MONETARY **POLICY REPORT**

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MONETARY **POLICY REPORT**

* Presented by the technical staff to the Board of Directors for its meeting on 30 April 2021.

Updated on 7 May 2021.

This new version incorporates the following boxes:

Box 1
The Transmission of Changes in the Monetary Policy Interest Rate (MPR) to Credit Institutions' Interest Rates (CI)
Box 2
Analysis of Macroeconomic Expectations implicit in Financial Market Instruments

In addition, it contains ortho-typographic corrections that do not alter the information previously introduced.

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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 business day. Additionally, the Monetary Policy Report (MPR)[4], produced by the Central Bank's technical staff, is published in January, April, July, and October, together with the minutes. On the Wednesday of the week following the Board meeting, the Governor clarifies concerns about the minutes, and the Bank's Deputy Technical Governor presents the MPR. This dissemination scheme[5] seeks to deliver relevant and up-to-date information to contribute to better decision-making by the agents of the economy.

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

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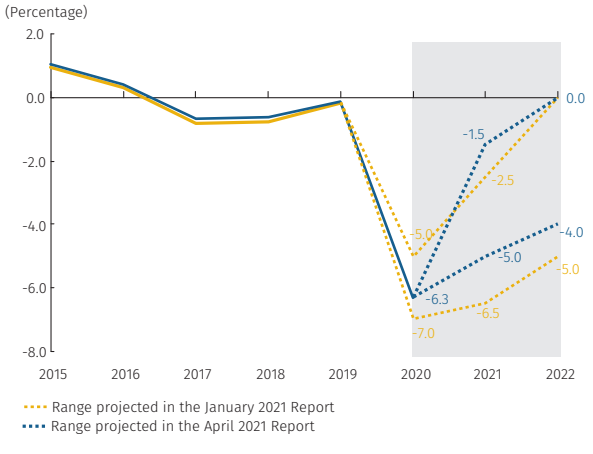
01 / Summary

1.1 Macroeconomic summary

Economic recovery has consistently outperformed the technical staff's expectations following a steep decline in activity in the second quarter of 2020. At the same time, total and core inflation rates have fallen and remain at low levels, suggesting that a significant element of the reactivation of Colombia's economy has been related to recovery in potential GDP. This would support the technical staff's diagnosis of weak aggregate demand and ample excess capacity. The most recently available data on 2020 growth suggests a contraction in economic activity of 6.8%, lower than estimates from January's *Monetary Policy Report* (-7.2%). High-frequency indicators suggest that economic performance was significantly more dynamic than expected in January, despite mobility restrictions and quarantine measures. This has also come amid declines in total and core inflation, the latter of which was below January projections if controlling for certain relative price changes. This suggests that the unexpected strength of recent growth contains elements of demand, and that excess capacity, while significant, could be lower than previously estimated. Nevertheless, uncertainty over the measurement of excess capacity continues to be unusually high and marked both by variations in the way different economic sectors and spending components have been affected by the pandemic, and by uneven price behavior. The size of excess capacity, and in particular the evolution of the pandemic in forthcoming quarters, constitute substantial risks to the macroeconomic forecast presented in this report.

Graph 1.1
Annual output gap (ranges)[a/]



a/ The historical output gap estimate is calculated as the difference between observed and potential (trend) GDP based on the 4GM model; the forecast gap is calculated as the difference between the technical staff's GDP estimate and potential (trend) GDP based on the 4GM model.

Despite the unexpected strength of the recovery, the technical staff continues to project ample excess capacity that is expected to remain on the forecast horizon, alongside core inflation that will likely remain below the target. Domestic demand remains below 2019 levels amid unusually significant uncertainty over the size of excess capacity in the economy (Graph 1.1). High national unemployment (14.6% for February 2021) reflects a loose labor market, while observed total and core inflation continue to be below 2%. Inflationary pressures from the exchange rate are expected to continue to be low, with relatively little pass-through on inflation. This would be compatible with a negative output gap. Excess productive capacity and the expectation of core inflation below the 3% target on the forecast horizon provide a basis for an expansive monetary policy posture.

The technical staff's assessment of certain shocks and their expected effects on the economy, as well as the

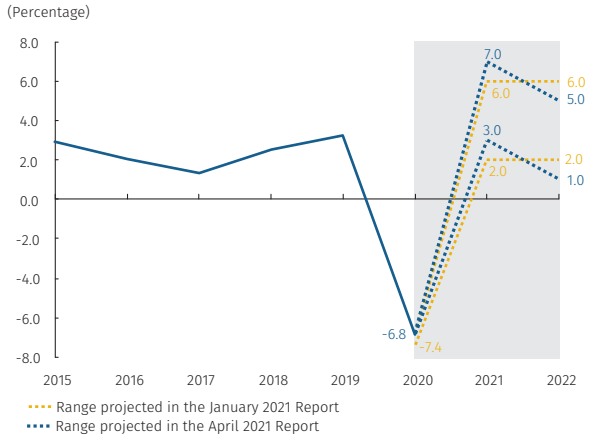
presence of several sources of uncertainty and related assumptions about their potential macroeconomic impacts, remain a feature of this report. The coronavirus pandemic, in particular, continues to affect the public health environment, and the reopening of Colombia's economy remains incomplete. The technical staff's assessment is that the COVID-19 shock has affected both aggregate demand and supply, but that the impact on demand has been deeper and more persistent. Given this persistence, the central forecast accounts for a gradual tightening of the output gap in the absence of new waves of contagion, and as vaccination campaigns progress. The central forecast continues to include an expected increase of total and core inflation rates in the second quarter of 2021, alongside the lapse of the temporary price relief measures put in place in 2020. Additional COVID-19 outbreaks (of uncertain duration and intensity) represent a significant risk factor that could affect these projections. Additionally, the forecast continues to include an upward trend in sovereign risk premiums, reflected by higher levels of public debt that in the wake of the pandemic are likely to persist on the forecast horizon, even in the context of a fiscal adjustment. At the same time, the projection accounts for the short-term effects on private domestic demand from a fiscal adjustment along the lines of the one currently being proposed by the national government. This would be compatible with a gradual recovery of private domestic demand in 2022. The size and characteristics of the fiscal adjustment that is ultimately implemented, as well as the corresponding market response, represent another source of forecast uncertainty.

Newly available information offers evidence of the potential for significant changes to the macroeconomic scenario, though without altering the general diagnosis described above. The most recent data on inflation, growth, fiscal policy, and international financial conditions suggests a more dynamic economy than previously expected. However, a third wave of the pandemic has delayed the re-opening of Colombia's economy and brought with it a deceleration in economic activity. Detailed descriptions of these considerations and subsequent changes to the macroeconomic forecast are presented below.

The expected annual decline in GDP (-0.3%) in the first quarter of 2021 appears to have been less pronounced than projected in January (-4.8%). Partial closures in January to address a second wave of COVID-19 appear to have had a less significant negative impact on the economy than previously estimated. This is reflected in figures related to mobility, energy demand, industry and retail sales, foreign trade, commercial transactions from selected banks, and the national statistics agency's (DANE) economic tracking indicator (ISE). Output is now expected to have declined annually in the first quarter by 0.3%. Private consumption likely continued to recover, registering levels somewhat above those from the previous year, while public consumption likely increased significantly. While a recovery in investment in both housing and in other buildings and structures is expected, overall investment levels in this case likely continued to be low, and gross fixed capital formation is expected to continue to show significant annual declines. Imports likely recovered to again outpace exports, though both are expected to register significant annual declines.

Economic activity that outpaced projections, an increase in oil prices and other export products, and an expected increase in public spending this

Graph 1.2
Annual GDP
(annual change)



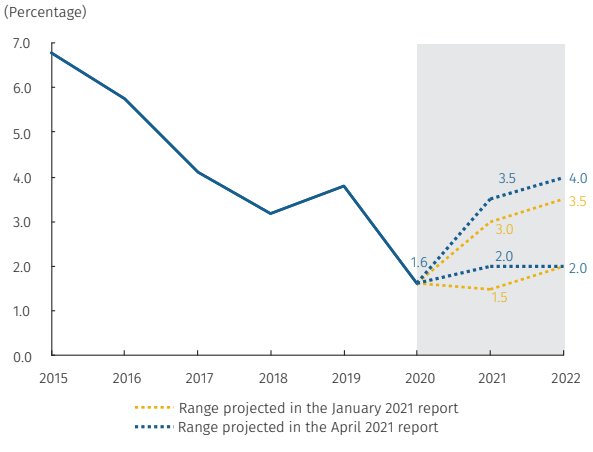
Source: DANE; calculations and projections by *Banco de la República*.

year account for the upward revision to the 2021 growth forecast (from 4.6% with a range between 2% and 6% in January, to 6.0% with a range between 3% and 7% in April). As a result, the output gap is expected to be smaller and to tighten more rapidly than projected in the previous report, though it is still expected to remain in negative territory on the forecast horizon. Wide forecast intervals reflect the fact that the future evolution of the COVID-19 pandemic remains a significant source of uncertainty on these projections (Graph 1.2). The delay in the recovery of economic activity as a result of the resurgence of COVID-19 in the first quarter appears to have been less significant than projected in the January report. The central forecast scenario expects this improved performance to continue in 2021 alongside increased consumer and business confidence. Low real interest rates and an active credit supply would also support this dynamic, and the overall conditions would be expected to spur a recovery in consumption and investment. Increased growth in public spending and public works based on the national government's spending plan (*Plan Financiero del Gobierno*) are other factors to consider. Additionally, an expected recovery in global demand and higher projected prices for oil and coffee would further contribute to improved external revenues and would favor investment, in particular in the oil sector. Given the above, the technical staff's 2021 growth forecast has been revised upward from 4.6% in January (range from 2% to 6%) to 6.0% in April (range from 3% to 7%). These projections account for the potential for the third wave of COVID-19 to have a larger and more persistent effect on the economy than the previous wave, while also supposing that there will not be any additional significant waves of the pandemic and that mobility restrictions will be relaxed as a result. Economic growth in 2022 is expected to be 3%, with a range between 1% and 5%. This figure would be lower than projected in the January report (3.6% with a range between 2% and 6%), due to a higher base of comparison given the upward revision to expected GDP in 2021. This forecast also takes into account the likely effects on private demand of a fiscal adjustment of the size currently being proposed by the national government, and which would come into effect in 2022. Excess in productive capacity is now expected to be lower than estimated in January but continues to be significant and affected by high levels of uncertainty, as reflected in the wide forecast intervals. The possibility of new waves of the virus (of uncertain intensity and duration) represents a significant downward risk to projected GDP growth, and is signaled by the lower limits of the ranges provided in this report.

Inflation (1.51%) and inflation excluding food and regulated items (0.94%) declined in March compared to December, continuing below the 3% target. The decline in inflation in this period was below projections, explained in large part by unanticipated increases in the costs of certain foods (3.92%) and regulated items (1.52%). An increase in international food and shipping prices, increased foreign demand for beef, and specific upward

pressures on perishable food supplies appear to explain a lower-than-expected deceleration in the consumer price index (CPI) for foods. An unexpected increase in regulated items prices came amid unanticipated increases in international fuel prices, on some utilities rates, and for regulated education prices. The decline in annual inflation excluding food and regulated items between December and March was in line with projections from January, though this included downward pressure from a significant reduction in telecommunications rates due to the imminent entry of a new operator. When controlling for the effects of this relative price change, inflation excluding food and regulated items exceeds levels forecast in the previous report. Within this indicator of core inflation, the CPI for goods (1.05%) accelerated due to a reversion of the effects of the VAT-free day in November, which was largely accounted for in February, and possibly by the transmission of a recent depreciation of the peso on domestic prices for certain items (electric and household appliances). For their part, services prices decelerated and showed the lowest rate of annual growth (0.89%) among the large consumer baskets in the CPI. Within the services basket, the annual change in rental prices continued to decline, while those services that continue to experience the most significant restrictions on returning to normal operations (tourism, cinemas, nightlife, etc.) continued to register significant price declines. As previously mentioned, telephone rates also fell significantly due to increased competition in the market.

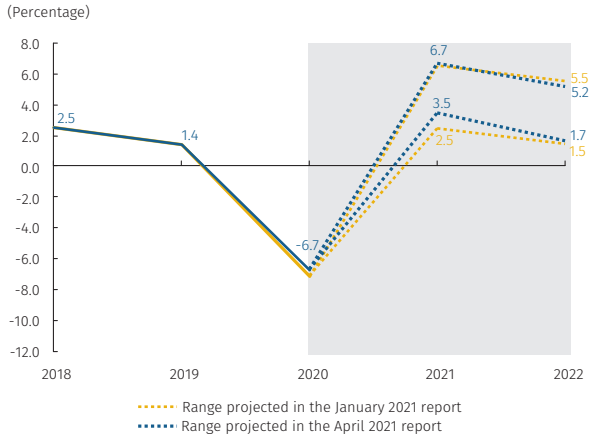
Graph 1.3
Consumer price index (CPI), annual ranges
(end-of-period; annual change)



Source: *Banco de la República.*

Headline inflation is expected to continue to be affected by ample excesses in productive capacity for the remainder of 2021 and 2022, though less so than projected in January. As a result, convergence to the inflation target is now expected to be somewhat faster than estimated in the previous report, assuming the absence of significant additional outbreaks of COVID-19 (Graph 1.3). The technical staff's year-end inflation projections for 2021 and 2022 have increased, suggesting figures around 3% due largely to variation in food and regulated items prices. The projection for inflation excluding food and regulated items also increased, but remains below 3%. Price relief measures on indirect taxes implemented in 2020 are expected to lapse in the second quarter of 2021, generating a one-off effect on prices and temporarily affecting inflation excluding food and regulated items. However, indexation to low levels of past inflation, weak demand, and ample excess productive capacity are expected to keep core inflation below the target, near 2.3% at the end of 2021 (previously 2.1%). The reversion in 2021 of the effects of some price relief measures on utility rates from 2020 should lead to an increase in the CPI for regulated items in the second half of this year. Annual price changes are now expected to be higher than estimated in the January report due to an increased expected path for fuel prices and unanticipated increases in regulated education prices. The projection for the CPI for foods has increased compared

Graph 1.4
Trade partners' real annual GDP
(annual change; yearly projection)

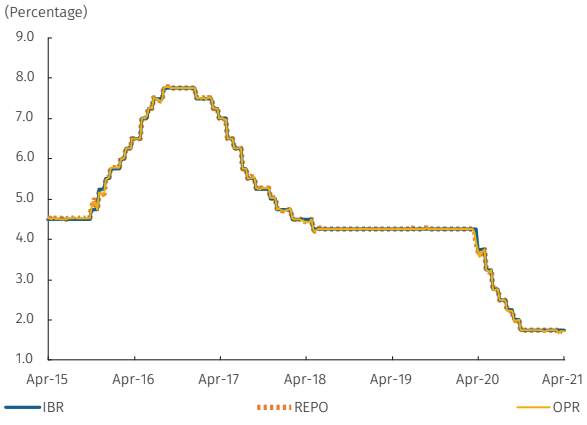


Sources: Bloomberg, statistics offices, and central banks; calculations and projections by *Banco de la República*.

to the previous report, taking into account certain factors that were not anticipated in January (a less favorable agricultural cycle, increased pressure from international prices, and transport costs). Given the above, year-end annual inflation for 2021 and 2022 is now expected to be 3% and 2.8%, respectively, which would be above projections from January (2.3% and 2,7%). For its part, expected inflation based on analyst surveys suggests year-end inflation in 2021 and 2022 of 2.8% and 3.1%, respectively. There remains significant uncertainty surrounding the inflation forecasts included in this report due to several factors: 1) the evolution of the pandemic; 2) the difficulty in evaluating the size and persistence of excess productive capacity; 3) the timing and manner in which price relief measures will lapse; and 4) the future behavior of food prices.

Projected 2021 growth in foreign demand (4.4% to 5.2%) and the supposed average oil price (USD 53 to USD 61 per Brent benchmark barrel) were both revised upward. An increase in long-term international interest rates has been reflected in a depreciation of the peso and could result in relatively tighter external financial conditions for emerging market economies, including Colombia. Average growth among Colombia's trade partners was greater than expected in the fourth quarter of 2020. This, together with a sizable fiscal stimulus approved in the United States and the onset of a massive global vaccination campaign, largely explains the projected increase in foreign demand growth in 2021 (Graph 1.4). The resilience of the goods market in the face of global crisis and an expected normalization in international trade are additional factors. These considerations and the expected continuation of a gradual reduction of mobility restrictions abroad suggest that Colombia's trade partners could grow on average by 5.2% in 2021 and around 3.4% in 2022. The improved prospects for global economic growth have led to an increase in current and expected oil prices. Production interruptions due to a heavy winter, reduced inventories, and increased supply restrictions instituted by producing countries have also contributed to the increase. Meanwhile, market forecasts and recent Federal Reserve pronouncements suggest that the benchmark interest rate in the U.S. will remain stable for the next two years. Nevertheless, a significant increase in public spending in the country has fostered expectations for greater growth and inflation, as well as increased uncertainty over the moment in which a normalization of monetary policy might begin. This has been reflected in an increase in long-term interest rates. In this context, emerging market economies in the region, including Colombia, have registered increases in sovereign risk premiums and long-term domestic interest rates, and a depreciation of local currencies against the dollar. Recent outbreaks of COVID-19 in several of these economies; limits on vaccine supply and the slow pace of immunization campaigns in some countries; a significant increase in public debt; and tensions

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



a/IBR: interbank rate
Repo: policy interest rate
OPR: overnight policy rate (1-day repo)
Source: Office of the Financial Superintendent of Colombia and *Banco de la República.*

between the United States and China, among other factors, all add to a high level of uncertainty surrounding interest rate spreads, external financing conditions, and the future performance of risk premiums. The impact that this environment could have on the exchange rate and on domestic financing conditions represent risks to the macroeconomic and monetary policy forecasts.

Domestic financial conditions continue to favor recovery in economic activity. The transmission of reductions to the policy interest rate on credit rates has been significant. The banking portfolio continues to recover amid circumstances that have affected both the supply and demand for loans, and in which some credit risks have materialized. Preferential and ordinary commercial interest rates have fallen to a similar degree as the benchmark interest rate. As is generally the case, this transmission has come at a slower pace for consumer credit rates, and has been further delayed in the case of mortgage rates (see Box 1 of this report)[1]. Commercial credit levels stabilized above pre-pandemic levels in March, following an increase resulting from significant liquidity requirements for businesses in the second quarter of 2020. The consumer credit portfolio continued to recover and has now surpassed February 2020 levels, though overall growth in the portfolio remains low. At the same time, portfolio projections and default indicators have increased, and credit establishment earnings have come down. Despite this, credit disbursements continue to recover and solvency indicators remain well above regulatory minimums.

1.2 Monetary policy decision

In its meetings in March and April the BDBR left the benchmark interest rate unchanged at 1.75% (Graph 1.5).

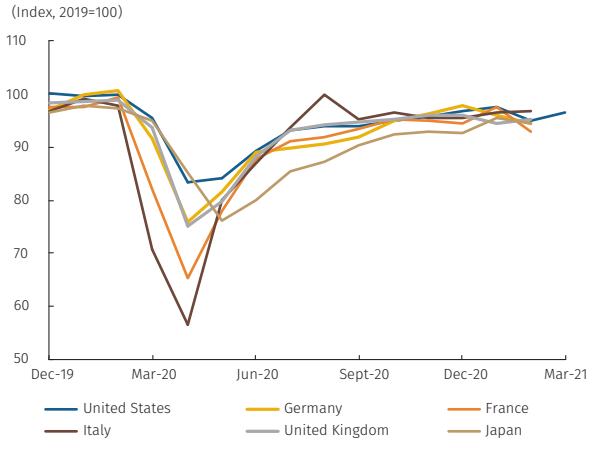
1 This supplement will be made available on Friday, May 7, 2021.

02/ Macroeconomic Projections and Risk Analysis

Graph 2.1
Major Economies Industrial Production and Global Trade Indicators

A. Real global exports and shipping container traffic

B. Industrial Production in Selected Major Economies



Sources: Institute of Shipping Economics and Logistics, CPB Netherlands Bureau for Economic Policy Analysis, and Bloomberg.

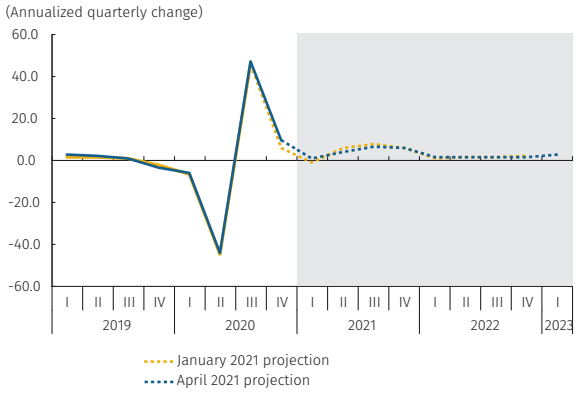
2.1 International Outlook

Current international conditions suggest an improvement in global economic prospects on the forecast horizon. However, until COVID-19 has been brought fully under control, a resurgence of the pandemic, alongside significant volatility and a weakening of the external factors that affect Colombia's economy, cannot be discounted. Positive forecasts in China and the United States are expected to drive an improvement in global economic performance. The industrial sector, the global trade of goods, and commodities prices have all shown a degree of resilience despite additional waves of the coronavirus in some parts of the world (Graph 2.1). Vaccination campaigns should also help improve the global economic outlook, though only a select group of countries has made significant progress on this front to date, which could lead to some disparities in the pace of global economic recovery. As a reflection of improved global economic prospects, oil prices and Colombia's external demand are both expected to be higher than forecast in the previous report. Meanwhile, major developed economies' central banks have suggested they will keep financial support measures in place until long-term objectives have been reached. This report assumes that the U.S. Federal Reserve's current policy interest rate will be held until the end of 2022. Nevertheless, rising long-term interest rates in the United States could portend tighter external financing conditions for emerging markets. Uncertainty regarding international economic conditions continues to be high in general, the result of a recent uptick in COVID-19 cases in some parts of the world, the propagation of new variants of the virus, and the relatively slow pace of vaccination in many counties amid global supply restrictions. International financing conditions could become less favorable should the United States normalize its monetary policy earlier than expected, which could also add to the lag in economic recovery in many of the emerging markets that have accumulated macroeconomic deficits.

2.1.1 Foreign Demand

The economies of Colombia's trade partners are expected to grow by 5.2% this year and 3.4% in 2022. Fourth-quarter GDP results among Colombia's main trade partners showed a larger-than-expected recovery at the end of 2020 compared to projections from the previous report. Latin American and Caribbean countries continued to reopen their economies in this period, even as the United

Graph 2.2
Trade Partners' Assumed Real Quarterly GDP (Annualized Quarterly Change; Projections Based on Assumption for the Full Year)



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

Table 2.1
Trade Partner Growth[a/]

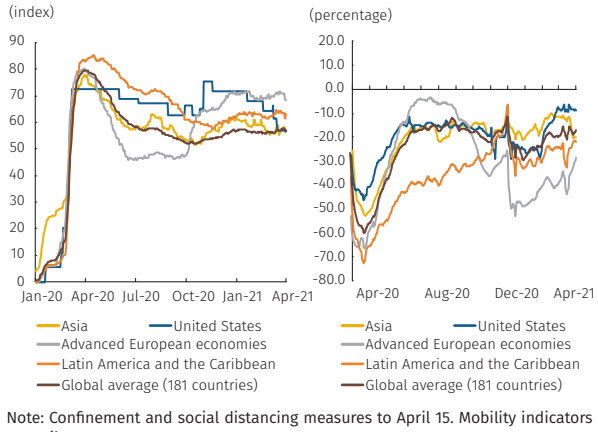
Main trade partners	2019 (pr)	2020 (pr)	2021 (proj)	2022 (proj)
United States	2.2	-3.5	6.3	3.6
euro zone	1.3	-6.8	4.3	4.1
China	6.0	2.3	8.4	5.5
Ecuador	0.0	-7.8	3.0	2.6
Brazil	1.4	-4.4	3.3	2.5
Peru	2.2	-11.1	9.2	4.7
Mexico	-0.1	-8.5	4.7	2.9
Chile	1.1	-6.0	5.9	3.4
All trade partners [/a]	1.4	-6.7	5.2	3.4

(pr): preliminary.
(proj): projected.
a/ Main trade partners excluding Venezuela. Calculations based on non-traditional trade participation.
Sources: Bloomberg, Focus Economics, statistics offices and central banks (observed data); *Banco de la República* (projections and calculations)..

Graph 2.3
Confinement and Population Mobility Indicators

A. Index of social distancing and quarantine measures

B. Trips to restaurants, malls, movie theaters, etc.



Note: Confinement and social distancing measures to April 15. Mobility indicators to April 24.
Sources: Google and Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips, and Beatriz Kira (2020). Oxford COVID-19 Government Response Tracker, Blavatnik School of Government. Usage rights: Creative Commons Attribution CC BY standard; calculations by *Banco de la República*.

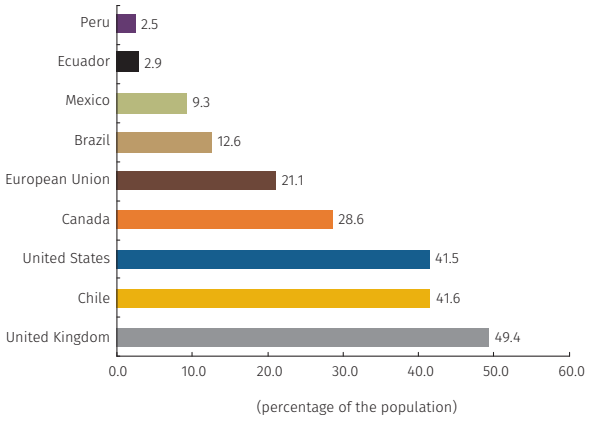
States and especially the euro zone were affected by new waves of the virus. Overall, Colombia's trade partners average year-end GDP was somewhat above projections from the January report (Graph 2.2), though the figures remained below pre-pandemic levels. A reactivation of economic activity likely stalled in early 2021 due to an intensification of the COVID-19 pandemic in several countries and the propagation of new strains of the virus, which led to increased quarantine restrictions among several of Colombia's trade partners (Graph 2.3). Nevertheless, economic recovery in 2021 is now expected to be more significant than projected in the January report, in large part due to higher-than-expected growth forecasts in the United States (Table 2.1) as a result of significant fiscal stimulus and a positive outlook for the country's vaccination campaign. An upward revision on growth figures in the region, particularly in Chile (which has had a successful vaccination campaign) and Mexico (thanks to likely benefits from its trade ties with the U.S.), would also be reflected in this change. The technical staff continues to expect positive performance in external demand (3.4%) in 2022, as the virus comes increasingly under control. This forecast would nonetheless include significant disparities between countries and economic sectors, due to differences in the impact and evolution of the pandemic. Uncertainty in general remains high[2]. Downward projection risks would include an intensification of the pandemic, the massive propagation of new strains of the virus, and delays in vaccination campaigns. International trade tensions that are more persistent or that impart more significant negative effects on the global economy than expected would also be a factor. Upward risks to the projection would be associated primarily with economic reopening that comes faster than expected thanks to increased control over the virus.

The expected recovery in the United States this year will likely surpass that of other advanced economies, thanks in part to a larger fiscal stimulus and progress in its vaccination campaign. Through the third week of April, close to 40% of the U.S. population had received at least one dose of a coronavirus vaccine (Graph 2.4), likely boosting the country's control over the pandemic and allowing for a relaxation in social distancing measures. Together with a $1.9 trillion fiscal stimulus that was approved in March and expansive monetary policy, progress in addressing COVID-19 appears to have contributed to the U.S. recovery and an improvement in its economic outlook. In March the U.S. unemployment rate fell to 6.0% and consumer confidence (Graph 2.5) increased, both of which would be expected to favor private consumption[3]. Fiscal support

2 Growth among Colombia's trade partners is expected to average between 3.5% and 6.7% in 2021, and between 1.7% and 5.2% in 2022.

3 Real retail sales grew month-on-month in March by 9.1%, after a decline in February (-3.2%).

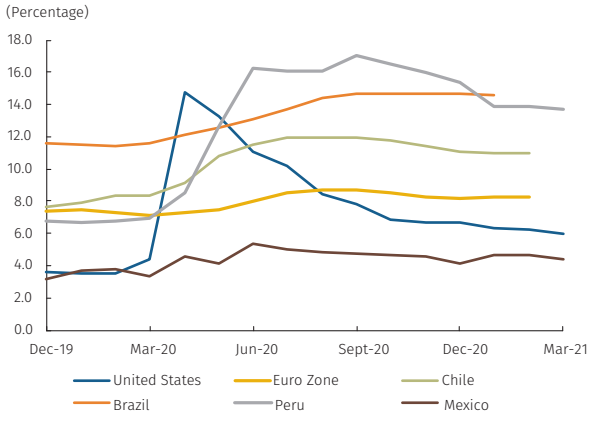
Graph 2.4
Vaccination Coverage (at least one dose) in Selected Countries



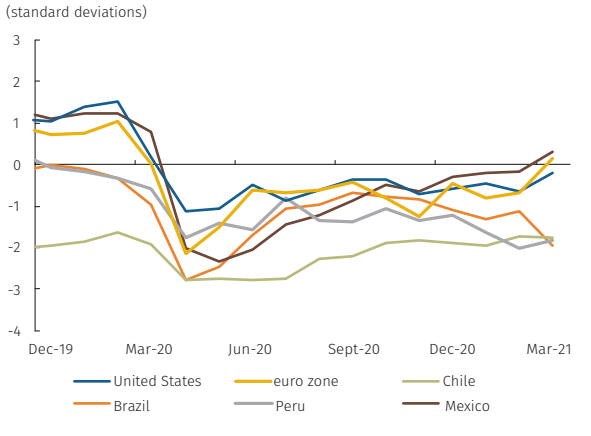
Note: data consulted April 24, 2021.
Sources: Our World in Data.

Graph 2.5
Unemployment Rate and Consumer Confidence for Selected Trade Partners

A. Unemployment rate



B. Consumer confidence indicators



Sources: INEGI, BIE, CIF, FVG IBRE, UDD, Fedesarrollo, APOYO, University of Michigan, European Commission, and Bloomberg; calculations by *Banco de la República*.

measures have also increased real available income and savings rates, factors that could drive aggregate demand in the future. Industrial production in March increased by 1.4% compared to February and business conditions (PMI) ended the period above the threshold. As a result, despite limited quarterly growth in the first quarter due in part to an intensification of the pandemic at the beginning of the year, the U.S. recovery is expected to accelerate in forthcoming quarters[4]. The possible approval of a new infrastructure plan and modifications to the tax system would also have considerable economic implications. By contrast, the roll-out of the vaccination campaign in the euro zone has been slow and several of those countries have had difficulty in controlling the virus. As a result, social distancing measures have been put in place or expanded in several European countries in recent weeks (Graph 2.3). This is likely to be reflected in economic indicators in the first quarter and at least part of the second. Future recovery in the bloc is expected to be supported by an extension of fiscal and monetary stimulus, as well as by further economic reopening in the second half of the year as the pace of the vaccination campaign improves. Uncertainty about economic growth in the euro zone continues to be high due to risks associated with the pandemic and new variants of the virus, as well as due to political and trade tensions, among other factors.

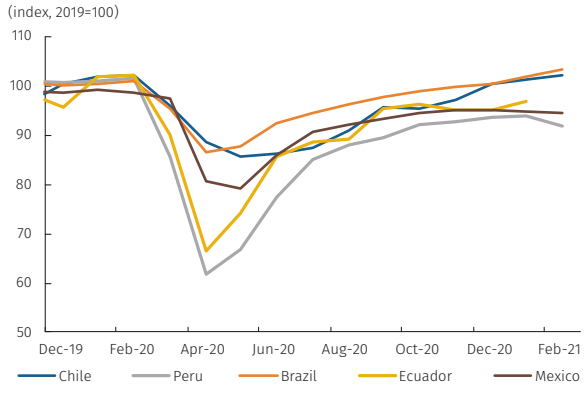
Annual growth in China is expected to accelerate in 2021. Real GDP growth in China recovered significantly in annual terms in the first quarter (18.3%), though quarterly growth fell to 0.6% from 3.2% in the last quarter of 2020. This was likely the result primarily of new COVID-19 mobility restrictions related to Chinese New Year celebrations. China continues to show success in controlling the pandemic and has made significant progress in its vaccination program. In March, headline inflation (0.4%) and core inflation (0.3%) increased, though to levels still below the central bank's target (3.0%). Domestic demand could continue to improve thanks to a strengthening in consumption[5], public investment, and monetary stimulus. Economic activity is likely to be driven by external factors alongside the improved outlook for global growth. Uncertainty over China's growth trajectory continues to be high not only due to COVID-19, but also to political and trade tensions with other countries. Additionally, according to the International Monetary Fund (IMF) China's projected stimulus plan aimed at driving economic recovery could increase the country's financial vulnerabilities

4 As this report went to press, preliminary GDP figures from the United States showed 6.4% quarterly annualized growth in the first quarter of 2021. Compared to the same period from the previous year, growth was 0.4%.

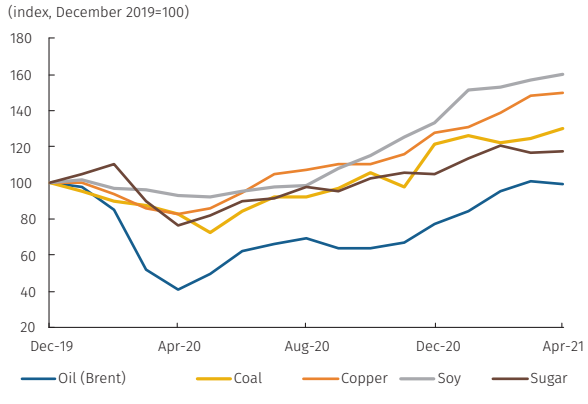
5 There has been an increase in consumer confidence in recent months to levels close to those observed before the pandemic, and a survey of China's unemployment rate suggests a reduction in March to 5.3% (compared to 5.5% in February).

Graph 2.6
Economic Activity and Prices on Selected Commodities Exports for Countries in the Region

A. Monthly economic activity indicator

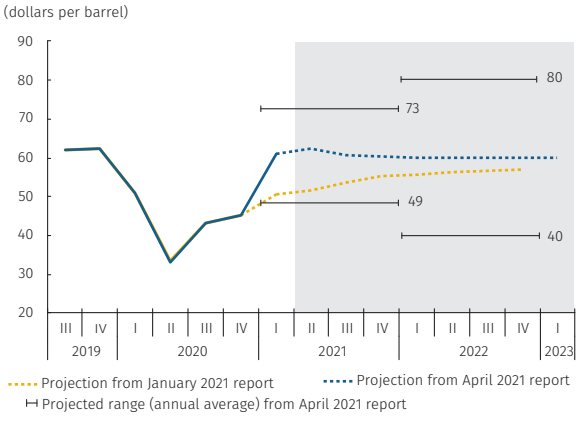


B. Export commodities prices [a/]



a/ April 2021 figure corresponds to average through April 23.
Sources: Bloomberg and Datastream; calculations by *Banco de la República*.

Graph 2.7
International Oil Price (Brent)
(quarterly average; quarterly assumption)



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

by significantly increasing public and corporate debt, the latter of which would be driven in part by an increased participation of economic agents with a higher credit risk. **Foreign demand is expected to improve among Colombia's main trade partners in Latin America and the Caribbean, though many of these countries continue to face difficulties in controlling the pandemic. A partial recovery in GDP in these countries is expected in 2021.** Several Latin American and Caribbean countries have faced new waves of the COVID-19 pandemic this year and, with the exception of Chile, have been relatively slow in progressing with national vaccination campaigns (Graph 2.4). As a result, authorities in several countries have implemented increased quarantine measures or delayed economic reopening, reducing population mobility (Graph 2.3) in a way that could affect recovery, at least in the short term (Graph 2.5, Panel A). Some countries in the region continue to face high unemployment rates and consumer confidence that remains below pre-pandemic levels (Graph 2.5). Several also face limited fiscal space and/or room to implement more expansive monetary policies. Nevertheless, these countries are likely to benefit from more favorable external conditions than were projected in the last report. The improved outlook for global economic growth, driven in large part by the United States and China, would be expected to favor external demand, especially for countries with significant trade ties with those countries, such as Mexico. The improved outlook has also contributed to an increase in some commodities prices (Graph 2.6, Panel B), such as copper and oil, which would benefit exporting countries. Some of these economies could also continue to benefit from remittance flows from workers abroad. The outlook for Colombia's trade partners in the region remains surrounded by a high degree of uncertainty due to the potential for additional waves of the pandemic and new strains of the virus, increased public debt loads, tighter international financial conditions, and other factors.

2.1.2 International Prices

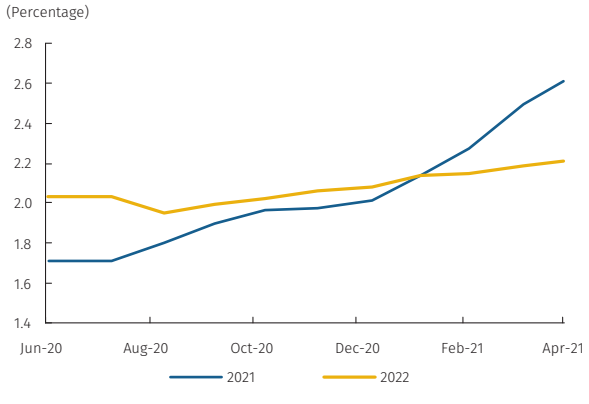
Oil prices (Brent) are expected to average $61 per barrel (bl) in 2021 and $60/bl in 2022, both upward revisions from the January report (Graph 2.7). Higher expected oil prices moving forward have been driven by an unanticipated price increase in the first quarter of 2021 and demand factors that will likely favor the price forecast, including higher U.S. and China growth projections, resilience in manufacturing and global trade, and expectations for a stronger global economy thanks to increased control over the pandemic and progress in national vaccination programs. More significant increases in international oil prices are expected to be limited by continued effects on demand, at least in the short term, and by new waves of the virus that could restrict economic recovery

in places such as India, Brazil, and Europe, all of which are significant hydrocarbons consumers. On the supply side, oil prices have benefited from cuts by the Organization of Petroleum Exporting Countries and its allies (OPEC+), as well as from the slow pace of recovery in production in other countries, such as the United States. OPEC+ is expected to continue to soften production cuts as the demand outlook improves. Other producers are also expected to increase production, partly in response to higher observed prices. Based on the above, Brent is now expected to average $61/bl in 2021 and $60/bl in 2022. This marks an upward revision to expected oil prices that would contribute to a more significant recovery in Colombia's terms of trade, with positive effects on national revenues, the balance of trade, and fiscal accounts. Nevertheless, uncertainty continues to be high[6], as the speed with which supply and demand shocks currently affecting the oil market can be fully overcome remains unknown. Upward risks to the projected oil price would be associated with a faster-than-expected recovery in the global economy and with more significant OPEC+ production cuts, leading to a tighter market. Downward projection risks would include new outbreaks of the virus or a slow pace of vaccination that significantly affects the reopening of major economies, a faster response in crude extraction in the United States and other producers as prices increase, and an inability on the part of OPEC+ countries to maintain production agreements amid significant idle production capacity and geopolitical developments that could affect supply.

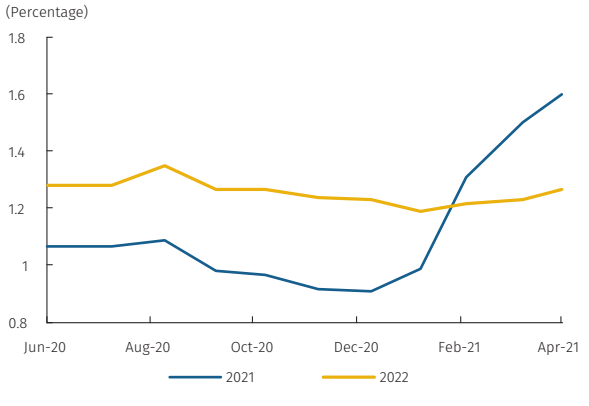
Expected headline inflation in the U.S. has increased to above 2.0% for 2021 and 2022. Headline inflation in the U.S. in March was 2.6% and core inflation was 1.6%, higher than the 1.7% and 1.3% registered in February, respectively. Fuel prices contributed significantly to headline inflation, in line with increased oil prices. Expected inflation for 2021 and 2022 has risen to above 2.0% (Graph 2.8, Panel A), amid potential yearly increases in some commodities prices and a more significant recovery in demand as the result of fiscal stimulus. Progress in the country's vaccination campaign and a recovering (though still loose) labor market are also factors to consider. As the gradual reopening of the economy continues in coming months, bottlenecks in supply and a low basis of comparison from 2020 could bring about temporary increases in inflation. Meanwhile, overall annual inflation in the euro zone accelerated from 0.9% in February to 1.3% in March, due primarily to dynamics in energy prices. Core inflation fell for the second consecutive month from 1.1% to 0.9%, in part suggesting weak economic activity and excess productive capacity. Expected inflation for 2021 and 2022 has increased, though in both cases remains below 2.0% (Graph 2.8, Panel B). Among the risk factors that could contribute

Graph 2.8
Expected Average Annual Headline inflation in Select Advanced Economies

A. United States



B. Euro zone

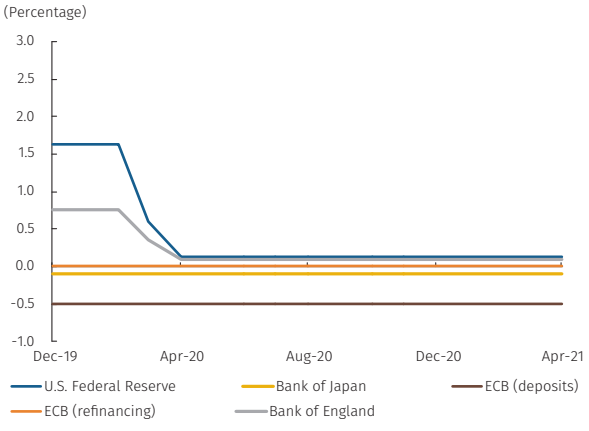


Source: Bloomberg; the survey figure corresponds to the average considered on the last day of the month. The figure for April corresponds to the 23rd of the month.

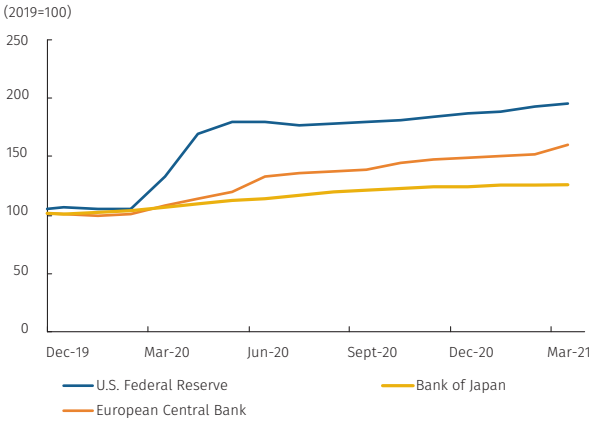
6 The range for average expected oil prices in 2021 is between $49/bl and $73/bl, and for 2022 is between $40/bl and $80/bl.

Graph 2.9
Monetary Policy in Selected Advanced Economies

A. Benchmark interest rates [a/]

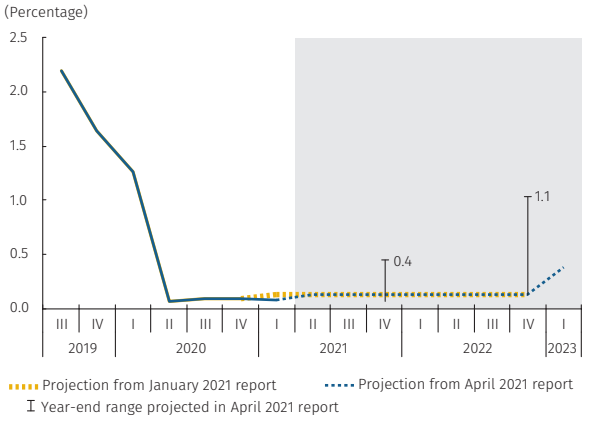


B. Balance sheets (total assets)



a/ The figure for April corresponds to the 23rd of the month.
Sources: U.S. Federal Reserve, European Central Bank, and Bloomberg.

Graph 2.10
Federal Reserve Interest Rate
(quarterly average; quarterly assumption)



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

to higher inflation in these advanced economies on the forecast horizon are additional increases in international commodities prices, primarily in foods and oil, more long-lasting interruptions in supply chains, and a recovery in aggregate demand that is faster than expected.

2.1.3 Global Financial Conditions

Advanced economy central banks have continued to supply ample liquidity so far this year, alongside low policy interest rates and unconventional policy measures (Graph 2.9). In its meeting on March 17, the Federal Open Market Committee (FOMC) held its benchmark interest rate between 0.0% and 0.25%, in line with the technical staff's expectations[7]. The Fed reiterated its long-term objectives of full employment and average inflation of 2.0% and signaled that it expects to retain an expansive monetary policy stance until those objectives are reached. The Fed also expects to continue increasing its monthly asset holdings by at least $120 billion, including $80 billion in U.S. treasury bonds, until substantial progress toward those long-term objectives is achieved. The Fed has signaled that it considers this approach to be appropriate despite a steepening curve for treasury bonds. The Fed's governor signaled that the bank will not act in a preventive manner based on forecasts, but rather will wait to make monetary policy changes once economic results in line with its objectives have been observed, which is not expected in the short term. For its part, the European Central Bank (ECB) in its meeting on April 22 confirmed its expansive monetary policy stance, holding interest rates and announcing that it would speed up the pace of net asset purchases this quarter compared to the first months of the year, under the aegis of its pandemic emergency purchasing program (PEPP).

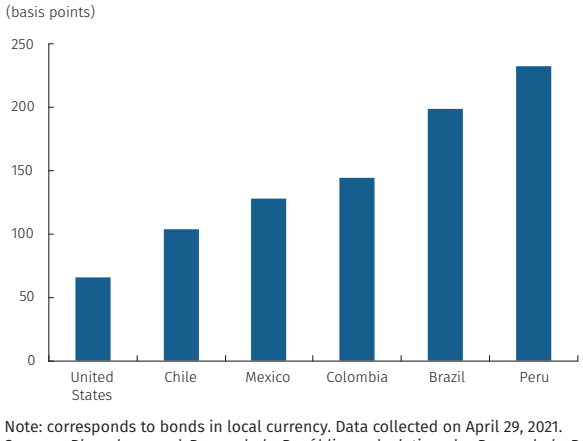
The Fed's monetary policy interest rate is expected to remain stable in 2021 and 2022, with a more significant increase toward the end of the forecast horizon (Graph 2.10). The FOMC's recent decisions have come amid an increase in long-term interest rates on U.S. treasury bonds, expected inflation above 2%, and an improved outlook for growth and employment. According to the U.S.' current monetary policy framework, the Federal Reserve is prepared to allow for inflation above 2.0% for a limited period. This, together with a weak labor market, would allow for the Fed to maintain monetary policy stimulus with the goal of reaching full employment and average inflation of 2%. In taking this and the U.S. central bank's forward guidance into account, this report assumes stability in the country's monetary policy in 2021 and 2022, with a first increase in the policy interest rate toward the

7 At the publication of this report the FOMC in its April 28 meeting held the interest rate range on federal funds unaltered, in line with the technical staff's expectations.

end of the forecast horizon. This assumption also considers information from diverse market surveys, projections from members of the FOMC, surveys conducted by the central bank, and information derived from futures markets. Nevertheless, increased fiscal stimulus or a faster economic reopening, for example, could lead to inflation, employment, and growth coming more quickly in line with the Federal Reserve's long-term objectives than expected. If this were to happen, a normalization in monetary policy (balance sheet and interest rate) could come sooner than anticipated and would suggest less favorable external financing conditions for Colombia[8]. Emerging market economies' varying degrees of vulnerability to this risk depend on several factors, including net external position, financing sources and structures, fiscal position, and inflation and economic recovery outlooks.

The increase in long-term interest rates in the United States could lead to tighter external financing conditions on the forecast horizon. Between early January and the end of March, the spread between the 10- and two-year zero-coupon rate on U.S. treasury bonds increased by around 79 basis points (bp), following increases in 83 bp and 4 bp in the 10- and two-year rates, respectively. This came in the context of significant fiscal stimulus, higher expected inflation and economic growth, and uncertainty over the evolution of the economy. This period also brought observed increases in major stock index valuations, while risk perception indices for developed countries (VIX and VSTOXX) averaged lower levels than in the fourth quarter of 2020. Through April 23, several countries in Latin America and the Caribbean have also seen increases on the long end of public debt yield curves (Graph 2.11). According to the Institute of International Finance (IIF), capital flows to emerging markets weakened in March. At the writing of this report, 10-year interest rates on U.S. treasury bonds were above levels observed at the beginning of the year, with some analysts suggesting that they could continue to increase on the forecast horizon. Uncertainty remains high, and factors such as the increase in debt and the public deficit, resulting from fiscal stimulus in the United States, could put pressure on the global loanable funds market. At the same time, changes in U.S. tax policy could have an effect on equity markets. Finally, disparities in economic recovery among advanced and emerging markets, as well as geopolitical tensions and other factors, could also negatively affect international financial conditions.

Graph 2.11
Zero-Coupon Rates on 10-Year Sovereign Bonds
(change from January 4 to April 23)

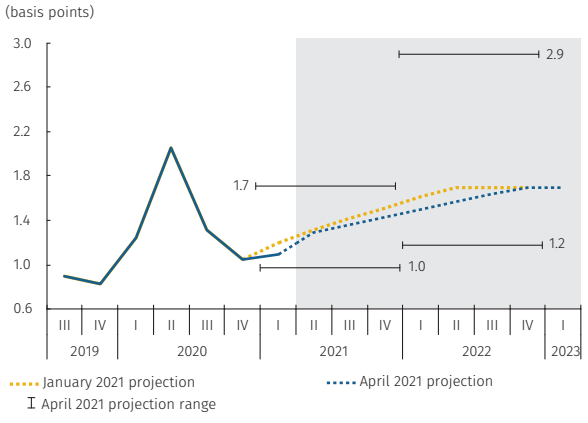


Note: corresponds to bonds in local currency. Data collected on April 29, 2021.
Sources: Bloomberg and *Banco de la República*; calculations by *Banco de la República*.

The projected risk premium has been revised downward on the forecast horizon from the previous report but remains on an upward trajectory and is expected to

8 This expectation assumes a Federal Reserve policy rate at the end of 2021 between 0.1% and 0.4%, and between 0.1% and 1.1% at the end of 2022 (Graph 2.10).

Graph 2.12
Assumed Quarterly Risk Premium for Colombia [a/]
(quarterly average; quarterly assumption)

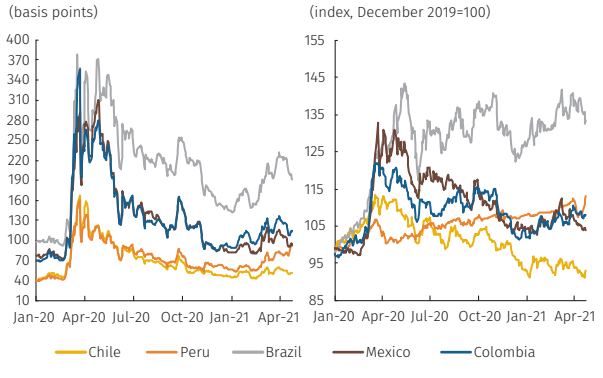


a/ Corresponds to 5-year credit default swaps.
Source: Bloomberg; calculations and projections by *Banco de la República.*

Graph 2.13
Nominal Exchange Rate and Risk Premium for Selected Latin American Countries

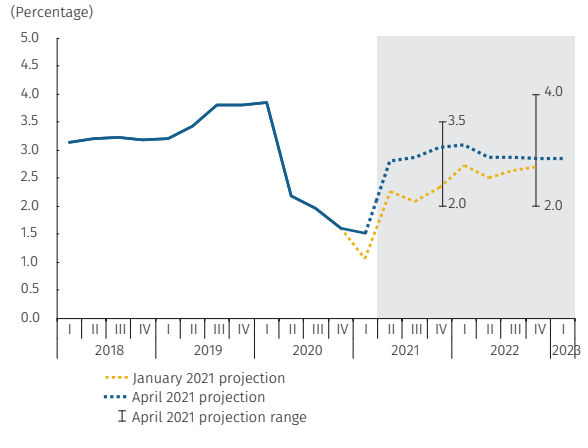
A. Five-year credit default swaps

B. Nominal exchange rate



Note: Figures to April 23, 2021.
Source: Bloomberg; calculations by *Banco de la República.*

Graph 2.14
Consumer Price Index
(annual change, end-of-period)



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

converge to levels somewhat above the historical average (Graph 2.12). Risk premiums and exchange rates for some Latin American and Caribbean countries increased over the first quarter compared to the end of 2020 (Graph 2.13). In Colombia, the average for five-year credit default swaps (CDS) was 110 bp with a maximum at the end of March of 137 bp. The exchange rate averaged COP 3,558 to the dollar (market representative rate, MRR), with a maximum of COP 3,720 per dollar (MRR)[9] (Graph 2.13). Colombia's average expected risk premium is 130 bp for 2021 and 160 bp for 2022, downward revisions from the previous report based in part on observed figures from the first quarter that were lower than expected, as well as the expected increase in the oil price. The risk premium's growth trajectory and its convergence can be associated with an observed increase in Colombia's public and foreign debt to above their historical averages. Among the upward risks for these projections would be a possible decline in oil prices, a worsening of Colombia's COVID-19 outlook, delays in the vaccination campaign, or increased uncertainty over the country's fiscal accounts[10].

2.2 Macroeconomic Projections[11]

2.2.1 Inflation

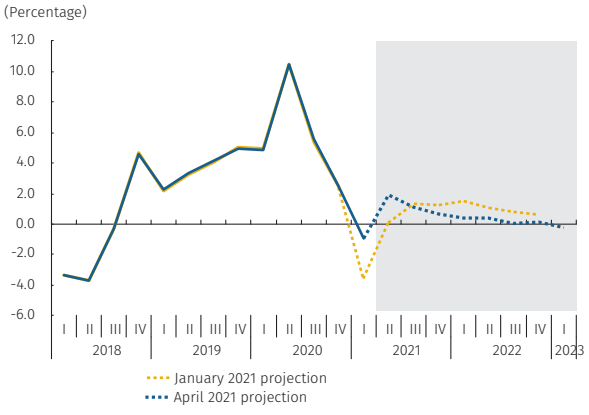
Headline consumer inflation is likely to increase in the second quarter but remain below the target rate over the majority of the forecast horizon, alongside an output gap that is expected to remain negative. An upturn in consumer inflation is expected in the second quarter as the effects of numerous downward shocks from 2020 soften; these shocks also account for a low annual basis of comparison. Some additional but temporary upward pressures are expected to recede starting in the third quarter, partially offsetting the impact of a gradual reduction in excess productive capacity. However, an output gap that is expected to continue in negative territory, together with additional factors discussed below, would be expected to prevent an increase in headline inflation above 3.0% in the next eight quarters (Graph 2.14). Current projections continue to include a much higher degree of uncertainty than normal, given the number and size of the shocks associated with the COVID-19 pandemic. This environment and the challenges these shocks pose to measuring CPI make it difficult to estimate the relative weight of the diverse factors of price behavior. Given the above, the central forecast

9 In the month through April 23, five-year CDS and the exchange rate corrected somewhat compared to maximums registered in March.

10 The average risk premium for 2021 would range between 100 bp and 170 bp, and for 2022 between 120 bp and 290 bp.

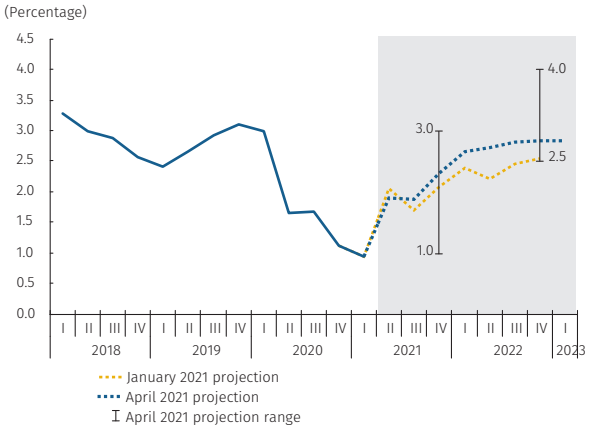
11 The results suppose an active monetary policy in which *Banco de la República*'s benchmark interest rate is adjusted to guarantee compliance with the inflation target.

Graph 2.15
Quarterly RER Inflationary Gap [a/]
(annual change, end of period)



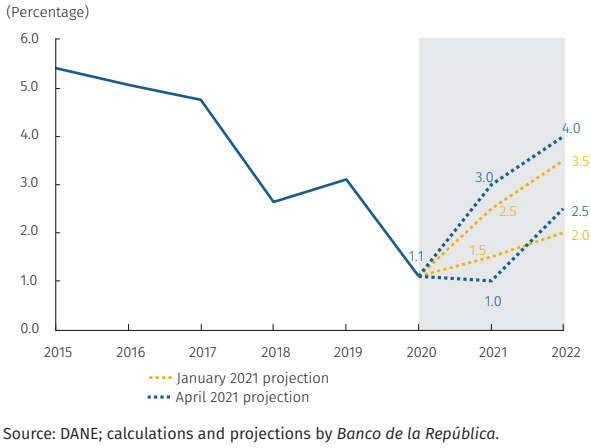
a/ The real exchange rate (RER) inflationary gap captures inflationary pressures from the exchange rate. Positive values imply upward pressure on inflation. The gap is calculated as the deviation in the real exchange rate compared to a non-inflationary trend component estimated using a 4G model.
Source: *Banco de la República.*

Graph 2.16
CPI Excluding Food and Regulated Items
(annual change, end of period)



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

Graph 2.17
CPI Excluding Food and Regulated Items, Annual Ranges
(annual change, end-of-period)



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

projects headline annual inflation of 3.1% at the end of 2021, with a range between 2.0% and 3.5%, and 2.8% for the end of 2022, with a range between 2.0% and 4.0%.

The headline inflation path was revised upward based on excess productive capacity forecasts below projections from the previous report and the presence of more significant temporary upward pressure on food and regulated prices. As discussed below, a faster-than-expected recovery in demand has led to a revision in the projected output gap, which is now expected to be less negative on the entire forecast horizon. One result of this change has been an increase in the expected headline annual inflation path compared to the January report (Graph 2.14). Nevertheless, the forecast continues to contemplate downward pressures from the persistence of significant excess productive capacity, indexation to low levels of past inflation, expected inflation below the target rate in 2021, and minimal exchange rate pressures. This last factor is suggested by an inflationary gap at levels close to zero on the forecast horizon (Graph 2.15). The revised forecast also takes into account possible temporary downward effects from a variety of sources, including the entry into the market of a new mobile telephone operator, recent restrictions on mobility, and the prolongation of a temporary VAT exemption on numerous goods. The revised forecast accounts for some potential temporary upward pressures as well, originating in projected food and regulated items prices above those forecast in the previous report.

Core inflation is expected to remain below the target on the entire forecast horizon but converge to it faster than projected in the previous report due to a downward revision in estimated excess productive capacity. After reaching a low in the first quarter of 2021 (0.9%), core inflation is expected to rebound significantly in the second quarter due to the softening of the effects of temporary downward shocks in 2020. As a result, the inflation measurement most directly affected by monetary policy would begin to settle at levels more in accordance with a gradual recovery in demand and tightening of excess productive capacity, slowly converging with the target rate and reaching it beyond the forecast horizon of this report (Graph 2.16). Core inflation is now expected to end the year at around 2.3% and reach 2.8% at the end of 2022, with probability intervals of 1.0% to 3.0% and 2.5% to 4.0%, respectively (Graph 2.17).

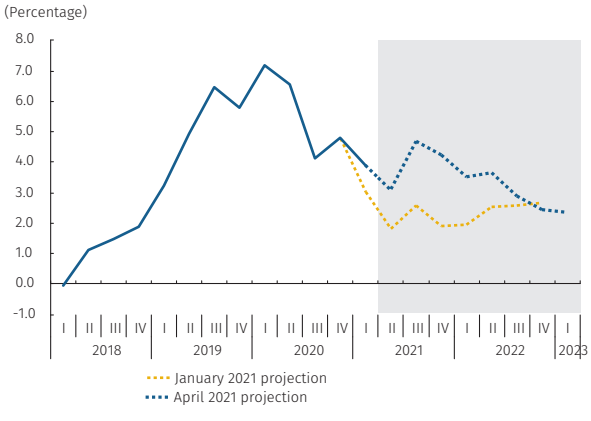
In addition to being influenced by a change in the output gap, the core inflation forecast also accounts for a diverse set of shocks that are expected to influence subgroups of goods and services (excluding foods and regulated items) in different ways. The forecast for inflation on goods takes into account an unexpected reversion of the effects of the VAT-free day in November observed in

February, amounting to a one-time shock on price levels that is expected to have a temporary effect on annual price variation. The trajectory of the CPI for goods also takes into account an extension of the public health emergency declaration through May 31, 2021, which extended a temporary VAT exemption on various health and personal hygiene products that was previously expected to be in place only until the end of February. The technical staff continues to expect minimal exchange rate pressure on this sub-group of the CPI, as suggested by the projected performance of the real inflationary exchange rate gap (Graph 2.15) and low price transmission from an increase in transport and freight costs due to weak demand. The forecast trajectory for the CPI for services, in addition to a somewhat less negative output gap, also takes into account increased operating costs for some economic activities (in particular food away from home and unregulated education costs) in what remains a complex epidemiological environment. As the same time, the forecast considers minimal increases in the CPI for rentals, as a consequence of indexation to low past inflation and significant excesses in rental housing, especially for middle and upper tax brackets. The expected path of the CPI for services also includes a temporary downward shock related to entry into the market of a new mobile telephone operator and a delay in price adjustments on various services, given the third wave of COVID-19 in the country.

Annual change in the CPI for foods is expected to continue to be affected by upward pressures over the next several months. These should begin to recede in the third quarter, allowing levels to fall closer to 3.0% at the end of the forecast horizon. The forecast trajectory of the CPI for foods was revised significantly upward in this report, on account of a surge in additional upward pressures from a less favorable agricultural cycle, international prices, transport costs, and a significant increase in external demand for certain products. These pressures should be temporary. Alongside a still negative output gap, favorable climate conditions, and the absence of exchange rate pressures, they should allow for a decline in the annual change of this sub-basket to levels below 3.0% in the second half of 2022. In the short term, there is expected to be a decrease in this indicator in the second quarter compared to levels observed in the first quarter due to a high basis of statistical comparison caused by the significant increase in the demand for food in the same quarter of 2020. In the third quarter there is expected to be an increase due to the opposite effect. Overall, year-end annual change in the CPI for foods is expected to be 4.2% in 2021 and below 3.0% in 2022 (Graph 2.18).

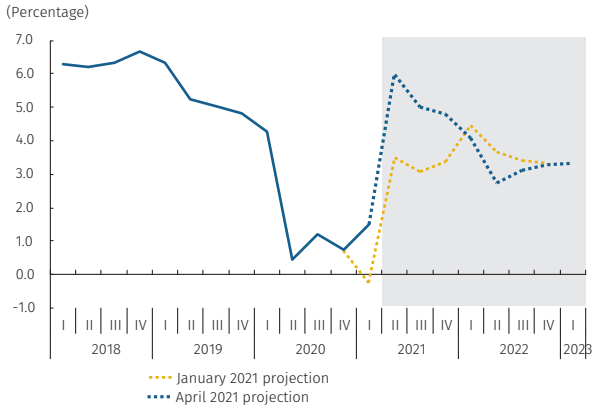
The annual change in the CPI for regulated items is expected to be relatively high in coming quarters as the result of upward revisions in projected oil prices and utility rates, among other factors, but it should converge

Graph 2.18
CPI for Foods [a/]
(annual change, end-of-period)



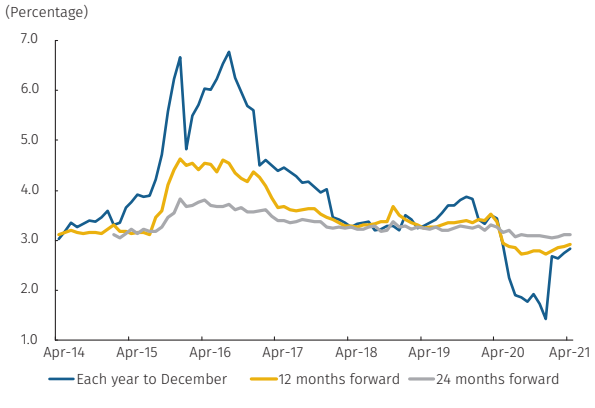
a/ does not include food away from home.
Source: DANE; calculations and projections by *Banco de la República*.

Graph 2.19
CPI For Regulated Items
(annual change, end of period)



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

Graph 2.20
Bank and Stockbroker Inflation Forecasts



Source: *Banco de la República* (Monthly Analyst Survey).

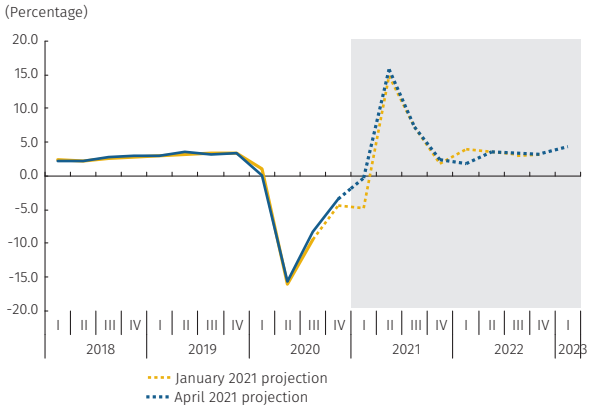
to levels near 3.0% in the middle of 2022. As discussed in the first section of this report, international oil prices have risen in recent months, as have projected prices. The transmission of this increase, which began to be observed in a meaningful way in the first quarter of 2021 (see Section 3), is expected to be completed over the rest of the year, increasing the forecast for regulated items via the CPI for fuels. The current projection also takes into account increases in utility rates beyond those observed in the first months of the year, and which could partially be the result of adjustments from 2020 that were postponed due to the pandemic-related shocks. Increases in electricity rates are also expected to pass-through to consumer prices, while rates are also expected to increase as some operators pass on the costs of increased investment. At the same time, the forecast for the CPI for regulated education (preschool, elementary, secondary) has increased given an unexpected adjustment observed in February, likely associated with the gradual return to in-person teaching and to efforts to recover pre-pandemic price levels on the part of numerous educational institutions. Given the above, the annual change in the CPI for regulated items is expected to rebound significantly in the second quarter of 2021 to close to 6.0% and end the year around 4.8%. For 2022 it is expected to finish the year slightly above 3.0%. The short-term increase is due in part to a low basis of statistical comparison from 2020, when price relief measures for utility rates were concentrated, alongside a reduction in fuel prices (Graph 2.19). These forecasts do not suppose the implementation of additional price relief measures related to the pandemic.

Market inflation expectations remained almost unchanged compared to the January report, and project headline inflation below 3.0% at the end of 2021, converging to the target in 2022. Economic analysts' expectations based on the Bank's monthly survey in April point to average headline inflation at the end of 2021 and 2022 of 2.8% and 3.1%, respectively (Graph 2.20), values similar to those registered in January. Expected inflation excluding food remained stable at 2.5% for year-end 2021 but increased slightly for the end of 2022 from 2.6% in the January report to 2.7%.

2.2.2 Economic Activity

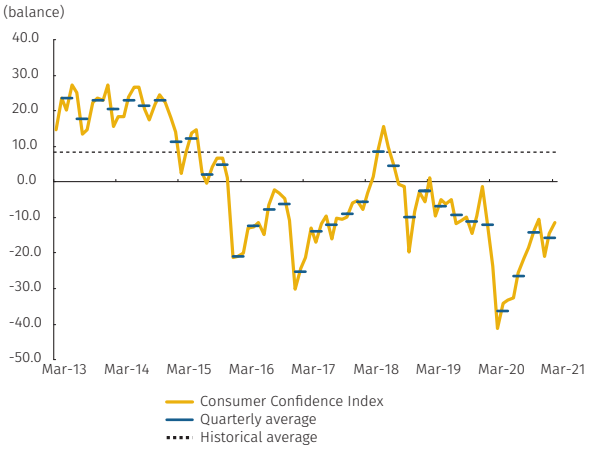
Colombia's economic recovery likely continued in the first quarter despite a second wave of COVID-19, the effects of which appear to have been less disruptive than previously anticipated. Annual GDP fell in the fourth quarter by 3.5% (seasonally adjusted and corrected for calendar effects, SACE), a less significant decline than forecast by the technical staff (-4.4%). Improved fourth-quarter performance and significant revisions to previous quarterly figures led to an improvement in the overall growth rate

Graph 2.21
Quarterly GDP [a/]
(annual change)



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

Graph 2.22
Consumer Confidence Index
(monthly; quarterly and historical average)



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

in 2020 (-6.8%) compared to the previous report (-7.2%). The relaxation of social distancing measures, steps by local and national authorities to maintain household income and support company finances, and low interest rates and ample liquidity administered by *Banco de la República* appear to have facilitated a recovery in economic activity in the second half of the year. Available data suggests that GDP growth likely continued to recover in the first quarter of 2021, with annual variation for the year now projected at -0.3% (Graph 2.21), a significantly smaller decline than forecast in the January report. The upward revision in the first quarter was due both to improved results at the end of 2020, which suggested some resilience in the recovery process, and to the fact that the economic impact of new social distancing measures appears to have been less severe than expected. According to the Economic Monitoring Indicator (ISE for its abbreviation in Spanish), the deterioration in economic activity in January was less significant than expected, and a significant recovery in February led to figures beyond those from the end of 2020. The technical staff's first-quarter estimate accounts for the likelihood that the significant recovery in economic activity in February would not have been fully sustained in March.

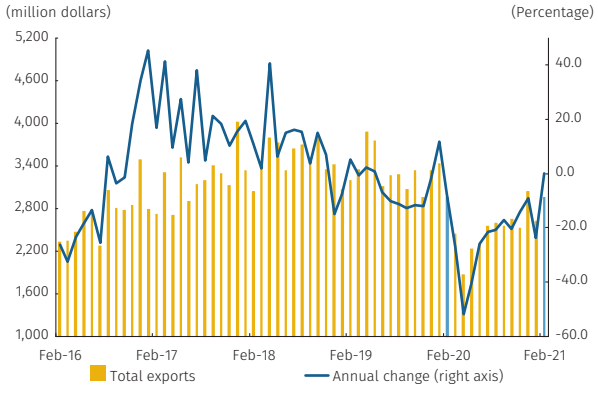
The effects of pandemic-related closures in January were mitigated by a quick reopening in February that likely extended into March and, as a result, would have had a minor impact on domestic demand in the first quarter. Despite partial mobility restrictions in numerous cities at the beginning of the year, domestic demand appears to have continued to increase, though at a moderate pace compared to previous quarters. Overall consumption and investment both likely experienced quarterly growth. As of publication this conclusion appears to be supported by a majority of available indicators, including consumer confidence (Graph 2.22), the ISE, and manufacturing sales and production.

Total consumption likely continued to recover in the first quarter, slightly surpassing pre-pandemic levels despite the minor effects of a second wave of contagion in January. Annual growth in this component of demand appears to have entered positive territory for the first time since the second quarter of 2020, reflecting favorable performance in private and public consumption. The effects of the second wave of COVID-19 would have had a slight and temporary impact on some segments of private consumption, as suggested in reported retail sales figures, which will be discussed in Section 3. Within private consumption, services spending appears to have grown both in annual and quarterly terms, though it remains below pre-pandemic levels (December 2019). A similar dynamic has likely taken place in semi-durable goods. For its part, durable goods consumption appears to have sustained a high rate of annual growth similar to the previous quarter,

at levels above those from the end of 2019. Available data suggests that private goods and services consumption may be experiencing a re-composition toward markets and products in which the physical presence of buyers and sellers is becoming less necessary. As a result, digital purchases and activities are gaining as a share of private consumption, allowing for a faster recovery in this component above pre-pandemic levels. Public consumption, for its part, is expected to grow to even higher levels in the first quarter after an increase last year in response to the pandemic. This would be in line with the Colombian government's financial plan (*Plan Financiero*) as reported by the treasury department (MHCP for its initials in Spanish). Part of this growth could be explained by government spending associated with the vaccination campaign, which began in February of this year. As a result, a portion of public consumption would continue to play a counter-cyclical role in the economy, growing at rates above those of GDP and private consumption.

Investment also likely continued to recover, though to levels that remain significantly below those prior to the pandemic. Based on dollar import figures to March (advances from Colombia's national customs agency, DIAN) it is expected that spending on machinery and equipment will have registered an increase compared to the previous quarter. This would again been driven by purchases of transportation equipment in the first quarter. Investment in housing and other buildings and structures (which includes public works) is also expected to have registered quarterly growth and a less pronounced decline in annual terms than in previous quarters, though it still remains well below pre-pandemic levels. This relatively favorable trend would likely apply to housing as well and would be consistent with dynamism in residential sales in the second half of 2020 amid national government programs aimed at stimulating the construction of social housing units. Meanwhile, a recovery in public works can likely be associated with the beginning or continuation of numerous road infrastructure and other projects undertaken by local, regional, and national authorities, as well as by increased oil prices that likely favored investment in the hydrocarbons sector.

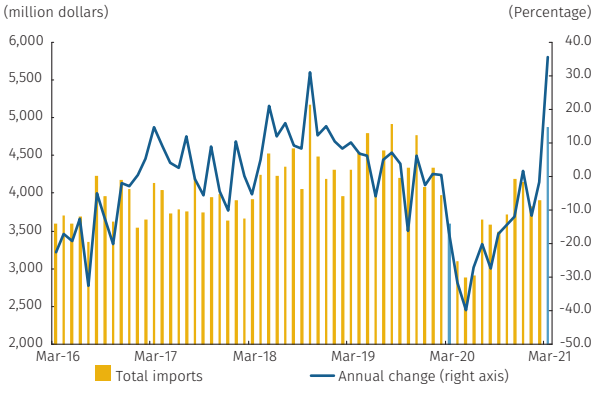
Graph 2.23
Total Goods Exports (FOB)
(monthly)



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

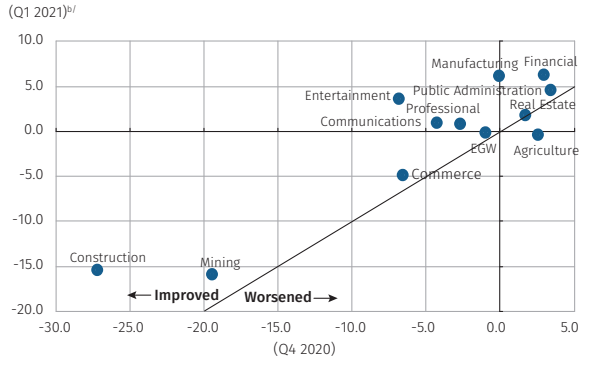
Exports appear to have continued to be the component most affected by the pandemic and terms of trade shocks from the beginning of 2020, showing only a mild recovery in the first quarter. As a result, the contribution of net foreign demand to GDP growth was likely very low. Exports likely performed better at the beginning of this year compared to the fourth quarter of 2020, as suggested by DANE's foreign dollar sales reports in February (Graph 2.23) and advances from DIAN in March. However, significant disparities within export performance remain. The aforementioned recovery was likely only possible thanks to the performance of some agricultural and

Graph 2.24
Total Goods Imports (CIF)
(monthly)



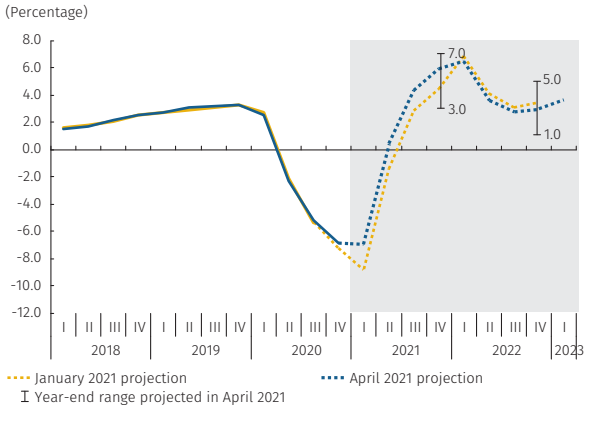
Sources: DANE and DIAN (foreign trade advances); calculations by *Banco de la República*.

Graph 2.25
Annual Growth by Activity [a/]
(Q1 2021 *vs.* Q4 2020)



Note: Agriculture: agriculture, forestry, hunting, and fishing; Mining: mine and quarry exploitation; Manufacturing: industrial manufacturing; EGW: electricity, gas, and water; Construction: construction; Commerce: commerce, repairs, transportation, lodging, and food services; Communications: information and communications: Finance: financial and insurance activities; Real estate: real estate activities; Professional: professional, scientific, technical, and support activities; Public administration: public administration and defense, education, and health; Entertainment: arts, entertainment and recreation, and household activities.
a/ seasonally adjusted and corrected for calendar effects.
b/ *Banco de la República*'s technical staff's forecast.
Source: DANE; calculations by *Banco de la República*.

Graph 2.26
Accumulated GDP, 4 Quarters [a/]
(annual change)



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

manufacturing goods, while both extractive industries exports (especially oil) and services exports remained stagnant or showed only slight increases. As for imports (in real peso terms), dollar figures from DIAN advances in March (Graph 2.24) point to an increase in overall levels, due primarily to an increase in some capital goods and raw materials purchases. As a result, the contribution of net foreign demand to annual GDP growth was likely very slightly negative in the first quarter of the year.

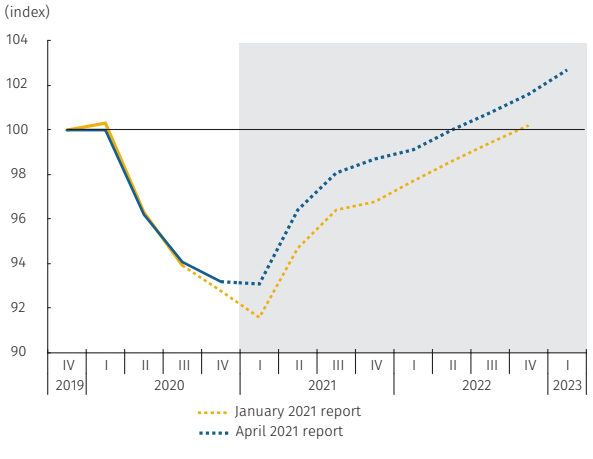
Supply side information available to date appears to confirm a very moderate effect on the economy from the second wave of COVID-19 in January. This effect would have been reversed quickly in February and, possibly, in March (Graph 2.25). Tertiary sectors, which were most affected by pandemic-related restrictions at the beginning of the year, showed a recovery in February. This suggests that recovery in these activities likely continued in the first quarter overall, though at a more moderate pace than in previous quarters. Within the commerce, repairs, transport, lodging and food services category, commercial margins are expected to have grown in annual terms, more than offsetting pronounced annual declines in transport, lodging, and food services. Among primary sectors, mining is expected to continue to show significant annual contraction as a consequence of low oil and coal production. Among secondary activities industrial manufacturing production is likely surpassing its pre-pandemic levels. By contrast, construction is expected to continue to show significant negative annual growth rates despite some recovery in overall levels thanks to positive sales performance and progress in housing and public works projects.

Colombia is being hit hard by a third wave of COVID-19 in the second quarter, which could temporarily slow the pace of recovery. Nonetheless, economic performance is expected to strengthen over the remainder of 2021, assuming there are no additional and significant adverse effects from the pandemic. Authorities in multiple parts of the country implemented significant mobility restrictions in response to a third wave of COVID-19, which could have an effect on the economy. The central forecast scenario assumes that this round of quarantine measures could be in place until mid-May, and that their impact is likely to be more pronounced than measures implemented in January of this year. This projection would include a contraction in GDP in the second quarter of 2021. However, assuming a reduction in the severity of the COVID-19 outbreak and progress in the national vaccination program, Colombia's economy would be expected to recover in the second half of the year. The growth projection for 2021 has been revised upward to 6.0% (Graph 2.26), taking into account the likelihood of higher GDP figures at the beginning of this year compared to previous estimates, improved performance among trade partners, higher-than-expected oil and coffee prices, and fiscal

stimulus (in accordance with the MHCP's spending plan). This forecast supposes that external financial conditions will continue to be favorable for the remainder of the year and that social distancing measures will again be relaxed as the pandemic comes under control. Diverse productive sectors should be on a path toward normalization in the second half of 2021. Nevertheless, uncertainty over the evolution of the pandemic and its potential effects on the economy continues to be unusually high. The possibility of new outbreaks represents a significant downward risk to the annual growth projection, as reflected in a wide forecast interval (between 3.0% and 7.0%).

Growth for the remainder of 2021 will likely be supported by positive performance in domestic demand, especially in investment. Higher oil prices and significant public sector infrastructure efforts are expected to drive domestic demand in 2021. In the absence of new waves of the pandemic, an increase in consumer confidence and more significant opening of economic activities would be expected, reinforcing the recovery in private consumption and investment. This trend would also be favored by monetary policy that is expected to remain in expansive territory, favorable domestic credit conditions, and fiscal stimulus that would continue to support household and business income. Exports are also expected to increase, though to a lesser extent, as a full recovery in production and exports in sectors such as coal, oil, and services is not yet expected.

Graph 2.27
Accumulated GDP, 4 Quarters [a/]
(Q4 2019 = 100)



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

In the absence of new waves of COVID-19, Colombia's economy should return to pre-pandemic levels of output toward the second quarter of 2022, earlier than estimated in the previous report. This comes alongside negative economic impacts from COVID-19 that appear to have been less severe than expected in 2020, as well as improved growth expectations for 2021. The economy is now forecast to grow by 3.0% in 2022 (range between 1.0% and 5.0%), taking into account possible short-term effects on private demand as the result of a fiscal adjustment such as the one currently being put forth by the national government. Given the above, GDP (four-quarter accumulated) would be expected to return to pre-pandemic levels in the first half of 2022. However, a slow expected recovery in available household income amid historically high unemployment rates and continued financial fragility among some households and businesses could continue to weigh on the pace of recovery in economic activity.

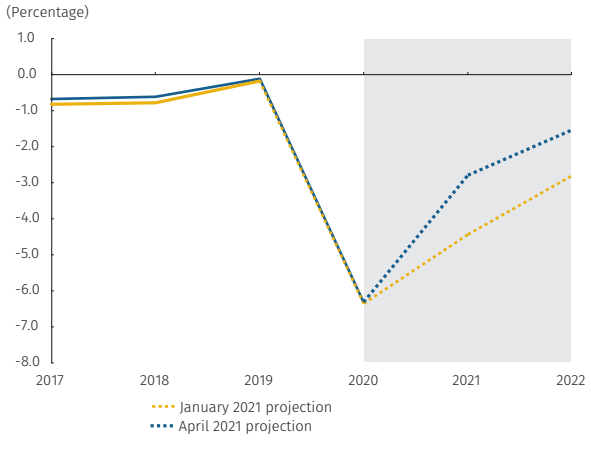
The short- and medium-term forecasts for economic activity continue to be affected by significant uncertainty, most significantly related to the continued evolution of the pandemic and the country's required fiscal adjustment. The central forecast scenario supposes that the pandemic will gradually recede in Colombia and in a majority of its trade partners in coming months, as

vaccination programs advance and countries reach relatively high levels of immunity. New waves of contagion cannot be discounted and would slow the full re-establishment of economic activity and lead to lower growth than expected. Other relevant risk factors that could weigh on the central forecast scenario include elevated uncertainty over the composition of supply and demand shocks caused by the pandemic, their possible implications for future economic growth, and the possibility of tighter external financing conditions resulting from a potentially faster normalization than expected in foreign countries' monetary policies. Colombia's public debt trajectory also represents a significant risk to the macroeconomic forecast. The forecast considers a fiscal adjustment coming into force in 2022 that would allow for public debt levels to be pushed back toward those projected in the spending plan in the medium term, ensuring Colombia's access to financing at relatively low and stable costs.

Based on recent labor market dynamics and current economic forecasts, Colombia's national unemployment rate is expected to continue to fall at a moderate pace in 2021, averaging between 12.8% and 15.0% over the course of the year. A relaxation in mobility restrictions put in place in the first weeks of 2021, alongside a gradual reopening of educational institutions, led to an increase in the labor force participation rate in the first two months of the year. As a result, the unemployment rate fell more slowly in this period than it had in the second half of 2020 (see Section 3), with increased pressures on labor supply in urban areas that were comparable to the rate of growth in employment. Given this dynamic and the current central macroeconomic forecast, the national unemployment rate is expected to continue to decline, though at a very gradual pace. Employment in the salaried and formal sectors is expected to grow more slowly than in the non-salaried and informal sectors. The technical staff expects an average unemployment rate in 2021 between 12.8% and 15.0%, with a most likely value of 13.9%. This represents a slight downward correction compared to the range estimated in the previous report (12.5% and 15.5%). Given the above, the labor market is expected to continue to be significantly loose on the forecast horizon and should not act as a source of inflationary pressures in the form of labor costs. These forecasts come in a highly uncertain context, in which labor market performance could depend on the evolution of the pandemic and the implementation of measures to address it.

The Colombian economy will likely continue to show significant excess productive capacity on the forecast horizon, though at lower levels than estimated in the previous report (Graph 2.28). Excess productive capacity has likely been a result of negative economic shocks associated with the COVID-19 pandemic, which appears to have affected demand more so than supply. The recovery that began in the third quarter of 2020 has been stronger than

Graph 2.28
Annual Output Gap [a/]



a/ The historical estimate is calculated as the difference between observed and potential (trend) GDP using a 4G model; the forecast is calculated as the difference between the technical staff's GDP estimate and potential (trend) GDP using a 4G model.
Source: *Banco de la República.*

the technical staff's previous estimates in terms of both private and public demand. At the same time, inflation, especially core inflation, has fallen significantly, signaling the existence of a negative output gap. Nevertheless, the most recent information on economic activity suggests first-quarter growth in 2021 surpassing expectations from the January report, as well as higher levels of headline and expected inflation. When controlling for the effect on prices of increased competition in the mobile telephone market, core inflation figures would also be higher than projected in the January report. As a result, it can be inferred that there is likely less, though still significant, excess capacity than considered in the January report. Such a conclusion would consider the effects of the second wave of COVID-19 and the potential impact of the current third wave. Given the above, this report estimates an output gap of -2.8% in 2021 (compared to -4.4% projected in January), at a range between -5% and -1.5%. Potential output would be expected to grow by 2.2% and return to pre-pandemic levels this year. Excess productive capacity is expected to continue to decline gradually over the forecast horizon, putting the output gap in 2022 at -1.5%, with a range between -4% and 0%. Meanwhile, potential output is expected to continue to recover and grow at rates similar to those before the pandemic toward the end of 2022. These estimates come amid a high degree of uncertainty, as a result of pandemic-related shocks simultaneously affecting supply and demand and the possibility of new waves of infection.

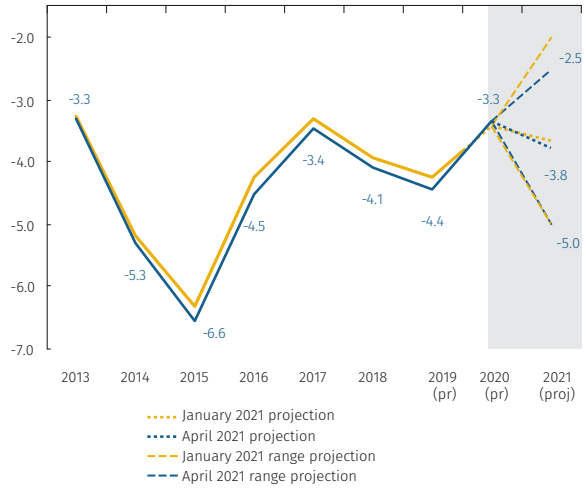
2.2.3 Balance of Payments

The current account deficit was likely close to -3.8% of GDP in the first quarter of 2021, higher than observed in the same period in 2020. The increase is likely associated primarily with a larger trade deficit in goods and services due to a recovery in imports in industrial and agricultural goods, increased tariffs in maritime trade (which would have increased transportation costs), and a reduction in the annual surplus in services associated with tourism. Growth in non-traditional export products, gold, and coffee would have partially offset an expansion of the trade deficit. Increased profit outflows among businesses with foreign capital, especially in the oil sector, likely also contributed to the annual increase in the deficit in the first quarter. Annual transfer growth, particular in remittances from the United States, would have moderated expansion in the current account deficit.

The current account deficit is expected to augment to 3.8% of GDP in 2021, in large part as a reflection of the expected recovery in Colombia's economy (Graph 2.29). The recovery in domestic demand is expected to drive growth in goods and services imports, whereas profits for businesses with foreign participation would increase amid expanded economic activity and higher oil prices. Transport services

Graph 2.29
Annual Current Account

(percentage of GDP)

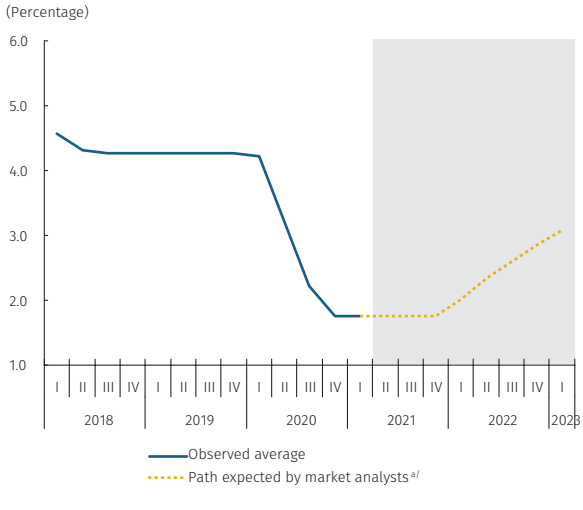


(pr): preliminary.
(proj): projection.
Source: *Banco de la República.*

payments are also expected to rise over the course of the year amid increased levels of trade and higher international prices, in addition to increased spending on tourism, in line with expectations for a slow and gradual recovery in international travel. An expected expansion in the public sector deficit would also contribute to this dynamic. On the other hand, the increase in the external imbalance would be partially offset by recovery among Colombia's trade partners, an improvement in the terms of trade, growth in remittances income, and a gradual recovery in the export of services associated with tourism compared to low levels from last year. Dollar export levels are expected to continue to recover, both for industrial goods and for Colombia's primary export commodities, in particular oil, oil derivatives, and coffee. Remittances are expected to reach historical highs in 2021, partly as the result of economic growth in Colombian migrants' countries of residence. This is especially true in the United States, where fiscal stimulus is expected to favor household income and where the expectation of economic recovery is continually improving. Given all of the above, the current account deficit is expected to close the year at -3.8% of GDP, an upward revision compared to the previous report (-3.6% of GDP). These projections include a high degree of uncertainty, given the unknowns of the pandemic and its potential effects on national income and domestic spending, unpredicted changes in the price of oil and other commodifies, and the potential for unexpected changes in international financial conditions and the exchange rate.

Colombia is expected to retain full access to international financing in 2021, amid global economic recovery. Recovery in domestic and international economic activity is expected to have a positive effect on foreign direct investment (FDI), which would continue to take up a significant share of the financing of the current account deficit. The public sector is expected to contribute significantly to external financing based on a variety of funding sources, including issuance of bonds abroad and new debt. The primary sources of uncertainty related to the financial account have to do with potential changes in international financing conditions. In particular, the observed increase in long-term interest rates on public debt in advanced economies could lead to tighter financing conditions for emerging markets. A faster normalization of monetary policy in the United States than contemplated by the central forecast scenario represents another risk. Fiscal policy decisions could also affect risk perceptions and capital flows.

Graph 2.30
Monetary Policy Interest Rate



a/ corresponds to the median of analyst projections. these projections are calculated taking the quarterly average of monthly responses to *Banco de la República*'s April 2021 survey of economic analyst expectations.
Source: *Banco de la República.*

2.2.4 Monetary Policy and Interest Rates Expected by Analysts

The median year-end policy interest rate expected by analysts is 1.75% for 2021 and 2.83% for 2022 (Graph 2.30). The median response to *Banco de la República*'s monthly survey of analyst expectations in April projected a policy

interest rate of 1.75% for the remainder of the year. The survey suggests that interest rates could reach 2.0% at the beginning of 2022, closing the year at 2.83%. The technical staff's central forecast assumes that there will not be any further outbreaks of COVID-19 over the forecast horizon (eight quarters), and accounts for negative shocks on the economy, including those to demand, that were below expectations from the previous report, implying a tighter output gap and higher inflation curve. This would be compatible with an expected trajectory for the benchmark interest rate that is, on average, higher than forecast in the previous *Monetary Policy Report* and above analysts' expectations from earlier surveys this year. Nevertheless, risk scenarios that include additional outbreaks of COVID-19 would be expected to lead to a lower interest rate path than considered in the forecast scenario. The April survey was conducted prior to the release of positive ISE results from February and a worsening of the current wave of the pandemic.

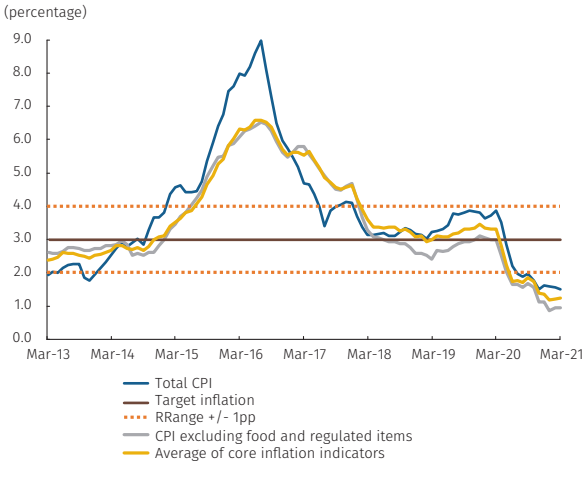
The evolution of the pandemic represents a significant source of uncertainty when it comes to projecting the speed of economic recovery, the magnitude of its impact on aggregate demand, and the degree of excess productive capacity on the forecast horizon. The main sources of uncertainty on inflation and growth projections continue to be related to the pandemic, the public health and self-isolation measures required to address it, and the overall effects on productive capacity and aggregate demand. High levels of uncertainty are expected to persist on the forecast horizon. As a result, the evaluation of the magnitude and persistence of shocks to supply and demand will need to be undertaken carefully and consider all available information on prices and economic activity. External financing conditions, the fiscal deficit and potential measures for its adjustment, expected inflation dynamics, and the evolution of the labor market, among other factors, will represent important considerations in evaluating inflationary pressures and the development of economic activity on the monetary policy horizon.

03 / Current Economic Situation

3.1 Inflation and Price Behavior

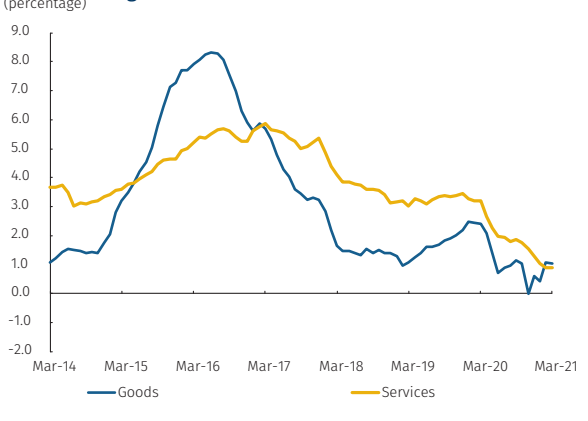
Annual consumer inflation and core inflation continued to decline in the first quarter of 2021, remaining at very low levels and below the 3.0% target. Annual inflation in March was 1.51%, 10 basis points (bp) lower than in December (Graph 3.1). This was the second-lowest figure for inflation since consolidated and nationally aggregated information has been collected (1951), behind only November 2020 (1.49%). The average of the core inflation indicators also fell from December (1.34%) to March (1.22%). Although annual inflation is low, the March figure was above projections from the previous report, largely due to annual adjustments in the CPI for regulated items and foods, that surpassed the technical staff's expectations.

Graph 3.1
CPI and Core Inflation Indicators
(annual change)



Sources: DANE and *Banco de la República*.

Graph 3.2
CPI For Goods and Services, Excluding Food and Regulated Items
(annual change)

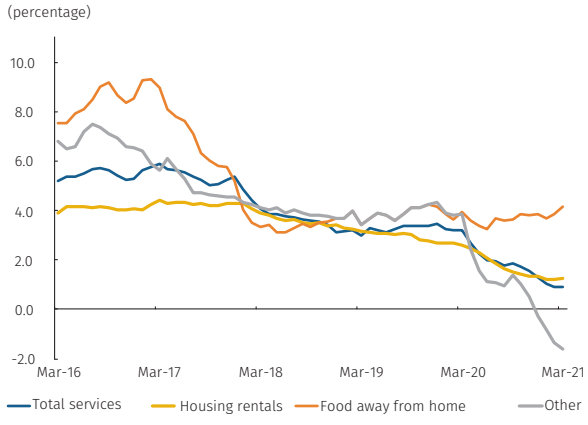


Source: DANE; calculations by *Banco de la República*.

Significant excess productive capacity continued in the early months of the year, which alongside other factors could explain the reduction in core inflation, particularly for the indicator that excludes food and regulated items. Inflation excluding food and regulated items declined from December (1.1 1%) to March (0.94%), in line with the estimate from the previous report. The downward trend in this indicator of core inflation came even though the economy continued to recover in the first quarter, alongside a gradual reopening of diverse productive sectors and interrupted only partially by pandemic-related mobility restrictions put in place in January. Excess productive capacity continued to be significant (illustrated in Section 2 of this report) and alongside the continued temporary suspension of indirect taxes on some goods (hygiene and health products) and services (food away from home, tourism, and air travel) limited price adjustments in this sub-basket, especially in the services sector (Graph 3.2). Price reductions in mobile telephone services due to increased competition in that market and a very slight transmission of peso depreciation on consumer prices, limited in part by weak in demand, were additional considerations.

Services were the component of the CPI that exerted the most downward pressure on headline inflation in the first quarter. The annual change in the CPI for services fell from 1.29% in December to 0.89% in March, registering the lowest level among all major aggregates of the CPI. Rentals maintained a downward trend, falling from December (1.33%) to March (1.25%), exhibiting low monthly adjustments over the course of the year as a result of significant pandemic-related effects on household income and excess supply in rental housing (Graph 3.3). Annual price

Graph 3.3
CPI For Services Excluding Food and Regulated Items and its Components
(annual change)



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

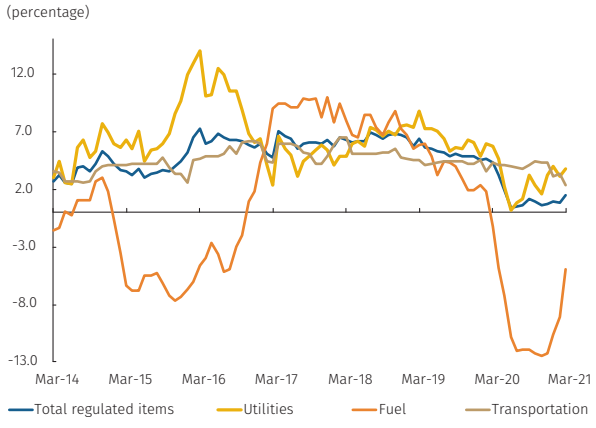
adjustments in the "other" sub-group within services also continued to decline and fell further into negative territory in March (-1.63%) compared to December (-0.26%). This can be associated in large part with activities for which a return to normal operations in light of the pandemic has been more difficult, as is the case with tourism, air travel, lodging and hotel services, nightlife, and movie theaters. All of these services accumulated negative price variation over the course of the year. Meanwhile, fixed and mobile communications services exerted significant downward pressure in light of price reductions instituted by numerous carriers over the course of the year ahead of the imminent entry of a new competitor in the market. The effect of this increased competition on price variation is expected to be temporary but could present additional effects on rates or on connected goods and services once the new operator has been incorporated into the CPI. Foods away from home (FAH) were the only grouping of the CPI for services that showed upward annual price variation, incorporating increases in some primary costs, especially in foods and public services, as well as, reduced supply due to the closure of restaurants.

Annual price adjustments in the goods basket were very moderate in the first quarter, but showed an upward trend motivated by several factors. Price variation in the goods basket rose from 0.63% in December to 1.05% in March (Graph 3.2). This increase was associated with the reversion of rebates from the VAT-free day in November, which for measurement reasons were registered in February. This did not prevent price adjustments in this group from remaining at very low levels. The reversion of other rebates from 2020, which stimulated some goods prices (shoes and some clothing items), and strong demand in transportation (bicycles, motorcycles, and automobiles) were also upward price factors. A degree of transmission of recent peso depreciation on certain prices is also possible, such as for appliances or personal electric device costs, which rose more than 8.0% over the course of the year. This increase could also be a reflection of the delayed effects of the reversion of the VAT-free day. Nevertheless, weak demand has helped contain price increases and may even be offsetting recent upward exchange rate pressure.

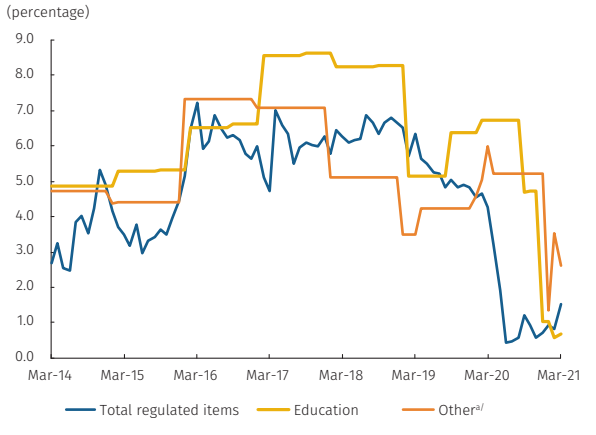
Unanticipated increases in international oil prices and some utility rates led to a significant rebound in the CPI for regulated items. The regulated CPI was the element of the basic market basket that registered the greatest increase in annual variation in the first quarter, rising from 0.73% in December to 1.52% in March (Graph 3.4); this was significantly above projections from earlier reports. Upward pressure was driven by utility rates (from 3.2% to 3.7%) and fuel prices (from -12.2% to -4.9%) (Graph 3.4, Panel A). Price adjustments in the first case were caused, especially, by sewage and trash collection rates, where

Graph 3.4
CPI For Regulated Items and Its Components
(annual change)

A.

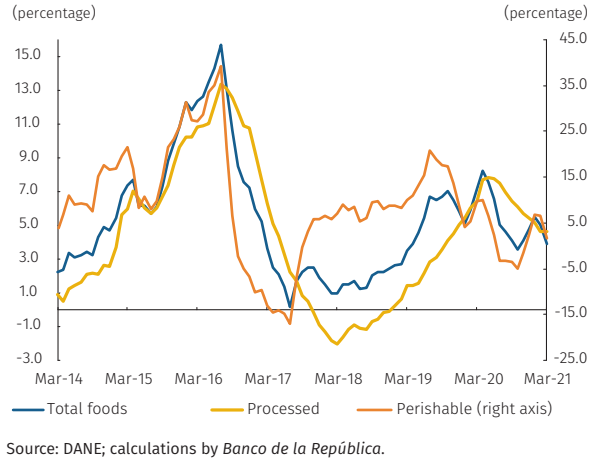


B.



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

Graph 3.5
CPI For Foods by Group and its Components



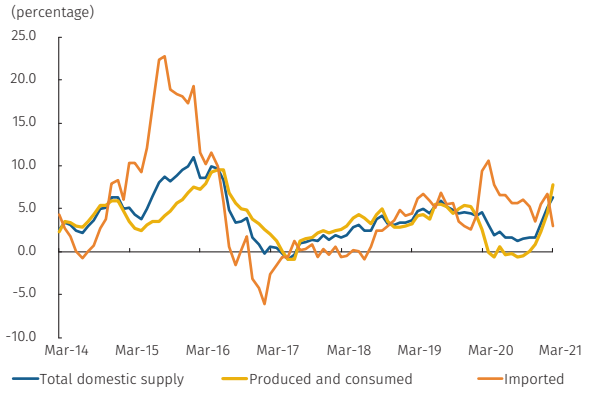
Source: DANE; calculations by *Banco de la República.*

the increase over the course of the year has already surpassed 4.0%, and which corresponds to postponed indexation from last year in the first months of 2021. In the case of fuels, the rebound in international oil prices in recent weeks has been reflected in adjustments in domestic gasoline prices, for which a very low basis of annual comparison is also a factor. By contrast, increases in transportation costs have not yet passed-through to consumer prices, limited perhaps by weak demand; annual price variation within this segment of regulated items fell between December and March (from 4.3% to 2.4%). Regulated education prices have exerted clear downward pressure on inflation since the third quarter of 2020, given reductions in matriculation and monthly payment costs, possibly attributable to lower operating expense amid reduced demand and the expansion of virtual education (Graph 3.4, Panel B).

Food prices continued to decline in annual terms in the first quarter, despite some upward pressures associated with increases in international prices for raw agricultural materials and certain perishable and processed foods. A decline in the annual change in the CPI for foods observed between December (4.80%) and March (3.92%) was driven both by perishable food prices and by processed foods (Graph 3.5). This decline was due primarily to a low statistical base of annual comparison. A year ago, at the start of the pandemic, food prices increased significantly due to a sudden and massive surge in consumption. Nevertheless, the decline in the annual change in the CPI for foods was below the technical staff's expectations. So far this year, prices for this grouping have risen 3.1% on significant and unanticipated increases in some sectors. Prices for perishable foods (8.0% year to date) have rebounded to the greatest extent in the first three months of the year, the consequence of a downward phase in the productive cycle for potatoes and fruits (mango, lulo, and lime). Processed foods prices, which have risen so far this year by 1.7%, have incorporated upward pressures originating from a generalized contraction in agricultural supply and a significant increase in cattle exports that began once Colombia was recertified as being free of foot and mouth disease in February 2020. Food oils and cereal products, affected by a recent upturn in international prices and by the exchange rate, have also driven the increase in processed food prices over the course of 2021 so far.

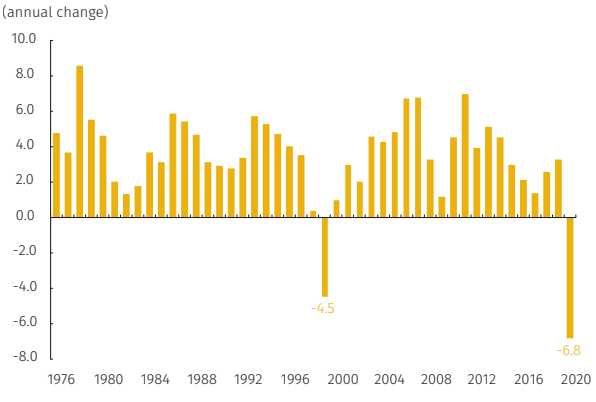
An upward trajectory in non-labor costs observed since the end of last year deepened in the first quarter of 2021. Annual change in non-labor costs, approximated using the PPI for domestic supply, increased from 1.65% in December to 6.31% in March (Graph 3.6). This dynamic was concentrated in the domestic PPI, where annual price adjustments rose from 0.8% in December to 7.8% in March (driven primarily by mining), and to a lesser extent by the industrial PPI. The behavior of international oil prices last

Graph 3.6
PPI by Origin
(annual change)



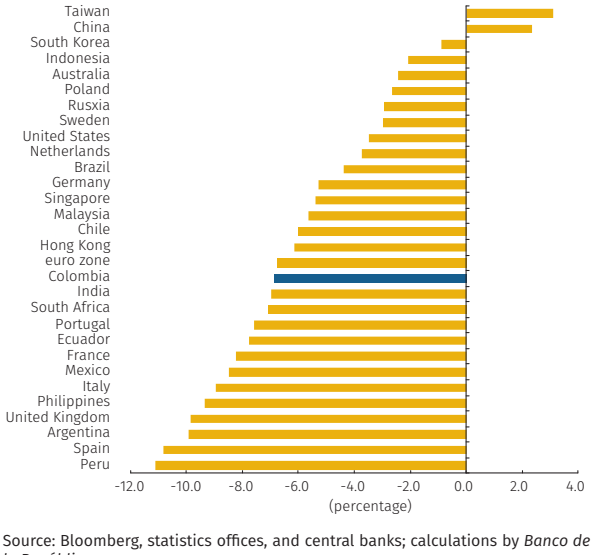
Source: DANE; calculations by *Banco de la República.*

Graph 3.7
GDP Growth in Colombia
(1976-2020)



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

Graph 3.8
Annual Growth in 2020
(percentage; selected countries)



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

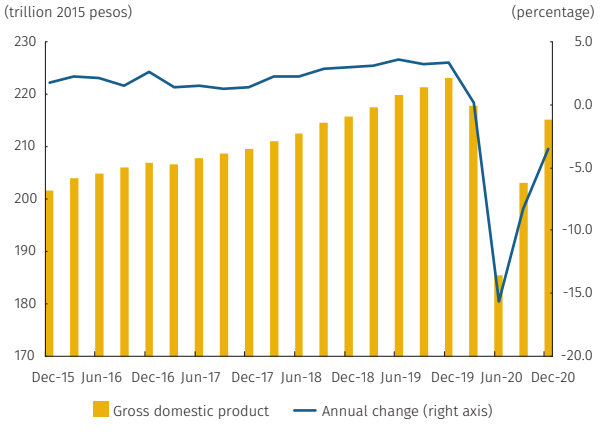
year largely explains the recent performance of producer inflation. The PPI for crude oil extraction in the last 12 months increased 124%, driven by a very low basis of comparison from the previous year. The increase in producer inflation for industrial activities can be explained primarily by oil refining prices. Meanwhile, the PPI for domestic agriculture registered more significant adjustments compared to the end of last year. This was likely associated with livestock and permanent crops, which have accumulated price increases above 10% over the past 12 months. By contrast, the import component of the PPI contracted between December (3.58%) and March (3.03%). So far this year, this segment of the PPI has not shown evidence of upward pressure as the result of bottlenecks in production and transportation, which have been observed in numerous global economies.

3.2 Economic Growth and Domestic Demand

3.2.1 Fourth-Quarter GDP

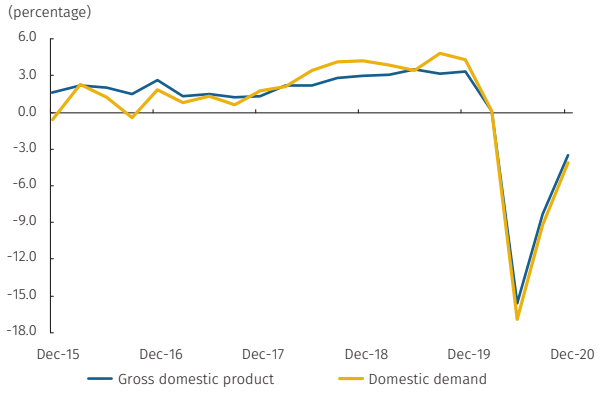
As was the case for other global economies, Colombia experienced a significant recession in 2020 related to the COVID-19 pandemic. Colombian GDP shrunk by 6.8%, a historical high (Graph 3.7) in line with the size of contractions observed elsewhere in the world, particularly in Latin America (Graph 3.8). However, the size of the contraction was smaller than forecast in the previous *Monetary Policy Report*, as the result of significant revisions to national accounts and better-than-expected economic performance in the fourth quarter. Altogether, the data from 2020 suggest a highly uneven economy over the course of the year. Positive performance early in the first quarter was interrupted at the beginning of March as COVID-19 began to spread more rapidly. Quarantine and social distancing requirements led to a steep fall in economic activity, especially in April, leading to the largest annual decline in GDP since quarterly data has become available (-15.6%, SACE) in the second quarter. Numerous factors can help explain the beginning of the economic recovery in May. First, the strictest social distancing and quarantine measures were relaxed, as efforts to contain the virus showed some success and the risk of saturation in the public health system was reduced. Steps from national and local authorities to sustain household income and provide financial support to firms also had an impact, while ample liquidity administered by *Banco de la República* contributed to stabilizing domestic financial markets, and a reduction in the policy interest rate limited the financial burden on households and businesses and helped stimulate spending. Finally, a recovery in terms of trade, driven by increased oil and coffee prices, had positive effects on national revenues. With some short interruptions, the recovery continued to consolidate over the second half of the year, allowing for a significant increase

Graph 3.9
Quarterly Gross Domestic Product [a/]
(level and annual change)



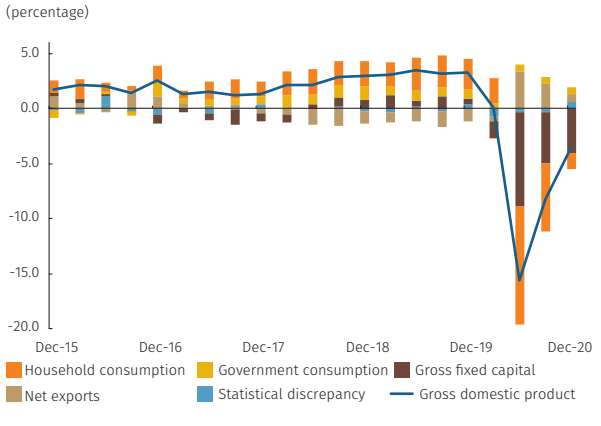
a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by *Banco de la República.*

Graph 3.10
Gross Domestic Product and Quarterly Domestic Demand[a/]
(annual change)



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

Graph 3.11
Spending Side Quarterly GDP[a/]
(annual change, contributions)



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

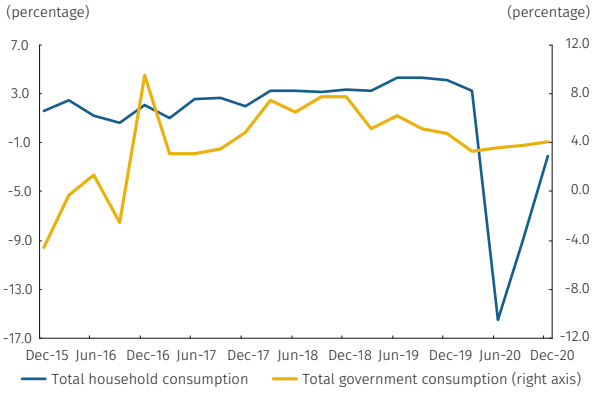
in GDP compared to the second quarter, though without returning to pre-pandemic levels.

The economic recovery that began in the third quarter of 2020 deepened in the fourth, though annual change in GDP remained in negative territory. Indicators of economic activity, including GDP, have in general exceeded the technical staff's forecasts. Annual GDP growth in the fourth quarter (-3.5%) (Graph 3.9) performed better than expected in the previous *Monetary Policy Report* and confirmed the significance of the recovery in the second half of the year, though GDP remained below pre-pandemic levels. However, significant disparities in pandemic-related effects and recovery on distinct sectors of the economy and spending components remain, as do significant excesses in capacity and high levels of unemployment.

A fourth-quarter increase in GDP compared to September was driven largely by domestic demand. Domestic demand in the fourth quarter (-4.1%) improved significantly compared to the third (-9.2%) (Graph 3.10). By component, a significant increase in consumption from the third to the fourth quarter was primarily responsible for spending performance. Gross capital formation showed minimal recovery in this period and remained low compared to pre-pandemic levels.

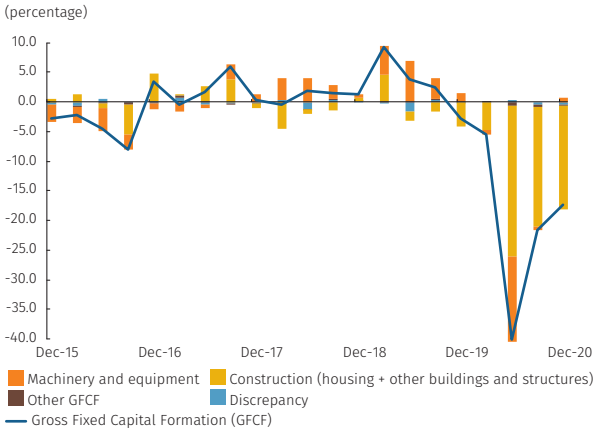
Total consumption in the fourth quarter recovered to near 2019 levels, alongside an increase (from a very low base) in private consumption and public consumption that continued to grow at a positive pace in annual and quarterly terms. Household consumption outpaced GDP growth in this period, improving from a decline of 9.0% in the third quarter to a decline of 2.1% in the fourth. A continued reopening of commercial activity and the relaxation of social distancing measures aided the fourth-quarter improvement, as did stimulus from the last VAT-free day and other discount holidays, which had an impact primarily on spending in semi-durable and durable goods. These two components of private consumption grew significantly in quarterly terms, as the consumption of durable goods in particular ended the year above 2019 levels. Despite continued effects of the pandemic, services consumption, the largest contributor to overall private consumption, also recovered in this period, falling 4.9% in the fourth quarter after an annual decline of 13.8% from July to September. Finally, consumption of non-durable goods maintained a positive quarterly trend, showing a rate of annual expansion similar to that of the third quarter. Private consumption fell by 5.8% for the year as a whole. Meanwhile, public consumption registered a quarterly increase at the end of 2020 that, together with a significant revision of previous quarters, led to overall growth in 2020 (3.7%) that was notably better than first expected (Graph 3.12). Given all of the above, total consumption in the fourth quarter was the aggregate that most contributed to the improvement

Graph 3.12
Total Household Consumption and Government Consumption[a/]
(annual change)



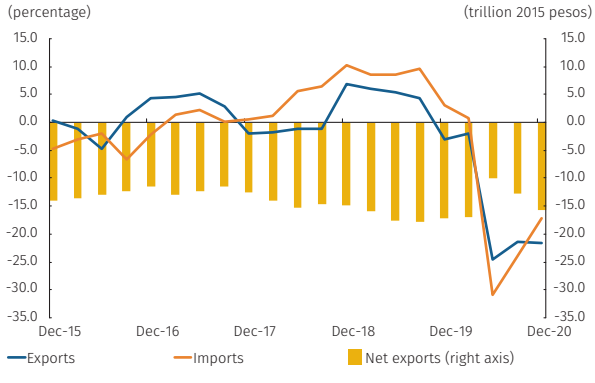
a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by *Banco de la República*.

Graph 3.13
Quarterly Gross Fixed Capital Formation[a/]
(annual change, contributions)



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

Graph 3.14
Exports, Imports, and Trade Balance[a/]
(annual change, trillion 2015 pesos)



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

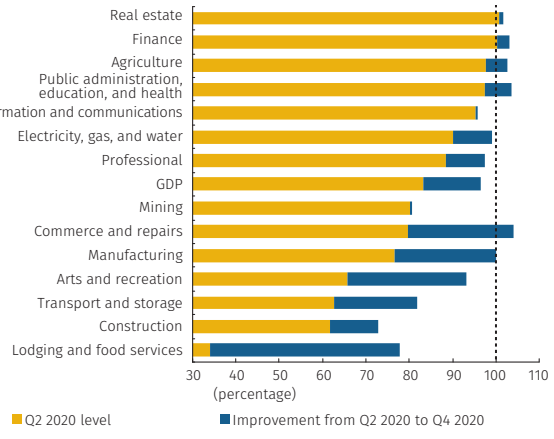
in GDP from the spending side, contracting annually by only 0.8%. The annual decline in total consumption for 2020 (-4.1%) was also less severe than the decline in GDP as a whole.

A recovery in gross fixed capital formation lost momentum in the fourth quarter due to the stagnation at very low levels of investment in construction and a small quarterly decline in investment in machinery and equipment (Graph 3.13). Fourth-quarter levels of this component of domestic demand were close to those of the third, while an annual decline moderated slightly from -20.6% to -18.4%. Despite significant spending on transportation equipment at the end of the year, investment in machinery and equipment receded slightly in the last part of the year, despite positive annual change for 2020 as a whole. Investment in housing and other buildings and structures continued to be significantly affected by the pandemic, registering annual declines of 27.5% and 31.1% in the fourth quarter, respectively, and showing minimal increases compared to the third quarter and the historical lows of the second. Investment in construction thus contracted overall by 28.8% in 2020, a decline only surpassed by figures registered in 1999. Gross fixed capital formation for 2020 as a whole shrunk by 21.1%.

Net exports in real peso terms fell in the fourth quarter as the result of an increase in imports and a fall in exports (Graph 3.14). Real exports presented a slight quarterly decline in the fourth quarter, corresponding to an annual decline of 21.6%. This was below expectations and similar to third-quarter performance (-21.4%). Foreign sales in mining goods and services continued to stagnate over the period, falling in annual terms at significant rates that were mitigated slightly by less unfavorable performance of some agricultural and manufacturing goods. By contrast, imports continued to recover, falling in annual terms by 17.2% in the fourth quarter compared to 23.9% in the third. This quarterly behavior fit with an improvement in domestic demand and can be explained primarily by purchases of capital and durable consumer goods. Given the above, the contribution from net external demand to annual change in GDP was negligible in the fourth quarter. Exports contracted by 17.4% for the year as a whole, while imports fell by 18%.

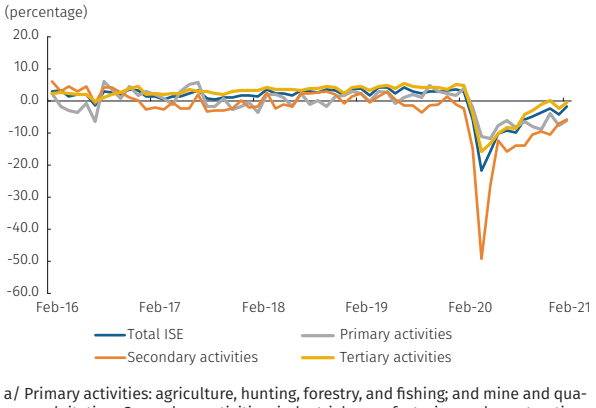
All major components of productive activity performed better in the fourth quarter compared to the historical lows of the two preceding quarters, in line with the gradual relaxation of quarantine measures. However, the majority of these components remained below pre-pandemic levels (Graph 3.15). A more dynamic economy in the fourth quarter was driven by tertiary activities, where GDP increased on a quarterly basis beyond expectations from the previous report. Particularly notable was the recovery in commerce and repairs, which exhibited positive annual

Graph 3.15
Relative Value Added by Sector in Q4 2019[a/]
(Q4 2019=100)



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

Graph 3.16
Total and Sector-Level ISE[a/], SACE series
(annual change)



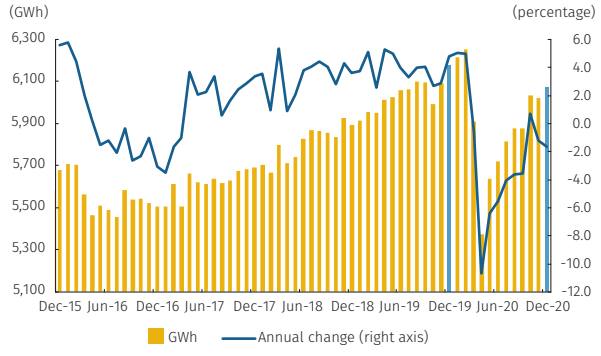
a/ Primary activities: agriculture, hunting, forestry, and fishing; and mine and quarry exploitation. Secondary activities: industrial manufacturing and construction; Tertiary activities: electricity, gas, and water; commerce, repairs, transportation, and lodging; information and communications; financial activities and insurance; real estate; professional, scientific, and technical activities; administration and support; public administration and defense, education and health; arts, entertainment, and recreation.
Source: DANE, calculations by *Banco de la República.*

growth and recovered to pre-pandemic levels. The VAT-free day promoted by the national government and other discount holidays promoted by the private sector contributed to this very positive performance. Value added by industrial manufacturing also returned to pre-pandemic levels, driving a recovery in secondary activities despite the fact that construction remained at very low levels and continued to show pronounced annual declines (both in buildings and in public works). For primary activities, the agricultural sector registered notable growth, particularly in crops. By contrast, mining continued to stagnate, and the annual decline in growth rates steepened due to significant annual declines in coal (-57.1%) and oil and gas extraction (-13.6%) that could not be offset by positive performance in metal mineral extraction (37.1%), which includes gold.

3.2.2 Indicators of Economic Activity in the First Quarter of 2021

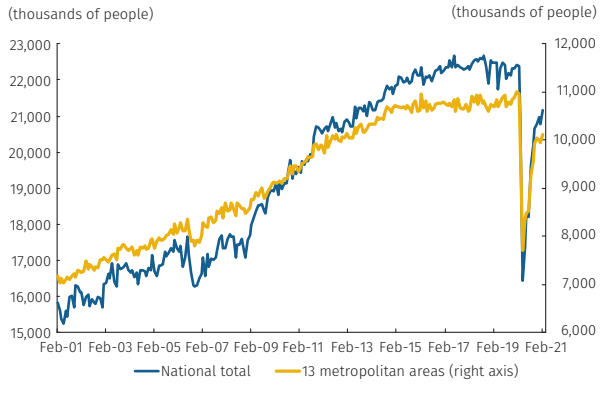
Economic activity was affected in January by steps to contain a second wave of COVID-19 but returned to a growth trajectory in February and March. GDP was likely affected by quarantine measures related to COVID-19 at the beginning of the year but appears to have returned to a growth trajectory in February. In the seasonally adjusted series, retail sales figures excluding fuels and vehicles grew annually in the fourth quarter by 5.6% before declining by 4.9% in January and then increasing by 9.6% in February. Similarly, annual change in industrial manufacturing production rose by 1.4% in December, fell by -0.4 in January, and rose again by 3.4% in February. The ISE, the most complete measure of economic activity, registered annual change in December, January and February of -2.3%, -4.2% and -1.9%, respectively (Graph 3.16). Higher frequency indicators, such as the demand for energy (Graph 3.17), mobility indicators, transaction figures from commercial banks, and vehicle matriculations suggest that the economy likely returned to a rate of recovery in March similar to that of the end of 2020.

Graph 3.17
Total Monthly Energy Demand, National Interconnected System (SIN)[a/]
(GWh and annual change)



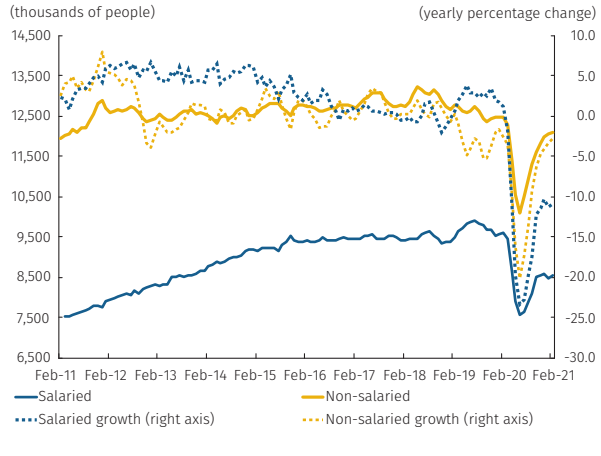
a/ Seasonally adjusted and corrected for calendar effects.
Source: XM; calculations by *Banco de la República*.

Graph 3.18
Employment by Location
(seasonally adjusted monthly series)



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

Graph 3.19
Employment by Job Quality: National Total
(seasonally adjusted moving quarter)



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

3.3 Labor Market[12]

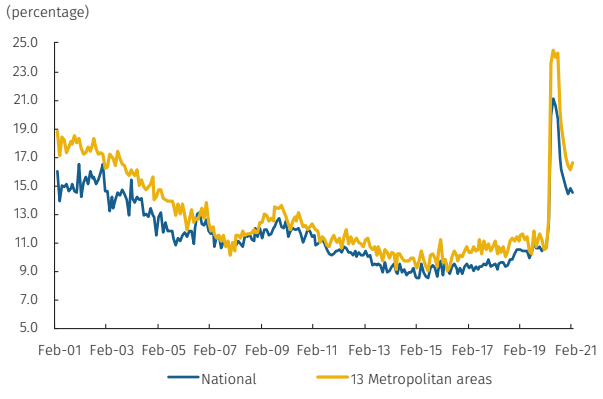
After a pause in January employment recovered again in February, though at a slower pace than observed in 2020. According to the seasonally adjusted series[13] from DANE's Large Integrated Household Survey (GEIH by its Spanish abbreviation), employment grew month-on-month in February by 1.9% (390,000 jobs) at the national level and by 1.6% (164,000 jobs) in Colombia's 13 largest cities (Graph 3.18). This recovery in employment came after a slight decline in January, explained in large part by a second wave of COVID-19 and the resulting restrictions put in place in some parts of the country. This suggests that as of February the labor market would have recovered close to 79.4% (4.7 million) of the jobs lost between March and April of 2020 at the national level, and 74.3% (2.4 million) in the 13 largest cities. Nevertheless, the speed of the recovery in employment has slowed compared to the second half of 2020. As a result, the deterioration in the Colombian labor market continues to be significant, with 1.2 million fewer jobs than observed a year ago and with significant disparities among population groups.

Job creation continues to occur primarily in less stable labor income segments. The recovery in employment has been varied among different types of work, leading to changes in composition. For the moving quarter ending in February, salaried and non-salaried employment grew nationally by 0.9% (78,000 jobs) and 0.5% (58,000 jobs), respectively, compared to the moving quarter ending in January. Taking these figures into account, the labor market would have recovered close to 62.3% (1.9 million) of salaried jobs lost between February and March of 2020, and 88.0% (2.6 million) of non-salaried jobs (Graph 3.19). Formal and informal urban employment have recovered 68.7% (876,000) and 77.8% (1.5 million) of the jobs lost from the pandemic. The reduced dynamism in formal employment is confirmed by information from administrative registers, such as Colombia's online social security register (PILA by its acronym in Spanish), which shows a recovery of just 29.5% of the overall decline in pension-dependent contributors. Both of the comparisons above suggest a recovery in employment that has favored less stable income segments (non-salaried and informal employment).

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

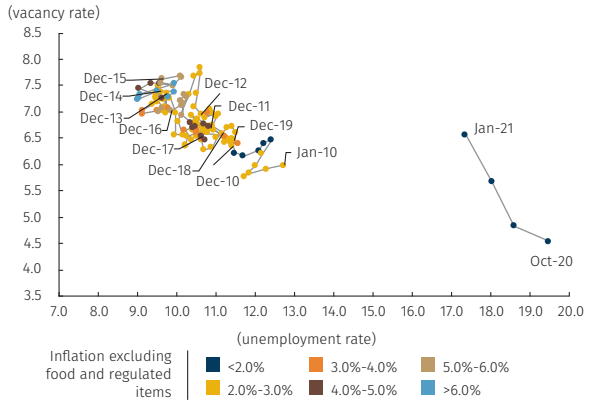
13 Labor market series are seasonal, meaning that their values are systematically higher or lower depending on the month of the year. This phenomenon needs to be isolated through statistical techniques in order to make comparison across months in the same year. For that reason, the information presented in this section corresponds to the series excluding those calendar effects, referred to as the seasonally adjusted series.

Graph 3.20
Unemployment Rate by Location
(seasonally adjusted monthly series)



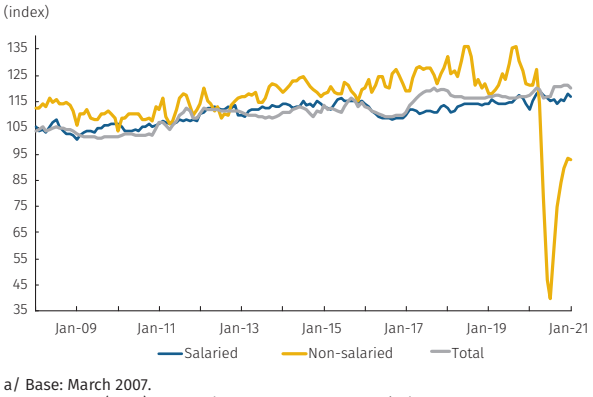
Source: DANE (GEIH), calculations by *Banco de la República.*

Graph 3.21
Beveridge Curve for Seven Largest Cities



Notes: seasonally adjusted, moving quarter. Vacancy rate estimated through hiring methodology in GEIH, see Morales, L. F., & Lobo, J. (2017). Estimating Vacancies from Firms' Hiring behavior: The Case of a Developing Economy. *Borradores de Economía*, (1017).
The Beveridge curve estimate is not available for the period from March to September 2020, as the vacancy indicator with which it is usually calculated could not be produced due to a reduction in the number of questions in the GEIH.
Sources: DANE (GEIH) and *Banco de la República.*

Graph 3.22
Real Monthly Median Labor Income Index: 23 Cities[a/]
(seasonally adjusted moving quarter)



a/ Base: March 2007.
Source: DANE (GEIH); calculations by *Banco de la República.*

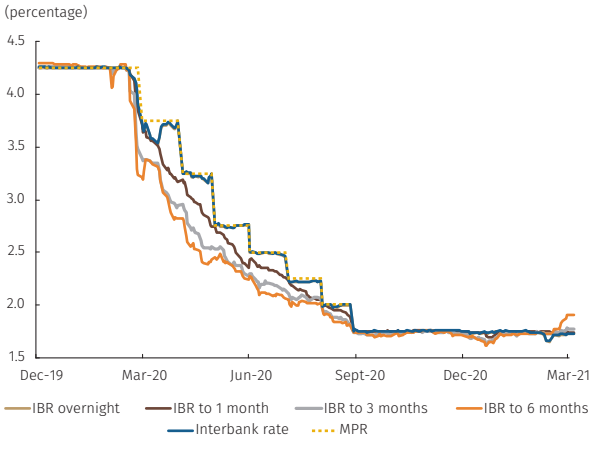
The pace of decline in the unemployment rate slowed and figures continue at historically high levels. The relaxation of mobility restrictions in February and the gradual reopening of schools has allowed for an increase in the labor force participation rate, which had remained stable since November 2020. This was more accentuated in urban areas, where the monthly increase in labor force participation was greater than the increase in employment. As a result, while in February the national unemployment rate fell in monthly terms to 14.6%, in the 13 largest cities it increased by 0.5 percentage points to 16.6%, given higher pressure on the labor supply (Graph 3.20). Although there remains a downward trend in unemployment, reductions have come at a slower pace than observed in the second half of 2020, when the national unemployment rate fell 6.2 percentage points (-7.5 percentage points in the 13 largest cities). Additionally, there remain significant disparities among population groups, with higher levels of unemployment for women, non-heads of household, young people, and less educated workers.

The moderated recovery in the unemployment rate reflects a labor market that remains loose and that is likely exerting downward pressure on inflation via labor costs. The most recent vacancy information from the GEIH and the Public Employment Service (SPE for its initials in Spanish) shows relative stability in recent months, with levels that remain below those observed prior to the pandemic. Based on a Beveridge curve, the vacancy rate and a moderated recovery in the urban unemployment rate suggest a labor market that remained widely loose to February 2021 (Graph 3.21,) which would imply downward pressure on inflation via lower salary costs. Labor income information from the GEIH, in particular for the non-salaried segment, appears to confirm this conclusion. While income in the salaried segment has remained relatively stable, non-salaried income continues below levels observed a year ago despite some recovery after an abrupt fall in April 2020.

3.4 Financial and Money Market

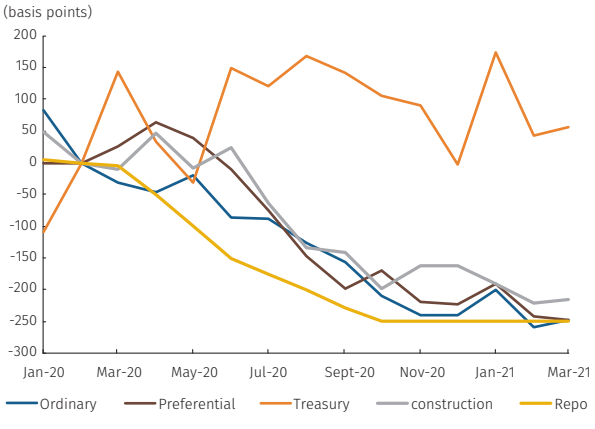
Domestic financial conditions continued to favor a recovery in economic activity in the first quarter of 2021. The arrival of COVID-19 in Colombia a year ago led to significant demand for liquidity on the part of businesses, which was met by banks through a significant increase in commercial loans. The mortgage loan portfolio in this period became less positive, while consumer and microcredit portfolios declined. Starting in the second half of 2020, sight deposits stabilized at high levels and growth in the commercial credit portfolio decelerated due to pre-payment on credit loans, though to March 2021 this modality remained above pre-pandemic levels. In the same month mortgage rates stopped their deceleration

Graph 3.23
Policy Interest Rate (MPR), Interbank Rate, and Banking Benchmark Reference Rate (IBR)
(daily data)



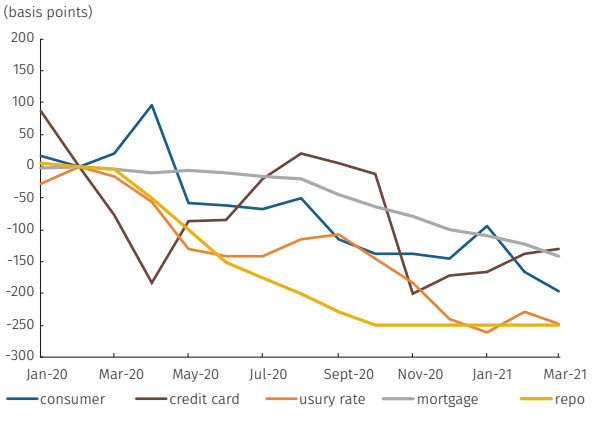
Source: *Banco de la República.*

Graph 3.24
Monthly Interest Rates on Commercial Credit
(change from February 2020)



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

Graph 3.25
Monthly Interest Rates on Household Credit
(change from February 2020)



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

and showed positive real annual growth rates. Consumer and micro-credit portfolios recovered and in March 2021 exceeded pre-pandemic levels. This has come amid the materialization of some credit risks, an increase in loan provisions, and a decline in financial system profits. Interest rates on preferential and ordinary loans have fallen to a similar degree as the reduction in the policy interest rate, while transmission of monetary policy on consumer interest rates and, to a larger extent, mortgage interest rates has been slower, in line with historical trends.

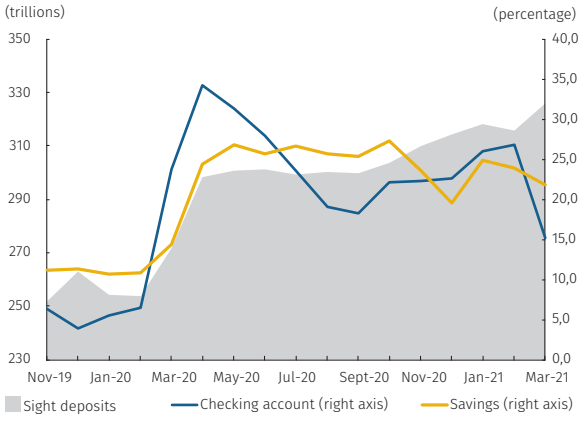
The transmission of reductions in the monetary policy interest rate toward money market, deposit, and credit interest rates has been robust (see Box 1[14]). Money market interest rates remained aligned with the policy interest rate in the first quarter, with the exception of the IBR at six months, which in the final days of March surpassed the monetary policy rate by around 16 bp (Graph 3.23). Deposit interest rates continued to fall, and since February 2020 have accumulated declines of 298 bp on CDs, 270 bp on Colombia's DTF rate, and 135 bp on savings deposits. In the same period, commercial credit interest rates registered a significant decline, similar to the monetary policy rate (-248 bp for preferential credit, -247 for ordinary loans, and -216 for construction loans) (Graph 3.24). For their part, household interest rates have reacted more slowly, as has been the case historically. Between February 2020 and March 2021, consumer interest rates fell 196 bp, mortgage rates 141 bp, and credit cards 130 bp (Graph 3.25).

Sight deposits have stabilized at high levels and long-term deposits have continued to decelerate since the second half of 2020. The abundant availability of funds in the banking system continues to consist primarily of sight deposits, while the share of CDs continues to decline. In February and March 2021 deposit levels increased due to the dynamic for sight deposits and bond placement, after a relatively stable second half of 2020. At the close of the first quarter sight deposits grew by 20.0% annually and term deposits (CDs and bonds) contracted 7.4% annually (Graphs 3.26 and 3.27), leading to a reduction in the share of CDs in fundraising (from 44.4% in February 2020 to 35.5% in March 2021). To March of this year, the deposit balance of COP 533 trillion has surpassed the portfolio in national currency (COP 493 trillion) by 8.1%, which represents a significant change compared to the same figures in the period before the pandemic. Additionally, the short-term liquidity indicator (IRL)[15] at the end of the first quarter was 226%, somewhat above the figure from February 2020 (210%) and more than double the 100%

14 This supplement will be made available on Friday, May 7, 2021.

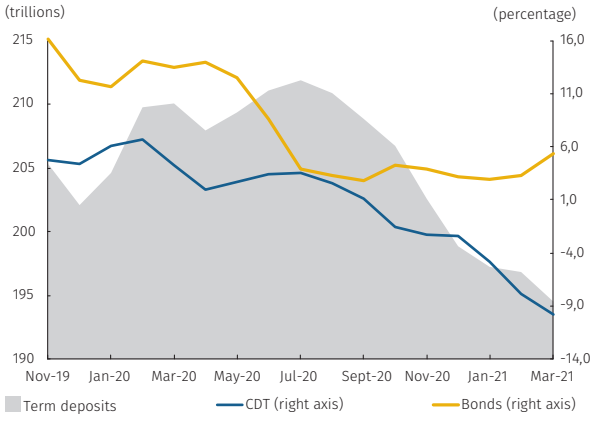
15 Liquidity Coverage Ratio (LCR) to 30 days relates the availability of liquidity to potential outlays, considering stressed markets.

Graph 3.26
Sight Deposits[a/]
(monthly average balance and annual change)



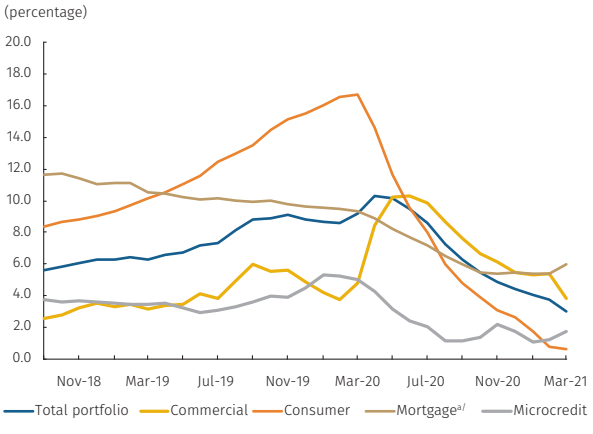
a/ Includes checking accounts, saving deposits, and other sight deposits.
Source: Office of the Financial Superintendent of Colombia; calculations by *Banco de la República.*

Graph 3.27
Term Deposits
(monthly average balance and annual change)



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

Graph 3.28
Gross Portfolio in National Currency
(annual change, average monthly data)



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

required. In January 2021 resource stability measured with the NSFR[16] was 110% compared to the 80% required until March 2021[17].

The banking portfolio continues to recover (Graph 3.28) in a context in which the pandemic has affected both the supply and demand for loans, and in which some credit risks have materialized. Commercial loan disbursements in national currency continued below pre-pandemic levels in the first quarter, to which the increased use of direct external financing and debt placement in the domestic market would have contributed. Micro-credit benefited by the national government's guarantee program, having already surpassed February 2020 levels and sustaining a modest annual 1.7% growth in the period. Support from the national government for home buying[18], the partial coverage of interest on mortgage debt[19], and a real estate market exhibiting strong signs of recovery have all likely contributed to improved performance in the mortgage portfolio. In the first quarter of 2021 housing loan disbursements exceeded levels from the same period last year, generating an acceleration in annual growth from 5.5% in December to 6.0% in March. Meanwhile, consumer credit has been supported by the Debt Support Program (PAD for its acronym in Spanish)[20], which currently covers 12% of the portfolio. In this context, consumer loan disbursements in March reached the 2019 monthly average, essentially halting the accelerated decline in annual growth.

Credit risk and loan provisions increased while financial system profits have declined. Despite this, solvency levels remain above minimum regulatory requirements. The default portfolio has increased as loan postponements and temporary delays authorized by the Financial Superintendent have lapsed[21], an eventuality that was covered by an increase in loan provisions starting in the second half of 2020. To January 2021, arrears increased 5.6%, affecting especially the mortgage portfolio (6.9%) and consumer credit (6.6%). In this context, accumulated profits

16 The Net Stable Funding Ratio (NSFR) relates available financing to required funding. This is a new monitoring indicator established by the Financial Superintendent starting in April 2020, in line with the Basel III accords.

17 The goal is to increase this minimum regulatory requirement up to 100% in December 2022.

18 Such as the *Mi Casa Ya* and *Semillero de Propietarios* programs, which are aimed at social interest housing (maximum price of COP 118.5 million).

19 Mechanism operated by the Reserve Fund for the Stabilization of the Mortgage Portfolio (FRECH in Spanish).

20 External Circular Letter 02 022 from June 30, 2020, more flexible and less onerous mechanism to maintain credit validity, adjusting conditions, where possible, for debtors and discretion allowed in risk management by financial entities.

21 External Circular Letters 007 and 014 from March 2020.

from the last 12 months contracted by 56%. Nevertheless, total and core solvency maintained their margins on regulatory minimums (21.5% vs. 9.5% and 17.1% vs 4.5%, respectively[22]).

22 Solvency behavior has been aided by adoption of the Basel III Accords (Decrees 477 of 2018 and 1421 of 2019), a portfolio deceleration, and a recomposition of assets toward investment.

Box 1

The Transmission of Changes in the Monetary Policy Interest Rate (MPR) to Credit Institutions' Interest Rates (CI)

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Deicy Cristiano Botia
Eliana González Molano
Carlos Huertas Campos*

The mechanisms through which monetary policy actions affect the short-term economic growth and inflation are called the channels of monetary policy transmission. One of them, the interest rate channel, implies that changes in the MPR (short term) are transmitted to the interest rates with similar and longer terms for the different financial instruments. These changes modify the cost of financing for various economic agents, alter their spending and investment decisions and, as a result, affect the economic activity, the exchange rate, the inflation expectations and, finally, the prices. In this context, the efficiency of this channel depends on both the degree of sensitivity of short, medium, and long-term rates to changes in the MPR and the time it takes for this sensitivity, along with other factors, to materialize.

The above mechanism is reinforced when the credit channel works. The latter channel has an effect when bank loans are a special or single source of financing for agents[1], and when, for commercial banks, loans cannot easily be replaced by other investments either. Under these circumstances, changes in the MPR alter the general level of the interest rates and affect the supply of bank loans in the economy. As a result, the impact of such changes on the interest rates for loans is reinforced as is their effect on aggregate demand and, therefore, prices.

Despite the above, the transmission of the changes in the MPR to deposit and loan interest rates is not immediate and has a high degree of uncertainty. In this Box, we show some results which suggest that compared to observed since 2003, the speed of adjustment of the interest rates to changes in the MPR in the period (April to December 2020) has been faster, particularly to interest rates on deposits and preferential loans. First, we describe the main aspects of the transmission of the MPR to market interest rates, and how the performance of some variables that affect the savings and loan markets generates uncertainty in estimating the MPR. Also, we argue why the transmission of the MPR may be asymmetric, i.e., its degree or speed may differ in periods when the MPR increases or decreases.

1. Some Factors that affect the Transmission of the MPR

a. The Situation of the Economy and the Characteristics of CIs

The main function of CIs is to capture money from families and enterprises in an economy (surplus) and lend it to those agents who require it for consumption or investment (deficit). In this respect, the control and monitoring of the various risk factors by the CIs is intended to ensure the stability of these entities, a crucial factor in preserving household and corporate savings. Significant changes in economic activity or very volatile periods affect the risk level that CIs perceive, therefore altering the operation of the credit channel and the transmission of the MPR. For example, sharp output declines are often accompanied by reductions in credit demand and supply, liquidity problems or increases in financing costs by CIs, declines in the agents' income, and increases in credit risk, among others. In such a context, the accumulation of risks in CIs is transferred to interest rates on loans and slows down the transmission of reductions in the MPR. This slow or scarce transmission can also occur in periods of economic boom and TPM increases, particularly when they coincide with increases in credit supply far above demand.

The micro-financial characteristics of CIs could also explain different reactions of savings and credit rates to changes in the MPR. In general, small and low-capital or liquidity CIs face greater restrictions in their access to resources, and their rates tend to show lower sensitivity to movements in the MPR, particularly during periods of interest-rate cuts.

Chavarro et al.(2015) used duration and cross-sectional models to assess the effect of macro-financial and micro-financial variables on the transmission of the MPR. In the first case, the duration model evaluates the likelihood of transmission occurring at 25%, 50%, 75%, and 100%, and estimates the impact of macroeconomic and micro-financial factors on this probability. The authors found that increases in positive gaps of both inflation and output decrease the likelihood of transmission taking place in commercial credits. In addition, they found that the effect of the micro factor was negative, small,

* The authors belong to the Statistics Section and the Programming and Inflation Department of *Banco de la República*. They are exclusively responsible for the opinions herein contained, which do not necessarily reflect those of the Central Bank or its Board of Directors.

1 In 2019, 55.6% of corporate financing in national (N) and foreign (F) currencies was made through loans with CIs, 23.8% through N or F suppliers, 13.9% through parent companies, and 7.8% with bonds. As for households, 93.3% of financing is provided by CIs and the remaining 6.7% by cooperative institutions, employee funds, and mutual associations.

and with limited significance for the credit modalities analyzed. Using a cross-sectional, feasible generalized least squares model (FGLS), they studied the individual effect of the size, liquidity, and capitalization of CIs on the transmission of the MPR to consumption, commercial, ordinary, and preferential credits (Table B1.1). The main results are: 1) In the long term, transmission to interest rates of all modalities is complete; 2) Regarding consumer credits, the size of CIs is the only factor that affects transmission (larger entities record a greater transmission); 3) As for preferential credits, CIs with the highest capitalization level reacted most to the change in the MPR; and 4), liquidity makes no difference in transmission for any of the credit modalities. Larger entities have lower rates for ordinary and consumer credits. Liquidity positively impacts the rate level for ordinary credits, while this characteristic has no significant effect for other modalities.

b. Limits on Credit Interest Rates

In principle, limits on credit interest rates seek to protect consumers from an excessive rate or usury rate. However, critics of these limits argue that, as they do not result from an optimal balance between credit supply and demand, they can generate several adverse effects, such as less financial deepening, informality in the high-risk loan market[2], and rigidities in the transmission of the MPR to credit rates, among others. A statistical exercise for Colombia shows the effect of the limit rates and the MPR on interest rate dynamics for different credit terms and modalities. Graph B1.1 shows the percentage of the variance of the corresponding market rate explained by the MPR and the limit rate (partial R^2). A significant effect of the movements of the limit rate on micro-credit, credit card loan, mortgage, and consumer lending rates (for less than three years) were found[3]. On the contrary, in commercial credits, the influence of usury rates is very low and considerably less than the contribution of the MPR[4].

c. Expectations and Unanticipated Changes of the MPR

Theoretically, long-term interest rates can be expressed as an average of the expected short-term rates contained by the total maturity period of the loan or deposit. Thus, agents can modify the expected level of a market interest rate throughout the term horizon in the face of variations or expectations of changes in the MPR. In this regard, Cristiano *et al.* (2017) conducted several econometric exercises to include the effect of expectations on the transmission of the MPR. The first exercise assesses the effect of the non-anticipated component of changes in the MPR on the transmission of fixed-term deposits (DTF) and commercial (ordinary and preferential) rates. From October 2008 to December 2020, the effect of the unanticipated shock calculated through a Taylor rule (Ψ_t)[5] is significant only for preferential rates. In the unanticipated shock using the agents' expectations (Ψ'_t)[6], an unexpected decision is transmitted by 64.6% to the DTF rate, 76.9 % to preferential rates, and 61.7% to ordinary credit rates (Table B1.2).

Two other exercises focus on studying the effect of unanticipated shocks on short-term interest rates (ninety-day DTF or CDT). In the first, monthly changes in the DTF rate are expressed as a simple average of the changes in the agents' monthly MPR expectations, prediction errors, and prediction corrections[7]. The estimate for this model is updated with data to 2020. Results suggest that DTF rates are adjusted by 41.4% for the expected total change in the MPR month by month until its duration (expected change at three months). In contrast, the monetary surprises and corrections made by CIs to their forecasts do not have a statistically significant effect on the behavior of the DTF (Table B1.3). In the second exercise, by using daily data, the authors analyze the effect of monetary policy decisions on the change in interest rates to ninety days, breaking it up into three moments: one month's before, one day's before, and immediate (the next day). Results suggest that ninety-day CDT rates are adjusted by 63.4% one month prior to the BDBR's announcement, while the effects one day before the change and one day after the change are not significant (Table B1.4).

2. How long does Transmission of the MPR take?

The factors mentioned previously explain the lag between announcing a change of the MPR and its transmission to market interest rates. The duration of this transmission has been analyzed in several studies for Colombia, which have found a long-term relationship between the MPR and loan and deposit interest rates, but their transmission may be incomplete in the short term[8]. Overall, the estimated time for complete transmission is quite uncertain and implies a wide period. Factors like the duration of the period for increases or decreases, the magnitude of the changes, or the estimation methodologies affect the time required for transmission. Graph B1.2 shows the likelihood of a 50% or 100% transmission of the MPR changes to consumption, ordinary, and preferential rates. In both cases and for all modalities, the results suggest that market rates

2 Credit demand in high-risk loan markets, at rates higher than the usury rate, is usually met by unsurveilled agents.

3 Cointegration relationships between the market rate, the MPR, and the corresponding limit rate were found only for some credit card loan and micro-credit terms, as well as for some types of credit in the case of home acquisition. Long-term relationships between these rates were found for consumption and for ordinary and preferential interest rates.

4 For details of the methodology, see Chavarro *et al.* (2015).

5 The rule considers the output gap, the deviation of inflation from the target, US inflation, nominal depreciation, and the consumer confidence index: $TPM_t = f(GAP, (\pi\text{-}Meta), TPM, Inf_{usa}, \Delta TC, ICC)_{t-p} + \Psi_t$.

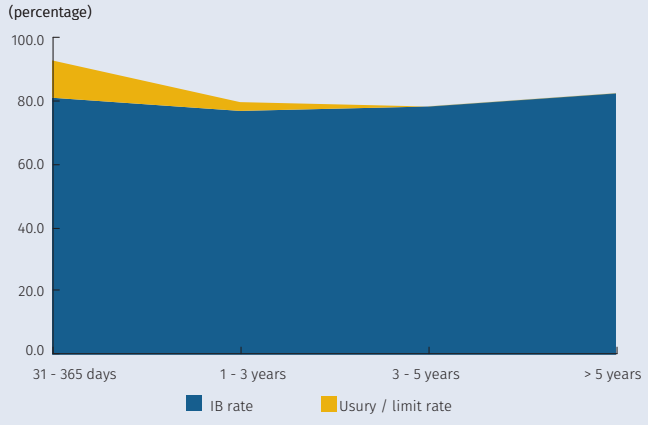
6 Using the results of the monthly expectations survey to economic analysts (EME), $\Psi'_t = TPM\text{-}E_{t-1}(TPM)$.

7 For details of the methodology, see Cristiano *et al.* (2017).

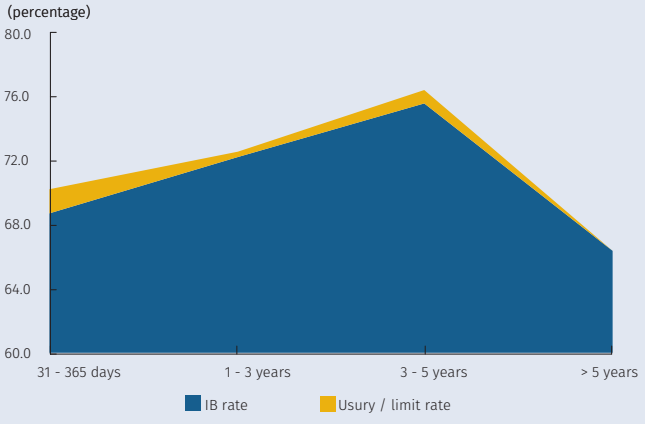
8 See Julio (2001), Huertas *et al.*(2005), Betancourt *et al.* (2006), Vargas *et al.* (2010), Chavarro *et al.* (2015).

Graph B1.1
Contribution of the Policy Rate and the User or Limit Rate to the Variation of Interest Rates by Credit Modality, Terms, and Type

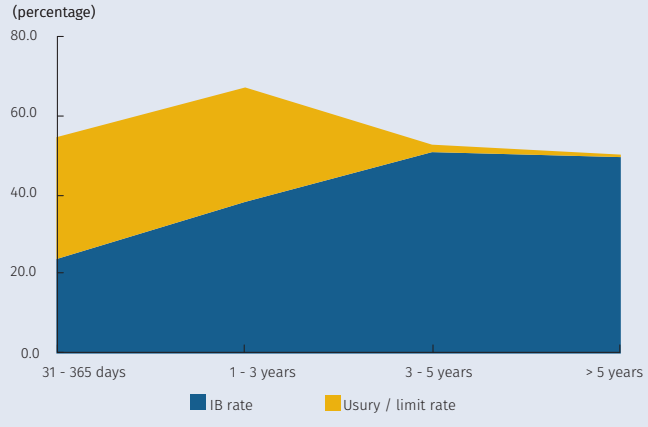
A. Preferential Rate



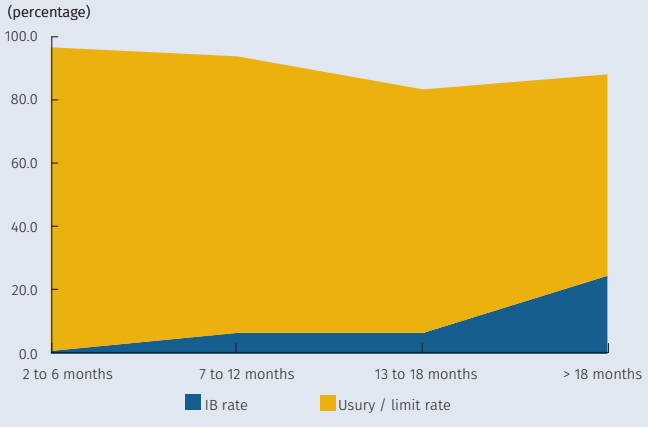
B. Ordinary



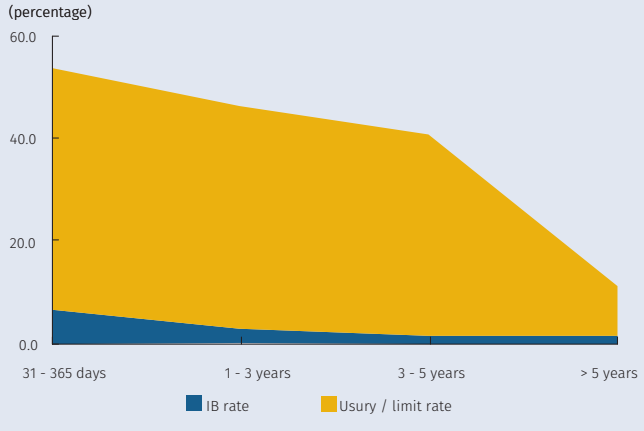
C. Consumption



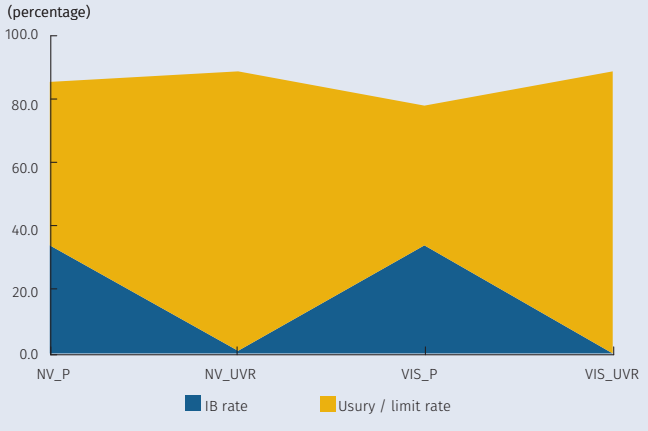
D. Credit Card[a/]



E. Micro-credit[a/]



F. Housing acquisition



NV_P: Housing acquisition (other than VIS) interest rate in pesos.
NV_UVR: Housing acquisition (other than VIS) interest rate in real value units (UVR).
Vis_P: Housing acquisition interest rate (VIS) in pesos.
VIS_UVR: Housing acquisition interest rate (VIS) in UVR.
a/ No stable long-term relationship was found between credit card and micro-credit rates with the Monetary Policy Rate (MPR) and the corresponding usury rate. Therefore, these results must be interpreted with caution.
Sources: Chavarro *et al.* (2015); Office of the Financial Superintendent of Colombia and *Banco de la República*; calculations by the authors; samples from May 2002 to December 2020.

Table B1.1
Estimated coefficients and control variables for IBR according to a FGLS model (2003-2020)

	Consumption	Ordinary	Preferential
Interactions			
IB*Size	1.896***		
IB*Capitalization			1.532***
Accumulated effect			
IB	1.015***	1.120***	1.006***
Size	-0.111***	-0.115***	0.040**
Capitalization	0.023**		-0.067
Liquidity		0.019**	0.002

Note: * Significant at 10%, ** Significant at 5.0%, *** Significant at 1.0%.
Sources: Office of the Financial Superintendent of Colombia and *Banco de la República*; authors' calculations; period analyzed: 2003 to 2020.

Table B1.2
Impact of the Unanticipated Shock on the MPR on Market Rates' Change

	Ψ Model	Ψ' Model
DTF	0.146	0.646***
Preferential	0.227*	0.769***
Ordinary	0.134	0.617***

Note: * Significant at 10%, ** Significant at 5.0%, *** Significant at 1.0%.
Sources: Office of the Financial Superintendent of Colombia and *Banco de la República*; calculations by the authors; period analyzed: October 2008 to December 2020.

Table B1.3
DTF: Effect of Unanticipated Shocks based on Short-Term Expectations.

	Coefficient
Surprise	0.042
Adjustment	0.197
Change expected at 3 months	0.414***

Note: * Significant at 10%, ** Significant at 5.0%, *** Significant at 1.0%.
Sources: Office of the Financial Superintendent of Colombia and *Banco de la República*; calculations by the authors; period analyzed: October 2008 to December 2020.

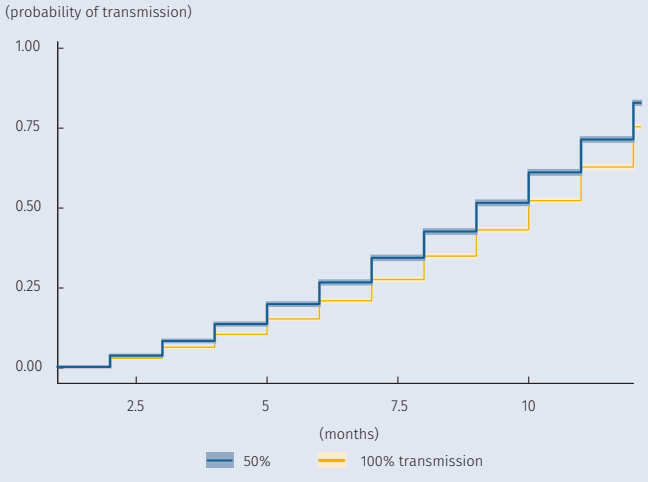
Table B1.4
CDT at 90 days: Effects of anticipated changes (one month before), one day before, and immediately.

	Coefficient
Anticipated	0.634***
One day before	-0.158*
Immediate	0.142
Total effect	0.619***

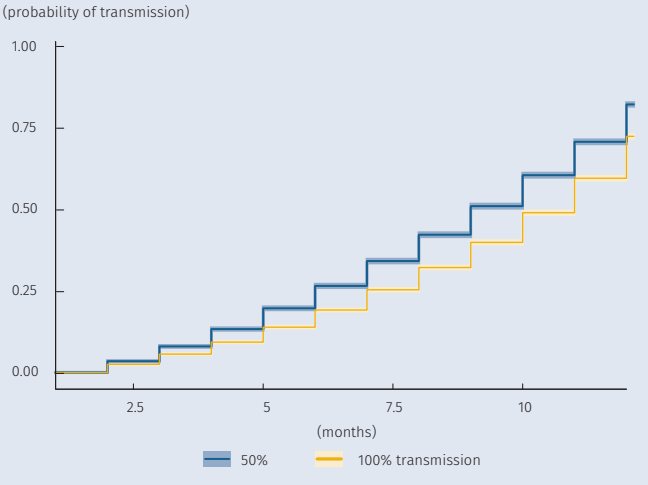
Note: *Significant at 10%, ** Significant at 5.0%, *** Significant at 1.0%.
Sources: Office of the Financial Superintendent of Colombia and *Banco de la República*; authors' calculations; period analyzed: 2003 to 2020.

Graph B1.2
Characterization of the 50% and 100% Transmission Probability of the Change to the MPR to Market Rates

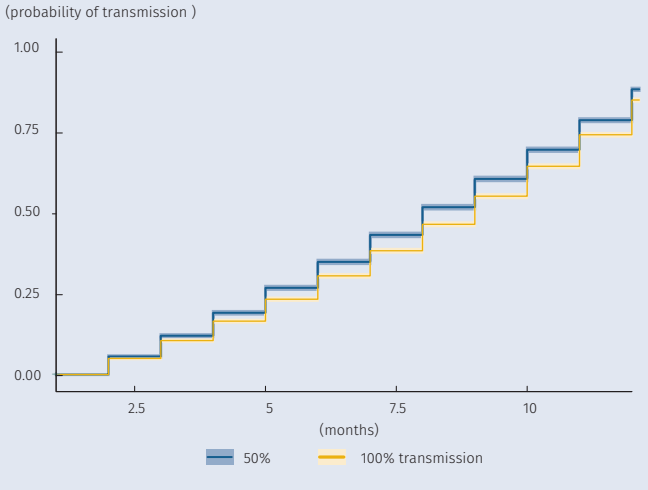
A. Consumption



B . Ordinary



C. Preferential credit



Sources: Office of the Financial Superintendent of Colombia and *Banco de la República*; authors' calculations; period analyzed: 2003 to 2020.

require some time to fully absorb the MPR shocks. The highest probability of transmission to preferential rates stands out, with a similar probability in the two scenarios, 50% and 100% transmission.

Another descriptive way to analyze the transmission is considering the *sensitivity index* [9], which contrasts, for each period of increase or decrease of the MPR, the cumulative change of a market rate vis-à-vis the cumulative change of the MPR. In this way, the time required by financial institutions to transmit the MPR stance in each complete scenario of increases or reductions is analyzed, as well as the magnitude of the adjustments regarding changes in the MPR and the credit modalities that exhibit greater and lesser reactions[10]. The results for 2003 - 2020 show that transmission takes time and that it differs for different modalities. In this period, to reach 90% sensitivity, the CDT rates require, on average, about a year and a half, and transmission is faster toward captures made by treasuries than those made by offices (Table B1.5). As for loan rates, the average and the standard deviation of the indicator suggest that the modalities that first reach 90% of transmission with less uncertainty are, in order, the interest rates for preferential, ordinary, consumption, micro-credit, and housing credits. Results also suggest that in the last phase of MPR reductions, from April to December 2020, transmission to deposit interest rates (seven months) and preferential credits (six months) has been faster than its historical average. At the end of 2020, the other modalities also exhibited good sensitivity: ordinary (84%), consumption (67%), and mortgage (35%) (Graph B1.3).

Galindo et al. (2020) assess the long- and short-term relationship between the MPR and market rates. They found that transmission to deposit rates can take about a year and a half, while for loan rates, between one and a little over two years, depending on the modality. Within the latter, transmission to commercial rates (preferential and ordinary) is usually at the bottom of that range, and consumption rates at the top. The slowest to react are micro-credit and housing interest rates. Analyzing the duration of the transmission of the MPR, they found that 90% transmission of a change in the MPR: 1) is almost complete in deposit rates and takes about 11 months; 2) is complete for the aggregated loan interest rates and requires about 17 months; and 3) exhibits a faster transmission to preferential and ordinary commercial interest rates (14 months) 23 months, respectively), for consumption interest rates it takes 34 months.

3. Is MPR Transmission Symmetrical?

Several studies have found differences in transmission and pace of adjustment of market rates facing reductions or increases in the MPR. For example, when analyzing data from OECD countries, Borio and Fritz (1995) found that market rate adjustment is slower in response to the reduction of the MPR compared to an increase. One argument for this to happen is that during recessions, the risk and credit requirements increase, and loan applicants turn to bidders with whom they have closer relationships. In this context, a reduction in the MPR leads to a minor balance adjustment of market interest rates. Asymmetry in transmission may occur in the opposite direction due to adverse selection problems and asymmetries of information in the credit market. In such cases, to avoid an increase in credit risk, CIs may decide not to fully transmit the increase in the MPR to their clients, as this could increase the likelihood of default and deteriorate the quality of their portfolios. This problem would materialize when there are increases in rates, but not when there are reductions. Additionally, De Bondt (2005) found that increasing the market rate in competitive markets can lead to customer losses in favor of competitors and be reflected in interest rate rigidities. In practice, both types of asymmetry can take place in an economy and may be different for distinct deposit and loan interest rates.

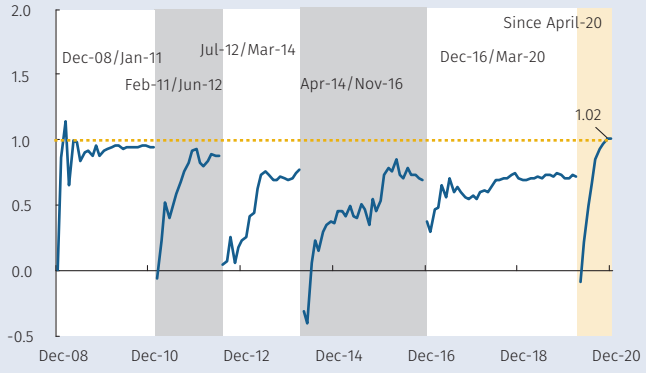
Galindo et al. (2020) used the methodology proposed by Shin (2014) to simultaneously estimate for Colombia short- and long-term asymmetries based on a cointegration scheme, using a non-linear autoregressive distributed lag model (NARDL). From May 2002 to August 2020, the authors found some asymmetries in the long term but not in the short time. In particular, they found symmetry in the response of the aggregate loan rate and the one for preferential commercial credits. On the other hand, consumer and ordinary credit rates react more to reductions in the MPR than to increases. Deposit interest rates respond more to increases than to decreases of the MPR. Thus, these results suggest that monetary policy could be more effective when it is expansionary than contractionary.

9 For details of the methodology, see Chavarro *et al.* (2015).

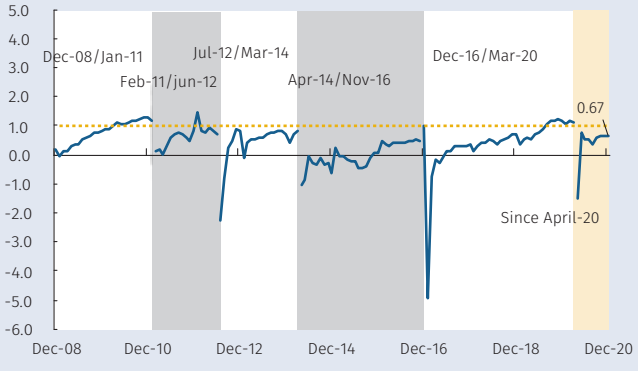
10 Negative values suggest a contrary sensitivity; between 0 and 1, low sensitivity (less than proportional); equal to 1, complete transmission; greater than 1 suggests a high sensitivity (more than proportional).

Graph B1.3
Market Interest Rate Sensitivity Index vis-à-vis the MPR

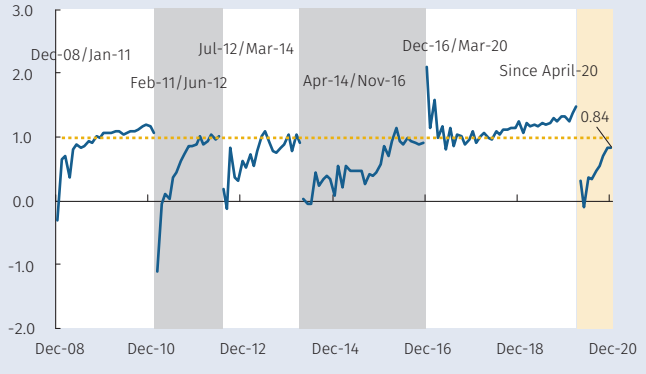
A. DTF Rate



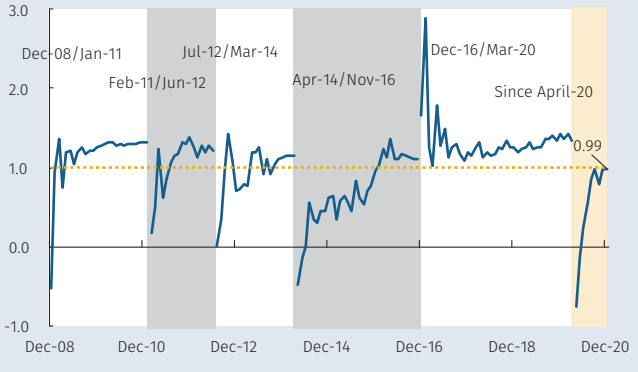
B. Consumption



C. Ordinary



D. Preferential Rate



Note: The sensitivity index (SI) is the cumulative change of a market rate as a proportion of the cumulative change in the MPR for each period of increase or decrease in the MPR. AN SI<0 means an anti-MPR reaction; 0<SI< 1, low MPR sensitivity (less than proportional); SI=1, full TPM transmission; SI>1, high TPM sensitivity (more than proportional). White stripes correspond to periods of reduction in the MPR; gray, to increases in the MPR; and yellow, to the last phase of reduction in the MPR (April to December 2020).
Sources: Office of the Financial Superintendent of Colombia and *Banco de la República*; authors' calculations.

Table B1.5
Savings and Credit Rates Sensitivity Index to Changes in the MPR

Type	Modality	Average months to reach 90% of change		
		April/2020 to Dec/2020	Jan/2003 to Dec/2020	
			Average	Standard Deviation
Deposits	Total CDT	7	17	11
	CDT < 6 months	5	19	11
	DTF (3 months)	5	18	11
	CDT from 6 to 12 months	5	18	10
	CDT > 12 months	4	8	8
	Treasury CDT	4	9	7
	Branch office CDT	7	22	10
Household placements	Consumption	*	17	10
	Mortgage (Non VIS)	*	20	12
	Credit card	1 **	15	8
Corporate placements	Ordinary	*	13	9
	Preferential	6	8	7
	Microcredit	1 **	17	11
	Non-VIS housing construction	*	16	9

* 90% not reached
** In these cases, the reaction is explained by the effects of rate recomposition rather than by rapid transmission of the MPR. In that regard, it should be considered as an atypical fact.
Sources: Office of the Financial Superintendent of Colombia and *Banco de la República*; authors' calculations; period analyzed: 2003 to 2020.

References

Betancourt, R.; Vargas, H.; Rodriguez, N. (2006). "Interest Rate Pass-Through In Colombia: A Micro-Banking Perspective", *Borradores de Economía*, No. 407, *Banco de la República*.

Borio, C.; Fritz, W. (1995). "The Response of Short-term Bank Lending Rates to Policy Rates: A Cross- Country Perspective", Working Paper, No. 27, BIS, Monetary and Economic Department.

Chavarro, X.; Cristiano, D.; Gómez, J.; González, E.; Huertas, C. (2015). "Evaluación de la transmisión de la tasa de interés de referencia a las tasas de interés del sistema financiero", *Borradores de Economía*, No. 874, *Banco de la República*.

Cristiano, D.; González, E.; Huertas, C. (2017). "Evaluación de la transmisión de la tasa de interés de referencia a las tasas de interés del sistema financiero considerando las expectativas de los agentes", Borradores de Economía, No. 988, *Banco de la República*.

De Bondt, G. (2005). "Interest Rate Pass-through: Empirical Results for the Euro Area", *German Economic Review*, vol. 6, pp. 37-78.

Galindo, A.; Steiner, R. (2020). "Asymmetric Interest Rate Transmission in an Inflation Targeting Framework: The Case of Colombia", *Borradores de Economía*, No. 1138, *Banco de la República*.

Huertas, C.; Jalil, M.; Olarte, S.; Romero, J. (2005). "Algunas consideraciones sobre el canal del crédito y la transmisión de tasas de interés en Colombia", Borradores de Economía, No. 351, *Banco de la República*.

Julio, J. (2001). "Relación entre la tasa de intervención del Banco de la República y las tasas del mercado: una exploración empírica", Borradores de Economía, No. 188, *Banco de la República*.

Vargas, H.; Hamann, F.; González, A. (2010). "Efectos de la política monetaria sobre las tasas de interés de los créditos hipotecarios en Colombia", Borradores de Economía, No. 592, *Banco de la República*.

Box 2

Analysis of Macroeconomic Expectations implicit in Financial Market Instruments

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This box analyzes the macroeconomic expectations underlying financial market information. This note complements the study presented in the *January 2021 Monetary Policy Report*[1], which was based on the responses of the *Monthly Survey of Economic Analysts' Expectations.*

As stated in the previous report, expectations of variables such as inflation and the policy interest rate are not observable and therefore their monitoring and analysis must be based on inferences made from observed variables. The exercises that permit such inferences are crucial to Central Banks because the aforementioned expectations provide signals about the present and future behavior of the agents, thus allowing to judge the current state of the economy as well as its prospects. They also provide a benchmark to contrast the Central Bank's forecasts, guide its communication strategy, and focus on its actions.

The expectations implied in the valuation of financial instruments have several desirable characteristics. For example, they are available daily for multiple horizons, including the long term (e.*g.*, five and ten years). However, these measures are an indirect estimate of expectations and therefore an approximation, whose actual signal could be affected by factors such as market liquidity.

Given the importance of expectations for economic analysis, *Banco de la República* monitors the expected policy interest rate and the inflation expectations underlying the prices of TES[2]. This Box analyzes these expectations and investigates whether there is a long-term empirical relationship between them.

The following is a characterization of these variables with historical information available from January 2006 to March 2021.

1. Inflation Expectations

Break-even inflation (BEI) rates are used as a proxy for inflation expectations implied in the valuation of financial instruments. These rates reflect the average inflation expected by market agents investing their resources in these securities.

Intuitively, the break-even inflation rate is defined as the difference between the yield of bonds at a nominal rate and bonds at a real rate (i.e., inflation-linked bonds), with the same maturity and credit quality. BEI rates are therefore actually an inflation compensation measure, which, in addition to expectations, includes an inflation risk premium and a liquidity risk premium associated with market conditions. However, Espinosa *et al.* (2015) note that, in the Colombian case, the latter is relatively small *vis-à-vis* expected inflation. (The calculation of the BEI rate is detailed in Annex B2.1A).

Banco de la República, in its macroeconomic assessment and forecasting exercise, also monitors forward BEI rates (FBEI). These enable the analysis of inflation expectations of the financial market once the short-term effects of transitory shocks have faded. For example, the 2-3-year BEI rate reflects the expected average inflation over a three-year period beginning after two years, removing inflation expectations for the first two years from the medium-term analysis. (The calculation of these rates is detailed in Annex B2.1B).

Panel A in Graph B2.1 illustrates BEI rates for one-, two-, five-, and ten-year horizons. These rates are constructed with information from the term structure of the rates of return of TES in Pesos and TES in UVR, which are bonds issued by the Colombian government.

Inflation expectations follow the level and dynamics of observed inflation, especially one and two years ahead. Their term structure increases with the time horizon, while their volatility decreases. However, this structure inverted between 2006 and 2008 and between 2016 and 2017. The first period was characterized by strong demand pressures, and the second one by supply shocks associated with *El Niño*.

In 2009, the inflation figure expected by the financial market fell structurally, in line with the reduction of observed inflation in Colombia since that year. Between 2006 and 2009, inflation expectations for the set of terms analyzed were around 4.8%, while for 2010-2019 this average fell to 3.5%. However, the differences between expected short- and long-term rates increased, being relatively wide in the periods following the global financial crisis periods between 2010 and 2011 and in the tapering period in 2013.

In the COVID period, inflation expectations fell to historical lows, and the terms spreads widened. Data as of

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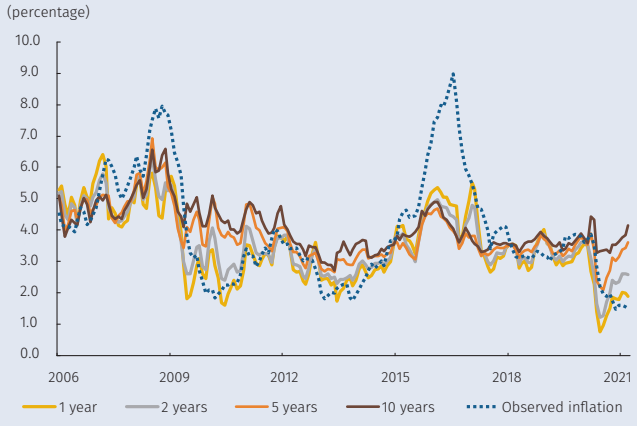
1 https://www.banrep.gov.co/es/informe-politica-monetaria-enero-2021-0

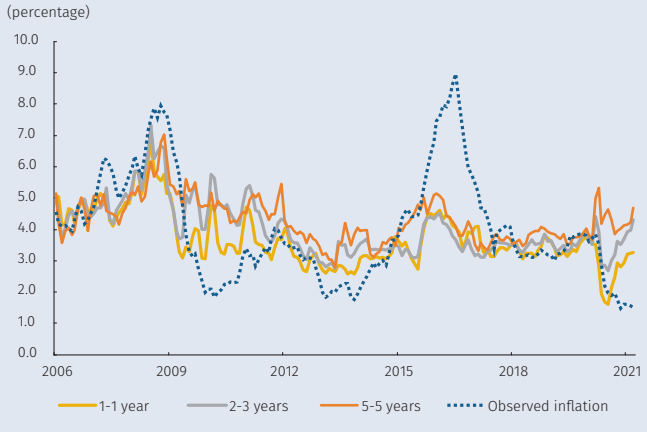
2 TES are debt instruments (e.g., bonds) issued by the Colombian government.

Graph B2.1
Annual Inflation Expectations
(January 2006 – March 2021)

A. BEI Rates



B. FBEI Rates



Source: *Banco de la República.*

March 2021 illustrate a rebound in expected inflation, and for the five- and ten-year horizons it is above its pre-pandemic level.

Panel B in Graph B2.1 shows the evolution of the 1-1, 2-3, and 5-5 years FBEI rates. The level of medium- and long-term expectations is higher after cleaning up the effects of temporary shocks in nearby horizons. During the pandemic, inflation expectations by the financial market in the short and medium term fell, but recent data suggest rapid increases of inflation in the longer horizons.

2. Expected Monetary Policy Rate

Banco de la República also extracts information from the policy response expected by the financial market implicit in the price of TES.

Following the theory of interest rate expectations, the expectation for the policy interest rate (EPR) at a given term is roughly the sum of the expected future path of policy rates one period ahead on the same time horizon. The EPR could also be estimated as the difference between the TES rate of return and the term premium. The latter is the compensation required by investors for assuming the risk of placing their resources on bonds at a specific maturity. The TES rate is observed on the market, while the premium is estimated following Espinosa *et al.* (2014). The derivation of the EPR is presented in Annex B2.2A.

As in the case of FBEI rates in the context of inflation expectations, it is possible to monitor the expected forward policy interest rate (FEPR) in order to study the policy response expected by the financial market in the medium and long terms, once the impact of temporary shocks to the economy has faded. For example, the FBEI 5–5-year rate is a proxy of the expected average policy rate over a five-year period beginning after five years. (The derivation of the FBEI is presented in Annex B2.2B).

Panel A of Graph B2.2 shows the term structure of the EPR rates for the same horizons and periods defined for BEI rates. The structure does not have a clearly defined slope. Its direction depended on the shocks that the economy faced in each period. For example, between 2006 and 2008, and between late 2015 and early 2017, the slope was negative, reflecting that the financial market expected a higher policy interest rate in the short-term than in the long-term. During the first period, there were strong demand pressures, and in the second period there were supply shocks on the various CPI groups, particularly food. Both periods were characterized by increasing inflation expectations as well as increases in the monetary policy rate.

As in the case of inflation expectations, the term structure of EPR registered a change in level in 2009, in line with the reduction in observed inflation. In the 2006-2009 period, the average EPR for the analyzed horizons was around 7.3%, while between 2010 and 2019 it oscillated around 4.4% and volatility was much lower.

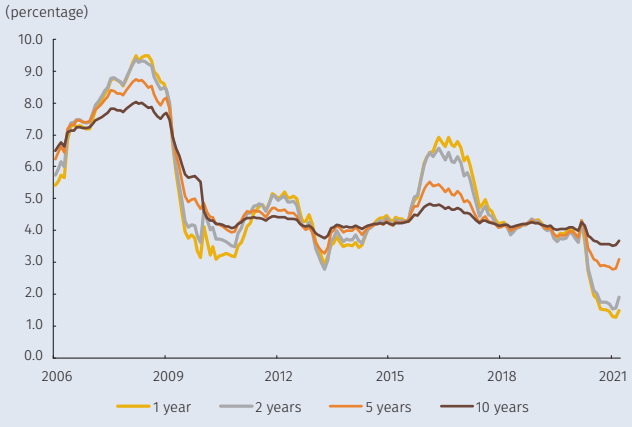
In the COVID period, the financial market's expectations of the policy interest rate for the various maturities fell rapidly due to the expected effects of the pandemic on economic activity and prices. Data as of March 2021 exhibit a change in the trend of expectations of this rate for the different horizons considered.

Panel B in Graph B2.2 shows the evolution of the 1-1, 2-3, and 5-5 years FEPR rates. These rates are used as a proxy for medium- and long-term expectations of the monetary policy reaction, once expected movements are withdrawn from the nearest horizon. The term structure of FEPR rates also illustrates the structural decline in policy interest rate expectations in 2009, and its slope depended on shocks to the economy over the period considered.

The 5-5-year FEPR rate reflects the long-term expectation of the financial market over the monetary policy rate. On average, this rate was around 4.4% between 2010 and 2019, and since the beginning of the pandemic it reduced to 4.2%.

Graph B2.2
Expected Monetary Policy Rate
(January 2006 a March 2021)

A. EPR Rate



B. FEPR Rate

Source: *Banco de la República.*

3. Relationship Between Expected Policy Interest Rates and Inflation Expectations

This section examines the long-term empirical relationship between the macroeconomic expectations underlying the valuation of TES by the financial market. To develop this analysis, a cointegration regression defined as follows is proposed:

$$i_t^{Pe,m} = \mu + \gamma \pi_t^{e,m} + \varepsilon_t, \qquad (1)$$

where $i_t^{Pe,m}$ and $\pi_t^{e,m}$ represent the expected policy interest rate and the annual inflation expectations for a horizon m[3]; ε_t corresponds to the error term; μ is a constant of the regression, and γ indicates the long-run balance relationship.

Table B2.1 presents the results of the cointegration analysis between the policy interest rate and inflation expectations defined in equation (1). Each panel presents the results of the Johansen test, which statistically evaluates whether there is a long-run relationship between two variables, and the estimated value of γ, which provides a quantification of that relationship. Table B2.1, panel A, estimates the relationship between the EPR and the BEI rate for two-, five- and ten-year maturities, while Panel B considers the FEPR and FBEI rates for 1-1, 2-3, and 5-5-year horizons. Both exercises use monthly data between January 2006 and March 2021.

The results of the Johansen test in panels A and B do not allow to reject the null hypothesis, pointing statistically at the existence of a systematic relationship between movements of the expected policy interest rate and inflation expectations for the different horizons and information sets considered.

In each of the exercises carried out, the estimated coefficient for γ is positive, greater than one, and statistically significant. These results suggest that when the financial market has higher inflation expectations, it also expects *Banco de la República* to raise the policy interest rate, and that this increase be higher than that of expected inflation. However, financial market agents also expect this policy reaction to be stronger in the short term than in the long term.

In conclusion, and similar to the information from the *Monthly Expectations Survey*[4] in the January 2021 *Monetary Policy Report*, the expected policy interest rates derived from financial market instruments show a positive and significant relationship to inflation expectations over different terms.

References:

Espinosa, J. A.; Melo, L. F.; Moreno, J. F. (2015). "Expectativas de inflación, prima de riesgo inflacionario y prima de liquidez: una descomposición del break-even inflation para los bonos del gobierno colombiano," *Borradores de Economía*, No. 903, *Banco de la República*.

Espinosa, J. A.; Melo, L. F.; Moreno, J. F. (2014). "Estimación de la prima por vencimiento de los TES en pesos del gobierno colombiano," *Borradores de Economía*, No. 854, *Banco de la República.*

3 For BEI and EPR rates, this is the *n* year term as per the definitions presented in Annexes B2.1A and B2.2A. In the case of the FBEI and FEPR rates, it corresponds to the a-b year term of the formulas in Annexes B2.1B and B2.2B.

4 www.banrep.gov.co/es/resultados-mensuales-expectativas-analistas-economicos

Table B2.1
Estimation of the long-run Relationship between Policy Interest Rate and Inflation Expectations

A. Cointegration analysis between EPR and BEI rates

Term	2 years	5 years	10 years
Johansen Test †			
No. of long-term relation			
0	0.00	0.00	0.01
1	0.36	0.29	0.13
Cointegration regression			
γ	1.896***	1.83***	1.645***
	(0.11)	(0.14)	(0.18)
μ	-0.018***	-0.02***	-0.017**
	(0.004)	(0.005)	(0.007)

B. Cointegration analysis between FEPR and FBEI rates

Term	1-1 year	2-3 years	5-5 years
Johansen Test †			
No. of long-term relation			
0	0.00	0.00	0.03
1	0.48	0.16	0.25
Cointegration regression			
γ	2.091***	1.467***	1.175***
	(0.13)	(0.17)	(0.22)
μ	-0.027***	-0.008	-0.001
	(0.005)	(0.007)	(0.009)

Note: *, **, *** Significant at 10%, 5.0% and 1.0%, respectively.
Values in parentheses correspond to standard deviations.
† The p-values of the Johansen Test are shown, whose null hypothesis contrasts the existence *of N* cointegration equations.
Source: *Banco de la República.*

Annex B2.1

This Annex provides the technical details of the calculation of the BEI and FBEI:

A. Break-Even Inflation Rate (BEI)

The BEI rate in time *t* to term *n* years is defined as:

$$\pi_t^{e,n} = \frac{(1+i_t^n)}{(1+r_t^n)} - 1$$

where i_t^n and r_t^n correspond to the yields of a bond with nominal fee (*e.g.*: TES in pesos) and a bonus with real rate (*e.g.*: TES in UVR), respectively. The bonds have the same term to n years, and the same credit quality. The BEI rate $\pi_t^{e,n}$ reflects the expected average inflation over the next n years.

B. Forward Break-Even Inflation (FBEI)

The FBEI rate $\pi_t^{e,a-b}$ in time t to term $a-b$ years represents the average inflation expectation over a period of b years starting after a years. The FEIB rate $\pi_t^{e,a-b}$ is given by:

$$\pi_t^{e,a-b} = \left[\frac{(1+\pi_t^{e,n})^n}{(1+\pi_t^{e,a})^a}\right]^{\frac{1}{b}} - 1$$

where $\pi_t^{e,a}$ and $\pi_t^{e,n}$ correspond to the BEI rates for periods a and n years, where $n = a + b$.

Annex B2.2

This Annex provides the technical details of the calculation of the EPR and FEPR:

A. Expected Monetary Policy Rate (EPR)

Under the theory of interest rate expectations, the market interest rate of a bond i_t^n to term n in time t is estimated as:

$$i_t^n = \mathbb{E}_t \sum_{i=0}^{n-1} i_{t+i}^{P^e} + \tau_t^n \quad (1)$$

where $\mathbb{E}_t \sum_{i=0}^{n-1} i_{t+i}$ is the sum of the expected future path of policy rates one period ahead i_t^P on the same time horizon, and τ_t^n is the term premium.[e]

The EPR $i_{t\ e,n}^{P}$ in time t to term n years is defined as:

$$i_t^{P^{e,n}} = \mathbb{E}_t \sum_{i=0}^{n-1} i_{t+i}^{P^e} \quad (2)$$

When substituting equation (2) in (1), the EPR $i_t^{pe,n}$ can also be written as:

$$i_t^{P^{e,n}} = i_t^{n} - \tau_t^n$$

The EPR rate $i_t^{P^{e,n}}$ reflects the expected policy interest rate over the next *n* years.

B. Forward Monetary Policy Rate (FEPR)

The FEPR $i_t^{Pe,a-b}$ in time t to term $a-b$ years represents the expected MPR over a period of b years starting after *a* years. The FEPR is given by:

$$i_t^{P^{e,a-b}} = \left[\frac{(1 + i_t^{P^{e,n}})^n}{(1 + i_t^{P^{e,a}})^a}\right]^{\frac{1}{b}} - 1$$

where $i_t^{P^{e,a}}$ y $i_t^{P^{e,n}}$ are the EPR rates to terms a and n years, where $n = a + b$.

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

	Units	Apr-21	Dec-21	Apr-22	Apr	Apr-23
Total CPI	Monthly Variation (average)	0.34	n. r.	n. r.	n. r.	n. r.
CPI excluding foods	Monthly Variation (average)	0.22	n. r.	n. r.	n. r.	n. r.
Total CPI	Annual Variation, end of period (average)	1,69[c/]	2.84	2.92	3.12	3.12
CPI excluding food	Annual Variation, end of period (average)	1,48[c/]	2.53	2.70	2.90	2.89
Nominal Exchange Rate	Pesos per dollar, end of period	3,650	3,517	3,500	3,456	3,450
Policy Rate	Percentage, end of period	1.75	1.75	2.25	3.00	3.25

	Units	Q1 2021	Q2 2021	Q3 021	Q4 2021	2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2022	Q1 2023
GDP	Annual variation, original series	-1.9	13.4	6.0	3.0	4.8	3.7	3.5	3.5	3.4	3.6	n. a.
Unemployment	Thirteen cities, average of period	16.6	15.0	15.1	14.0	n. a.	13.7	13.3	13.2	12.9	n. a.	n. a.
IBR (90 days)	Effective annual rate, end of Period	n. r.	1.8	1.8	2.0	n. a.	2.3	2.5	2.8	3.0	n. a.	3.4
DTF	Effective annual rate, end of Period	n. r.	1.8	1.8	2.0	n. a.	2.2	2.5	2.6	2.8	n. a.	3.0
Fiscal Deficit (NCG)	Percentage of GDP	n. a.	n. a.	n. a.	n. a.	-8.6	n. a.	n. a.	n. a.	n. a.	-6.1	n. a.
Current Account Deficit	Percentage of GDP	n. a.	n. a.	n. a.	n. a.	-3.6	n. a.	n. a.	n. a.	n. a.	-3.7	n. a.

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.*
n/a: not available.
n/r: not relevant given that data is already observed.
Source: *Banco de la República*'s Monthly Survey of Economic Analyst Expectations (April 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	2.8	2.1	1.6	2.6	2.5	1.4	**-6.7**	**5.2**	**3.4**
Oil price (Benchmark Brent)	Dollars per barrel, average for period	112	109	99	54	45	55	72	64	43	**61**	**60**
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	**0.11**	**0.13**
Credit default swaps at 5 years for Colombia	Basis points, average for period	119	113	101	184	212	129	114	99	141	**130**	**160**
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	2.5	2.5	2.8	-0.9	**2.2**	**1.7**
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	**3.1**	**2.8**
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 tradables	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 non-tradables	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	**4.8**	**3.3**
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	**4.2**	**2.5**
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	**2.3**	**2.8**
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	-1.0	-0.3	9.5	2.5	-1.7	-0.7	3.7	5.9	**0.7**	**0.3**
Economic activity												
Gross domestic product	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	**6.0**	**3.0**
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	-4.1	.	.
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	-5.8	.	.
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	-21.2	.	.
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	-21.1	.	.
Housing	Percentage, annual change, s.a.c.e.	-0.7	6.4	10.4	9.5	-0.2	-1.9	-0.4	-8.4	-28.2	.	.
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	-29.1	.	.
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	-10.5	.	.
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	0.1	.	.
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	-8.6	.	.
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	-7.6	.	.
Exports	Percentage, annual change, s.a.c.e.	4.5	4.7	-0.3	1.7	-0.2	2.6	0.6	3.1	-17.4	.	.
Imports	Percentage, annual change, s.a.c.e.	9.4	8.5	7.8	-1.1	-3.5	1.0	5.8	7.3	-18.0	.	.
Output gap [f/]	Percentage	0.0	0.8	1.4	1.0	0.4	-0.7	-0.6	-0.1	-6.3	**-2.8**	**-1.5**
Short-term indicators												
Real industrial production	Percentage, annual change, seasonally adjusted	-0.3	-1.3	1.6	2.0	3.7	0.0	2.7	1.4	-8.0	.	.
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	**13.9**	.
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	**15.6**	.
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	-11,641	-12,587	-20,233	-19,302	-12,782	-10,742	-13,634	-14,285	-9,083	**-11,448**	.
Percentage of GDP	Percentage, nominal terms	-3.1	-3.3	-5.3	-6.6	-4.5	-3.4	-4.1	-4.4	-3.3	**-3.8**	.
A. Goods and Services	Millions of dollars	-1,465	-3,250	-12,332	-19,005	-13,452	-8,946	-9,501	-12,876	-12,421	**-13,433**	.
B. Primary income (factor income)	Millions of dollars	-15,008	-14,223	-12,522	-5,727	-5,228	-8,407	-11,776	-10,114	-5,386	**-7,906**	.
C. Secondary income (current account transfers)	Millions of dollars	4,833	4,887	4,622	5,430	5,898	6,611	7,643	8,704	8,724	**9,891**	.
Financial account (A+B+C+D)	Millions of dollars	-11,553	-11,739	-19,292	-18,244	-12,273	-9,696	-12,559	-13,240	-8,092	.	.
Percentage of GDP	Percentage, nominal terms	-3.1	-3.1	-5.1	-6.2	-4.3	-3.1	-3.8	-4.1	-3.0	.	.
A. Foreign investment (i+ii)	Millions of dollars	-15,646	-8,558	-12,269	-7,506	-9,331	-10,147	-6,409	-11,095	-5,724	.	.
i. Foreign in Colombia (FDI)	Millions of dollars	15,040	16,210	16,169	11,724	13,848	13,837	11,535	14,314	7,690	.	.
ii. Colombian abroad	Millions of dollars	-606	7,652	3,899	4,218	4,517	3,690	5,126	3,219	1,966	.	.
B. Portfolio investment	Millions of dollars	-4,769	-7,438	-11,565	-9,166	-4,839	-1,613	1,297	250	-1,346	.	.
C. Other investment (loans and other credits and derivatives)	Millions of dollars	3,457	-2,690	106	-1,987	1,731	1,518	-8,635	-5,728	-5,350	.	.
D. Reserve assets	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	88	847	941	1,058	509	1,046	1,075	1,045	992	.	.
Interest rates												
Policy rate	Percentage, average for period	5.0	3.4	3.9	4.7	7.1	6.1	4.4	4.3	2.9	.	.
Policy rate expected by analysts	Percentage, average for period	.	.	.	.	.	.	.	.	.	**1.75**	**2.44**
IBR	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	Percentage, average for period	10.3	8.7	8.7	9.4	12.8	11.1	9.3	8.8	7.4	.	.
Consumer interest rate	Percentage, average for period	19.2	17.9	17.3	17.2	19.2	19.4	17.9	16.5	15.0	.	.
Mortgage rate	Percentage, average for period	13.2	11.1	11.1	11.0	12.4	11.6	10.6	10.4	10.1	.	.

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 21 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 and revisión de las medidas de inflación básica en Colombia," *Borradores de Economía*, no. 122, *Banco de la República*, available at: https://investiga.banrep.gov.co/es/be-1122.
d/ 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 April 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	2.6	3.0	3.0	2.5	3.3	3.0	0.8	0.1
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 tradables	Percentage, annual change, end of period	5.69	4.28	3.46	3.24	1.67	1.39	1.39	1.40
CPI non-tradables	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/]									
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	-2.9	-3.1	-0.6	-0.1	-3.3	-3.7	-0.3	4.6
Economic activity									
Gross domestic product	Percentage, annual change, s.a.c.e.	1.3	1.5	1.2	1.3	2.2	2.2	2.9	3.0
Final consumption spending	Percentage, annual change, s.a.c.e.	1.9	2.2	2.8	2.5	3.5	4.1	4.0	4.3
Final household consumption spending	Percentage, annual change, s.a.c.e.	1.0	2.6	2.6	2.0	3.2	3.3	3.2	3.3
Final government overhead spending	Percentage, annual change, s.a.c.e.	3.1	3.1	3.5	4.9	7.5	6.4	7.7	7.7
Gross capital formation	Percentage, annual change, s.a.c.e.	-1.4	-2.3	-6.0	-3.3	-3.0	1.6	3.6	4.0
Gross fixed capital formation	Percentage, annual change, s.a.c.e.	-0.4	1.7	5.9	0.3	-0.5	1.9	1.4	1.3
Housing	Percentage, annual change, s.a.c.e.	5.2	1.4	-2.1	-11.6	-7.9	-1.4	5.7	3.2
Other buildings and structures	Percentage, annual change, s.a.c.e.	-2.6	5.7	10.7	5.0	-6.3	-0.9	-6.3	-0.5
Machinery and equipment	Percentage, annual change, s.a.c.e.	-5.0	-1.8	8.2	4.4	12.4	13.5	7.5	2.0
Cultivated biological resources	Percentage, annual change, s.a.c.e.	18.4	1.3	-10.9	-5.1	-8.0	-8.4	4.0	0.9
Intellectual property products	Percentage, annual change, s.a.c.e.	-3.3	1.9	3.8	2.5	2.6	2.4	0.7	0.4
Domestic demand	Percentage, annual change, s.a.c.e.	0.8	1.3	0.7	1.7	2.1	3.4	4.1	4.2
Exports	Percentage, annual change, s.a.c.e.	4.6	5.2	2.8	-2.0	-1.9	-1.2	-1.1	6.8
Imports	Percentage, annual change, s.a.c.e.	1.4	2.2	0.1	0.5	1.1	5.6	6.4	10.2
Output gap [f/]	Percentage	0.1	-0.1	-0.4	-0.7	-0.7	-0.8	-0.7	-0.6
Short-term indicators									
Real industrial production	Percentage, annual change, seasonally adjusted	-0.7	-0.6	1.0	0.1	2.0	2.9	3.4	2.6
Retail commerce sales excluding fuels and vehicles	Percentage, annual change, seasonally adjusted	0.1	-0.2	-0.3	-0.1	4.6	5.5	5.4	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	-11.6	-5.2	1.5	1.9	0.7	1.2	1.1	2.6
Labor Market [g/]									
National Total									
Unemployment rate	Percentage, seasonally adjusted, average for period	9.4	9.2	9.4	9.5	9.4	9.6	9.5	10.2
Employment rate	Percentage, seasonally adjusted, average for period	58.4	58.8	58.3	57.9	57.8	58.0	58.2	57.1
Overall participation rate	Percentage, seasonally adjusted, average for period	64.5	64.7	64.4	64.0	63.8	64.2	64.3	63.6
Thirteen cities and metropolitan areas									
Unemployment rate	Percentage, seasonally adjusted, average for period	10.4	10.6	10.8	10.6	10.7	10.6	10.5	11.3
Employment rate	Percentage, seasonally adjusted, average for period	60.3	60.2	59.7	59.3	59.3	59.6	59.6	58.4
Overall participation rate	Percentage, seasonally adjusted, average for period	67.4	67.3	67.0	66.3	66.4	66.7	66.6	65.9
Balance of payments [h/i/]									
Current account (A+B+C)	Millions of dollars	-3,628	-2,596	-2,830	-1,688	-2,976	-3,437	-3,352	-3,870
Percentage of GDP	Percentage, nominal terms	-4.9	-3.4	-3.6	-2.0	-3.7	-4.1	-3.9	-4.6
A. Goods and Services	Millions of dollars	-2,706	-2,596	-2,387	-1,257	-1,621	-2,349	-2,427	-3,105
B. Primary income (factor income)	Millions of dollars	-2,343	-1,632	-2,128	-2,304	-2,979	-2,900	-2,882	-3,015
C. Secondary income (current account transfers)	Millions of dollars	1,421	1,632	1,685	1,873	1,623	1,812	1,957	2,250
Financial account (A+B+C+D)	Millions of dollars	-2,953	-2,413	-2,698	-1,633	-2,784	-2,783	-3,513	-3,479
Percentage of GDP	Percentage, nominal terms	-4.0	-3.2	-3.4	-2.0	-3.4	-3.3	-4.1	-4.1
A. Foreign investment (i+ii)	Millions of dollars	-1,797	-1,252	-4,148	-2,951	-935	-2,345	-2,469	-659
i. Foreign in Colombia (FDI)	Millions of dollars	2,513	2,526	4,992	3,805	2,007	3,846	2,799	2,883
ii. Colombian abroad	Millions of dollars	716	1,275	845	854	1,072	1,500	330	2,224
B. Portfolio investment	Millions of dollars	265	-1,983	-514	620	1,750	334	536	-1,323
C. Other investment (loans and other credits and derivatives)	Millions of dollars	-1,513	668	1,838	526	-3,737	-921	-1,749	-2,228
D. Reserve assets	Millions of dollars	93	154	126	173	137	150	169	732
Errors and omissions (E and O)	Millions of dollars	675	183	132	56	192	653	-161	391
Interest rates									
Policy rate	Percentage, average for period	7.4	6.6	5.5	5.0	4.6	4.3	4.3	4.3
Policy rate expected by analysts	Percentage, average for period								
IBR	Percentage, average for period	7.4	6.6	5.5	5.0	4.6	4.3	4.3	4.3
Commercial interest rate	Percentage, average for period	12.8	11.6	10.6	10.0	9.4	9.4	9.3	9.0
Consumer interest rate	Percentage, average for period	20.1	19.7	19.0	18.7	18.7	17.9	18.0	17.3
Mortgage rate	Percentage, average for period	12.5	12.3	11.3	10.9	10.8	10.6	10.5	10.4

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 21 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 and revisión de las medidas de inflación básica en Colombia," *Borradores de Economía*, no. 122, *Banco de la República*, available at: https://investiga.banrep.gov.co/es/be-1122.
d/ 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 April 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
2.7	2.4	1.3	-3.3	-5.7	-43.8	47.4	9.9	**1.0**	**4.1**	**6.8**	**6.2**	**1.9**	**1.9**	**1.9**	**1.9**	**2.7**
64	68	62	62	51	33	43	45	61	**63**	**61**	**60**	**60**	**60**	**60**	**60**	**60**
2.40	2.40	2.19	1.64	1.26	0.06	0.09	0.09	0.08	**0.13**	**0.13**	**0.13**	**0.13**	**0.13**	**0.13**	**0.13**	**0.38**
121	104	90	83	125	206	132	104	110	**129**	**136**	**143**	**150**	**156**	**163**	**170**	**170**
3.21	3.43	3.82	3.80	3.86	2.19	1.97	1.61	1.51	**2.8**	**2.9**	**3.1**	**3.1**	**2.9**	**2.9**	**2.8**	**2.8**
3.27	3.22	3.37	3.45	3.26	1.40	1.57	1.03	1.06	.	.	.	.	.	.	.	.
1.09	1.60	1.83	2.18	2.41	0.73	1.15	0.63	1.05	.	.	.	.	.	.	.	.
3.01	3.10	3.37	3.45	3.22	2.00	1.86	1.29	0.89	.	.	.	.	.	.	.	.
6.33	5.24	5.03	4.81	4.27	0.44	1.19	0.73	1.52	**6.0**	**5.0**	**4.8**	**4.1**	**2.7**	**3.1**	**3.3**	**3.3**
3.24	4.96	6.49	5.80	7.19	6.55	4.13	4.80	3.92	**3.1**	**4.7**	**4.2**	**3.5**	**3.7**	**2.9**	**2.5**	**2.3**
9.98	15.46	17.50	8.66	9.79	2.52	-3.42	2.49	1.58	.	.	.	.	.	.	.	.
1.43	2.18	3.57	5.04	6.46	7.75	6.40	5.43	4.60	.	.	.	.	.	.	.	.
3.27	3.22	3.37	3.45	3.26	1.40	1.57	1.03	1.06	.	.	.	.	.	.	.	.
3.24	3.34	3.66	3.78	3.64	2.17	2.33	1.88	1.67	.	.	.	.	.	.	.	.
2.41	2.65	2.92	3.10	2.99	1.65	1.67	1.11	0.94	**1.9**	**1.9**	**2.3**	**2.7**	**2.7**	**2.8**	**2.8**	**2.8**
2.97	3.07	3.32	3.44	3.30	1.74	1.86	1.34	1.22	.	.	.	.	.	.	.	.
3,134	3,241	3,340	3,411	3,532	3,848	3,733	3,661	3,558	.	.	.	.	.	.	.	.
2.3	3.3	4.1	5.0	4.9	10.5	5.6	2.4	**-0.9**	**2.0**	**1.1**	**0.7**	**0.4**	**0.4**	**0.1**	**0.1**	**-0.2**
3.1	3.5	3.2	3.3	0.1	-15.6	-8.3	-3.5	**-0.3**	**15.8**	**7.2**	**2.3**	**1.7**	**3.6**	**3.4**	**3.3**	**4.4**
4.0	4.2	4.4	4.2	3.2	-11.9	-6.7	-0.8	**0.7**	.	.	.	.	.	.	.	.
3.2	4.3	4.3	4.1	3.2	-15.4	-9.0	-2.1	**-0.1**	.	.	.	.	.	.	.	.
5.1	6.2	5.1	4.7	3.3	3.6	3.8	4.0	**4.3**	.	.	.	.	.	.	.	.
5.6	2.1	5.1	2.5	-6.8	-39.3	-20.6	-18.4	**-10.8**	.	.	.	.	.	.	.	.
9.3	3.7	2.4	-2.8	-5.5	-40.2	-21.7	-17.3	**-14.5**	.	.	.	.	.	.	.	.
-4.9	-9.0	-8.7	-10.9	-11.2	-41.5	-32.7	-27.5	**-19.2**	.	.	.	.	.	.	.	.
15.2	1.3	0.9	-4.5	-6.7	-43.6	-35.5	-31.1	**-26.5**	.	.	.	.	.	.	.	.
14.3	20.5	10.4	3.9	-2.2	-37.7	-1.6	2.1	**-0.6**	.	.	.	.	.	.	.	.
2.5	9.0	8.0	0.5	1.6	0.7	-4.3	2.4	**2.7**	.	.	.	.	.	.	.	.
0.4	0.3	1.4	4.3	0.2	-16.8	-10.5	-7.4	**-3.9**	.	.	.	.	.	.	.	.
3.9	3.5	4.8	4.3	0.1	-17.0	-9.2	-4.1	**-0.8**	.	.	.	.	.	.	.	.
6.1	5.4	4.2	-3.0	-2.0	-24.6	-21.4	-21.6	**-17.0**	.	.	.	.	.	.	.	.
8.5	8.6	9.5	3.0	0.7	-30.9	-23.9	-17.2	**-10.6**	.	.	.	.	.	.	.	.
-0.5	-0.3	-0.2	-0.1	-0.5	-3.6	-5.4	-6.3	**-6.5**	**-4.4**	**-3.3**	**-2.8**	**-2.5**	**-2.0**	**-1.7**	**-1.5**	**-1.2**
1.2	2.4	0.9	1.3	-0.8	-23.5	-7.5	-0.2	.	.	.	.	.	.	.	.	.
6.2	7.5	9.8	8.9	6.0	-14.8	-3.7	5.6	.	.	.	.	.	.	.	.	.
-1.9	6.6	4.9	24.1	-13.8	-1.9	-3.6	-4.6	13.3	.	.	.	.	.	.	.	.
5.3	3.2	1.4	-0.2	-2.1	-15.7	-15.4	-14.1	.	.	.	.	.	.	.	.	.
10.5	10.3	10.7	10.6	11.2	20.6	17.5	15.0	**14.6**	**14.1**	**13.5**	**13.4**	.	.	.	.	.
57.4	56.4	56.5	56.3	55.2	43.5	48.6	51.9	.	.	.	.	.	.	.	.	.
64.1	62.8	63.2	63.0	62.2	54.8	58.9	61.0	.	.	.	.	.	.	.	.	.
11.4	11.0	10.9	11.4	11.2	24.0	21.2	17.2	**16.4**	**15.8**	**15.1**	**15.0**	.	.	.	.	.
58.6	58.6	58.7	58.5	57.1	44.0	48.8	53.1	.	.	.	.	.	.	.	.	.
66.2	65.9	65.9	66.0	64.4	57.9	61.9	64.1	.	.	.	.	.	.	.	.	.
-3,694	-2,945	-4,368	-3,279	-2,505	-1,713	-1,752	-3,114	.	.	.	.	.	.	.	.	.
-4.7	-3.7	-5.4	-3.9	-3.4	-3.1	-2.6	-4.1	.	.	.	.	.	.	.	.	.
-2,816	-2,612	-4,225	-3,224	-2,935	-2,448	-3,072	-3,966	.	.	.	.	.	.	.	.	.
-2,676	-2,545	-2,455	-2,438	-1,708	-980	-1,100	-1,598	.	.	.	.	.	.	.	.	.
1,798	2,211	2,312	2,383	2,138	1,716	2,420	2,450	.	.	.	.	.	.	.	.	.
-3,451	-3,287	-3,656	-2,845	-2,107	-1,860	-1,615	-2,509	.	.	.	.	.	.	.	.	.
-4.4	-4.2	-4.5	-3.4	-2.9	-3.3	-2.4	-3.3	.	.	.	.	.	.	.	.	.
-2,632	-3,668	-1,802	-2,993	-2,173	-1,677	20	-1,894	.	.	.	.	.	.	.	.	.
3,390	4,148	3,303	3,472	3,466	1,398	615	2,211	.	.	.	.	.	.	.	.	.
758	481	1,502	478	1,294	-279	634	317	.	.	.	.	.	.	.	.	.
-1,307	-178	268	1,466	-265	-3,142	489	1,573	.	.	.	.	.	.	.	.	.
-1,863	31	-2,376	-1,520	502	369	-2,329	-3,893	.	.	.	.	.	.	.	.	.
2,351	526	254	202	-171	2,590	205	1,705	.	.	.	.	.	.	.	.	.
242	-342	711	434	398	-147	136	605	.	.	.	.	.	.	.	.	.
4.3	4.3	4.3	4.25	4.23	3.26	2.24	1.75	1.75	.	.	.	.	.	.	.	.
									1.75	**1.75**	**1.75**	**2.00**	**2.33**	**2.58**	**2.83**	**3.08**
4.3	4.3	4.3	4.3	4.2	3.2	2.2	1.8	1.7	.	.	.	.	.	.	.	.
9.1	9.0	8.9	8.5	8.4	8.3	7.0	6.2	6.0	.	.	.	.	.	.	.	.
18.0	17.2	16.0	15.5	15.8	15.5	14.8	14.2	14.0	.	.	.	.	.	.	.	.
10.4	10.5	10.4	10.4	10.4	10.4	10.2	9.6	9.2	.	.	.	.	.	.	.	.

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