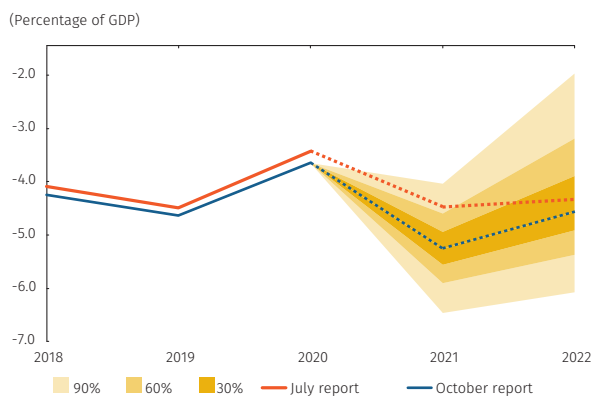
a/ The graph presents the probability distribution for the forecast for 2021 and 2022. Densities characterize the balance of potential risks with areas of 30%, 60% and 90% probability around the central forecast (mode), using as a reference, mainly, the densities from the Patacon model.
b/ The probability distribution corresponds to the forecast exercise in the October report.
Source: Banco de la República.

relief measures, as well as their recent increases below the target despite the recovery in demand. The dynamic in labor markets, which continue to be loose, points in the same direction. However, the most recently available information on economic activity suggests a recovery in GDP in the year-to-date that has exceeded expectations, supported in large part by dynamism in domestic demand and in particular by private consumption, which has already surpassed pre-pandemic levels. This is supported by the ISE for tertiary activities, composed mainly of services, which has surpassed 2019 levels. The segments of core inflation related to services have also begun to register increases beyond the technical staff's expectations in recent months. Although core inflation remains below the target, it has begun to accelerate. All of these factors together point to a reduction in excess productive capacity that has likely come faster than projected in previous reports (Graph 2.23). Given the above, the current forecast estimates an annual output gap at the end of 2021 of -1.4% (compared to -2.3% estimated in July) and that this gap would close toward the end of 2022 or beginning of 2023 (earlier than projected in July). This would imply potential output recovering at a more significant rate, expected to grow by 4.2% in 2021. All that said, measuring the effects of the pandemic and other shocks to aggregate demand, potential output, and the output gap continue to be surrounded by high levels of uncertainty. The risk factors involved are described in more detail in Section 2.3 of this report.

2.2.3 Balance of Payments

The current account deficit is expected to expand to 5.3% of GDP[11] in 2021, a reflection primarily of greater-than-expected domestic demand growth (Graph 2.24). Growth in imports for 2021 would likely be driven by a recovery in consumption and investment. Colombians resuming travel abroad and COVID-19 vaccine purchases would be secondary factors. High international maritime goods transportation costs and elevated global product and input prices, driven by disruptions in global supply chains among other factors, are expected to increase the nominal value of foreign purchases. The current account deficit is also expected to expand in line with the expected recovery in yearly earnings for businesses with foreign participation, as the result of increased

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11 The current account deficit would represent around 6.5% of quarterly GDP in the third quarter, an increase compared to the same period in 2020 and to the second quarter of 2021. This would be due, primarily, to increased imbalances in goods and services trade and factor income. This comes in the context of economic recovery, elevated goods transportation costs, and increased tourism outflows, and despite the fact that remittances likely continued to grow at significant rates.

economic activity and high oil and coal prices. Colombia's external revenues, meanwhile, are expected to recover over the course of the year, partially offsetting the pressures on the trade imbalance. Higher export prices, especially for oil, coal, coffee, and industrial products, alongside a recovery in foreign demand amid increased trade partner growth, can likely explain a large part of this expected recovery. Remittances, which have reached historical highs this year, as well as an incipient recovery in international tourist arrivals, would also be expected to increase annual foreign income. From the perspective of the savings-investment balance, the annual increase in the current account deficit in 2021 would reflect lower net savings rates in the private sector, in line with a more significant rate of expansion in consumption and investment, in the context of a public sector imbalance that remains high. As a result, the deficit is projected to grow to 5.3% of GDP (USD 16.583 billion) in 2021, an upward revision from the July report (4.5% of GDP).

The current account deficit is expected to decline to 4.6% of GDP (USD 15.546 billion) in 2022, below the 2021 forecast[12]. The main factors expected to influence a correction in the external imbalance would include an additional recovery in exports in a context in which some major export prices remain high. The dissipation of negative shocks on oil and coal production in 2021 and growing foreign demand would also be factors. There is also expected to be a gradual normalization in net tourism revenues, international transportation costs, and global supply chain issues, as well as lower imports associated with COVID-19 vaccines. The expected annual correction in the deficit would come amid a reduced fiscal imbalance. Despite this, the current account deficit would be expected to remain relatively high, due in part to the fact that growth in domestic demand would continue to drive import spending and earnings for businesses with foreign investment, although at a more moderate pace. Remittances are expected to moderate as well. Projections for 2021 and 2022 include high levels of uncertainty, tied to changes in the domestic growth outlook and growth among Colombia's major trade partners, as well as the evolution of export commodity prices and international trade transportation rates, among other factors.

Colombia is expected to continue to have access to global capital markets on the forecast horizon, although under less favorable financial conditions. Capital flows are expected to continue to support Colombia's external financing, driven by a recovery in the domestic and global economies and by the high prices of mining and energy commodities. The trend in foreign direct investment (FDI) recovery is expected to continue, growing progressively in significance in financing the current account deficit. Capital obtained by the public sector is expected to continue to be a significant source of external revenues. Public sector financing, concentrated in long-term instruments, is projected to reach highs in 2021. However, this financing would moderate in 2022 with an expected reduction in the fiscal deficit. Given the estimates for FDI flows and public sector financing, the private sector would be expected to increase its balance of net foreign assets aside from direct investment, which could correspond both to the constitution of new assets and to the liquidation of external liabilities. An increase in external financing costs, or reductions in economic growth or primary export goods prices, could present risks to capital account estimates. In particular, there is uncertainty over the

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12   In the July report this estimate for the current account deficit was 4.3% of GDP for 2022.

Graph 2.25
Average Observed Quarterly Interest Rate and Rate Expected by Analysts [a]

(Percentage)

— Observed average   ······ trajectory expected by analysts
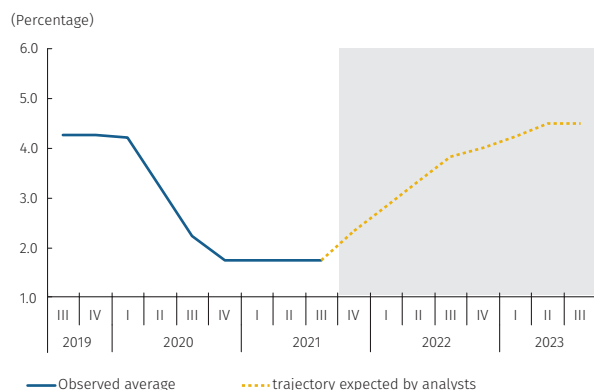
a/ Median analyst projection. These projections are calculated considering the quarterly average of the responses to the Bank's monthly economic analyst survey from October 2021
Source: *Banco de la República.*

Graph 2.26
Consumer Price Index, Predictive Density [a]
(annual change, end-of-period)

(Percentage)

▨ 90% ▨ 60% ▨ 30% — October report
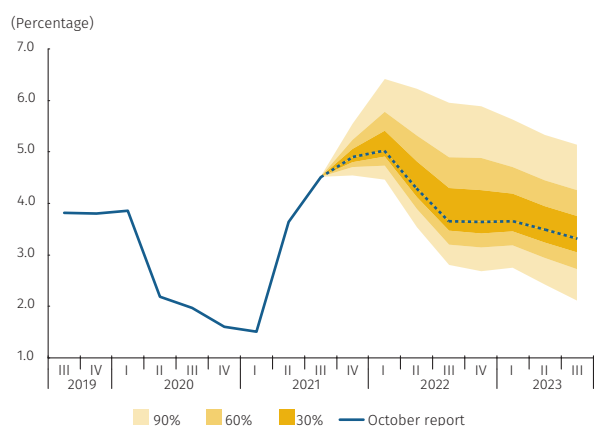
	IV 2021	IV 2022	III 2023
Mode	4.87	3.64	3.32
< Mode	29.7%	26.3%	37.1%
Range			
< 2	0.0%	0.9%	3.8%
2 -- 4	0.0%	38.3%	62.4%
> 4	100.0%	60.8%	33.6%

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 central forecast (mode), using a combination of densities from the Patacon and 4GM models.
Source: *Banco de la República.*

country's financing costs associated with a possible liquidity adjustment in the United States, increased aversion to risk in international financial markets, or an increase in the domestic risk premium.

2.2.4 Monetary Policy and Interest Rates expected by Analysts

The median year-end policy interest rates expected by analysts for 2021 and 2022 are 2.3% and 4.0%, respectively (Graph 2.25). *Banco de la República*'s monthly survey of analyst expectations for October suggested median policy interest rate expectations of 2.3% on average for the fourth quarter of 2021 (2.5% median for year-end 2021). The median response for the beginning of 2022 was 2.8%, and for the end of the year was 4.0%. At the end of the forecast horizon (eight quarters), the median analyst expectation was 4.5%. The technical staff now expects an increased inflation trajectory on the forecast horizon, in large part due to transitory supply shocks and reduced excess productive capacity compared to the July report. This would be compatible with an expected trajectory of the benchmark interest rate that, on average, is somewhat higher than both the forecast from the previous report and market analyst expectations from October. As with previous reports, there remains a high level of uncertainty on the forecast horizon related to the intensity and persistence of shocks affecting the evolution of economic activity and inflation. Particularly, shocks related to costs and disruptions to global production chains, international financial conditions, aggregate supply and demand dynamics, and the magnitude of excess productive capacity on the forecast horizon should be evaluated closely as new information becomes available.

2.3 Balance of Risks and Macroeconomic Forecast

The macroeconomic forecast continues to contain a high degree of uncertainty. This section presents the balance of risks to the forecast, focused on the primary drivers of that uncertainty, in order of importance, included on the predictive density exercises used by the technical staff for this report[13].

Most significantly, commodity and transportation cost pressures could be more pronounced and/or long-lasting than considered in the central forecast scenario

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13 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 Monetary Policy Report from July 2021.

Graph 2.27
CPI excluding Food and Regulated Items, Predictive Density [a/]
(annual change, end-of-period)

(Percentage)
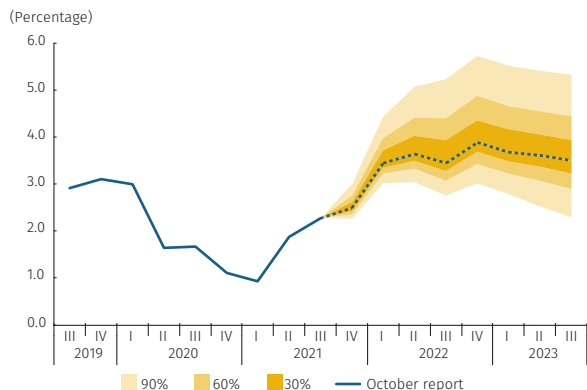
	IV 2021	IV 2022	III 2023
Mode	2.48	3.88	3.50
< Mode	26.2%	27.3%	38.0%
Range			
< 2	0.1%	0.2%	2.4%
2 -- 4	99.9%	32.0%	57.2%
> 4	0.0%	67.7%	40.3%

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

Graph 2.28
GDP, Four-Quarter Accumulation, Predictive Density [a/, b/]
(annual change)

(Percentage)

	IV 2021	IV 2022	III 2023
Mode	9.78	4.67	2.62
< Mode	50.0%	72.6%	61.2%
Range			
< 2	0.0%	18.4%	48.9%
2 -- 5	0.0%	60.3%	44.0%
5 -- 8	1.9%	20.7%	6.9%
> 8	98.1%	0.5%	0.1%

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 central 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*.

(upward risk to inflation). The predictive density exercise accounts for increased uncertainty associated with international commodity prices and recent disruptions in global production and transportation chains, which could impact production costs in a more persistent way than expected and bias domestic prices upward. In this context, core inflation (excluding foods and regulated items) would be expected to present an upward bias on the forecast horizon, given the impact of previous shocks on the goods basket. Other factors could also generate upward risks to inflation excluding food and regulated items, associated with a more dynamic recovery in tourism and entertainment activities, higher prices for food away from home, and the risk of higher rental housing indexation than is considered in the central forecast scenario. The balance or risks to core inflation includes uncertainty over the effect of VAT-free days in the fourth quarter of 2021, as well as the dates on which these events will occur in 2022. Upward biases on foods and regulated item prices are expected to persist throughout 2022. The foods basket includes upward risks to perishable and processed food prices due to the possibility of higher commodities and input costs (fertilizers, compost, and other products) as well as the risk of higher upward pressure from international food prices. Regulated items face the risk of a more significant adjustment in fuel costs (due to the gap with international prices) and in energy rates, as well as the risk of indexation to utility and regulated education prices at higher inflation rates than considered in the central scenario.

Downward biases on consumption and investment in 2022 are related to the risk that factors which have had a positive effect on recent economic activity and recovery in aggregate demand could be more transitory than expected. These also account for the risk of additional waves of the COVID-19 pandemic (downward risk to growth and inflation). There is significant uncertainty over the short-term GDP outlook for the remainder of 2021. Downward biases on consumption in 2022 reflect the risk that private spending dynamics in the second half of 2021 could represent suppressed demand financed by savings accrued over the course the pandemic, which could be exhausted and prevent a similar rate of spending over the course of the next year. Downward risks associated with the evolution of the pandemic remain, given that new waves of contagion cannot be discounted, and that these could slow the recovery in demand and lead to lower growth than projected in the central forecast scenario. Growth in 2022 is also biased downward due to possible effects of tax measures on investment decisions, as well as the political uncertainty inherent in an election year.

Graph 2.29
Output Gap, Predictive Density [a/, b/]
(four-quarter accumulation)

(Percentage)
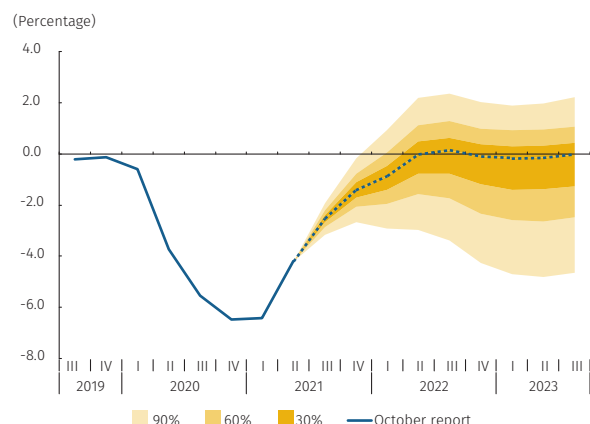
	IV 2021	IV 2022	III 2023
Mode	-1.4	-0.1	0.0
< Mode	50.0%	69.8%	71.4%
Range			
< -1	70.1%	52.1%	54.3%
-1 -- 0	26.4%	19.9%	17.8%
> 0	3.4%	27.9%	27.8%

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

Finally, external risk factors include the possibility of less favorable international financial conditions than considered in the central forecast scenario (downward risk to growth and upward risk to inflation). Trade partner performance include downward risks in 2022 related to the possibility of less dynamic growth in the United States, China, and other Latin American countries. Recent inflation data from the U.S. suggests an upward bias on inflationary pressures, implying an upward bias on the Federal Reserve's interest rate as well. Recent risk premium behavior for emerging markets, deteriorating public debt levels, and fiscal uncertainty add to the risk of tighter international financial conditions than considered in the central scenario (see Annex 3). These risks imply a downward bias on economic activity and an upward bias on inflation.

Overall, the balance of the previous risks on the forecast horizon biases the current inflation forecasts upward, while the GDP growth and output gap projections are biased downward (Graphs 2.26–2.29). Considering the risk factors and biases explained above, inflation would be expected at 90% probability to range between 4.6% and 5.6% in 2021 and between 2.7% and 5.9% in 2022. Core year-end inflation would be expected, also at 90% probability, in 2021 between 2.3% and 3.0% and in 2022 between 3.0% and 5.7%. GDP growth is biased downward and is expected between 8.4% and 11.2% in 2021 and between 0.7% and 6.5% in 2022.

03/ Current Economic Conditions

3.1 Inflation and Price Behavior

Annual consumer inflation remained on an upward trajectory in the third quarter as the result of growing external pressures and additional internal pressures related to supply and the recovery in demand. Annual consumer inflation in September exceeded expectations and stood at 4.51%, a significant increase from June (3.63%) (Graph 3.1). External inflationary pressures, including disruptions to global supply chains in particular and an upward trend in international commodity prices and transport and logistics costs, continued to pass-through on Colombian consumer inflation, mainly through food prices. These pressures have started to affect other baskets as well, including goods (excluding foods and regulated items), in line with recent trends in other countries. External pressures have also affected the services basket (excluding food and regulated items) via foods away from home, and in regulated items via fuel prices (see Box 1). Some domestic supply pressures remained in the third quarter, though to a lesser degree than in previous months, generated mainly by roadblocks associated with a national strike in May and by certain aspects of Colombia's agricultural production cycle. Some increased inflationary pressure, especially in services, was also related to the recovery in demand amid some remaining COVID-19 related limits on capacity in certain sectors.

Annual inflation excluding food and regulated items also continued to increase in the third quarter as the result of external pressures and the reactivation of demand in sectors that had been significantly affected by the pandemic. This came amid a larger-than-expected decrease in excess productive capacity. Core inflation, estimated as the annual change in the consumer price index (CPI) excluding food and regulated items, increased in the third quarter (from 1.87% in June to 2.28% in September), as did the average of the indicators of core inflation (from 2.64% to 3.03%) (Graph 3.1). As mentioned in the previous report, diverse supply shocks originating abroad have put pressure on core inflation throughout the year. The third quarter added some inflationary pressures originating in an economic recovery that was more dynamic than forecast in previous reports, and which has led to a faster reduction in excess productive capacity than anticipated. Accumulated depreciation in recent months also likely contributed to increased prices for some goods. Upward pressure on

Graph 3.1
CPI and core inflation indicators
(annual change)

(Percentage)

Total CPI
Target inflation
Range +/- 1 pp
CPI excluding food and regulated items
Average of core inflation indicators
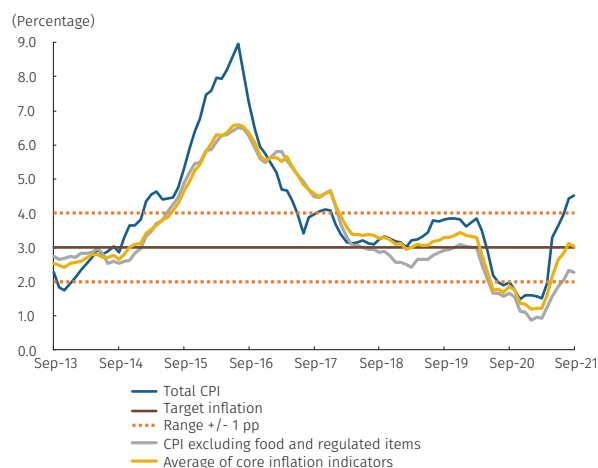
Sources: DANE and *Banco de la República*.

Graph 3.2
CPI for Goods and Services, excluding Food and Regulated Items
(annual change)

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

Graph 3.3
CPI for services excluding food and regulated items, and its components
(annual change)
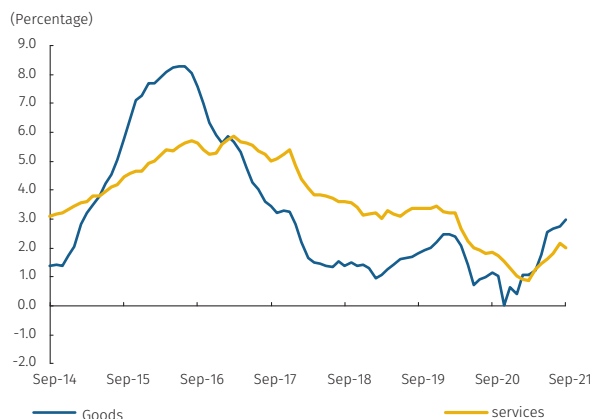
Sources: DANE; calculations by *Banco de la República.*

core inflation originating in more dynamic demand and third-quarter depreciation was likely partially offset by transitory downward shocks in some segments.

Annual variation in the CPI for goods continued to increase as the result of global supply chain disruptions, which were exacerbated by specific demand pressures. Annual growth in goods prices has accelerated over the course of the year, increasing from 2.57% in June to 2.97% in September (Graph 3.2). In addition to specific demand pressures on some transportation products (especially bicycles and motorcycles in the third quarter), goods prices have been driven up by supply chain bottlenecks, particularly as the result of shortages in iron, steel, and other commodities. Limited availability of microprocessors has also delayed global production of vehicles, domestic appliances, and electronics. For their part, goods prices have incorporated higher transportation costs associated with an unusual increase in freight prices, container shortages, port delays, and partial closures of Chinese ports due to COVID-19.

An upward trend in services prices in the third quarter was associated primarily with housing rentals and food away from home. Annual variation in services prices continued to increase gradually in the third quarter, from 1.6% in June to 2.0% in September. This can be attributed in part to the reactivation of demand and could have been more significant if not for being partially offset by downward shocks on inflation related to a government decree eliminated higher public education costs starting in September[14]. Housing rentals, which account for half of the services basket, grew more than expected, in part due to the renewal of contracts making up for discounts offered in 2020 and to higher prices for new renters. The third-quarter increase in prices for food away from home (FAH) also drove the upward trend in the CPI for services (Graph 3.3). This segment was affected primarily by increased food prices and rising utility rates, in addition to supply loss as many establishments were forced to close as the result of COVID-19 (as noted by the food industry union). A recovery in demand as economic activity gradually returns to normal, as well as more willingness on the part of consumers to return to restaurants, has also put upward pressure on FAH prices. The annual change in the CPI for services also increased due to a low basis of comparison in some segments. Tourism and recreation activities (included in the "other" sub-

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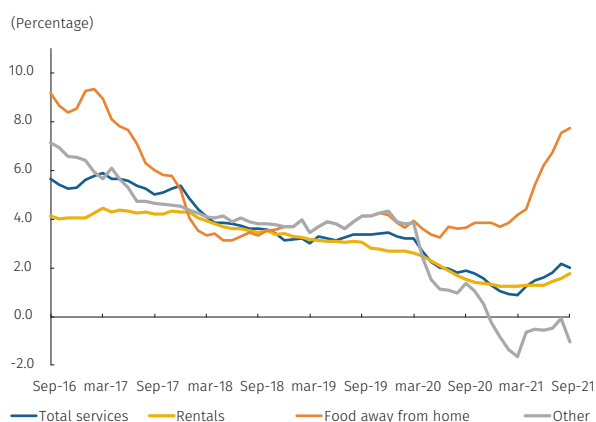
14 The Social Investment Law expanded benefits for free higher public education, leading to a reduction in the CPI for higher education in September. The CPI level's reduction is permanent, but the impact on inflation would be transitory.

Graph 3.4
CPI for regulated items and its components
(annual change)

A.

(Percentage)

Total regulated items Utilities Fuels Transportation

B.

(Percentage)

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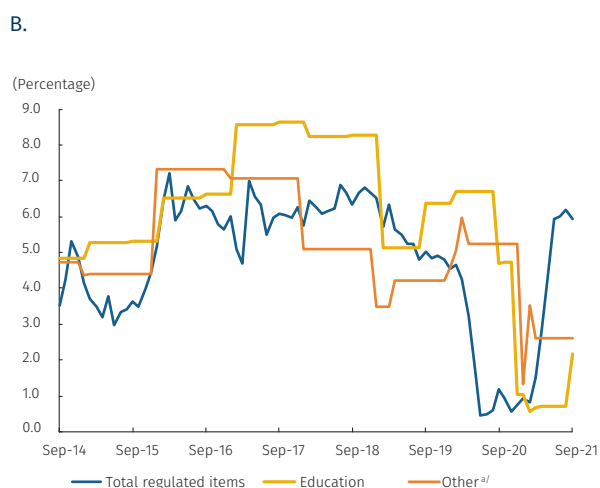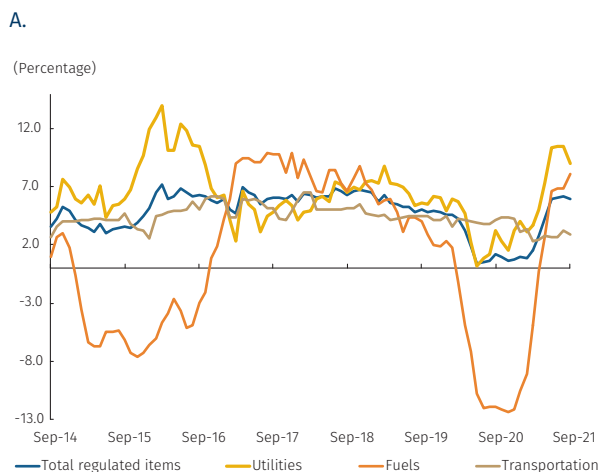
a/ Includes moderated EPS quotas, administrative certificates and documents, and honorarium payments.
Source: DANE; calculations by *Banco de la República.*

Graph 3.5
CPI for Foods by Group and its Components
(annual change)

(Percentage)   (Percentage)

Total foods processed foods Perishable foods (right axis)
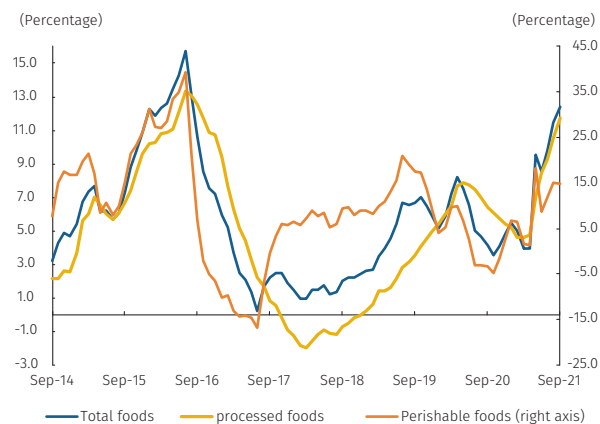
Source: DANE, calculations by *Banco de la República.*

basket) recorded significant increases in the third quarter, possibly a reflection of demand recovery as capacity and operations limits are removed.

Annual change in the CPI for regulated items remained relatively stable in the last three months despite upward pressures from increased international oil and some utilities prices. Annual change in regulated items prices remained relatively stable from June (5.93%) to September (5.94%). The CPI for fuels increased over the last three months, after a government-decreed rise in gasoline (COP 146) and diesel (COP 150) prices in mid-September in response to increased international prices. Domestic adjustments continued to be small compared to international markets, however, and a significant gap between domestic and international prices remained in September. Increased international oil prices may also be influencing gas and energy rates, the latter of which could also be affected by increased producer inflation (a significant component of formulas for this CPI)[15]. Upward pressures led to significant increases in these rates for the third quarter. However, these were not reflected in increases in the annual change in the CPI for utilities, which declined (Graph 3.4). This was due to a low basis of comparison, given the fact that the reversion of rebates on water, sewage, and energy prices offered by local governments were concentrated in September 2020.

Annual change in the CPI for foods rebounded in recent months alongside an increase in international prices, reduced meat supply, and ebbs in the productive cycle for some perishable foods. Annual change in the CPI for foods remained on a growth trajectory starting in the second quarter, reaching its recent high in September (12.40%) (Graph 3.5). The third quarter saw significant increases in the annual change for both perishable (8.7% in June, 14.8% in September) and processed foods prices (8.5% in June, 11.7% in September). Significant upward pressure came from prices on beef and its substitutes (pork and chicken), which are included within the processed foods sub-basket. An increase in beef exports, reduced cattle slaughter, and significant increases in international prices on raw materials needed to produce concentrated animal feed can help explain this phenomenon. The effects of the national strike in May could also have continued to limit supply. Other import prices continued to record significant increases due to high international prices for cereals, oils, and oilseed. Ebbs in the productive cycle for various perishable food products led to significant price increases that are expected to be transitory.

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15 Significant increases in water and sewage prices have been recorded in recent months due to increases in necessary investment for the maintenance of networks, service improvements, and expanded coverage.

Graph 3.6
PPI by Origin
(annual change)

(Percentage)

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

Graph 3.7
Quarterly Gross Domestic Product ᵃ/
(level and annual change)

(Trillion 2015 pesos)   (Percentage)
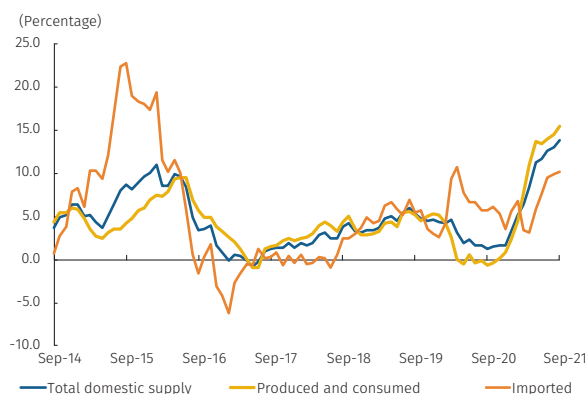
a/ Seasonally adjusted and corrected for calendar effects
Source: DANE; calculations by *Banco de la República.*

However, the possibility of higher production costs due to increased international prices for agricultural inputs (fertilizers, compost, etc.) cannot be discounted.

Annual producer inflation remained on a growth trajectory in the third quarter, due to a recovery in some mining (and oil) prices, shortages of certain industrial inputs, and supply problems for some agricultural crops. Annual producer inflation (estimated as the annual change in the PPI for domestic supply) has been increasing since the beginning of this year and rose from 11.72% in June to 13.76% in September (Graph 3.6). This trend can be explained by both its domestic component (from 13.4% in June to 15.4% in September) and imports (from 7.6% to 10.1%). As mentioned in the previous report, these two segments of the producer price index (PPI) have risen over the course of the year due to increases in extractive industries prices, especially for steel, iron, oil, and oil derivatives. Prices for the import component of the PPI have incorporated accumulated currency depreciation as well as supply chain disruptions, microprocessor shortages, elevated freight costs, and high international commodity prices. Prices in the domestic component of the PPI also increased due to a reduced domestic supply of some foods (meat, fruit, and coffee).

3.2 Growth and Domestic Demand

GDP recovery was interrupted in the second quarter, in line with the technical staff's expectations. Quarterly GDP (SACE) contracted 2.4% in the second quarter compared to the first, the result of roadblocks in April and May and more restrictive COVID-19 measures put in place to address a third wave of the pandemic. Nevertheless, a low basis of comparison from 2020 led to historically high annual growth of 17.6% in the original series (17.0% SACE) (Graph 3.7), close to projections from the July report (17.3%). Recovery in the second quarter varied significantly among economic sectors and components of spending, amid ample excess productive capacity and high unemployment.

Despite the quarterly decline in GDP, domestic demand expanded in the second quarter and was more dynamic than anticipated, in part thanks to positive consumption performance. Although quarterly expansion was lower than in previous quarters, growth in domestic demand returned to pre-pandemic levels in this period. Domestic demand grew 0.6% in quarterly terms and 23.0% compared to the same period in 2020 (Graph 3.8). That said, performance within this aggregate was uneven: consumption recorded significant dynamism, growing in quarterly terms by 3.0%, while gross fixed capital
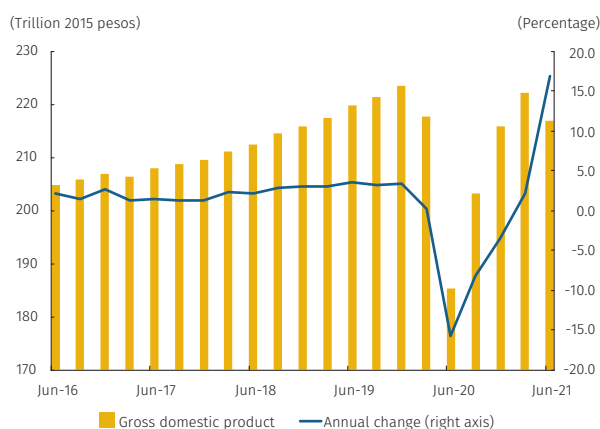
Graph 3.8
Gross Domestic Product and Quarterly Domestic Demand [a/]
(annual change)
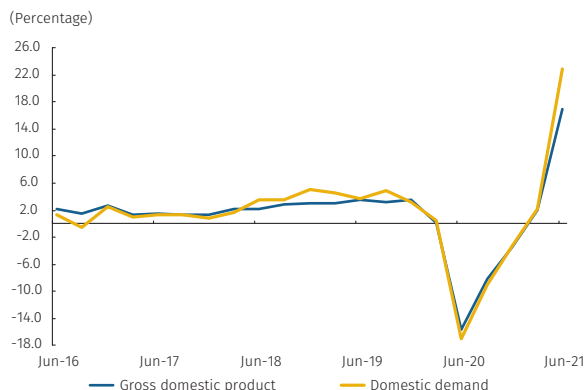
(Percentage)

─── Gross domestic product   ─── Domestic demand

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

Graph 3.9
Final Household and General Government Spending [a/]
(annual change)
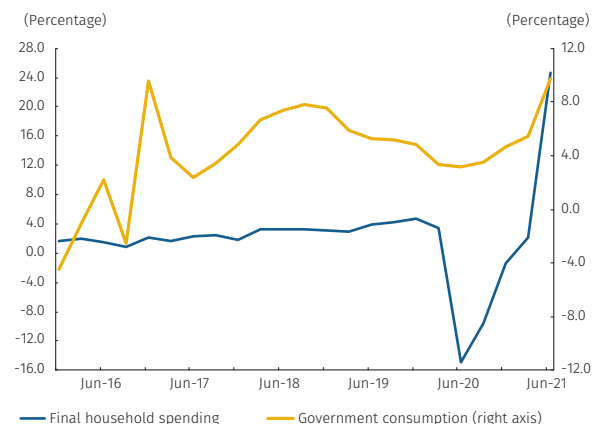
(Percentage)   (Percentage)

─── Final household spending   ─── Government consumption (right axis)

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

Graph 3.10
Quarterly gross fixed capital formation [a/]
(annual change, contributions)
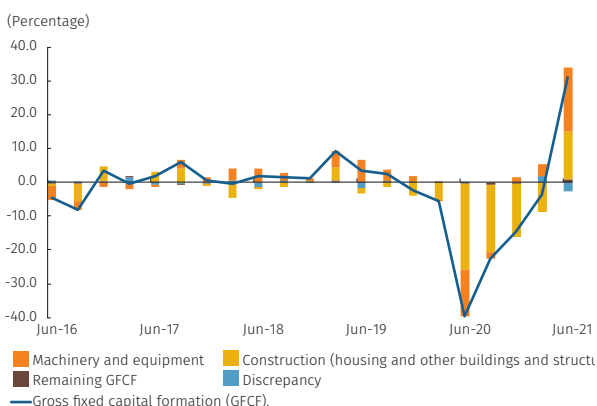
(Percentage)

■ Machinery and equipment   ■ Construction (housing and other buildings and structu
■ Remaining GFCF   ■ Discrepancy
─── Gross fixed capital formation (GFCF).

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

formation declined considerably compared to the first quarter (-18.3%). Altogether, domestic absorption in the second quarter was once again more dynamic than overall growth in economic activity.

Overall consumption was unexpectedly dynamic, recording significant annual and quarterly growth despite measures to contain the third wave of the pandemic and the negative effects of roadblocks. Household consumption again grew in quarterly terms, exceeding expectations and ending the quarter 4.5% above pre-pandemic levels. This can be explained in part by significant growth in services and semi-durables consumption compared to the previous quarter (3.8% and 15.3%, respectively), which was partially offset by declines in durable (-10.7%) and non-durable goods spending (-1.3%). Overall, aggregate household consumption grew at an annual rate of 24.7% (Graph 3.9). Meanwhile, public consumption accelerated significantly, recording annual growth (9.7%) and quarterly growth (5.5%) well above projections. This positive dynamic, which suggests the continued counter-cyclical role of government spending, was driven in part by vaccine purchases in the second quarter. Overall, total consumption expanded in annual terms above the average for economic activity (21%) and was 5.4% above year-end 2019 levels.

Gross fixed capital formation lost a significant portion of gains from recent months, receding to below year-end 2020 levels. All of the major components of investment registered quarterly declines in the second quarter. The largest of these was the loss in investment in machinery and equipment, which declined more than expected and was consistent with a decline in domestic production of this category of goods, despite the fact that there were no observed declines in imports in this segment. Poor housing investment performance, above all in non-social housing, suppressed this component of spending to well below pre-pandemic levels. Investment in other buildings and structures fell close to year-end 2020 levels and continued to be the most affected segment of gross fixed capital formation. Its quarterly decline can likely be explained primarily by a weak dynamic in public works, as indicated by supply-side figures from the national accounts. Despite all of the above, a low basis of comparison allowed for total investment to grow at an annual rate of 29.5% (Graph 3.10).

Colombia's trade imbalance in real peso terms grew substantially in the second quarter, reaching levels significantly above those recorded prior to the pandemic. This was the result of significant dynamism in imports and contrasted with a quarterly decline

Graph 3.11
Exports, imports and trade balance a/
(annual change and trillion 2015 pesos)
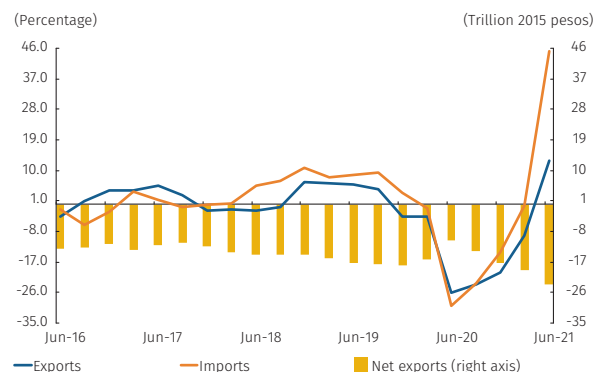
a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by *Banco de la República.*

Graph 3.12
Sector-Level Value Added in Q2 2021 relative to Q4 2019 a/
(Q4 2019 = 100%)
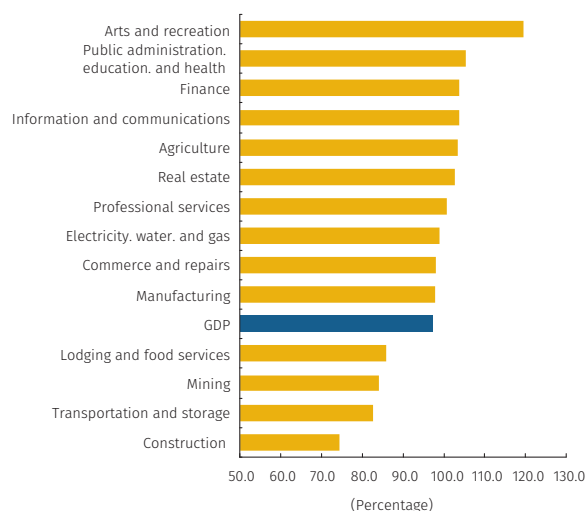
a/ seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by *Banco de la República.*

in exports, which were also affected by events in the second quarter. The decline in this aggregate was concentrated in foreign goods sales, particularly in extractive industries, where exports registered considerable annual declines (14.2% for oil and 22.1% for coal). By contrast, services exports in real peso terms performed very favorably, growing 21.9% compared to the first quarter. Imports continued to recover in the second quarter, returning to pre-pandemic levels. This was driven primarily by purchases in raw materials and durable consumer goods. Given the above, the second-quarter contribution of net foreign demand to annual change in GDP fell to its most negative rate (-7.0 percentage points) since quarterly records became available (Graph 3.11).

Although several segments recovered their pre-pandemic levels of value added in the second quarter, several others lagged behind, including construction, transportation and storage, mining, and lodging and food services (Graph 3.12). The repair and maintenance of vehicles, retail and wholesale commerce and ground transportation, construction and industrial manufacturing segments recorded significant quarterly contractions in this period, possibly explained by the roadblocks and mobility restrictions related to the third wave of the pandemic. Retail sales, industrial production, and ground cargo transport figures declined significantly, especially in May. Nevertheless, lodging and food services, health activities, and especially arts, recreation, and entertainment performed unexpectedly well. A recomposition of household spending, with greater participation of virtual services, appears to be driving the entertainment and recreation sector, which in the second quarter rose substantially above pre-pandemic levels.

3.3 Labor Market[16]

**Employment returned to growth after stagnating in the first half of the year. However, recovery in the labor market continues to be slower than for economic activity.** National employment grew 2.1% in August (436,000 jobs) (Graph 3.13), according to the monthly seasonally adjusted series[17] in DANE's Integrated

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16 For a more detailed analysis of the recent evolution of the labor market, please see *Banco de la República*'s Labor Market Report, available at ht-tps://www.banrep.gov.co/es/reporte-mercado-laboral

17 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.

Graph 3.13
Employment Performance
(seasonally adjusted monthly series)

(Thousand people)   (Thousand people)

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

Graph 3.14
Jobs by Type of Employment
(seasonally adjusted moving quarter)

A: Salaried and non-salaried: national total

(Thousand people)   (Percentage growth)
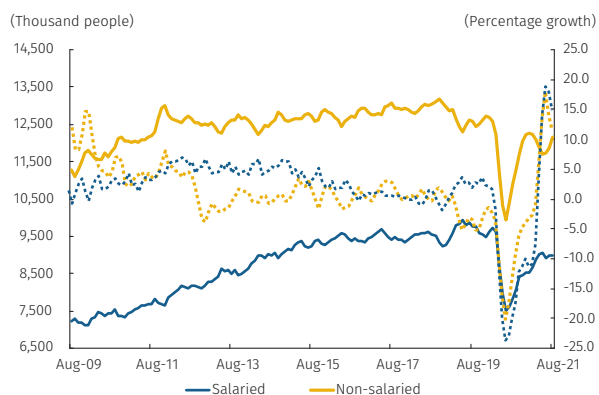
B: Formal and informal; 23 cities and metropolitan areas

(Thousand people)   (Percent growth)
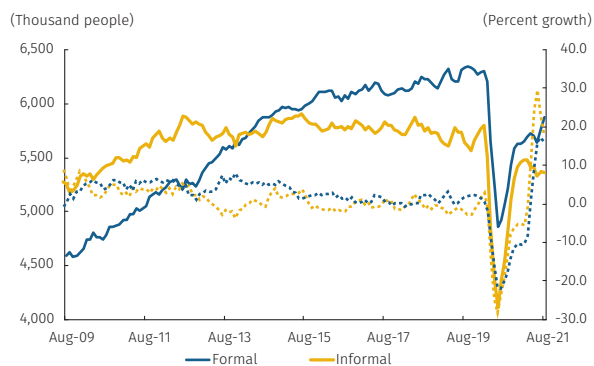
Notes: the dotted lines represent annual growth (right axis). The national statistics agency (DANE) officially considers workers to be informal if they do not work in business establishments or companies that have up to five total employees across all sites, including management and/or partners and excluding self-employed workers, laborers, or government employees.
Source: DANE (GEIH); calculations by *Banco de la República*.

Household Survey. Employment would have thus grown for two consecutive months, after recovery in the first half of the year was limited by COVID-19 and disruptions to public order. Growth was driven in large part by positive performance in secondary cities and municipalities and rural areas, which registered increases of 3.1% (340,000 jobs) from July, compared to 0.9% growth (96,000 jobs) in Colombia's 13 largest cities. Labor market recovery continues to lag significantly behind the recovery in economic activity. While the latter has likely surpassed pre-pandemic levels, according to the monthly economic tracking indicator (ISE), the jobs total remains around 750,000 below levels observed in February 2020.

Non-salaried employment grew again at the national level, while the formal employment drove jobs growth in major cities. Although non-salaried employment was affected by COVID-19 and disruptions to public order at the national level in the first half of the year, this segment has in recent months reversed its decline and returned to monthly growth. Salaried employment, meanwhile, remained relatively stable and with a lesser role in job creation (Graph 3.14, Panel A). To August the labor market has recovered around 83.4% (2.2 million) of the non-salaried jobs lost between April and February 2020, and just 66.5% (1.5 million) of the salaried jobs. By contrast, jobs creation in major cities has been driven in large part by the formal sector, which has maintained a growth trajectory over the course of the year. Based on moving quarterly data, formal employment in Colombia's 23 cities grew by 1.7% (100,000 jobs) from August to July, while informal jobs contracted slightly by 0.2% (11,000 jobs) (Graph 3.14, Panel B). Formal employment growth can also be confirmed by other administrative indicators, such the number of people filing with the PILA pension system, which in July had neared pre-pandemic levels. This positive dynamic in formal employment led to a reduction in the informality rate in the quarter, close to 2019 levels (47.7%).

Employment growth outpaced the increase in labor participation, allowing for unemployment rates to continue to decline. However, performance among cities and population groups remains heterogeneous. The absence of mobility restrictions and gradual reopening of schools and childcare institutions have driven a decline in inactivity, increasing the labor supply. Nevertheless, employment in this period grew more than labor participation, leading to a decline in unemployment rates across geographic categories. Unemployment fell in August to 12.6% nationally and to 15.0% in Colombia's 13 largest cities. These figures continue to be high compared to pre-pandemic levels (Graph 3.15). The decline in urban unemployment rates in recent months has come at a slower pace than in other

Graph 3.15
Unemployment Rate by Location
(seasonally adjusted monthly series)

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

Graph 3.16
Beveridge Curve for Seven Largest Cities

Notes: seasonally adjusted series. Moving quarter. Based on vacancy rate estimated using GEIH hiring methodology, see Morales, L.F., & Lobo, J. 2017. Estimating Vacancies from Firms' Hiring Behavior: The Case of a Developing Economy, *Borradores de Economía*, no. 1017. The estimate of the Beveridge curve is not available for the period between March and September 2020, due to the fact that the vacancy indicator with which it would normally be obtained could not be calculated because of a reduction in the number of questions in the GEIH. Source: DANE (GEIH) and *Banco de la República*.

geographic areas. As a result, although the Colombian labor market has shown a significant correction since the start of the pandemic, significant heterogeneity persists. In urban areas, large cities such as Bogotá and Cali continue to record unemployment rates well above pre-pandemic levels, while smaller cities have performed better. Likewise, the unemployment rate for women remains significantly higher than for men.

The Colombian labor market continues to be loose and is thus not a source of inflationary pressures via salary costs. Job vacancy indices based on the GEIH and the public employment service (SPE) suggest a significant recovery in demand for new jobs, close to pre-pandemic levels. However, the recorded reduction in unemployment has not yet taken the unemployment rate down to early 2020 levels. Plotted on a Beveridge curve[18], this suggests that Colombia's labor market continues to be loose, although with less deflationary pressures than recorded at the beginning of the pandemic (Graph 3.16). This would be confirmed by labor income figures from the GEIH, particularly related to the non-salaried employment, where real labor income per hour remains well below pre-pandemic levels (10 percentage points). Nevertheless, an increase in hours worked in this segment suggests real monthly income above 2019 levels. For its part, real labor income from salaried workers, both on a monthly basis and per hour, continues to be relatively stable.

3.4 Financial and Money Market

Financial conditions continue to be favorable and contribute to the recovery in economic activity. In the third quarter interest rates on deposits and loans increased, but in real terms continued at historical lows. Credit continues to accelerate, though at a slower rate than economic growth. This has come in the context of economic recovery, an improvement in employment and household income, and high portfolio levels in national currency relative to GDP. Credit risk has moderated, but continues to be high, and profits among banking institutions continue to recover though without returning to pre-pandemic levels.

Nominal savings and credit interest rates have increased, but in real terms continue at historically low levels. The one-day banking reference indicator (IBR) was aligned with the monetary policy rate in the third quarter, while sight deposits (savings and checking

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18 The Beveridge curve is a graphic representation of the relationship between the rate of job openings and the unemployment rate.

Graph 3.17
Real Commercial Credit Interest Rates
(average monthly data deflated with CPI excluding foods)
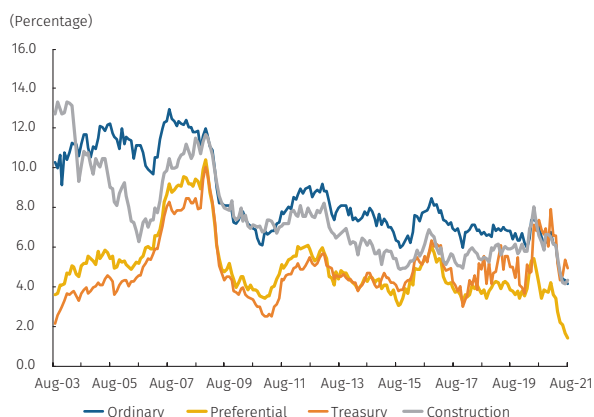
(Percentage)

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

Graph 3.18
Real Household Credit Interest Rates
(monthly average data deflated with the CPI excluding foods)
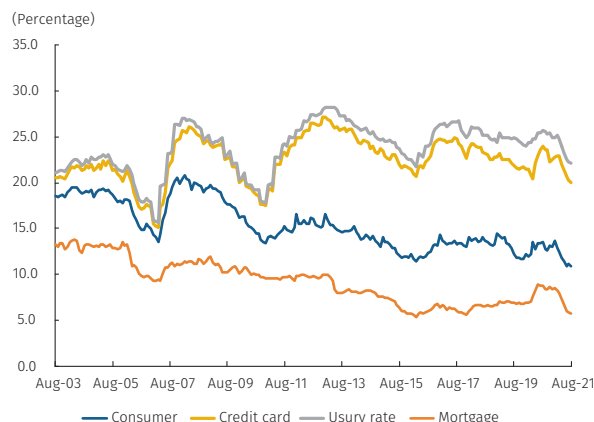
(Percentage)

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

Graph 3.19
Gross National Currency Portfolio
(annual change, average monthly data)

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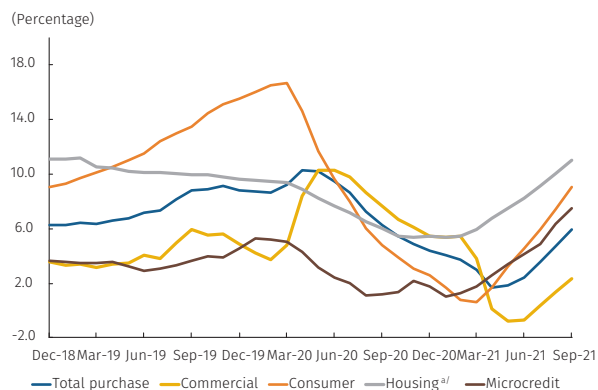
a/Adjusted housing: banking portfolio plus securitizations
Source: Office of the Financial Superintendent of Colombia; calculations by *Banco de la República*.

accounts)[19], the primary source of financing for credit establishments, recorded relatively stable interest rates. At terms equal to or greater than three months, the IBR and interest on certificates of deposit (CDs) have risen since the start of the second quarter, in part because economic agents projected increases in the monetary policy rate for the second half of 2021 in this period. Credit interest rates also increased with respect to lows registered between April and May, behavior that was most accentuated in ordinary, construction, and consumer loans. Despite the nominal observed increases in savings and credit interest rates, in real terms their levels remained at historical lows (Graphs 3.17 and 3.18). In line with market expectations, at the end of September the BDBR increased the policy interest rate by 25 basis points to 2.0% and announced that it had begun normalizing monetary policy.

Credit dynamism continued to accelerate, though at a slower pace than for economic growth, and contributed to a recovery in output. Total annual portfolio growth in pesos accelerated in the third quarter, from 2.4% in June to 5.9% in September (Graph 3.19). Household credit drove performance in this period, particularly for housing purchases (from 8.2% to 11.0%), followed by consumer loans (from 4.6% to 9.1%). Commercial credit, which contracted at the end of the second quarter (-0.7%), returned to positive territory (2.4%) with balances equivalent to the higher levels recorded in the second quarter of last year, when uncertainty and cash needs drove businesses' demand for credit (Box 2)[20]. Microcredit also accelerated, recording annual increases from 4.1% in June to 7.5% in September. The expected recovery in economic activity and employment, improvement in business and household confidence, and low real interest rates would be expected to contribute to credit demand continuing to gain dynamism and support output growth.

Ample deposit availability, the moderation in credit risk, and the recovery of profits in the financial sector are expected to continue to contribute to the supply of loans. Deposit levels are sufficient for the portfolio in pesos to continue to expand. The banking system's liquidity coverage ratio (LCR 197%[21] in August) and net

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19 These rates were those that reacted the least to the reduction of the monetary policy rate during the pandemic.

20   This supplement will be available from Monday, November 8,

21   For banks. The IRL for companies with commercial financing and financial cooperatives in July 2021 were 260% and 280%, respectively.

stable funding ratio (NSFR 111%[22] in August) remain steady and above the 100% requirement. The past-due portfolio balance stayed close in August to levels recorded in December and the default indicator fell to 4.9% (5.5% in December). For its part, the risk portfolio declined, from 12.2% of the total portfolio in December to 10.3% in August. The moderation in risk indicators reduced pressure on liability provisions and contributed to greater increased earnings. In August, 12-month accumulated earnings totaled COP 11.3 trillion, 86% of those recorded in 2019.

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22   Group one, comprising banks whose assets represent more than 2.0% of total banking assets. In the second group credit establishments that are not in group one and that have the portfolio as a significant asset are included, and they show a CFEN of 129.7% in May, also above the 80% required for March 2022.

Box 1
The Role of External Pressures in the Recent Behavior of Inflation in Colombia

**Sergio Restrepo Ángel
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Sara Naranjo Saldarriaga
Santiago Forero Alvarado***

Graph B1.1
Consumer Price Index
Breakdown by Origin of the Shock
(Contribution in percentage points (pp) to annual headline inflation; annual change)

Note: The percentages in brackets in the labels constitute the weight of each sub-group within the total CPI.
Source: DANE, *Banco de la República*.

The global economic recovery process, along with global supply chain disruptions and a continuous rise in international prices of commodities, transport and logistics costs, have led to a widespread price acceleration in most economies in the world. Colombia also experienced this phenomenon, with inflation moving from its lowest historical level at the end of 2020 (1.61 %) to 4.51 % in September 2021, that is, 1.51 percentage points (pp) above the 3.0% target. This increase was explained by several factors that may have been amplified, among other things, by a low statistical base for comparison. This box presents three exercises, two of them empirical and one in the framework of general equilibrium, which seek to identify how much of this increase was due to the aforementioned external shocks.

In the first empirical exercise, each item of the consumer price index in Colombia is classified into disjunct subgroups[1], according to the probability that its price can rise significantly depending on the shock that may be affecting it. In particular, four sources of pressure (shocks) were identified: The external ones; the recovery of domestic demand due to the end of restrictive measures set forth to deal with the Covid-19 pandemic; the tax-relief and non-VAT days decreed by the national government, and the impacts on domestic supply on account of adverse production cycles or to the roadblocks that took place during May 2021 (Graph B1.1).

Food away from home (FAH) was classified into a separate group as they are being simultaneously affected by all the shocks mentioned above: external pressures via higher food prices; tax reliefs[2]; domestic supply on account of the closure of thousands of establishments during the pandemic[3]; and the recovery of demand with the return to normalcy and a greater willingness of consumers to return to restaurants. The item for "others" in Graph B1.1 corresponds mostly to the regulated items component of the CPI along with a few additional items.

It is important to note here that the basket of external pressures has been underestimated, since it does not include goods and services whose prices may have been affected by external factors during the pandemic, but which were benefited by changes in subsidies, indirect taxes, etc. For example, items such as electronic devices (computers, television sets, cell phones, etc.) are classified within the group "tax reliefs and non-VAT days", although they are being strongly impacted by problems with global supply chains and semiconductor shortages. In addition, FAH is an item that is being heavily shocked by external pressures, but which was not included within this sub-group for the reasons already mentioned.

Inflationary pressures from the international context (external pressures, Graph B1.1), have been transmitted and have significantly increased their participation in the recent inflation in Colombia. This passthrough has mainly taken place through the prices of processed food and, to a lesser extent, transportation goods (vehicles, motorcycles and bicycles, etc.), furniture and household goods, beauty products, and a few services (vehicle insurance, laboratory tests, etc.), replicating the trends observed in other countries. Additionally, external factors have also

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* The authors belong to the Programming and Inflation Department and Macroeconomic Models Department of *Banco de la República*. The opinions expressed herein are of their sole responsibility and do not necessarily reflect those of the Central Bank or its Board of Directors.

1 This refers to the impossibility of finding an item simultaneously in two subgroups.

2 A 0% rate was decreed on the consumption tax until 31 December 2021, as per Law 2068 of 2020, with the purpose of contributing to the reactivation of this sector, having been affected during the periods of major contagion of Covid-19.

3 See the Bogotá Chamber of Commerce report: https://www.ccb.org.co/Clusters/Cluster-de-Gastronomia/Noticias/2020/Noviembre-2020/Cuestion-de-supervivencia-22-mil-restaurantes-han-cerrado-sus-puertas

generated upward pressures in FAH via the notable increase in food inflation, both for perishable and processed[4] foods. On the other hand, the regulated component of the CPI, particularly the price of fuels, is under strong pressure due to the high international oil prices observed in recent months.

On the domestic front (Graph B1.1), since May 2021, there has been greater upward pressure on prices on account of a domestic demand that has recovered more vigorously than anticipated. On the other hand, supply pressures that persist due to the roadblocks in May and to a downward cycle of agricultural production of some items in Colombia (with meat and fruit among the most outstanding) have also exerted upward pressures to food prices. The return of some reliefs decreed in 2020 in the context of the pandemic, which had exerted downward pressure between May 2020 and March 2021, are now a major bullish factor for inflation.

The second empirical exercise is descriptive and aims to detect external pressures on a small subgroup of CPI items for imported goods, whose prices are determined exogenously in international markets and should be affected by the behavior of the exchange rate. To this end, the price index of the subgroup of external pressures for the United States ($CPI^{Ext/USA}$) was constructed[5] with the same items as for the external pressures' basket for Colombia ($CPI^{Ext/COL}$) made in the first exercise. Also, an index of the nominal exchange rate for the two countries ($ERI^{COL/USA}$) was calculated. In this way, it was possible to estimate what proportion of an increase in the $CPI^{Ext/COL}$ is due to external factors ($CPI^{Ext/USA}$ and $ERI^{COL/USA}$) for a given period (Graph B1.2, panel A). It is important to note that this exercise is not intended to infer the exchange rate passthrough to the total CPI in Colombia, which has typically been low, and should be way lower than that of a small subset of imported goods.

First, the period between July 2014 and March 2018 was taken as reference, which covers from the time when international oil prices fell sharply[6], until the end of a period of relative stability in the exchange rate between May 2016 and March 2018. Thus, between July 2014 and March 2018, the Colombian peso recorded a nominal depreciation of 53.5 % ($\Delta ERI^{Col/USA}$), while the ($CPI^{Ext/USA}$) was characterized by very low volatility and fell by 2.1%, and the ($CPI^{Ext/COL}$) increased by 23.8 %. These estimates suggest that only 46.3 % (23.8 ÷ 51.4) of the aggregate between the increase in external prices and the depreciation of the peso (51.4 %) was transmitted to domestic prices for this small set of goods.

In the next period of nominal depreciation, between March 2018 and September 2021, the ($CPI^{Ext/COL}$) increased 19.1 %, while the ($CPI^{Ext/USA}$) and the ($ERI^{COL/USA}$) increased by 10% and

Graph B1.2
Group of Homogeneous External Pressures between Colombia and the United States and Global Container Index
(Annual rates and variations)

A. External Pressure Indexes and Market ER

(Index, March 2018 = 100)
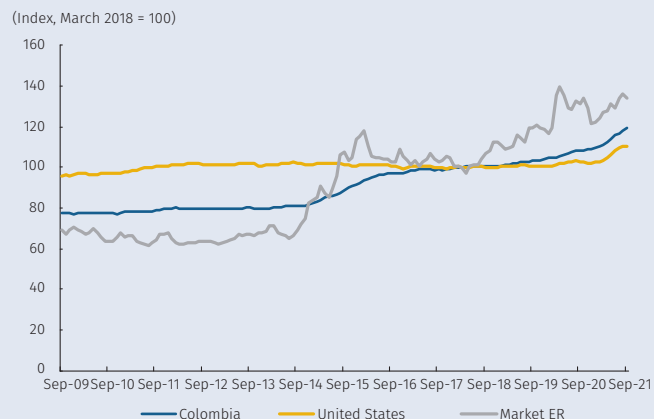
B. World Container Index[a]

(Index) (Percentage)
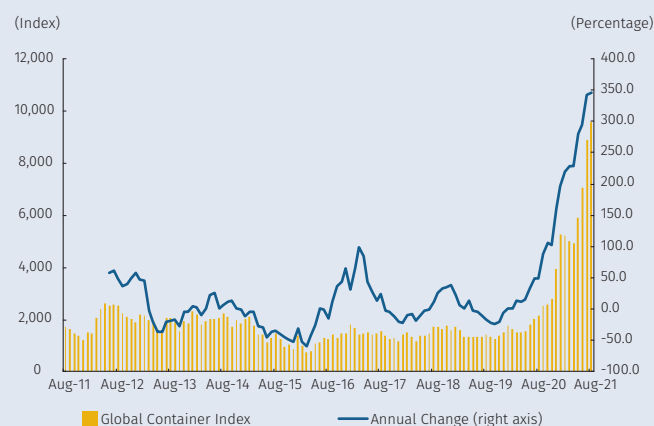
a/ The World Container Index evaluated by Drewry reports spot container freight rates for major trade routes from East to West. The index represents a weighted average of the 11 shipping routes, per volume. Shipping routes include Shanghai - Rotterdam, Rotterdam - Shanghai, Shanghai - Genoa, Genoa - Shanghai, Shanghai - Los Angeles, Los Angeles - Shanghai, Shanghai - New York, Los Angeles - Rotterdam, Rotterdam - Los Angeles, New York - Rotterdam, Rotterdam - New York.
Sources: Bloomberg, U.S. Bureau of Labor Statistics; DANE; calculations by *Banco de la República*.

33.9 %, respectively. Thus, in this period, the aggregate of increases in external prices and the exchange rate (43.9 %) would have been transmitted by about 43.5 % to domestic prices; that is, about 2.8 pp less than in the previous period of nominal depreciation. Adding to this the sharp increase in world freight rates observed during the pandemic (Graph B1.2, panel B), it is likely that external pressures will continue to push up the prices of these goods in Colombia.

Finally, a general equilibrium exercise was performed using the 4GM model[7] in which a factor decomposition of the Phillips curves is made for both goods and services sub-baskets, not including food and regulated items. It is important to mention that, while the 4GM does not exactly model the external pressures group built in the

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4   As of September 2021, the annual percentage change for processed food prices was 11.7 %, and for perishable food prices was 14.8 %.

5   The construction of the "external pressures" index for the United States was done using the same weights as each of the items in the homologous Colombian index.

6   The Brent variety, a reference for Colombia, fell from USD 115 per barrel to USD 55 per barrel between June 2014 and March 2015. The ER, on the other hand, increased by 37 %, from COP 1,888 per dollar to COP 2,586 per dollar, respectively.

7   Semi-structural model for monetary policy analysis and macro-economic forecasting in Colombia. For a description of the model, check the working paper at: https://repositorio.banrep.gov.co/handle/20.500.12134/9812

first empirical exercise (Graph B1.1), goods and services sub-baskets (particularly goods), are the ones that have the closest fit. The objective of this exercise is to quantify how much supply shocks (which are more associated with the external pressures described at the beginning of this box) contribute to the inflations of these two sub-baskets.

Equations (1) and (2) describe the Phillips curve of the goods sub-basket, and Table B1.1 shows the contribution to its annual increase, in percentage points, of each of the factors that it comprises.

Phillips curve for the sub-basket of goods:

$$\pi_t^T = \alpha_{1,T}\,\pi_{t-1}^T + (1-\alpha_{1,T})\pi_{t+1}^T + \alpha_{2,T}\,rmc_t^T + \varepsilon_t^T \qquad (1)$$

$$rmc_t^T - \alpha_{3,T}\,\hat{y}_t + (1-\alpha_{3,T})\,(\hat{z}_t - \widehat{rp}_t^T) \qquad (2)$$

$$\alpha_{1,T} = 0{,}3061 \quad \alpha_{2,T} = 0{,}1432 \quad \alpha_{3,T} = 0{,}2598$$

when analyzing the increase in the goods sub-basket inflation so far in 2021 (from 0.64 % in the fourth quarter of 2020 to 2.96 % in the third quarter of 2021), the results presented in Table B1.1 are explained to a greater extent by the supply shocks of the Phillips curve ($\varepsilon_t^{\pi T;}$ from -1.81 to 0.2), followed by the lower downward pressures of the

output gap ($\hat{y}_t$; from -0.24 to -0.09). It is important to note that the shocks to the Phillips curve also include the price relief measures provided by the government to deal with the adverse effects of the pandemic, which generated strong bearish pressures from the second quarter of 2020, explaining their sign change to negative.

In the same way, equations (3) and (4) describe the Phillips curve of the services sub-basket, and Table B1.2 shows the contribution to its annual increase, in percentage points, of each of the factors comprised by it.

Phillips curve for the sub-basket of services:

$$\pi_t^{NT} = \alpha_{1,NT}\,\pi_{t-1}^{NT} + (1-\alpha_{1,NT})\,\pi_{t+1+\alpha2,NT}^{NT}\,rmc_t^{NT} + \varepsilon_t^{NT} \qquad (3)$$

$$rmc_t^{NT} = \alpha_{3,NT}\,\hat{y}_t + (1-\alpha_{3,NT})\,(\hat{z}_t - \widehat{rp}_t^{NT}) \qquad (4)$$

$$\alpha_{1,NT} = 0{,}34621 \quad \alpha_{2,NT} = 0{,}0738 \quad \alpha_{3,NT} = 0{,}6397$$

The results presented in Table B1.2 show the factor decomposition for the services sub-basket annual change. So far in 2021, the upward pressures of the supply shocks to the Phillips Curve, ($\varepsilon_t^{\pi NT}$), mostly explain the increase of the annual change for this sub-basket. It stands out that this sub-basket contains FAH, which, as mentioned above, has exerted upward pressures, mainly due to disruptions

Table B1.1
Factor Decomposition for the annual Change in Prices of the Goods' Basket according to the 4GM Model
(Annual changes; percentage points)

Period		Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021
Inflation of goods	π_t^T	2.36	0.78	1.13	0.64	1.00	2.60	2.96
Inflation of goods in t-1	π_{t-1}^T	0.66	0.72	0.24	0.35	0.20	0.31	0.80
Inflation expectations for goods	$E_t\pi_{t+1}^T$	1.25	1.49	1.69	1.76	1.89	1.61	1.75
Output gap	$\hat{y}_t$	-0.02	-0.14	-0.21	-0.24	-0.24	-0.16	-0.09
RER gap	$\hat{z}_t$	0.43	0.64	0.70	0.66	0.52	0.34	0.32
Relative Prices	$\widehat{rp}_t^T$	-0.04	-0.03	-0.02	-0.01	0.02	0.05	0.07
Shocks to the Phillips curve	$\varepsilon_t^{\pi T}$	0.05	-1.88	-1.24	-1.81	-1.32	0.50	0.20

Source: DANE, *Banco de la República*.

Table B1.2
Factor Decomposition for the annual Change in Prices of the Services' Basket according to the 4GM Model
(Annual changes; percentage points)

Period		Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021
Inflation for services	π_t^{NT}	3.23	2.03	1.83	1.27	0.90	1.63	2.00
Inflation of services in t-1	π_{t-1}^{NT}	1.18	1.12	0.70	0.63	0.44	0.31	0.56
Inflation expectations for services	$E_t\pi_{t+1}^{NT}$	2.18	1.82	1.52	1.31	1.18	1.07	1.31
Output gap	$\hat{y}_t$	-0.03	-0.19	-0.28	-0.32	-0.32	-0.21	-0.13
RER gap	$\hat{z}_t$	0.13	0.18	0.20	0.18	0.14	0.08	0.08
Relative Prices	$\widehat{rp}_t^{NT}$	0.01	0.01	0.00	0.00	0.00	0.01	0.01
Shocks to the Phillips curve	$\varepsilon_t^{\pi NT}$	-0.23	-0.88	-0.29	-0.50	-0.51	0.38	0.18

Source: DANE, *Banco de la República*.

in supply chains and international prices of commodities (both for processed and perishable foods). This, along with the dissolution of some price relief measures granted during the pandemic, explains the positive contribution to the annual change in the services sub-basket on account of supply shocks to the Phillips curve so far in 2021. Added to this are the lower downward pressures on the account of a slightly closer output gap in the second half of this year ($\hat{y}_t$).

Box 2
Behavior of Commercial Loans in Domestic Currency, March 2020 - September 2021

Tatiana Andrea Mora Arbeláez
Luis Hernán Calderón López*

Graph B2.1
Commercial loans to GDP[a/]
(Annual data)

(Percentage)

National Currency   Foreign Currency

a/ 2021 corresponds to the month of September.
Sources: Office of the Financial Superintendent of Colombia and DANE; calculations by *Banco de la República.*

Graph B2.2
Commercial Loans
(Balance and annual change)

A. National Currency

(Trillions)   (Percentage)

Balance   Annual Change (right axis)

B. Foreign Currency
(Weekly data)

(Millions of US dollars)   (Percentage)

Balance   Annual Change (right axis)

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

1.1 The Pre-Pandemic Period

From 2016 to February 2020, the total commercial banking loans (national currency, NC, and foreign currency, FC) were going through an adjustment process (Graph B2.1). From late 2014 to early 2016, persistent declines in oil prices and in the country's terms of trade were reflected in a loss of national income, increases in country risk and credit measures, exchange-rate depreciations, and a sharp slowdown in foreign trade and in absorption. In this environment, since 2015, the commercial loans in FC fell, and from 2016 onwards those in NC slowed from annual growth rates of around 15% in the first half of 2016 to a minimum of 2.4% in September 2017 (Graph B2.2, Panels A and B). Since last year, corporate indebtedness exhibited a greater contribution from other financing sources than those granted by local credit institutions (CIs). Direct external credit gained momentum, and made a greater contribution to commercial indebtedness, while the commercial loans in NC lost participation. In 2019, with the addition of debt instruments and direct external borrowing to the trading portfolio, commercial indebtedness surged.

The commercial loans in NC experienced a significant slowdown in 2016 and continued to grow slowly until the pandemic began (Graph B2.2, panel A). The gross commercial loans in NC increased from 16% growth figures in the first quarter of 2016 to values that stood between 3.0% and 4.0% in the following years and until the first two months of 2020. In general, despite transient upturns toward the end of 2019, in the years leading up to the pandemic, corporate credit growth rates were significantly lower than those observed before 2017.

The low dynamism of the pre-pandemic commercial loans occurred in an environment of low nominal and real commercial interest rates. After the record highs in August 2016, interest rates to companies continued to perform downward, in line with the period of monetary policy rate reductions (MPR). During 2018 and 2019, the declining trend
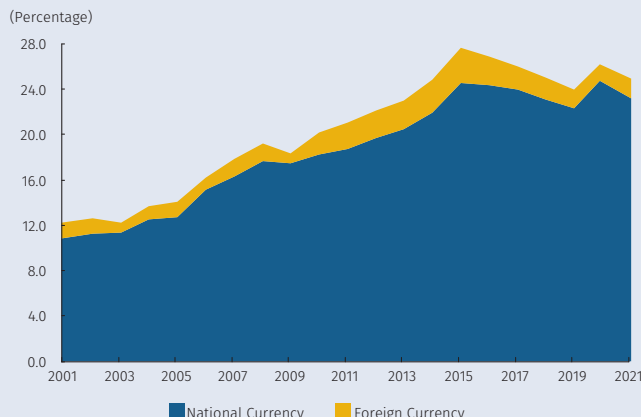
in the rates of regular and preferential loans moderated and remained at nominal and real levels below their historical averages calculated since 2000 (Graph B2.3). Low commercial interest rates, along with the slow recovery of commercial loans, suggested that demand for this loan category remained weak before the pandemic.

In the months leading up to the pandemic, the risk indicators of the commercial loans had shown some improvement, after reaching historically high levels in 2018[1] (Graph B2.4). Since 2016, while the commercial loans slowed down, the default indicator deteriorated in all economic sectors,

Graph B2.3
A. Nominal Commercial Interest Rates
(Monthly averages)

(Percentage)

Graph B2.4
Commercial Loans Default Indicator
(Monthly data)

(Percentage)

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

modest dynamism registered by the commercial loans in the months before the pandemic was accompanied by a slight improvement in its quality.

1.2 Pandemic Period

In the face of the pandemic and its possible consequences on the financial system, the Central Bank of Colombia responded immediately, providing significant liquidity to stabilize the payments and credit system, implementing coverages to fill the currency liquidity gap and reducing the policy interest rate. The Board of Directors of *Banco de la República* (BDBR) responded immediately and in a timely manner to the sudden changes in the macroeconomic conditions caused by the emergence of the pandemic with actions aimed at providing ample liquidity to the economy and ensuring the smooth operation of the payments system, as well as of foreign exchange, public debt, and credit markets. To this end, the Board expanded the amounts, counterparties, terms, and eligible titles for the Bank's transitional expansion operations (i.e., repos) and the modalities of public and private instruments. The Bank also reduced the cash reserve by 2.0 percentage points (pp), on average (from 7.0% to 5.0%) and purchased public and private instruments. Additionally, to reduce the pressure on the foreign exchange market, intervention mechanisms were introduced (such as forward sales of dollars and dollar swaps) that facilitated hedging and expanded liquidity in dollars leaving the foreign reserves unaffected. Moreover, the policy interest rate fell significantly (-250 basis points, bp), with the aim of reducing financial costs to households and businesses and supporting economic recovery as markets returned to normal. As of September 2021, the policy interest rate was at nominal (1.75%) and real historical lows, with which the monetary policy stance was widely expansionary throughout the pandemic period.

B. Real Commercial Interest Rates[/a]
(Monthly averages)

(Percentage)

a/ Deflated with CPI excluding food.
b/ The averages are calculated since 2000.
Source: Office of the Financial Superintendent of Colombia; calculations by *Banco de la República*.

except for mining and financial activities. Sectors such as electricity, transport, and agriculture exhibited the greatest deterioration in this indicator[2]. During 2018, the level of this indicator was 4.6%, on average, higher than had been observed since 2015 (3.3%). During the second half of 2019 its levels remained high but showed a decreasing trend that remained until early 2020. This suggests that the

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1   The levels observed in 2018 are the highest since 2005.

2   See *Financial Stability Report,* March 2018: https://www.banrep.gov.co/es/reporte-estabilidad-financiera-primer-semestre-2018

Since the beginning of the pandemic, the Government implemented measures to strengthen liquidity and facilitate access of businesses credit. Since mid-March, the NCG has issued measures to facilitate the provision of loans for working capital and payroll payments[3]. For this purpose, it enabled a guarantee program with the Fondo Nacional de Garantías (National Guarantee Fund) with a quota of COP 7.4 trillion (t) for commercial credit[4], which subsequently increased to COP 15 t. Under this program, companies could cover up to 90 % of loans according to their vulnerabilities and risk levels. It also authorized the opening of direct credit and rediscount lines through Bancoldex, Findeter, and Finagro with initial resources by COP 3.3 t[5], which then increased to COP 3.9 t[6]. As for liquidity, it postponed the fulfillment of tax obligations, it accelerated tax refunds[7], and deferred the contribution to pensions for April and May[8]. It also implemented the Formal Employment Support Plan (Plan de Apoyo al Empleo Formal, PAEF)[9], by which the Government contributed 40% of a minimum wage for each employee retained by companies that showed a fall in their income of at least 20% during the pandemic[10]. This subsidy remained in force until March 2021.

The Office of the Financial Superintendent of Colombia (aka: *Superfinanciera*) issued rules by which it granted special treatment to those debtors who had problems to comply with their credits. Without affecting the credit rating[11] and effective from March to July 2020, the *Superfinanciera* authorized the CIs to agree on temporary changes in the interest rate[12] as well as in installments, terms, and grace periods with debtors. Then, in the so-called Debtor Accompaniment Program (PAD)[13]—initially implemented in the second half of 2020 and extended until June 2021—it defined the parameters for adjusting the financial conditions of the current loans. This program sought to make financial conditions more compatible with the deterioration facing the economic activity without applying the restructuring rules, albeit recognizing the financial impacts and calculating, as per ordinary

regulations, the provisions that resulted from the risk assessment models.

The strong expansion of liquidity and the increase in the preference for liquid assets was reflected in a significant increase in M3 and its components. Deposits sufficed to meet a significant demand for credit. Between the end of February and June 2020, M3 increased by about 9.5% (COP 51.6 t), and recorded annual growth rates close to 16%, the highest in the last six years, reflecting the strong increase in the demand for cash and demand deposits[14]. The set of measures implemented by the BDBR allowed to deliver additional resources close to COP 40 t to the economy between March and June 2020. These resources represented approximately 35% of the monetary base, 7.0% of secondary liquidity (M3), and 3.7 % of the country's GDP. The increase in deposits—validated by the strong liquidity injection by the Central Bank—was of such magnitude that it allowed an expansion of all the asset items of CIs[15]. Liquidity injection also helped stabilize public and private debt markets and ensure the smooth operation of the payments system. In addition, the total credit to deposits ratio in NC was broad, suggesting the availability of resources to support credit growth.

In an environment of high uncertainty at the beginning of the pandemic, companies requested a high amount of credit to protect themselves against future deterioration of their cash flows. At the end of 2020, the companies made pre-payments, and the commercial loans began to contract. In the second quarter of 2021, this balance began to grow, albeit at low rates. Since mid-March 2020, the high volatility and uncertainty in the markets, generated by the health crisis and the closures of many economic sectors[16] contributed to increase corporate demand for credit to prevent the deterioration of their cash flows. Thus, in the March-April two-month period, disbursements of preferential loans doubled vis-à-vis those observed in the rest of the year, while amortizations were reduced, partly due to the grace periods authorized by the *Superfinanciera*. Consequently, between February and June, the jump in the level of the commercial loans in NC was remarkable[17], and its annual growth moved from 3.7% to 10.3%. In the second half of the year, amortizations increased, and credit prepayments were recorded, resulting in a fall in the commercial loans toward the end of 2020. This occurred in an environment where grace periods were expiring, fears of liquidity risks were dissipating, and the economy was recovering, although at levels still far below those observed before the pandemic. Subsequently, in 2021, the commercial loans increased significantly between the first and second quarter, but annual growth in June reduced partly due to a high basis of comparison (the commercial

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3   Resolutions 380 of 10 March 2020 and 385 of 12 March 2020. Legislative Decrees 417 17 March 2020 declaring the Economic, Social, and Ecological Emergency, and Decree 417 of 23 March 2020 authorizing second-floor official financial institutions to design instruments to support credit to enterprises.

4   For micro-enterprises and independent workers, quotas for COP 2.6 t were made available, and have been increased to COP 10.6 t.

5   See Reports on the Financial System During the Compulsory Quarantine for Life from the Office of the Financial Superintendent of Colombia.

6   For more details, see Box 2 of the April 2020 Monetary Policy Report.

7   Legislative decrees 520 of 6 April 2020 and 535 of 10 April 2020.

8   Decree 558 of 2020.

9   Legislative Decree 639 of 6 May 2020.

10   Percentage that was increased to 50% on that date whenever employees were women and the company belonged to the sectors mostly affected by the pandemic. Law 2060 of 22 October 2020.

11   External Circular Letter 007 and 014 of March 2020.

12   Forbidding any increase in the interest rates initially agreed or any administrative charge.

13   External Circular Letter 022 of 30 June 2020.

14   Within the M3, there was a high growth of cash and demand deposits. In particular, regarding cash, real growth was the highest since the 1980s.

15   Between the end of February and June 2020, deposits increased COP 39.4 t compared to credit, which grew COP 16 t.

16   Decreed by the Government as a strategy to limit the spread of Covid-19.

17   The commercial loans in NC increased from COP 231.6 t in February to COP 251.4 t in June 2020.

loans contracted by 0.7%, annually)[18]. In September, the balance of the commercial loans exceeded the high levels observed a year before, recording an annual 2.36% growth, even lower than the one estimated for economic activity. This took place in an environment of strong output recovery (after the negative effects of the third wave of Covid-19 and the roadblocks on the product in the second quarter), improvement in CI profits, credit risk moderation, and a broadly expansionary monetary policy stance.

Analysis of the micro-data shows that the aggregate behavior of the commercial loans exhibited significant heterogeneity during the pandemic. The information (disaggregated by corporation) shows that the aggregate behavior of the commercial loans reveals differentiated performances by level of indebtedness. At the beginning of the pandemic, credit flowed mainly to a small number of companies with large disbursements, particularly those seeking liquidity to fill the fall in their income. According to the data, 1.0 % of the firms that increased their indebtedness the most between December 2019 and June 2020 respond almost entirely for the behavior of the aggregate commercial credit, its increase, and its subsequent decrease[19]. By excluding this 1.0% with higher debt growth, the commercial loans performance was more stable, and even accelerated from the fourth quarter of 2020. Discounting the 10% or 20% of the firms that increased their indebtedness the most, the performance of this loan category exhibited a fall in the first half of 2020 and a strong recovery in the second half. In summary, at the beginning of the pandemic, credit flowed mainly to a small number of large companies with high disbursements, particularly those seeking liquidity to fill the fall in their sales in 2020. Since late 2020, credit has flowed to other corporations[20].

Despite the strong increase in commercial credit at the start of the pandemic, the perception of credit availability fell, albeit less than in other crises. A significant recovery of this indicator was recorded afterwards. The results of *the Quarterly Survey of Economic Expectations*[21] suggest that in the second quarter of 2020, companies experienced a drop in credit availability (Graph B2.5); however, this was less marked than the one observed in other crises, such as those recorded in 1999 or in the international financial crisis of 2008-2009. During 2021, the perception of credit availability continues to recover, and as of October it continued to come close to its historical average.

Between March and August 2020, the commercial credit risk did not increase due largely to the measures implemented by the *Superfinanciera*. Subsequently, credit risk increased and moderated only until the third quarter of 2021. Until July 2020, the default indicator, including the portfolio write-offs, remained at the levels observed in 2019, fluctuating at about 8.2%. The risk was only revealed since August 2020, as the grace periods authorized by the *Superfinanciera* expired and the collection of obligations normalized. In November of the same year, the indicator rose to 9.3%, and fluctuated around this level until the first half of 2021. This stabilization was aided by the recovery of

Graph B2.5
Current Perception of Credit Availability
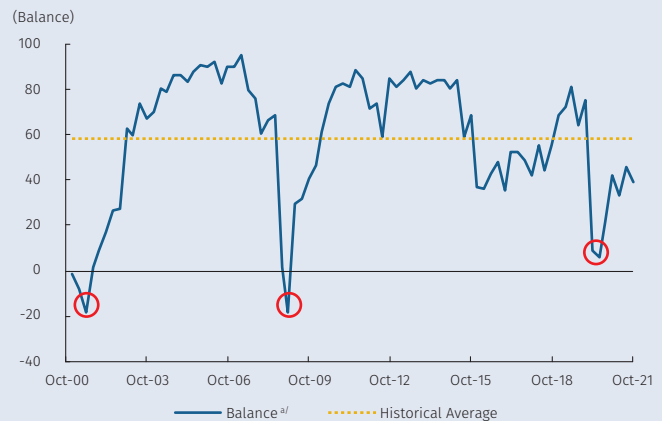
(Balance)

a/ Balance = high perception + no perception - low perception.
Source: *Banco de la República*, Quarterly Expectations Survey

economic activity and the management of credit risk under the PAD, which alleviated the credit conditions of 5.0% of the commercial loans with grace periods (with average duration of five months), terms (with average extensions of seventeen months), interest rates (with average reductions of 128 bp) and installments (with an average reduction of 13.7%)[22]. A marginal reduction in arrears was observed during the third quarter of 2021, which was 9.1% in August.

Trade credit performance during the pandemic occurred in an environment of transmission of MPR reductions to interest rates of new preferential and regular trade credits. In real terms, these rates are at historically low levels. The historical evolution of this transmission has been subject to wide uncertainty and has not been immediate, as it depends on several factors such as the situation of the economy, the characteristics of the CIs, the limits on interest rates, and MPR expectations, among others. For example, for Colombian, some studies show that in periods with inflation above the target and positive output gaps the likelihood of a transmission of the MPR decreases. Also, that a 90% transmission of changes in the MPR toward interest rates on preferential credits (fourteen months) is faster than to ordinary commercial credits (twenty-three months)[23]. As the sensitivity index (SI) suggests, between

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18   This took place despite the positive effect of using guarantees and credit lines provided by the Government and the implementation of the PAD. As of December, the use of guarantees reached 55% (COP 15 t quota), the use of credit lines arranged by the Government reached 87% (COP 3.9 t quota), and the PAD was COP 12.5 t, equivalent to 5.1% of the commercial loans. These credit policies were subject to greater demands for the approval of disbursements by the CIs as a risk-control measure.

19   See https://www.banrep.gov.co/es/blog/dinamica-y-heterogeneida-des-del-credito-comercial-el-periodo-pandemia

20   According to the 20th Labor Market Report of October 2021, during the pandemic, companies with lower liquidity and profitability margins and higher debt reduced their payroll the most during the crisis.

21   Conducted by *Banco de la República*, it is applied to traders, manufacturing and mining industries, financial systems, major chain stores, transport, and communications, academics and consultants, and trade unions.

22   October 2021 Report on the Financial System during the Mandatory Quarantine for Life, by the Office of the Financial Superintendent of Colombia.

23   For more information, see "The Transmission of Changes in the Monetary Policy Interest Rate (MPR) to Credit Institutions' Interest Rates (CI)." Box 1, *Monetary Policy Report,* April 2021, *Banco de la República*.

March 2020 and September 2021, transmission was faster than that usually observed in other years and faster than had been estimated in econometric studies (Graph B2.6). In that period, 90% (IS ≈ 0.9) of the transmission of the accumulated fall of the MPR to preferential rates was reached in September 2020 (six months), and full transmission (IS ≈ 1) was observed in December (nine months). As for regular credit rates, 90% transmission was reached in February 2021 (eleven months) and completed in May 2021 (fourteen months). In real terms, interest rates applied to preferential and regular credits declined. As of September, they are at historical lows (Graph B2.3). By contrast, to September 2021, the interest rate for micro-credits had not reacted to the reductions in the MPR (IS = 0.03).

The reduction in the MPR also generated a lower financial cost in much of the total balance for corporate credit. The relief in the financial cost of credit was also recorded in interest rates applied to commercial loans balances, as a significant fraction of the credits are indexed to the bank reference index (IBR) or the rate of term deposits (DTF). As of February 2020, of the total balance of the commercial loans, 34.3 % and 39.7 % were tied to the IBR and the DTF, respectively. These figures moved to 44.1 % and 29.9 % respectively by mid-September 2021 (Graph B2.7). Since the reduction in the IBR (-247 bp) and in the DTF (-241 bp) was similar in that period to the decrease in the MPR (-250 bp), the financial cost of 74% of the balance of commercial credits was reduced by the same magnitude.

Graph B2.6
Ordinary and Preferential Commercial Credit Interest Rate Sensitivity Index[a] *vis-à-vis* the MPR[b]

A. Ordinary

B. Preferential

Graph B2.7
Commercial Loans in National Currency by Interest Rate Modality

Source: Office of the Financial Superintendent of Colombia and *Banco de la República*.

a/ Sensitivity Index (SI): The sensitivity index contrasts for each period of increase or re-duction of the MPR the cumulative change of a market rate versus the cumulative change in the MPR for each period of increase or decrease in the MPR. SI<0 represents a contrary reaction to the MPR; 0<SI<1, low sensitivity to the MPR (less than proportional); SI=1, full transmission of the MPR; SI>1, high sensitivity to the TPM (more than proportional). Gray stripes indicate periods of increases in the MPR; white stripes indicate decreases, and the last one shows the current period of decline.
b/ Information as of 1 October 2021.
Source: *Banco de la República;* calculations by the authors.

Annex 1
Macroeconomic Projections from Local and Foreign Analysts [a/b]

	Units	Oct-21	Dec-21	Oct-22	Dec-22	Oct-23
Total CPI	Monthly Change (average)	0.18	n. r.	n. r.	n. r.	n. r.
CPI excluding foods	Monthly Change (average)	0.13	n. r.	n. r.	n. r.	n. r.
Total CPI	Annual Change, end of period (average)	4.76[c/]	4.88	3.63	3.52	3.15
CPI excluding food	Annual Change, end of period (average)	3.17[c/]	3.48	3.22	3.21	2.94
Nominal Exchange Rate	Pesos per dollar, end of period	3,750	3,730	3,700	3,670	3,600
Monetary Policy Interest Rate	Percentage, end of period	2.25	2.50	4.00	4.00	4.50

	Units	III-2021	IV-2021	2021	I-2022	II-2022	III-2022	IV-2022	2022	I-2023	II-2023	III-2023
GDP	Annual variation, original series	10.5	5.9	8.6	4.2	4.4	3.6	3.5	3.7	3.2	3.4	n. a.
Unemployment	Thirteen cities, average of period	14.1	13.0	n. a.	13.6	13.2	12.6	12.2	n. a.	12.4	11.8	n. a.
IBR (90 days)	Effective annual rate, end of Period	n. r.	2.7	n. a.	3.2	3.7	4.0	4.2	n. a.	4.3	4.5	4.5
DTF	Effective annual rate, end of Period	n. r.	2.6	n. a.	3.1	3.6	3.9	4.2	n. a.	4.3	4.4	4.5
Fiscal Deficit (NCG) [d/]	Percentage of GDP	n. a.	n. a.	8.5	n. a.	n. a.	n. a.	n. a.	7.0	n. a.	n. a.	n. a.
Current Account Deficit [d/]	Percentage of GDP	n. a.	n. a.	5.0	n. a.	n. a.	n. a.	n. a.	4.5	n. a.	n. a.	n. a.

n. a: not available.
n. r: not relevant given that data is already observed.
a/ Starting with the Monetary Policy Report from July 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, negative values represent surplus.
Source: *Banco de la República*'s Monthly Survey of Economic Analyst Expectations (October 2021).

Annex 2
Main Macroeconomic Forecast Variables

		Years										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Exogenous variables												
External [a/]												
Trade partners GDP [b/]	Percentage, annual change, seasonally adjusted	4.0	3.6	2.7	2.1	1.6	2.6	2.5	1.4	-6.7	**6.3**	**3.4**
Oil price (Benchmark Brent)	Dollars per barrel, average for period	112	109	99	54	45	55	72	64	43	**71**	**71**
Federal funds (Fed) effective interest rate	Percentage, average for period	0.14	0.11	0.09	0.13	0.40	1.00	1.83	2.16	0.38	**0.09**	**0.14**
Credit default swaps at 5 years for Colombia	Basis points, average for period	119	113	101	184	212	129	114	99	141	**137**	**169**
Domestic												
Colombia real neutral interest rate	Percentage, average for period	1.6	1.5	1.4	1.5	1.6	1.3	1.3	1.2	1.3	**1.5**	**1.6**
Potential (trend) GDP	Percentage, annual change	4.5	4.3	3.9	3.3	2.7	2.4	2.5	2.9	-0.7	**4.2**	**3.3**
Endogenous variables												
Prices												
CPI Total	Percentage, annual change, end of period	2.44	1.94	3.66	6.77	5.75	4.09	3.18	3.80	1.61	**4.9**	**3.6**
CPI excluding food [c/]	Percentage, annual change, end of period	2.67	2.46	3.28	5.25	5.51	5.03	3.51	3.45	1.03	.	.
CPI goods (excluding food and regulated items)	Percentage, annual change, end of period	0.56	0.86	1.75	7.27	5.91	3.24	1.40	2.18	0.63	.	.
CPI services (excluding food and regulated items)	Percentage, annual change, end of period	3.92	3.67	3.34	4.64	5.26	5.38	3.13	3.45	1.29	.	.
CPI regulated items	Percentage, annual change, end of period	2.33	1.56	4.89	4.43	5.63	6.26	6.65	4.81	0.73	**6.4**	**4.6**
CPI food [d/]	Percentage, annual change, end of period	1.48	-0.23	5.24	13.08	6.65	0.48	1.87	5.80	4.80	**13.4**	**1.2**
CPI perishables	Percentage, annual change, end of period	-3.90	-0.16	16.74	26.03	-6.63	5.84	8.88	8.66	2.49	.	.
CPI processed	Percentage, annual change, end of period	2.83	-0.24	2.54	9.62	10.74	-0.91	-0.08	5.04	5.43	.	.
Core inflation indicators [e/]												
CPI excluding food	Percentage, annual change, end of period	2.67	2.46	3.28	5.25	5.51	5.03	3.51	3.45	1.03	.	.
Core 15 CPI	Percentage, annual change, end of period	2.67	2.47	3.19	5.59	5.98	4.21	3.22	3.78	1.88	.	.
CPI excluding food and regulated items	Percentage, annual change, end of period	2.77	2.73	2.82	5.50	5.48	4.67	2.57	3.10	1.11	**2.5**	**3.9**
Average of all core inflation indicators	Percentage, annual change, end of period	2.70	2.55	3.10	5.45	5.66	4.64	3.10	3.44	1.34	.	.
MER	Pesos per dollar, average for period	1,798	1,869	2,001	2,742	3,055	2,951	2,956	3,281	3,693	.	.
Inflation gap in the real interest rate	Percentage, average for period	-3.4	.	-0.3	9.5	2.5	-1.7	-0.7	3.7	6.3	**1.8**	**-0.3**
Economic Activity												
Gross domestic product SACE	Percentage, annual change, s.a.c.e.	3.9	5.1	4.5	3.0	2.1	1.4	2.6	3.3	-6.8	**9.8**	**4.7**
Final consumption spending	Percentage, annual change, s.a.c.e.	5.5	5.4	4.3	3.4	1.6	2.3	4.0	4.2	-3.9	.	.
Final household consumption spending	Percentage, annual change, s.a.c.e.	5.6	4.6	4.2	3.1	1.6	2.1	3.2	3.9	-5.6	.	.
Final government overhead spending	Percentage, annual change, s.a.c.e.	4.8	8.9	4.7	4.9	1.8	3.6	7.4	5.3	3.7	.	.
Gross capital formation	Percentage, annual change, s.a.c.e.	2.9	7.8	12.0	-1.2	-0.2	-3.2	1.5	3.8	-20.3	.	.
Gross fixed capital formation	Percentage, annual change, s.a.c.e.	3.3	8.5	9.2	2.8	-2.9	1.9	1.0	3.1	-20.6	.	.
Housing	Percentage, annual change, s.a.c.e.	-0.7	6.4	10.4	9.5	-0.2	-1.9	-0.4	-8.4	-27.5	.	.
Other buildings and structures	Percentage, annual change, s.a.c.e.	4.4	12.3	9.6	10.2	0.0	4.6	-3.5	2.9	-28.3	.	.
Machinery and equipment	Percentage, annual change, s.a.c.e.	4.0	4.8	9.2	-9.3	-7.9	1.4	8.6	12.3	-10.3	.	.
Cultivated biological resources	Percentage, annual change, s.a.c.e.	-5.7	6.6	-1.3	2.3	13.1	0.3	-3.1	4.9	0.0	.	.
Intellectual property products	Percentage, annual change, s.a.c.e.	8.0	19.6	5.1	1.3	-12.0	1.2	1.5	1.6	-7.2	.	.
Domestic demand	Percentage, annual change, s.a.c.e.	4.9	5.9	6.0	2.4	1.2	1.1	3.5	4.1	-7.2	.	.
Exports	Percentage, annual change, s.a.c.e.	4.5	4.7	-0.3	1.7	-0.2	2.6	0.6	3.1	-18.3	.	.
Imports	Percentage, annual change, s.a.c.e.	9.4	8.5	7.8	-1.1	-3.5	1.0	5.8	7.3	-17.3	.	.
Output gap [f/]	Percentage	0.0	0.8	1.4	1.1	0.5	-0.5	-0.5	-0.1	-6.5	**-1.4**	**-0.1**
Short-term indicators												
Real industrial production	Percentage, annual change, seasonally adjusted	-0.2	-1.3	1.7	2.0	3.8	0.0	2.7	1.4	-8.2	.	.
Retail commerce sales excluding fuels and vehicles	Percentage, annual change, seasonally adjusted	4.2	5.5	8.4	6.3	2.0	-0.1	5.4	8.1	-1.7	.	.
Coffee production	Percentage, annual change in accumulated production for the period	-0.8	40.6	11.5	16.8	0.4	-0.3	-4.5	8.8	-5.8	.	.
Oil production	Percentage, annual change, average for period	3.2	6.6	-1.9	1.6	-11.7	-3.7	1.4	2.4	-11.8	.	.
Labor Market [g/]												
National Total												
Unemployment rate	Percentage, seasonally adjusted, average for period	10.4	9.6	9.1	8.9	9.2	9.4	9.7	10.5	15.9	**13.6**	**11.4**
Employment rate	Percentage, seasonally adjusted, average for period	57.8	58.0	58.4	59.0	58.5	58.4	57.8	56.6	49.8	.	.
Overall participation rate	Percentage, seasonally adjusted, average for period	64.5	64.2	64.2	64.7	64.5	64.4	64.0	63.3	59.2	.	.
Thirteen cities and metropolitan areas												
Unemployment rate	Percentage, seasonally adjusted, average for period	11.2	10.6	9.9	9.8	10.0	10.6	10.8	11.2	18.2	**15.5**	**13.1**
Employment rate	Percentage, seasonally adjusted, average for period	60.1	60.3	61.2	61.4	60.7	59.9	59.2	58.6	50.8	.	.
Overall participation rate	Percentage, seasonally adjusted, average for period	67.6	67.5	67.9	68.0	67.5	67.0	66.4	66.0	62.1	.	.
Balance of Payments [h/i/]												
Current account (A+B+C)	Millions of dollars	-11,640	-12,365	-19,819	-18,702	-12,587	-10,110	-14,188	-14,991	-9,927	**-16,583**	**-15,546**
Percentage of GDP	Percentage, nominal terms	-3.1	-3.2	-5.2	-6.3	-4.4	-3.2	-4.2	-4.6	-3.6	**-5.3**	**-4.6**
A. Goods and Services	Millions of dollars	-1,465	-3,250	-12,332	-19,004	-13,451	-8,947	-10,703	-14,336	-13,371	**-18,359**	**-14,907**
B. Primary income (factor income)	Millions of dollars	-15,008	-14,002	-12,108	-5,450	-5,312	-8,046	-11,442	-9,710	-5,343	**-8,675**	**-10,717**
C. Secondary income (current account transfers)	Millions of dollars	4,833	4,887	4,622	5,752	6,177	6,883	7,957	9,055	8,788	**10,451**	**10,078**
Financial account (A+B+C+D)	Millions of dollars	-11,553	-11,740	-19,292	-18,060	-12,339	-9,625	-12,954	-13,299	-8,319	.	.
Percentage of GDP	Percentage, nominal terms	-3.1	-3.1	-5.1	-6.1	-4.4	-3.1	-3.9	-4.1	-3.1	.	.
A. Foreign investment (i+ii) Millions of dollars	Millions of dollars	-15,646	-8,558	-12,270	-7,403	-9,341	-10,011	-6,172	-10,836	-5,921	.	.
i. Foreign in Colombia (FDI) Millions of dollars	Millions of dollars	15,040	16,210	16,169	11,621	13,858	13,701	11,299	13,990	7,641	.	.
ii. Colombian abroad Millions of dollars	Millions of dollars	-606	7,652	3,899	4,218	4,517	3,690	5,126	3,153	1,721	.	.
B. Portfolio investment Millions of dollars	Millions of dollars	-4,769	-7,438	-11,565	-9,091	-4,945	-1,800	862	-4,945	-1,792	.	.
C. Other investment (loans and other credits and derivatives) Millions of dollars	Millions of dollars	3,457	-2,690	106	-1,981	1,781	1,641	-8,831	-5,820	-4,934	.	.
D. Reserve assets Millions of dollars	Millions of dollars	5,406	6,946	4,437	415	165	545	1,187	3,333	4,328	.	.
Errors and omissions (E and O) Millions of dollars	Millions of dollars	87	626	526	642	247	485	1,234	1,692	1,608	.	.
Interest Rates												
Monetary Policy Interest Rate	Percentage, average for period	5.00	3.40	3.90	4.70	7.10	6.10	4.40	4.25	2.90	.	.
Monetary Policy Interest Rate expected by analysts [j/]	Percentage, average for period	.	.	.	.	.	.	.	.	.	**1.90**	**3.50**
IBR overnight	Percentage, average for period	5.0	3.4	3.8	4.7	7.1	6.1	4.3	4.3	2.9	.	.
Commercial interest rate [k/]	Percentage, average for period	10.3	8.7	8.7	9.4	12.8	11.1	9.3	8.8	7.5	.	.
Consumer interest rate [l/]	Percentage, average for period	19.2	17.9	17.3	17.2	19.2	19.4	17.9	16.5	15.1	.	.
Mortgage rate [m/]	Percentage, average for period	13.2	11.1	11.1	11.0	12.4	11.6	10.6	10.4	10.2	.	.

SACE: seasonally adjusted and corrected for calendar effects.

Note: values in bold represent a projection or assumption.

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 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 y revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, *Banco de la República*, available at: https://investiga.banrep.gov.co/es/ be-1122.

d/ Calculations by *Banco de la República* 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 y revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, *Banco de la República*, available at: https://investiga.banrep.gov.co/es/be-1122

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

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

g/ The rates are calculated based on seasonally adjusted annual populations.

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

i/ The results for 2019 and 2020 are preliminary.

j/ Corresponds to the median projection from analysts. These projections are calculated taking the quarterly average of the monthly responses in the survey of economic analyst expectations conducted by *Banco de la República* in October 2021.

k/ Average by rate amounts for ordinary, treasury, and preferential credit.

l/ Excludes credit cards.

m/ Average by rate amounts for non-social housing credit in pesos and UVR.

Annex 2 (continued)
Main Macroeconomic Forecast Variables

		2017				2018			
		T1	T2	T3	T4	T1	T2	T3	T4
Exogenous variables									
External ᵃ/									
Trade partners GDP ᵇ/	Percentage, annual change, seasonally adjusted	2.3	3.4	3.1	3.0	2.3	3.3	0.9	0.9
Oil price (Benchmark Brent)	Dollars per barrel, average for period	55	51	52	61	67	75	76	69
Federal funds (Fed) effective interest rate	Percentage, average for period	0.70	0.95	1.15	1.20	1.45	1.74	1.92	2.22
Credit default swaps at 5 years for Colombia	Basis points, average for period	144	130	127	113	99	113	110	132
Domestic									
Colombia real neutral interest rate	Percentage, average for period								
Potential (trend) GDP	Percentage, annual change								
Endogenous variables									
Prices									
CPI Total	Percentage, annual change, end of period	4.69	3.99	3.97	4.09	3.14	3.20	3.23	3.18
CPI excluding food ᶜ/	Percentage, annual change, end of period	5.55	5.40	4.86	5.03	3.97	3.73	3.67	3.51
CPI goods (excluding food and regulated items)	Percentage, annual change, end of period	5.69	4.28	3.46	3.24	1.67	1.39	1.39	1.40
CPI services (excluding food and regulated items)	Percentage, annual change, end of period	5.87	5.55	5.02	5.38	4.09	3.79	3.60	3.13
CPI regulated items	Percentage, annual change, end of period	4.71	6.33	6.10	6.26	6.28	6.21	6.35	6.65
CPI food ᵈ/	Percentage, annual change, end of period	1.46	-1.21	0.59	0.48	-0.06	1.11	1.47	1.87
CPI perishables	Percentage, annual change, end of period	-13.09	-14.72	-0.32	5.84	7.13	8.47	9.51	8.88
CPI processed	Percentage, annual change, end of period	6.28	3.29	0.84	-0.91	-2.01	-0.91	-0.72	-0.08
Core inflation indicators ᵉ/		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CPI excluding food	Percentage, annual change, end of period	5.55	5.40	4.86	5.03	3.97	3.73	3.67	3.51
Core 15 CPI	Percentage, annual change, end of period	5.63	5.16	4.49	4.21	3.45	3.24	3.19	3.22
CPI excluding food and regulated items	Percentage, annual change, end of period	5.81	5.13	4.50	4.67	3.28	2.99	2.87	2.57
Average of all core inflation indicators	Percentage, annual change, end of period	5.66	5.23	4.62	4.64	3.57	3.32	3.24	3.10
MER	Pesos per dollar, average for period	2,923	2,919	2,977	2,987	2,860	2,841	2,961	3,164
Inflation gap in the real interest rate	Percentage, average for period	-3.0	-3.1	-0.6	-0.1	-3.4	-3.7	-0.4	4.5
Economic Activity									
Gross domestic product SACE	Percentage, annual change, s.a.c.e.	1.3	1.5	1.3	1.3	2.3	2.1	2.8	3.0
Final consumption spending	Percentage, annual change, s.a.c.e.	2.1	2.3	2.6	2.3	3.8	4.0	4.0	4.1
Final household consumption spending	Percentage, annual change, s.a.c.e.	1.7	2.3	2.4	1.8	3.3	3.3	3.2	3.1
Final government overhead spending	Percentage, annual change, s.a.c.e.	3.9	2.4	3.5	4.9	6.7	7.4	7.8	7.5
Gross capital formation	Percentage, annual change, s.a.c.e.	0.3	-2.5	-4.1	-6.6	-5.0	0.9	1.2	9.4
Gross fixed capital formation	Percentage, annual change, s.a.c.e.	-0.4	1.7	6.0	0.4	-0.4	2.0	1.4	1.2
Housing	Percentage, annual change, s.a.c.e.	3.8	2.0	-1.6	-11.2	-8.0	-1.2	5.5	3.1
Other buildings and structures	Percentage, annual change, s.a.c.e.	-3.5	6.0	11.2	5.2	-6.5	-0.8	-6.2	-0.6
Machinery and equipment	Percentage, annual change, s.a.c.e.	-5.0	-1.8	8.2	4.4	12.5	13.5	7.5	1.9
Cultivated biological resources	Percentage, annual change, s.a.c.e.	18.6	1.0	-10.8	-4.9	-9.0	-8.2	4.1	1.5
Intellectual property products	Percentage, annual change, s.a.c.e.	-3.2	1.9	3.7	2.6	2.5	2.4	0.7	0.6
Domestic demand	Percentage, annual change, s.a.c.e.	1.1	1.3	1.3	0.8	1.6	3.6	3.5	5.1
Exports	Percentage, annual change, s.a.c.e.	4.2	5.6	2.7	-2.0	-1.4	-1.8	-0.8	6.7
Imports	Percentage, annual change, s.a.c.e.	3.7	1.4	-0.8	-0.2	0.3	5.4	7.1	10.7
Output gap ᶠ/	Percentage	0.2	0.0	-0.3	-0.5	-0.6	-0.7	-0.6	-0.5
Short-term indicators									
Real industrial production	Percentage, annual change, seasonally adjusted	-0.9	-0.5	1.0	0.2	2.2	2.8	3.4	2.4
Retail commerce sales excluding fuels and vehicles	Percentage, annual change, seasonally adjusted	0.3	-0.4	-0.2	-0.3	4.5	5.7	5.3	6.3
Coffee production	Percentage, annual change in accumulated production for the period	13.0	-17.2	17.1	-10.1	-5.8	13.1	-13.8	-6.6
Oil production	Percentage, annual change, average for period	-11.5	-5.2	1.5	1.8	0.5	1.0	1.1	2.6
Labor Market ᵍ/									
National Total									
Unemployment rate	Percentage, seasonally adjusted, average for period	9.4	9.1	9.4	9.6	9.4	9.4	9.6	10.3
Employment rate	Percentage, seasonally adjusted, average for period	58.4	58.9	58.3	57.8	57.8	58.2	58.2	57.0
Overall participation rate	Percentage, seasonally adjusted, average for period	64.5	64.8	64.4	64.0	63.8	64.3	64.3	63.5
Thirteen cities and metropolitan areas									
Unemployment rate	Percentage, seasonally adjusted, average for period	10.4	10.5	10.9	10.6	10.7	10.5	10.5	11.3
Employment rate	Percentage, seasonally adjusted, average for period	60.3	60.3	59.7	59.2	59.2	59.8	59.5	58.4
Overall participation rate	Percentage, seasonally adjusted, average for period	67.3	67.3	67.0	66.3	66.3	66.8	66.6	65.8
Balance of Payments ʰ/ⁱ/									
Current account (A+B+C)	Millions of dollars	-3,466	-2,471	-2,622	-1,552	-3,074	-3,507	-3,456	-4,151
Percentage of GDP	Percentage, nominal terms	-4.7	-3.3	-3.3	-1.9	-3.8	-4.2	-4.0	-4.9
A. Goods and Services	Millions of dollars	-2,706	-2,596	-2,387	-1,258	-1,891	-2,593	-2,722	-3,497
B. Primary income (factor income)	Millions of dollars	-2,286	-1,558	-1,993	-2,208	-2,922	-2,784	-2,769	-2,967
C. Secondary income (current account transfers)	Millions of dollars	1,527	1,684	1,759	1,914	1,739	1,870	2,035	2,313
Financial account (A+B+C+D)	Millions of dollars	-2,986	-2,625	-2,379	-1,635	-2,876	-2,719	-3,487	-3,872
Percentage of GDP	Percentage, nominal terms	-4.0	-3.5	-3.0	-2.0	-3.5	-3.3	-4.1	-4.6
A. Foreign investment (i+ii) Millions of dollars	Millions of dollars	-1,743	-1,217	-4,112	-2,939	-910	-2,273	-2,375	-615
i. Foreign in Colombia (FDI) Millions of dollars	Millions of dollars	2,459	2,492	4,957	3,793	1,982	3,773	2,704	2,839
ii. Colombian abroad Millions of dollars	Millions of dollars	716	1,275	845	854	1,072	1,500	330	2,224
B. Portfolio investment Millions of dollars	Millions of dollars	182	-2,178	-424	620	1,715	350	482	-1,684
C. Other investment (loans and other credits and derivatives) Millions of dollars	Millions of dollars	-1,518	617	2,031	512	-3,817	-945	-1,763	-2,305
D. Reserve assets Millions of dollars	Millions of dollars	93	154	126	173	137	150	169	732
Errors and omissions (E and O) Millions of dollars	Millions of dollars	479	-154	242	-83	197	788	-31	280
Interest Rates									
Monetary Policy Interest Rate	Percentage, average for period	7.38	6.56	5.48	4.99	4.58	4.33	4.25	4.25
Monetary Policy Interest Rate expected by analysts ʲ/	Percentage, average for period								
IBR overnight	Percentage, average for period	7.4	6.6	5.5	5.0	4.6	4.3	4.3	4.3
Commercial interest rate ᵏ/	Percentage, average for period	12.8	11.7	10.6	10.1	9.5	9.5	9.3	9.0
Consumer interest rate ˡ/	Percentage, average for period	20.2	19.7	19.1	18.7	18.7	17.9	18.0	17.3
Mortgage rate ᵐ/	Percentage, average for period	12.5	12.3	11.3	10.9	10.8	10.6	10.5	10.5

SACE: seasonally adjusted and corrected for calendar effects.
Note: values in bold represent a projection or assumption.
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 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 y revisión de las medidas de inflación básica en Colombia," Borradores de Economía, no. 122, *Banco de la República*, available at: https://investiga.banrep.gov.co/es/ be-1122.
d/ Calculations by *Banco de la República* 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 Economía, no. 122, *Banco de la República*, available at: https://investiga.banrep.gov.co/es/be-1122
e/ Calculations by *Banco de la República* based on its new classification. 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
f/ The historical estimate for the gap is calculated as the difference between observed and potential (trend) GDP resulting from the 4G monetary policy model; forecast is calculated as the difference between the technical staff's GDP estimate and potential (trend) GDP from the 4G model.
g/ The rates are calculated based on seasonally adjusted annual populations.
h/ The results presented here follow the recommendations of the sixth balance of payments manual proposed by the International Monetary Fund (IMF). See additional information and methodological changes at: http://www.banrep.gov/co/balanza-pagos.
i/ The results for 2019 and 2020 are preliminary.
j/ Corresponds to the median projection from analysts. These projections are calculated taking the quarterly average of the monthly responses in the survey of economic analyst expectations conducted by *Banco de la República* in October 2021.
k/ Average by rate amounts for ordinary, treasury, and preferential credit.
l/ Excludes credit cards.
m/ Average by rate amounts for non-social housing credit in pesos and UVR.

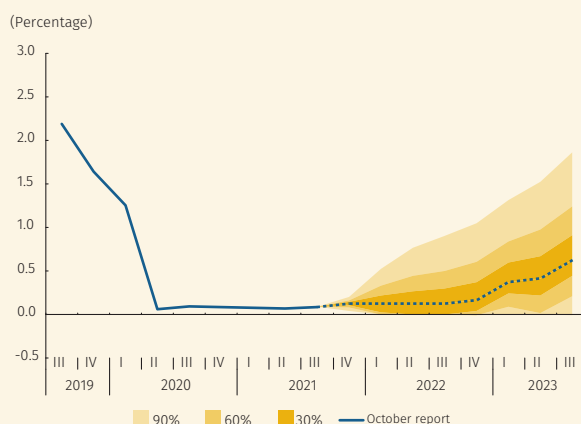|	2019				2020				2021				2022				2023		
	T1	**T2**	**T3**	**T4**	**T1**	**T2**	**T3**	**T4**	**T1**	**T2**	**T3**	**T4**	**T1**	**T2**	**T3**	**T4**	**T1**	**T2**	**T3**
	1.1	2.9	1.8	-2.0	-7.5	-43.8	48.9	11.5	5.1	5.0	3.5	**3.5**	**3.4**	**3.2**	**2.9**	**2.5**	**2.5**	**2.5**	**2.5**
	64	68	62	62	51	33	43	45	61	69	73	**80**	**76**	**72**	**70**	**67**	**66**	**65**	**65**
	2.40	2.40	2.19	1.64	1.26	0.06	0.09	0.09	0.08	0.07	0.09	**0.13**	**0.13**	**0.13**	**0.13**	**0.17**	**0.38**	**0.42**	**0.63**
	121	104	90	83	125	206	132	104	110	131	143	**165**	**167**	**168**	**170**	**170**	**170**	**170**	**170**
	3.21	3.43	3.82	3.80	3.86	2.19	1.97	1.61	1.51	3.63	4.51	**4.9**	**5.0**	**4.3**	**3.7**	**3.6**	**3.7**	**3.5**	**3.3**
	3.27	3.22	3.37	3.45	3.26	1.40	1.57	1.03	1.06	2.70	3.03	.	.	.	.	.	.	.	.
	1.09	1.60	1.83	2.18	2.41	0.73	1.15	0.63	1.05	2.57	2.97	.	.	.	.	.	.	.	.
	3.01	3.10	3.37	3.45	3.22	2.00	1.86	1.29	0.89	1.61	2.01	.	.	.	.	.	.	.	.
	6.33	5.24	5.03	4.81	4.27	0.44	1.19	0.73	1.52	5.93	5.94	**6.4**	**5.6**	**4.7**	**4.3**	**4.6**	**4.9**	**4.5**	**4.1**
	3.24	4.96	6.49	5.80	7.19	6.55	4.13	4.80	3.92	8.52	12.40	**13.4**	**10.8**	**6.3**	**3.3**	**1.2**	**2.1**	**1.8**	**1.6**
	9.98	15.46	17.50	8.66	9.79	2.52	-3.42	2.49	1.58	8.69	14.82	.	.	.	.	.	.	.	.
	1.43	2.18	3.57	5.04	6.46	7.75	6.40	5.43	4.60	8.47	11.74	.	.	.	.	.	.	.	.
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.	.	.	.	.	.	.	.
	3.27	3.22	3.37	3.45	3.64	1.40	1.57	1.57	1.06	2.70	3.03	.	.	.	.	.	.	.	.
	3.24	3.34	3.66	3.78	3.64	2.17	2.33	1.88	1.67	3.36	3.79	.	.	.	.	.	.	.	.
	2.41	2.65	2.92	3.10	2.99	1.65	1.67	1.11	0.94	1.87	2.28	**2.5**	**3.4**	**3.6**	**3.4**	**3.9**	**3.7**	**3.6**	**3.5**
	2.97	3.07	3.32	3.44	3.30	1.74	1.86	1.34	1.22	2.64	3.03	.	.	.	.	.	.	.	.
	3,134	3,241	3,340	3,411	3,532	3,848	3,733	3,661	3,555	3,696	3,847	.	.	.	.	.	.	.	.
	2.2	3.3	4.2	5.0	5.1	11.1	6.2	2.8	-0.8	2.8	**4.4**	**0.8**	**-0.5**	**-0.5**	**-0.1**	**-0.1**	**-0.9**	**-1.2**	**-1.1**
	3.0	3.5	3.2	3.4	0.1	-15.7	-8.2	-3.4	2.1	17.0	**12.7**	**8.3**	**5.3**	**8.6**	**3.3**	**1.8**	**2.5**	**2.9**	**3.3**
	3.5	4.2	4.4	4.7	3.5	-11.5	-7.3	-0.2	2.2	21.0	**17.5**	.	.	.	.	.	.	.	.
	2.9	3.9	4.3	4.7	3.4	-14.9	-9.5	-1.4	2.1	24.7	**20.3**	.	.	.	.	.	.	.	.
	5.8	5.3	5.2	4.8	3.4	3.1	3.5	4.7	5.5	9.7	**5.7**	.	.	.	.	.	.	.	.
	10.7	1.9	6.5	-3.3	-9.3	-37.7	-15.1	-20.0	3.2	29.5	**8.8**	.	.	.	.	.	.	.	.
	9.1	3.5	2.4	-2.3	-5.5	-39.8	-22.5	-14.7	-3.6	31.2	**19.3**	.	.	.	.	.	.	.	.
	-5.4	-8.8	-8.6	-10.7	-10.5	-40.9	-32.3	-26.3	-4.6	34.3	**29.2**	.	.	.	.	.	.	.	.
	14.3	1.3	1.2	-4.0	-8.4	-42.8	-34.6	-27.5	-21.6	19.5	**12.6**	.	.	.	.	.	.	.	.
	13.8	20.0	10.5	4.8	-0.6	-37.1	-5.5	4.4	9.1	48.0	**19.8**	.	.	.	.	.	.	.	.
	2.1	9.0	8.2	0.7	2.3	1.2	-5.0	1.8	9.6	3.6	**6.1**	.	.	.	.	.	.	.	.
	0.3	0.2	1.4	4.6	1.0	-15.0	-9.1	-5.8	0.6	14.1	**6.6**	.	.	.	.	.	.	.	.
	4.6	3.6	5.0	3.3	0.5	-17.1	-9.0	-3.3	2.1	23.0	**16.2**	.	.	.	.	.	.	.	.
	6.1	5.8	4.4	-3.6	-3.7	-25.9	-23.6	-20.1	-9.4	12.7	**14.9**	.	.	.	.	.	.	.	.
	8.0	8.5	9.5	3.5	-1.2	-30.0	-23.2	-14.2	-0.4	45.1	**36.0**	.	.	.	.	.	.	.	.
	-0.4	-0.3	-0.2	-0.1	-0.6	-3.7	-5.5	-6.5	-6.4	-4.2	**-2.5**	**-1.4**	**-0.9**	**0.0**	**0.1**	**-0.1**	**-0.2**	**-0.1**	**0.0**
	1.1	2.8	0.7	1.0		-24.3	-7.5	0.1	6.7	28.7	.	.	.	.	.	.	.	.	.
	6.2	7.3	9.8	9.1	5.7	-14.8	-3.5	5.7	4.9	20.1	.	.	.	.	.	.	.	.	.
	-1.9	6.6	4.9	24.1	-13.8	-1.9	-3.6	-4.6	13.3	.	-1.9	.	.	.	.	.	.	.	.
	5.3	3.2	1.4	-0.2	-2.1	-15.7	-15.4	-14.1	-14.6	-5.1	.	.	.	.	.	.	.	.	.
	10.5	10.0	10.7	10.7	11.3	20.2	17.6	15.1	14.5	14.9	**12.9**	**12.2**	**11.9**	**11.3**	**11.2**	**11.1**	.	.	.
	57.3	56.7	56.4	56.2	55.1	43.9	48.5	51.7	52.3	51.2	.	.	.	.	.	.	.	.	.
	64.0	63.0	63.1	62.9	62.1	55.0	58.9	60.9	61.1	60.1	.	.	.	.	.	.	.	.	.
	11.5	10.9	11.0	11.4	11.3	23.7	21.3	17.3	16.4	16.7	**14.9**	**14.1**	**13.7**	**13.1**	**12.9**	**12.8**	.	.	.
	58.6	58.9	58.6	58.4	57.0	44.3	48.7	53.0	53.6	52.8	.	.	.	.	.	.	.	.	.
	66.1	66.1	65.8	65.9	64.3	58.1	61.9	64.0	64.1	63.3	.	.	.	.	.	.	.	.	.
	-3,808	-3,273	-4,411	-3,499	-2,659	-1,926	-2,056	-3,286	-3,345	-4636	.	.	.	.	.	.	.	.	.
	-4.8	-4.2	-5.4	-4.1	-3.6	-3.5	-3.1	-4.3	-4.4	-6.3	.	.	.	.	.	.	.	.	.
	-3,126	-3,054	-4,515	-3,640	-3,190	-2,667	-3,355	-4,159	-3,863	-5467	.	.	.	.	.	.	.	.	.
	-2,614	-2,500	-2,300	-2,297	-1,641	-976	-1,124	-1,602	-1,933	-1,795	.	.	.	.	.	.	.	.	.
	1,932	2,281	2,404	2,438	2,173	1,718	2,422	2,475	2,450	2627	.	.	.	.	.	.	.	.	.
	-3,520	-3,333	-3,740	-2,706	-1,887	-1,855	-1,785	-2,792	-2,779	-4,149	.	.	.	.	.	.	.	.	.
	-4.5	-4.2	-4.6	-3.2	-2.6	-3.3	-2.7	-3.6	-3.7	-5.6	.	.	.	.	.	.	.	.	.
	-2,652	-3,626	-1,678	-2,880	-2,075	-1,643	-182	-2,020	-1,580	-1,080	.	.	.	.	.	.	.	.	.
	3,394	4,090	3,163	3,342	3,313	1,291	767	2,271	2,483	2092	.	.	.	.	.	.	.	.	.
	741	465	1,485	462	1,238	-352	585	250	903	1,013	.	.	.	.	.	.	.	.	.
	-1,382	-282	137	1,551	-168	-3,429	323	1,482	1,102	-5825	.	.	.	.	.	.	.	.	.
	-1,836	48	-2,453	-1,579	526	628	-2,131	-3,958	-2,491	2,582	.	.	.	.	.	.	.	.	.
	2,351	526	254	202	-171	2,590	205	1,705	190	174	.	.	.	.	.	.	.	.	.
	288	-60	671	793	772	71	271	494	566	486	.	.	.	.	.	.	.	.	.
	4.25	4.25	4.25	4.25	4.23	3.26	2.24	1.75	1.75	1.75	1.75	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	2.33	2.83	3.33	3.83	4.00	4.25	4.50	4.50
	4.3	4.3	4.3	4.3	4.2	3.2	2.2	1.7	1.7	1.7	1.8	.	.	.	.	.	.	.	.
	9.1	8.9	8.9	8.5	8.4	8.3	7.0	6.2	6.0	5.7	6.0	.	.	.	.	.	.	.	.
	18.0	17.3	16.0	15.5	15.8	15.5	14.9	14.2	14.0	13.7	14.3	.	.	.	.	.	.	.	.
	10.4	10.5	10.4	10.4	10.5	10.4	10.2	9.7	9.2	8.9	9.0	.	.	.	.	.	.	.	.

Annex 3
Predictive Densities for other Variables relevant to Macroeconomic Forecasts

Graph A3.1
Assumed Trade Partner Quarterly Growth at 12 Months based on Annual Projections[a]
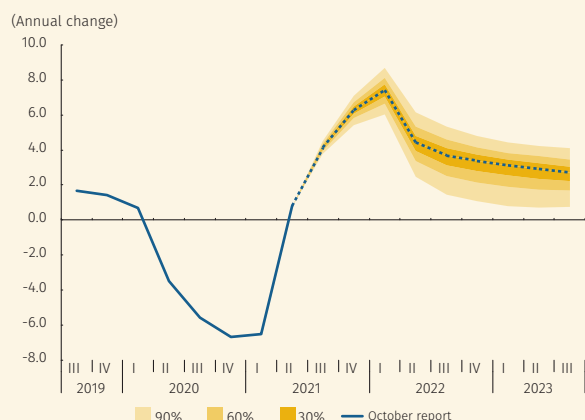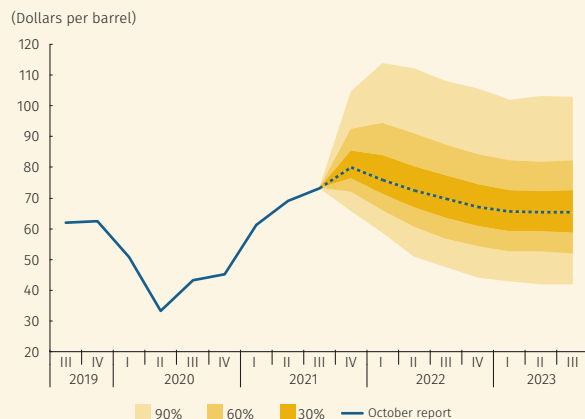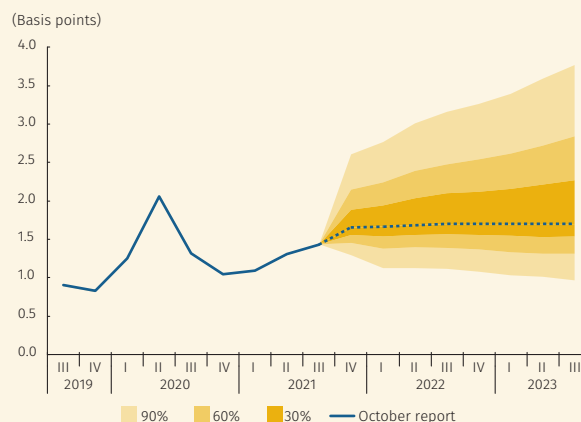
(Annual change)

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 central forecast (mode).
Sources: Bloomberg, statistics offices, central banks; calculations and projections by *Banco de la República.*

Graph A3.2
Assumed quarterly oil price[a]

(Dollars per barrel)

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 central forecast (mode).
Sources: Bloomberg; calculations and projections by *Banco de la República*.

Graph A3.3
Assumed U.S. Federal Reserve Quarterly Interest Rate[a]

(Percentage)

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 central 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]

(Basis points)

a/ Five-year credit default swaps
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 central forecast (mode), using a combination of densities from the Patacon and 4GM models.
Sources: Bloomberg; calculations and projections by *Banco de la República.*
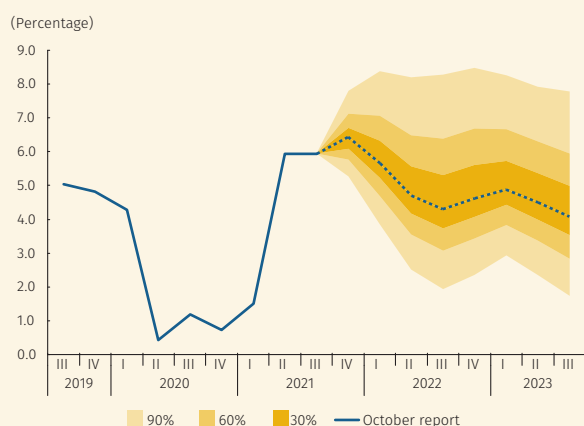
Annex 3 (continued)
Predictive Densities for other Variables relevant to Macroeconomic Forecasts

Graph A3.5
CPI for foods [a/]
(Annual change; end-of-period)
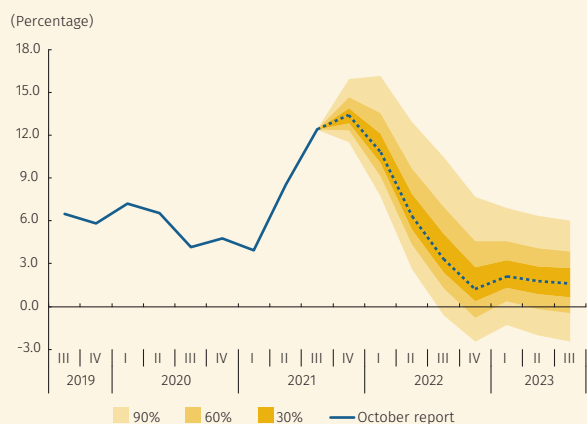
(Percentage)

90%   60%   30%   —— October report

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 central 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)

(Percentage)

90%   60%   30%   —— October report

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