
MONETARY POLICY REPORT

ISSN - 2711 - 2128



01/
2020



January 2020

MONETARY POLICY REPORT

* Presented by the Central Bank of Colombia's technical staff for the Board of Directors' meeting on 31 January 2020.

This report replaces the previous Inflation Report.
All published reports are available on *Banco de la República's* website.

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





MONETARY
POLICY
REPORT



Produced by:
Programming and Inflation Department
Office for Monetary Policy and Economic Information

Office of the Deputy Technical Governor
Hernando Vargas
Deputy Technical Governor

Office for Monetary Policy and Economic Information
Juan José Ospina
Chief Officer

Programming and Inflation Department
Carlos Huertas
Director

Inflation Section (*)
Adolfo León Cobo
Head

Édgar Caicedo
Juan Pablo Cote
Nicolás Martínez
Carlos Daniel Rojas
Karen Pulido

Macroeconomic Programming Section
Aarón Garavito
Head

Luis Hernán Calderón
Camilo González
Andrea Salazar
Franky Galeano

Advisors and Associate Researcher with the Programming and Inflation Department
Celina Gaitán
Sergio Restrepo
Daniel Parra

Macro-Economic Models Department
Franz Hamann
Director

Forecasting Section
Julián Pérez
Head

Jose Vicente Romero
Santiago Forero
Nicolás Moreno
Marcela De Castro
Sara Naranjo

Consultant and Researchers associated to the Macro-Economic Models Department
Alexander Guarín
Head

César Anzola
Juan Camilo Méndez

(*) José David Pulido, Economist in the Office of the Deputy Governor for Monetary Policy and Economic Information; Eliana González, head of the Statistics Section; Juan Sebastián Corrales, head of the Public Sector Section; and students Katherine Ramírez, Eva María Ramírez, Iván Gonzalo Mendoza and Juan Felipe Suárez also participated in the elaboration of this report.

Edited in: Bogotá D.C., Colombia.
Suggestions and comments: +57 (1) 343 1011 / atencionalciudadano@banrep.gov.co

Monetary Policy in Colombia

Banco de la República (the Central Bank of Colombia) is required by the Constitution to maintain the purchasing power of Colombia's currency in coordination with general economic policy¹. In order to fulfill this mandate, the Central Bank of Colombia's Board of Directors (hereafter BDBR) has adopted a flexible inflation targeting scheme, by which monetary policy actions (MP) seek to lead inflation to a specific target and achieve maximum levels of sustainable output and employment.

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

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

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

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

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

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

4 Formerly known as the Inflation Report.

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

Content

1	Summary /11
	1.1 Macroeconomic Summary /11
	1.2 Monetary Policy Decision /14
2	Macroeconomic Forecasts and Risk Analysis /15
	2.1 International Outlook /15
	2.2 Macroeconomic Projections /19
3	Current Economic Conditions /28
	3.1 Inflation and Price Behavior /28
	3.2 Growth and Domestic Demand /30
	3.3 Labor Market /33
	3.4 Money and Financial Markets /34
	Box 1: New Estimates for Colombia's Potential (Trend) GDP and Output Gap /36
	Box 2: Food Prices drove Inflation in 2019 /41
	Annex I: Macroeconomic Projections from Local and Foreign Analysts /45
	Annex 2: Primary Variables of the Macroeconomic Forecast /47

Graphs

Graph 1.1 Gross Domestic Product (GDP) by year /11
Graph 1.2 Output Gap by year /12
Graph 1.3 Consumer Price Index (CPI) /13
Graph 1.4 CPI Excluding Foodstuffs and Regulated Goods /13
Graph 1.5 Banco de la República's Intervention Rate /14

Graph 2.1 Assumed Quarterly Growth for Trade Partners, Based on Annual Projections /15

Graph 2.2 Purchasing Manager's Index (PMI) in the United States and the Euro Zone /15

Graph 2.3 Unemployment Rate and Consumer Confidence for Select Developed Economies /16

Graph 2.4 Quarterly Oil Price Assumption Based on Annual Projections /17

Graph 2.5 Evolution of Expected Total Annual Inflation in the U.S. and Euro Zone /17

Graph 2.6 Foreign Investment Flows /18

Graph 2.7 Assumed Quarterly Fed Interest Rate /18

Graph 2.8 Upper Limit of Fed Interest Rate /18

Graph 2.9 Colombia's Assumed Quarterly Risk Premium (CDS) /19

Graph 2.10 Risk Premia for Select Latin American Economies /19

Graph 2.11 Consumer Price Index /19

Graph 2.12 Quarterly RER Inflation Gap /20

Graph 2.13 CPI Excluding Food and Regulated Items /20

Graph 2.14 CPI for Food /20

Graph 2.15 CPI for Regulated Items /21

Graph 2.16 Bank Analyst and Stockbroker Inflation Expectations /21

Graph 2.17 Quarterly GDP /21

Graph 2.18 Accumulated GDP, 4 Quarters /22

Graph 2.19 Economic Tracking Indicator, 2015 base /22

Graph 2.20 Capital Goods Imports in Constant Peso Prices /23

Graph 2.21 Monthly Retail Sales Survey /23

Graph 2.22 Consumer Confidence Index and Quarterly Average /23

Graph 2.23 Total Goods Exports (FOB) /24

Graph 2.24 Total Goods Imports (FOB) /24

Graph 2.25 Annual Output Gap /24

Graph 2.26 Annual Current Account and its Components as a Percentage of GDP /25

Graph 2.27 Financial Account and its Components as a Percentage of GDP /26

Graph 2.28 Policy Interest Rate Quarterly Average: Observed and Analyst Expectations /27

Graph 3.1 CPI And Indicator Average for Basic Goods Baskets /28

Graph 3.2 CPI for Food and its Components /28

Graph 3.3 CPI for Tradable and non-Tradable Goods, excluding Food and Regulated Items /29

Graph 3.4 Components of CPI for non-Tradable Goods, excluding Food and Regulated Items /29

Graph 3.5 CPI for Regulated Items and its Components /29

Graph 3.6 PPI by Origin /30

Graph 3.7 Quarterly GDP on the Spending Side /30

Graph 3.8 GDP and Quarterly Domestic Demand /30

Graph 3.9 Quarterly Gross Fixed Capital Formation /31

Graph 3.10 Final Consumer Spending for Households and Final Quarterly General Government Spending /31

Graph 3.11 Exports, Imports, and Trade Balance /31

Graph 3.12 Quarterly GDP on the Supply Side /32

Graph 3.13 Coffee Production /32

Graph 3.14 Oil Production /32

Graph 3.15 Real Industrial Production Index /33

Graph 3.16 Unemployment Rate /33

Graph 3.17 Beveridge Curve for 7 Primary Cities /34

Graph 3.18 Policy Rate, TIB, and IBR /34

Graph 3.19 Real Lending Rates in National Currency /34

Graph 3.20 Real Gross Portfolio in National Currency /35

Graph 3.21 Semi-Durable and Durable Goods Consumption and Consumer Credit Disbursements /35

Tables

Table 2.1 Growth Projections for Main Trade Partners /16

Table 2.2 Forecasts for Benchmark Prices of Main Commodities Exported by Colombia /17

01 / Summary

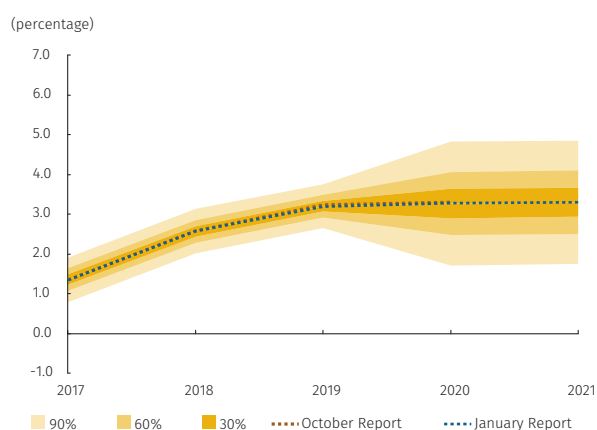
1.1 Macroeconomic Summary

International interest rates should remain low through 2020 and 2021, with foreign demand for Colombian goods and services recovering slowly.

A partial trade agreement between the United States and China, and Britain's orderly exit from the European Union, have reduced the likelihood of a major disruption in global trade. But while uncertainty has diminished, the negative effects on investment and international commerce from Brexit and U.S.-China trade tensions remain. This has been reflected in low observed and expected levels of global industrial output, and suggests that growth in the world's largest economies will decelerate in the year ahead. The U.S. Federal Reserve (the Fed) is expected to maintain its benchmark interest rate through 2020 and 2021, amid economic downturn and observed and expected core inflation near the target rate despite historically low unemployment. Following declines in output or low growth in 2019, Colombia's main Latin American trade partners can expect modest economic recovery in 2020, which should offset lower growth in developed economies. Over the next two years, Colombia's terms of trade are expected to deteriorate slightly, though less than estimated in the previous iteration of this report. The country risk premium, currently at a historic low, is expected to be lower than projected last October. Currency pressures associated with uncertainty over global trade and other factors have diminished. Nevertheless, exchange rate performance and pass-through onto domestic prices remains a source of risk. Additional risks associated with the recent outbreak of Coronavirus have not been considered in this report.

The Colombian economy grew by an estimated 3.2% in 2019 (Graph 1.1). The dynamic performance in all major components of domestic demand last year was driven by several factors. Cyclical recovery following the 2014 oil shock, a high rate of execution in public works, and fiscal policy incentives that primarily stimulated investment in machinery and equipment, all contributed to positive investment dynamics. Meanwhile, relatively low interest rates and loose credit conditions, together with an increase in available household income owing to strong growth in remittances, spurred increased consumer spending. A rise in incoming migration also led to increased consumption of goods and services. These factors all contributed to an acceleration in output growth from 2.6% in 2018 to 3.2% in 2019. For its part, GDP growth over the last quarter of 2019 was estimated at 3.3%. This figure, which takes the estimated effects of a national strike

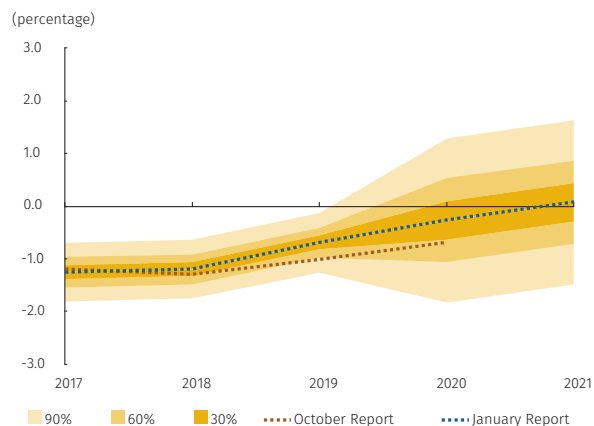
Graph 1.1
Gross Domestic Product (GDP) by year ^{a/, b/}
(fan chart, annual change)



a/ This graph shows the forecast trajectory for the baseline scenario, with symmetric confidence intervals at 30%, 60% and 90% included over an 8-quarter forecast horizon. These intervals are derived from forecast errors in the baseline projection using Patacon and 4G monetary policy models, evaluated recursively every quarter for the period 2011-2018. Projection errors are estimated at horizons between 1 and 4 quarters. These errors are maintained for calculations of the intervals at horizons between 5 and 8 quarters.

b/ The results presuppose active monetary policy in which the Central Bank's benchmark rate is adjusted to guarantee compliance with the target inflation rate.
Source: Banco de la República.

Graph 1.2
Output Gap by year^{a/, b/, c/}
(fan chart)



a/ This graph shows the forecast trajectory for the baseline scenario, with symmetric confidence intervals at 30%, 60% and 90% included over an 8-quarter forecast horizon. These intervals are derived from forecast errors in the baseline projection using Patacon and 4G monetary policy models, evaluated recursively every quarter for the period 2011-2018. Projection errors are estimated at horizons between 1 and 4 quarters. These errors are maintained for calculations of the intervals at horizons between 5 and 8 quarters.

b/ The output gap is calculated as the difference between observed GDP and potential GDP (trend) derived from the 4G monetary policy model.

c/ The results presuppose active monetary policy in which the Central Bank's benchmark rate is adjusted to guarantee compliance with the target inflation rate.

Source: Banco de la República.

into account, suggests that domestic demand decelerated slightly, though alongside higher growth in gross domestic product (GDP). The strong investment dynamic for imported goods and the poor economic performance of Colombia's trade partners will have been reflected in some net exports that detract from growth.

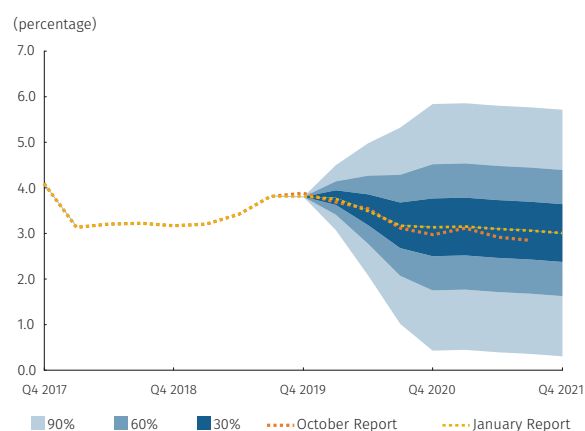
The Bank's technical staff revised its estimates of the Colombian economy's production capacity and utilization rate for 2019 (Graph 1.2).

With the goal of updating and refining its calculations for the size and utilization rate of the Colombian economy's production capacity, the Bank's technical staff introduced the following modifications to its estimates: 1) incorporating the effects of demographic change apparent in data made available from the 2018 national household and population census (DANE, 2018) and immigration statistics from recent years up to 2019; 2) revising its understanding of the effects of recent labor market and inflationary trends on production capacity calculations; 3) incorporating the effects on investment of Colombia's Financial Act of 2018 (Ley de Financiamiento); and 4) revising the methods used to estimate production capacity and its utilization rate, as well as the addition of new methodologies to that effect. The subsequent downward revision of the working age population reflected in the 2018 census data compared to 2005 was offset by incoming migration flows in 2019. The observation of an upward trend in the unemployment rate and other labor market phenomena since 2014 suggests that the effective contribution of labor on production capacity is lower than previously estimated. By contrast, the positive effect of the Financial Act on investment will have favored the accumulation of capital, increasing the economy's production capacity. The Bank's technical staff has concluded that the net effect of these factors requires a reduction in the 2019 production capacity estimate, included in the previous iteration of this report, as well as a corresponding upward revision in the production capacity utilization rate. Other signals derived from inflation performance and sub-basket prices in the consumer price index (CPI) point in the same direction, suggesting a tighter production gap even after considering the effects of exchange rate pressure and supply shocks observed in the economy. Given all of the above, this report revises October estimates for both the production gap and trend growth for 2019, from -0.1% to 0.7% and 2.9% to 2.7%, respectively.

For 2020 and 2021, the technical staff's growth forecast remains at 3.3%, alongside lower projected excess production capacity.

The revised 2019 production gap estimate is associated with more dynamic domestic demand than forecast in the previous report. The Bank's technical staff expects the factors that explained this dynamic in 2019 to continue to contribute to output growth this year and in 2021, albeit to a lesser extent in some respects. Investment should continue to be the most dynamic component of aggregate demand, in part thanks to the posi-

Graph 1.3
Consumer Price Index (CPI)^{a/, b/}
(fan chart, annual change)

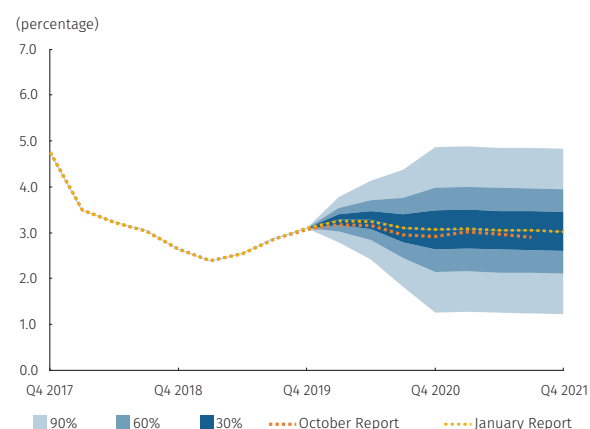


a/ This graph shows the forecast trajectory for the baseline scenario, with symmetric confidence intervals at 30%, 60% and 90% included over an 8-quarter forecast horizon. These intervals are derived from forecast errors in the baseline projection using Patacon and 4G monetary policy models, evaluated recursively every quarter for the period 2011-2018. Projection errors are estimated at horizons between 1 and 4 quarters. These errors are maintained for calculations of the intervals at horizons between 5 and 8 quarters.

b/ The results presuppose active monetary policy in which the Central Bank's benchmark rate is adjusted to guarantee compliance with the target inflation rate.

Source: Banco de la República.

Graph 1.4
CPI Excluding Foodstuffs and Regulated Goods^{a/, b/}
(fan chart, annual change)



a/ This graph shows the forecast trajectory for the baseline scenario, with symmetric confidence intervals at 30%, 60% and 90% included over an 8-quarter forecast horizon. These intervals are derived from forecast errors in the baseline projection using Patacon and 4G monetary policy models, evaluated recursively every quarter for the period 2011-2018. Projection errors are estimated at horizons between 1 and 4 quarters. These errors are maintained for calculations of the intervals at horizons between 5 and 8 quarters.

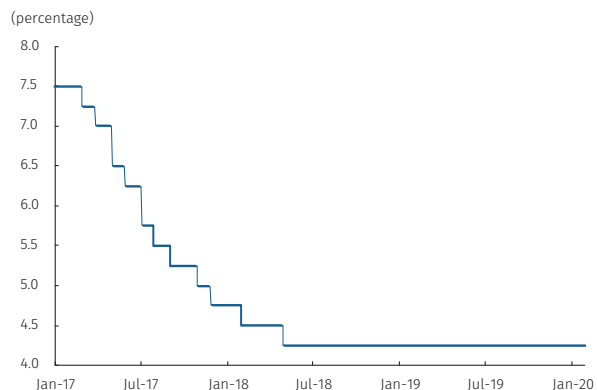
b/ The results presuppose active monetary policy in which the Central Bank's benchmark rate is adjusted to guarantee compliance with the target inflation rate.

Source: Banco de la República.

tive effects of the Economic Growth Enhancing Act of 2019 (Ley de Crecimiento Económico). Nevertheless, growth in this demand component is expected to decelerate slightly, due to a reduced contribution from the execution of public works and because tax stimuli will not have permanent effects on investment growth. A recovery in household investment, which fell significantly in 2019, should partially offset this slowdown. Household spending is expected to perform well, though at lower rates than in 2019, amid a labor market that registers modest employment growth and the expectation of a less dynamic environment for consumer credit and remittances. Public consumption is expected to decline in accordance with Colombia's fiscal rule and decreased spending by new state and local government administrations following their first year in office. A slight recovery among Colombia's trade partners should be reflected in lower growth in exports. At the same time, a decreased rate of expansion in investment in imported capital goods, together with lower consumption growth in durable goods, should lead to a smaller increase in imports. In sum, the technical staff expects positive domestic demand performance, though slightly lower than in 2019, supported by favorable financing conditions abroad. Net exports will detract less from growth, which as a result is forecast at 3.3%. This figure would exceed trend output growth and as such the output gap is expected to close over the course of the next two years. Nevertheless, there is a high level of uncertainty over the evolution of trend growth, due to the potential effects of demographic change and fiscal stimulus on investment affecting the factors of production and their level of productivity.

Starting in the first quarter of 2020, inflation will reconverge with the 3% target, as the effects of temporary supply shocks continue to diminish (Graph 1.3). In December 2019, observed inflation (3.8%) was below the technical staff's forecast. This can be explained by price increases in food and regulated items below estimates. As anticipated, core inflation (excluding food and regulated items) maintained its growth trend and settled at 3.1%. The supply shocks that increased inflation in 2019 (*El Niño* and an ad valorem tax) are expected to continue to wane this year (Graph 1.4). Increases in the price of foods are not expected to exceed 3% in December 2020. Growth in the CPI for regulated items is expected to decelerate, though at a slower rate than estimated last quarter, in part due to oil prices above forecast. Despite the projected reduction in excess production capacity, core inflation is forecast to converge to the target rate in 2020, thanks to the expectation of lower inflationary pressures originating with the exchange rate. This forecast can be explained by the expectation of lower international interest rates and risk premiums, and reduced international uncertainty related to trade tensions and Brexit. An observed decline in the dollar price of imports, a trend that could continue given the expected weakness of the global economy, is another

Graph 1.5
Banco de la República's Intervention Rate
 (daily figures)



Source: Banco de la República.

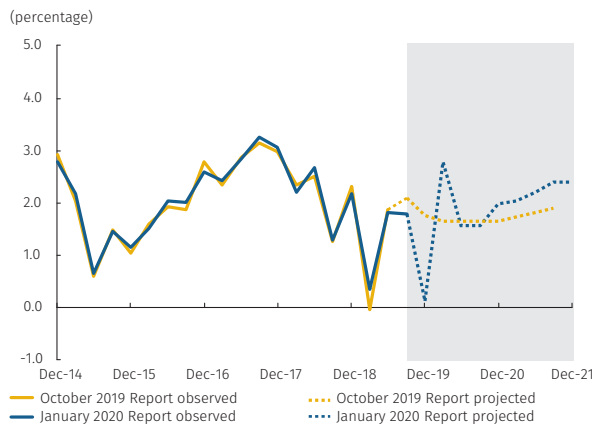
factor to consider. Additionally, excess production capacity should continue through the forecast horizon (though at lower levels than previously estimated) and inflation expectations should converge to the target. Given the above, core and total inflation (3.1%) are projected to decrease and approach the target at the end of 2020.

1.2 Monetary Policy Decision

In its December 2019 and January 2020 meetings, the Central Bank of Colombia's Board of Directors (BDBR) unanimously decided to maintain its benchmark interest rate at 4.25% (Graph 1.5).

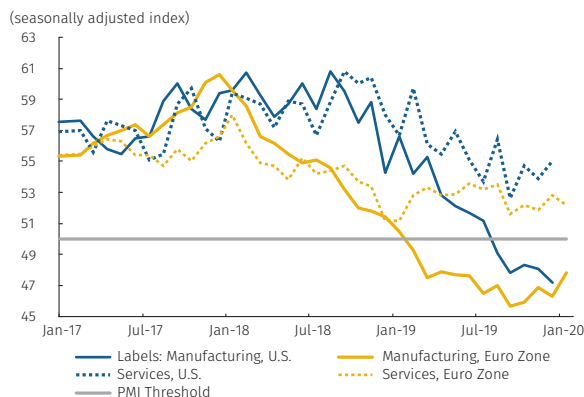
02/ Macroeconomic Forecasts and Risk Analysis

Graph 2.1
Assumed Quarterly Growth for Trade Partners, Based on Annual Projections^{a/}
(annualized quarterly change)



a/ Figures exclude Venezuela. Calculation based on dollar value of non-traditional trade (DANE)
Source: Bloomberg, Focus Economics, statistics agencies and central banks (observed data); Banco de la República (calculations and projections).

Graph 2.2
Purchasing Manager’s Index (PMI) in the United States and the Euro Zone



Note: PMI above the threshold indicates expansion and below indicates contraction for the respective sector in the previous month.
Sources: Institute for Supply Management and Markit, accessed from Bloomberg.

2.1 International Outlook¹

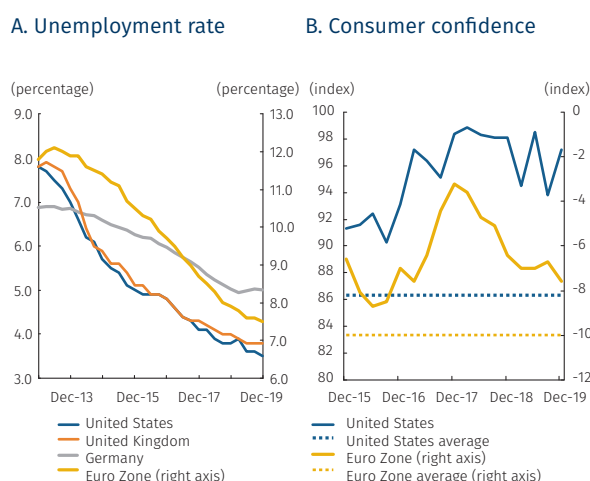
2.1.1 Foreign Demand

Estimated average growth among Colombia’s main trade partners in 2019 has been revised downward, due to idiosyncratic shocks in some of the region’s economies. This year and next should see a moderate recovery in foreign demand, though at rates below historic projections (Graph 2.1). Economic slowdown in the United States, China and the Euro Zone in 2019 can be explained in part by the adverse effects of trade tensions on investment decisions, industrial manufacturing and exports. Similarly, several economies in Latin America and the Caribbean have been negatively affected by supply shocks in the primary sector, less dynamic domestic demand, and widespread political tensions in the last quarter of 2019, resulting in a downward revision in growth estimates. Several central banks have reduced interest rates amid slower growth in economic activity and minimal inflationary pressures. Moving forward, the expansionary policies of the U.S. Federal Reserve (the Fed) and the European Central Bank (ECB) will continue to contribute to favorable international financing conditions. Moreover, uncertainty associated with trade tensions should remain relatively confined, given the results of recent negotiations between the U.S. and its trade partners, as well as Britain’s orderly exit from the European Union. Nevertheless, though the economic outlook of the world’s developed economies has improved slightly from the previous issue of this report, the expectation for deceleration in 2020 remains. China should still expect a structural deceleration in economic growth, accentuated by remaining trade restrictions. Colombia’s main Latin American trade partners are expected to undergo some degree of recovery, following poor performance in 2019. It is worth noting that these baseline projections and assumptions do not incorporate risks related to the recent outbreak of Coronavirus, the economic impacts of which remain highly uncertain.

Growth in the United States and the Euro Zone is expected to slow in 2020, before a slight upturn in 2021. The anticipated economic performance of these economies in 2020 owes in part to manufacturing sector expectations (PMI)²,

1 The baseline scenario in this report does not consider possible economic effects of the recent outbreak of Coronavirus detected in China.
2 Purchasing Managers’ Index.

Graph 2.3
Unemployment Rate and Consumer Confidence for Select Developed Economies (quarterly series)



Note: the average consumer confidence indicator for the United States has been calculated since 1985, and for the Euro Zone since 1978.
Source: Bloomberg

Table 2.1
Growth Projections for Main Trade Partners ^{a/}

Trade Partners;	2018 (pr)	2019 (est)	2020 (proj)	2021 (proj)
United States	2.9	2.3	1.8	1.9
Ecuador	1.1	-0.2	0.3	0.9
Peru	4.0	2.4	3.1	3.4
Mexico	2.0	0.0	1.2	1.7
Brazil	1.1	1.1	2.2	2.4
Euro Zone	1.9	1.2	1.0	1.2
Chile	4.0	1.1	1.2	2.5
China	6.6	6.1	5.9	5.8
Total trade partners ^{1a}	2.5	1.4	1.7	2.0

(pr): preliminary
(est): estimated
(proj): projected

a/ Figures exclude Venezuela. Calculation based on dollar value of non-traditional trade (DANE)

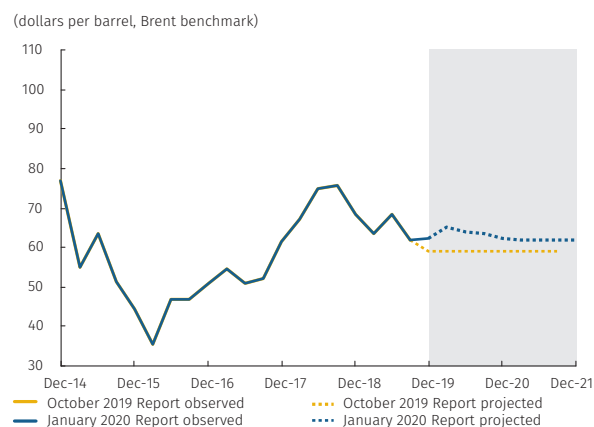
Source: Bloomberg, Focus Economics, statistics agencies and central banks (observed data); Banco de la República (calculations and projections).

which have ceased to deteriorate (Graph 2.2) but remain at relatively low levels. This may reflect a weak environment for investment, industrial production and international trade. Recent fiscal impulse in the United States should continue to decline, contributing to deceleration, while the contribution to growth from government spending in the Euro Zone is expected to continue. Private consumption in these economies is expected to remain dynamic, supported by a strong labor market, relatively high consumer confidence and loose financial conditions (Graph 2.3). The most recent indicators for both services and residential construction suggest that these sectors will perform well. The considerations above have precluded estimates of a more significant slowdown in economic activity in 2020, and even offer the prospect of slower deceleration in the U.S. economy. The United States and the Euro Zone are expected to expand output in 2021 to a greater degree than projected in the October report, in keeping with an improved outlook for global economic growth amid an orderly Brexit process and the results of negotiations between the United States and its trade partners.

Baseline forecasts project a modest recovery among Colombia's main regional trading partners, after idiosyncratic shocks affected several economies in 2019. Growth projections for Chile, Mexico and Peru (Table 2.1) were revised downward, due to a deterioration in business and consumer confidence amid a highly uncertain political environment. This may be partially offset by expansionary monetary policy and more significant fiscal stimulus. In Ecuador, by contrast, the most recent indicators suggest that GDP contraction in 2019 was smaller than estimated in the previous report. The growth of non-oil exports and an improvement in crude oil production, which were counteracted by the negative effects of street protests in October, are worth highlighting. Increased investment is expected to favor economic recovery moving forward, though a high degree of uncertainty remains. Finally, Brazil's economy is expected to perform better than estimated in the previous report. Brazil's monetary policy has become more expansionary, there have been observable improvements in its labor market, and the government has approved reforms that should drive consumption and allow for greater confidence.

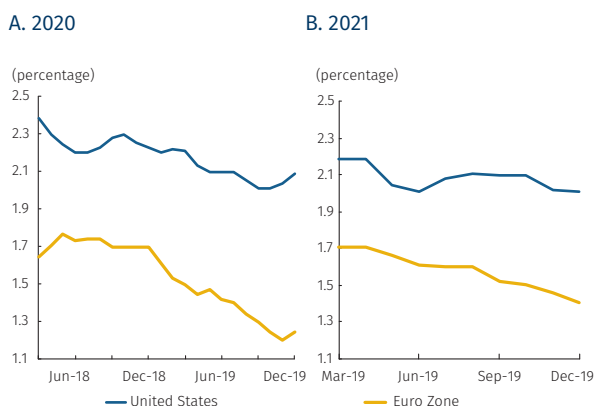
The baseline scenario suggests that real GDP growth for Colombia's trade partners in 2019 was 1.4%, which is expected to rise to 1.7% and 2.0% in 2020 and 2021, respectively. These figures have been revised from the previous report, which estimated growth at 1.5% in 2019, 1.7% in 2020 and 1.8% in 2021. International organizations such as the International Monetary Fund (IMF) and World Bank have drawn attention to risks to global growth that could affect Colombia's trade partners. These include a resurgence in protectionist measures associated with trade between the world's largest economies, street protests

Graph 2.4
Quarterly Oil Price Assumption Based on Annual Projections



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

Graph 2.5
Evolution of Expected Total Annual Inflation in the U.S. and Euro Zone^{a/}



a/Corresponds to the monthly average of expectations over annual change in consumer price indices.
Source: Bloomberg

Table 2.2
Forecasts for Benchmark Prices of Main Commodities Exported by Colombia

	2019	2020 (proj.)
Brent benchmark crude (dollars per barrel)	64.2	63.8
Colombian coal ^{a/} (dollars per ton)	75.8	60.0
Colombian coffee (dollars per pound)	1.37	1.53
Gold (dollars per troy ounce)	1,393	1,525

(proj): projected.

a/ Corresponds to implicit exports prices.

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

in Latin America, a larger-than-expected slowdown in the Chinese economy, possible effects of the Coronavirus, and other factors.

2.1.2 Developments in International Prices

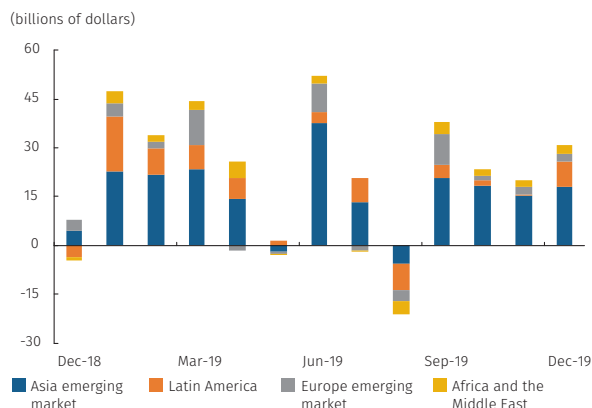
The assumed international price for oil has risen but remains below levels observed in 2019 (Graph 2.4). The international price for Brent benchmark crude in 2020 is forecast to be \$63.8 per barrel (bl), below 2019 prices (\$64.2/bl). This estimate marks an upward revision with respect to the October report (\$59.0/bl), taking into account deepening production cuts by members of the Organization of Petroleum Exporting Countries (OPEC) and its allies³, a slower-than-anticipated increase in crude extraction in the United States, and the outlook for global economic recovery. The Brent benchmark price is expected to fall to \$62/bl in 2021, above estimates from the October report (\$59.0/bl). These estimates fall within the range of market expectations. Possible risks to the current projection include a resurgence in global trade tensions, inventory changes beyond those anticipated by the market, an intensification of geopolitical tension in the Middle East, and the possible impact on demand of the Coronavirus, among other factors.

Developed economies are not expected to experience significant inflationary pressures, despite a recent increase in total inflation. Total inflation for U.S. and Euro Zone consumers increased in December compared to the previous month, rising from 2.1% to 2.3% and 1.0% to 1.3%, respectively. In the United States, this increase was the result of a recovery in energy prices, especially for fuel. For its part, core inflation in both the U.S. and the Euro Zone registered no change compared to November (2.3% and 1.3%, respectively). Significant changes in inflation are not expected for these economies in 2020 or 2021, which should continue to reflect an environment of minimal inflationary pressure.

Terms of trade are expected to undergo an annual reduction of 2.1% and 2.0% for 2019 and 2020, respectively (Table 2.2). Implicit export prices in dollars registered a generalized decline of 7.2% in the year as of November. The most significant reductions were observed in mining and oil derivatives, followed by agricultural goods. This effect was partially offset by a fall in the implicit price of imports (-5.0%), which included negative variations in intermediate and consumer goods. As such, terms of trade are estimated to have fallen by 2.1% annually in 2019. A de-

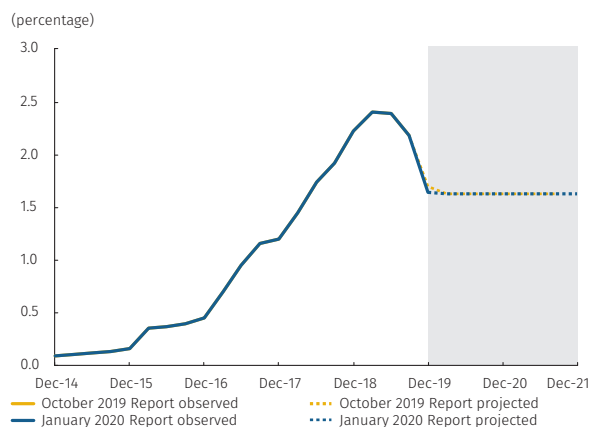
3 On December 6, 2019, OPEC and its allies agreed to cut an additional 500,000 barrels per day, adding to a previously agreed reduction of 1.2 million barrels per day. For its part, Saudi Arabia would cut an additional 400,000 barrels per day. This agreement was set to last until the first quarter of 2020.

Graph 2.6
Foreign Investment Flows ^{a/}



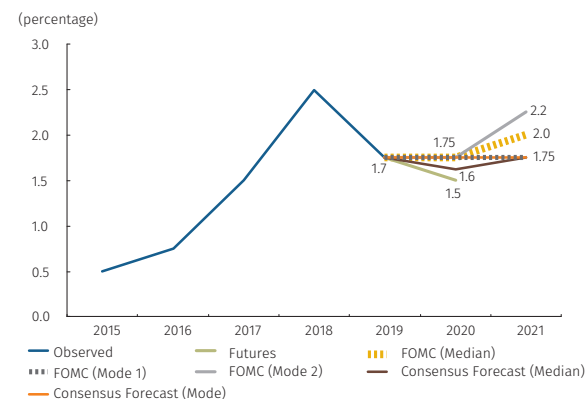
^{a/} Corresponds to investment flows in debt and stock instruments
Source: Institute of International Finance, Inc. (IIF)

Graph 2.7
Assumed Quarterly Fed Interest Rate ^{a/}



^{a/} Corresponds to the middle point in the range of the Fed's interest rate.
Source: U.S. Federal Reserve; calculations by Banco de la República.

Graph 2.8
Upper Limit of Fed Interest Rate (end of year) ^{a/}



^{a/} Data on implicit futures probability were updated on 21 January 2020. Projections from members of the Fed correspond to their meeting on 10-11 December, 2019. Projections from Consensus Economics were obtained from their January report (information through 18 December 2019).
Source: Bloomberg, Focus Economics and the U.S. Federal Reserve (Fed).

cline of 2.0% is forecast for 2020, associated in particular with a fall in the international price of coal, which should be partially offset by higher prices for some of Colombia's other raw materials exports.

2.1.3 Developments in International Finance

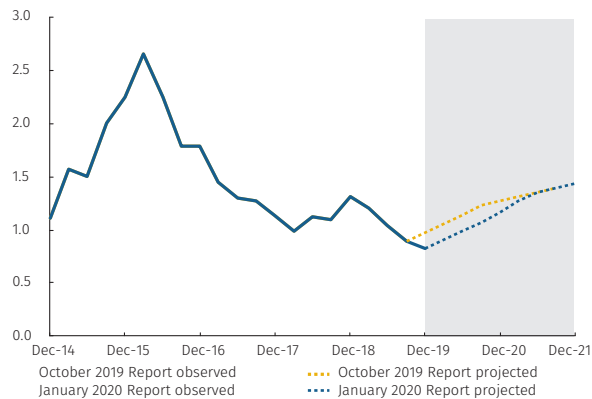
In the fourth quarter of 2019, financial indicators suggested reduced volatility in financial markets, alongside increased value in major stock market indices and capital flows into Latin American markets. Optimism surrounding a potential trade deal between the United States and China built through the last quarter of 2019, contributing to reduced uncertainty and increased demand for riskier assets. Financial volatility measured by the VIX and VS-TOXX indices fell by 13% and 11%, respectively, compared to the previous quarter, and the primary stock indices in the United States hit historic highs. This was accompanied by capital flows into Latin American markets (Graph 2.6), primarily in December. So far in 2020, the trend toward reduced financial volatility and increased stock index values has continued. Nevertheless, this dynamic could be negatively affected by general uncertainty related to the recent outbreak of the Coronavirus.

The Bank's macroeconomic baseline scenario does not anticipate a change in the Fed's interest rate.⁴ At their December meeting the Fed's Federal Open Market Committee (FOMC) decided unanimously to maintain interest rates between 1.50% and 1.75% (Graph 2.7), in line with the technical staff's expectations. In its press release the Fed explained its current monetary policy stance as keeping with support for sustained economic expansion, a strong labor market and inflation near the target rate. As forecast in the previous issue of this report, the Fed is not expected to adjust interest rates in 2020 or 2021. Though higher than the implicit futures market figure (Graph 2.8), the interest rate projection for 2020 coincides with the FOMC's expected mode and median interest rate range and the mode of analysts' estimates. For 2021, expected stability in the Fed's benchmark interest rate coincides with analysts' expectations and is below some FOMC projections, which consider a higher policy rate beginning that year.

Colombia's risk premium is now projected to be lower than October estimates, but by the end of 2021 should converge toward its historic average (Graph 2.9). In general, risk premiums in emerging economies fell over the course of the last quarter of 2019. In Colombia, the average for credit default swaps (5-year CDS) was 82.6 basis points (bp), below expectations and lower than third-quarter levels (89.9 bp). In 2020 so far, sovereign

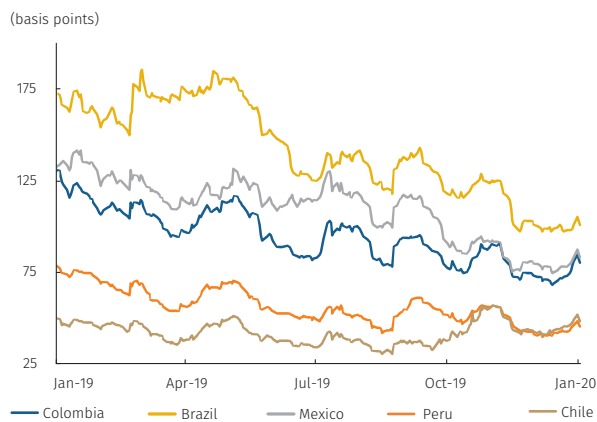
⁴ At press time, FOMC members in their January 29 meeting decided to maintain the benchmark interest rate range between 1.50% and 1.75%, in line with the technical staff's expectations.

Graph 2.9
Colombia's Assumed Quarterly Risk Premium (CDS)^{a/}



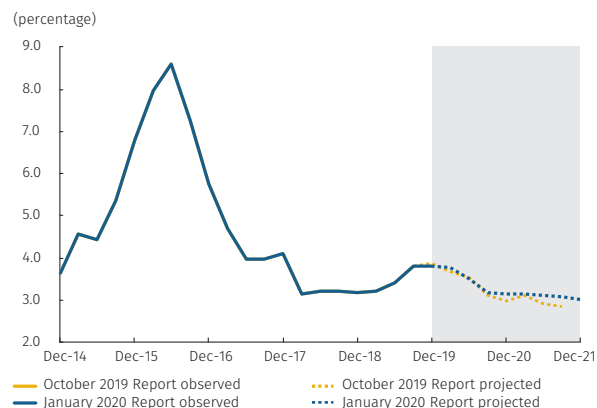
a/ Corresponds to credit default swaps at five years.
Source: Bloomberg; Calculations by Banco de la República.

Graph 2.10
Risk Premia for Select Latin American Economies^{a/}



a/ Measured by five-year credit default swaps
Source: Bloomberg

Graph 2.11
Consumer Price Index
(annual change)



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

risk premiums in some economies in the region have continued to fall, and in Colombia have dropped to historic lows (70.9 bp on average between January 1-20) (Graph 2.10). The baseline scenario for 2020 anticipates risk premiums below those projected in the previous issue of this report, resulting from recent observable trends and an upward revision in the expected oil price. Risk premiums are expected to converge toward historic averages at the end of the forecast horizon, bearing in mind the effects of deficit accumulation on Colombia's net external liabilities.

2.2 Macroeconomic Projections⁵

2.2.1 Inflation

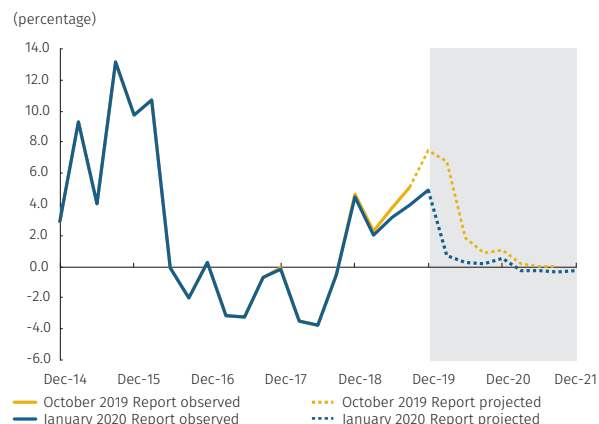
The baseline scenario continues to show a drop in inflation beginning in the first quarter of the year, primarily as a result of diminishing effects of supply shocks registered in 2019. The effects of supply shocks that increased inflation in 2019 (*El Niño* and an ad valorem tax) are expected to continue to wane, contributing to lower inflation in 2020. Given those circumstances, the forecast for annual inflation has been revised upward slightly, in accordance with larger-than-projected increases in regulated item prices and convergence to the core inflation target that has been slower than was expected in the October report. To that effect, total inflation is expected to end the year at 3.1% and remain close to the target rate through the rest of the forecast horizon.

The baseline scenario projects lower real exchange rate-based inflationary pressures compared to the October projection (Graph 2.12). Given recent oil price and risk premium performance, as well as reduced uncertainty related to global commerce as a result of the partial bilateral trade agreement between China and the United States, the baseline scenario now forecasts nominal depreciation of the peso to be less persistent than projected in the October estimate. As a result, inflationary pressures reflected in the real exchange rate are expected to be lower than estimated in the last issue of this report⁶.

5 These results assume active monetary policy in which the Central Bank of Colombia adjusts its benchmark rate to guarantee compliance with the inflation target.

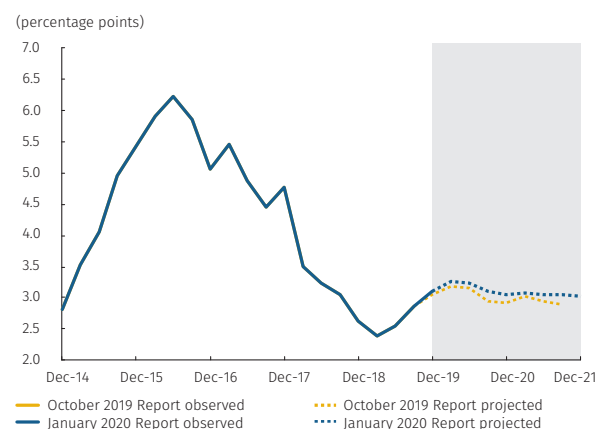
6 As this report was being produced, financial markets and oil prices underwent significant drops, while various currencies lost value against the dollar, all of which could be associated with the outbreak of Coronavirus and the effects of contagion on other countries. These shocks are not considered in this report.

Graph 2.12
Quarterly RER Inflation Gap^{a/}



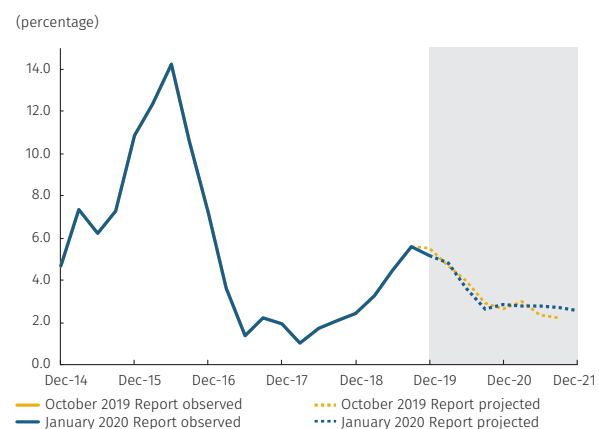
a/ The real exchange rate inflationary gap captures inflationary pressures based on the exchange rate. Positive values imply upward pressure on inflation from the exchange rate. The gap is calculated as a deviation in real exchange rate variation compared to a non-inflationary trend component estimated under the economic structure of the 4G monetary policy model.
Source: Banco de la República.

Graph 2.13
CPI Excluding Food and Regulated Items (annual change)



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

Graph 2.14
CPI for Food^{a/} (annual change)



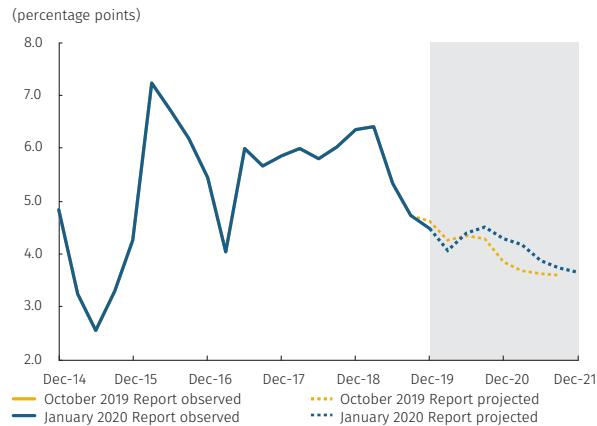
a/ Includes food away from home.
Source: DANE; calculations and projections by Banco de la República.

Core inflation (excluding food and regulated items) is expected to remain close to the target rate through the forecast horizon, amid lower exchange rate-based inflationary pressures and excess production capacity (Graph 2.13). Core inflation should increase slightly over the next two quarters but converge to the target rate at the end of 2020. By components, the CPI for tradable goods should accelerate through the first quarter of the year, as the result of consumption dynamism and the pass-through effects of accumulated price depreciation. For the remainder of the year, prices for tradable goods should recede somewhat, given the expectation for reduced currency pressure and international prices that may continue to decline or rise only at very low levels. The annual change in prices for non-tradable goods should remain relatively stable, though at levels slightly above those forecast in October. This rise can be explained, in part, by an increase in the minimum wage (which was greater than expected) and reduced downward pressure resulting from forecasts of a tighter output gap. This should be partially offset by small price increases in rental market projections. In synthesis, the current projection for core inflation considers reduced exchange rate-based inflationary pressures, and a slightly tighter output gap, compared to October.

The CPI for food is expected to decelerate, registering levels below 3% at the end of 2020. (Graph 2.14). Growth in food prices during 2019 was associated with factors related to climate, the pass-through effects of currency depreciation on processed foods, and the implementation of indirect taxes on soda. The reversion of these supply shocks should see a reduction in prices in 2020. Nevertheless, several factors could moderate the expected deceleration in food prices. One of these is a surprise increase in eating out registered at the end of last year, as well as the impact that the adjustment of the minimum wage could have on those prices. There is also a risk that observed increases in international prices for processed foods, such as cereals and oil, could continue. For the second half of 2020 and the remainder of the forecast horizon, the baseline scenario projects annual change in food prices to stabilize at levels below the target.

The CPI for regulated items should also slow, though at a lower rate than estimated last quarter, in part because of the higher expected path of oil prices. Readjustments in utility prices last December were less significant than previous estimates, contributing to a downward revision in the forecast price of regulated items in the first quarter of 2020 (Graph 2.15). Nevertheless, price increases above the target are still expected over the course of the year. This combined with the projected increase in the international price of oil and its pass-through effects on domestic prices for gasoline and other fuels, leaves estimates for the annual change in the price of regulated items above 4% at the end of 2020.

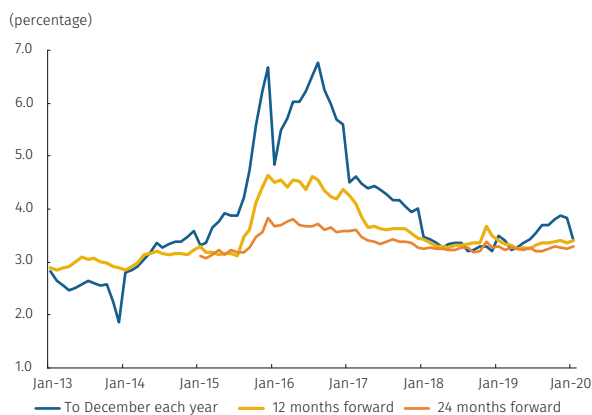
Graph 2.15
CPI for Regulated Items
(annual change)



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

Analysts' inflation expectations measured in January were slightly higher than those registered in October, and now project inflation close to 3.4% at the end of the year and 3.29% in 2021. Results from the Bank's monthly survey⁷ suggest analysts expect inflation to reach 3.41% at the end of 2020 and 3.3% in 24 months (Graph 2.16). This compares to 3.38% and 3.28%, respectively, registered in the October report. The difference between survey expectations and the technical staff's 2020 forecast can be explained, in large part, by analysts' anticipation of a more significant increase in food prices. Analyst expectations from the Bank's quarterly survey⁸, conducted at the beginning of January, project inflation in December 2020 reaching 3.59%, falling to 3.58% at 24 months. Break Even Inflation (BEI) calculations derived from the public debt market on January 24 project expected inflation at two, three, five and ten years of 3.57%, 3.55%, 3.52% and 3.58%, respectively⁹.

Graph 2.16
Bank Analyst and Stockbroker Inflation Expectations

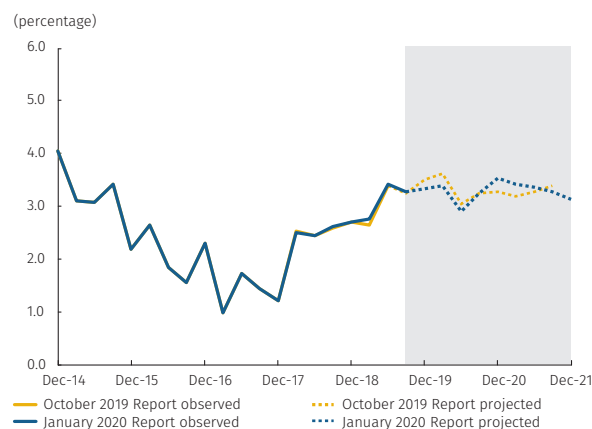


Source: Banco de la República (monthly analyst survey).

2.2.2 Economic Activity

The Colombian economy grew close to its long-term natural output level in 2019 and should maintain similar performance over the next two years (Graph 2.17). A number of factors help explain this dynamic. Relatively low interest rates, amid loose credit conditions, have contributed to growth. Strong growth in remittances, which contributed to household income and, alongside immigration flows, increased the consumption of goods and services, was another factor. The positive effect of both public works (4G) and fiscal policy on investment, particularly in machinery and equipment, is also worth noting. Several of these factors could continue to drive output growth in 2020 and 2021, though possibly to a lesser degree in some respects. With regard to domestic demand, the expectation of only a slight recovery in Colombia's trade partners would be reflected in low export growth. Meanwhile, favorable international financing conditions should see domestic demand continue to be more dynamic than output.

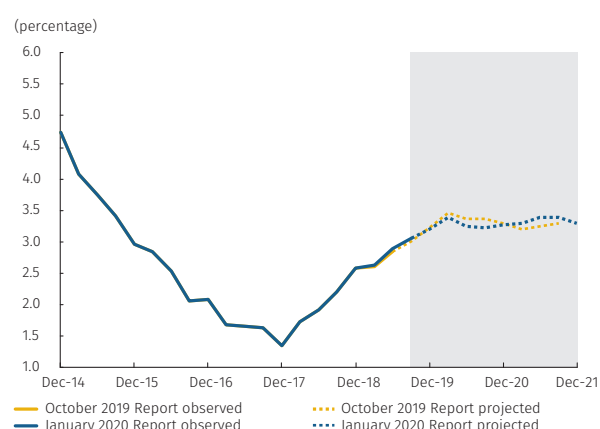
Graph 2.17
Quarterly GDP
(annual change)



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

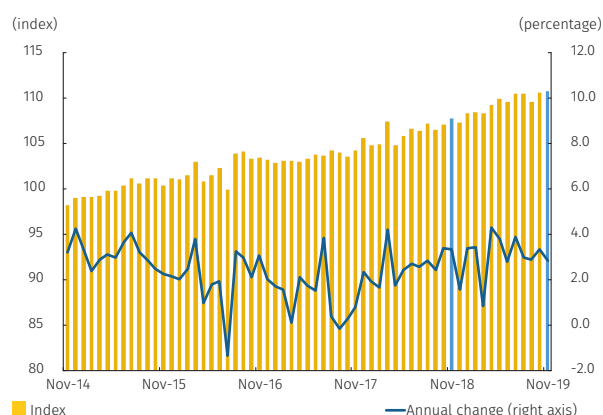
- 7 The *Encuesta Mensual de Expectativas de Analistas Económicas* (EME) surveys economic analysts on their expectations related to inflation, the Central Bank of Colombia's benchmark rate, the market exchange rate (MER) and GDP growth over predetermined time horizons. The last available survey was conducted in January 2020.
- 8 The *Encuesta Trimestral de Expectativas Económicas* (ETE) has as its goal to understand the perceptions and expectations of Colombian business on principal economic indicators of the country's economic health (inflation, salaries, exchange rate, interest rates, availability of credit and liquidity, economic growth, and employment).
- 9 After discounting inflationary and liquidity risk premiums, the rates to two and five years are 3.0% and 3.1%, respectively. The methodology used for these calculations is from Espinosa, Melo and Moreno (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.

Graph 2.18
Accumulated GDP, 4 Quarters
(annual change)



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

Graph 2.19
Economic Tracking Indicator, 2015 base
(seasonally adjusted and annual change)



Source: DANE; calculations by Banco de la República.

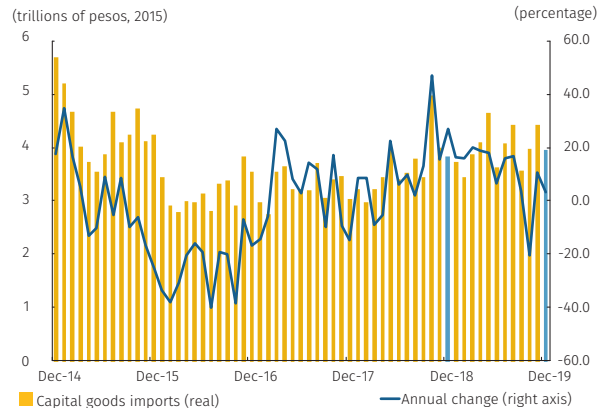
This report maintains the previous report’s 2019 GDP growth estimate of 3.2% (Graph 2.18). Third-quarter growth results (3.3% seasonally adjusted and corrected for calendar effects¹⁰) released by national statistics agency DANE support the technical staff’s forecasts. A similar dynamic is expected for the fourth quarter, with annual growth estimated at 3.3%. Private consumption and investment in machinery and equipment is expected to have sustained relatively high levels of expansion. This estimate takes into account small negative effects associated with a national strike in November, which likely temporarily affected spending-side consumption, as well as commerce and other supply-side services. Bimonthly figures for the October-November monthly economic tracking indicator, which displayed annual growth over the period of 3.1% (Graph 2.19), support this forecast. This being the case, the Colombian economy will have performed better in 2019 than in any year since the end of the growth cycle for raw materials prices in 2014. It will also have been the best performance, in terms of growth, of any major Latin American economy.

Domestic demand estimates for 2019 suggest a strong degree of dynamism. Growth in domestic demand is estimated to have grown solidly in the fourth quarter of 2019 (4.2%), though below levels observed in the previous quarter (4.8%). This is due to moderation in private spending as a result of the reversion of some positive but temporary shocks on investment and the effects of the national strike on consumption. Overall, growth in domestic demand in 2019 will have exceeded 4.0%, topping its performance in 2018 (3.9%).

Investment is estimated to have been the most dynamic component of GDP in 2019. Investment continued to recover in the third quarter of 2019, registering annual growth of 8.6%. Dynamic growth was again concentrated in spending on machinery and transportation equipment, as well as investment in public works. Effects of the Financial Act of 2018 (Ley de Financiamiento), as well as significant progress in the execution of public highway projects, a marked increase in oil sector investment, and increased spending by regional and local governments at the end of their terms (including the renewal of urban public transportation fleets), will have facilitated the positive performance observed in overall investment. Investment is expected to have maintained this relatively high annual growth rate in the fourth quarter, as evident in preliminary figures for the import of capital goods (Graph 2.20). Nevertheless, growth is believed to have been lower than registered in the two previous quarters due to a higher base of comparison and

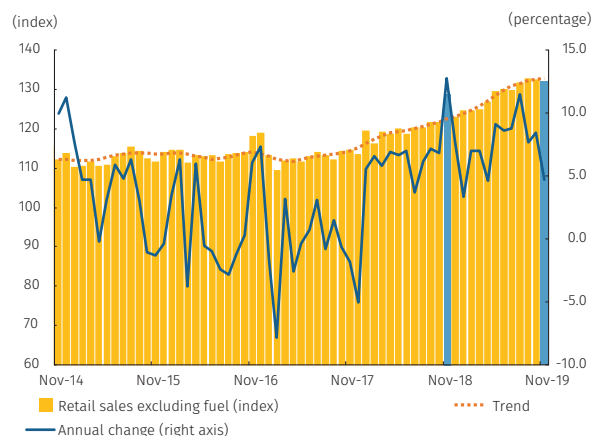
10 Forthwith, information related to GDP and its components will refer to the seasonally adjusted and calendar corrected series published by DANE.

Graph 2.20
Capital Goods Imports in Constant Peso Prices



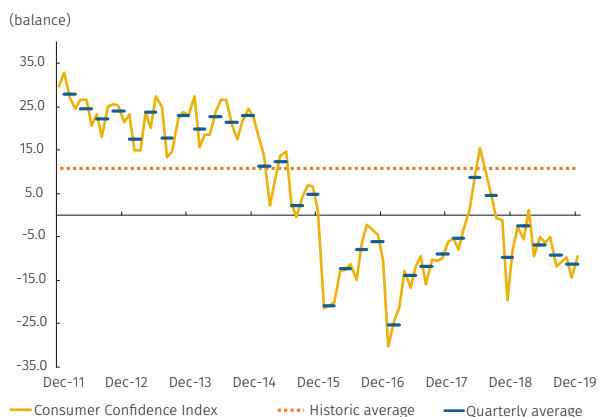
Source: DANE; calculations by Banco de la República.

Graph 2.21
Monthly Retail Sales Survey
(Total retail sales excluding fuels, seasonally adjusted and corrected for calendar effects)



Source: DANE; calculations by Banco de la República.

Graph 2.22
Consumer Confidence Index and Quarterly Average



Source: Fedesarrollo; calculations by Banco de la República.

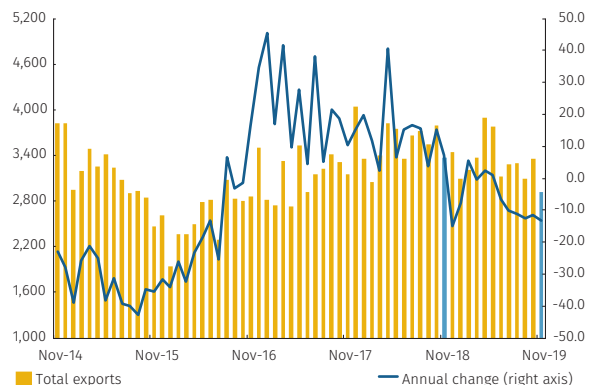
the aforementioned renewal of transport fleets, which was less intense than expected in previous quarters.

Private consumption is expected to have grown significantly in 2019 (4.6%), while growth in public consumption slowed (3.2% vs. 5.6% in 2018). Household spending in the fourth quarter is estimated to have grown at an annual rate below that observed in the third quarter (5.0%). This estimate takes into account the high levels already shown in the tradable component of consumption, as well as the brake on imports reflected in the fourth quarter (according to provisional figures from the national tax and customs agency DIAN) and temporary effects of the national strike. The forecast is supported by retail sales figures between October-November, which continued to grow at a healthy rate, albeit slower than in the third quarter (Graph 2.21). Expected levels of dynamism in private consumption come despite the fact that consumer confidence, according to indicators provided by Fedesarrollo, a think tank, have not recovered (Graph 2.22). For its part, public consumption in the third quarter of 2019 performed better than rates observed in the first half of the year, a dynamic that is expected to have continued into the fourth quarter, in line with the final months of budget execution for local and regional governments. Nevertheless, an overall reduction was observed in the contribution to growth from public consumption in 2019 compared to the previous year, a trend that is expected to continue in 2020.

Net exports appear to have curtailed growth more in 2019 than in 2018. As anticipated, third quarter exports in 2019 registered lower annual growth (1.8%), confirming the temporary nature of a shock observed in the second quarter. For the fourth quarter, international trade figures available for November suggest a similar performance to the previous three months (Graph 2.23). This estimate considers, primarily, a moderation in annual growth in the size of coffee exports, and smaller reductions in coal and oil exports observed in October and November. To this effect, real international sales are estimated to have grown by 2.9% in 2019. Imports in constant peso prices, which have shown elevated growth levels since the middle of 2018, again performed at high levels of growth in the third quarter of 2019 (10.7%). Nevertheless, provisional data for December suggest a moderation in annual growth of those imports for the fourth quarter, explained in part by a high base of comparison (Graph 2.24). All imports components appear to have performed in a similar fashion. To that effect, overall exports in 2019 are estimated to have grown by 8.4%.

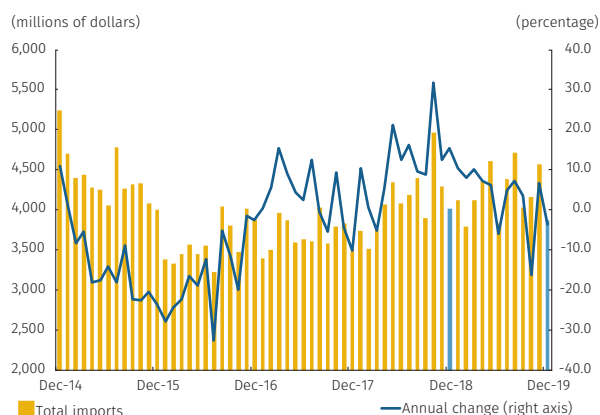
The Bank's technical staff revised its estimates for the Colombian economy's production capacity and utilization rate for 2019 (Graph 2.25). With the goal of updating and refining its calculations for the size and utilization rate of the Colombian economy's production capacity, the Bank's

Graph 2.23
Total Goods Exports (FOB)
(millions of dollars and annual change)



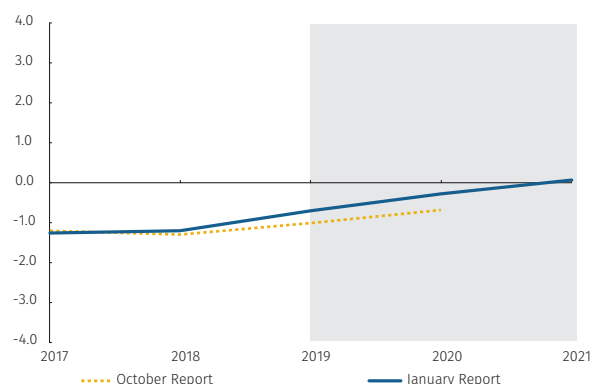
Source: DANE; calculations by Banco de la República.

Graph 2.24
Total Goods Imports (FOB)
(millions of dollars and annual change)



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

Graph 2.25
Annual Output Gap^{a/}



a/ This gap is calculated as the difference between observed GDP and the economy's potential GDP (trend GDP).
Source: Banco de la República.

technical staff introduced the following modifications to its estimates: 1) incorporating the effects of demographic change apparent in data made available from the 2018 national household and population census (DANE, 2018) and immigration statistics from recent years up to 2019; 2) revising its understanding of the effects of recent labor market and inflationary trends on production capacity calculations; 3) incorporating the effects on investment of Colombia's Financial Act of 2018 (Ley de Financiamiento); and 4) revising the methods used to estimate production capacity and its utilization rate, as well as the addition of new methodologies to that effect (Table 1). The subsequent downward revision of the working age population reflected in the 2018 census data compared to 2005 was offset by incoming migration flows in 2019. The observation of an upward trend in the unemployment rate and other labor market phenomena since 2014 suggests that the effective contribution of labor on production capacity is lower than previously estimated. By contrast, the positive effect of the Financial Act on investment will have favored the accumulation of capital, increasing the economy's production capacity. The Bank's technical staff has concluded that the net effect of these factors requires a reduction in the 2019 production capacity estimate included in the previous iteration of this report, as well as a corresponding upward revision in the production capacity utilization rate. Other signals derived from inflation performance and sub-basket prices in the consumer price index (CPI) point in the same direction, suggesting a tighter production gap even after considering the effects of exchange rate pressure and supply shocks observed in the economy. Given all of the above, this report revises October estimates for both the production gap and trend growth for 2019, from -0.1% to 0.7% and 2.9% to 2.7%, respectively (Graph 2.25).

In 2020 and 2021, the Colombian economy is expected to grow by 3.3%, driven primarily by domestic demand. Investment is expected to continue to be dynamic after the cyclical recovery from the 2014 oil shock. Overall investment should also benefit from an upturn in construction investment (primarily in housing), which should help offset the expected deceleration in spending on machinery and equipment. This reduction, in turn, can be explained in part by the moderation of positive effects from the Economic Growth Enhancing Act of 2019 (Ley de Crecimiento), which replaced the Financial Act of 2018. Private consumption should continue to perform well amid loose credit conditions and alongside other factors such as remittances and migration, though to a lesser degree than in 2019. Given this, dynamic growth in investment as a component of GDP should moderate over the next two years, while continuing to grow above growth rates for GDP itself. Growth in public consumption should continue to slow in compliance with the fiscal rule at levels below the Central Government's 2019 balance-sheet target. The swearing-in

of new local and regional governments, which generally coincides with a deceleration in public spending and less dynamism in the development and implementation of public investment projects and their associated costs, is also expected to affect public consumption. Nevertheless, through 2020 public consumption should show higher rates of growth alongside improvements in budget execution indicators related to regional and local governments. All told, growth in domestic demand is expected to come in under 4.0% but remain above GDP growth rates.

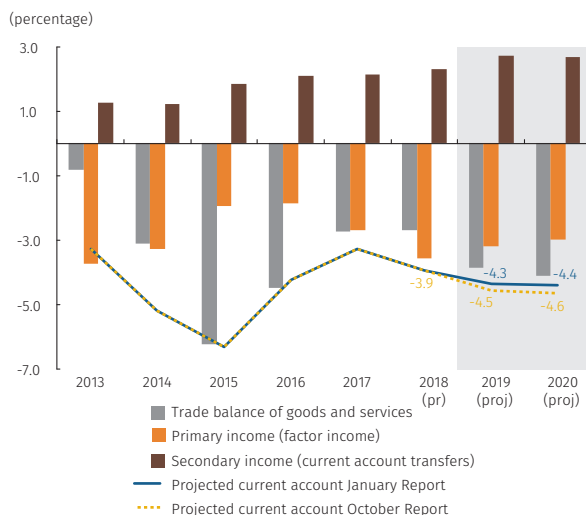
Slow economic recovery by Colombia's trade partners preclude projections of more significant growth in real exports on the forecast horizon, while growth in imports is expected to moderate over the next two years.

Foreign sales are expected to expand at levels below those for GDP in 2020 and 2021 due to weakness in international demand, despite moderate increases in production in some raw materials exports. Growth in demand for tradable goods is expected to slow, due in part to anticipated moderation in investment this year and through 2021. Additionally, consumption of durable goods could register lower growth levels as a consequence of the possible effects of accumulated depreciation of the peso. All this would reflect in less dynamic growth for imports which, nonetheless, should continue to grow at levels above those for GDP. The expected performance of real exports and imports suggests a less negative contribution to net foreign demand on growth over the forecast horizon.

In 2020 and 2021, excess production capacity should continue to decline.

The forecast for economic growth (3.3%) would exceed trend output, and with that the output gap would close over the next two years. Nevertheless, there is a high level of uncertainty over the evolution of trend growth, due to the potential effects of demographic change and fiscal stimulus on investment affecting the factors of production and their level of productivity.

Graph 2.26
Annual Current Account and its Components as a Percentage of GDP



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

2.2.3 Balance of payments

The current account deficit is estimated to have grown from 3.9% of GDP in 2018 to 4.3% in 2019, amid more significant growth in domestic demand, weak trade partner economies, and lower export prices (Graph 2.26).

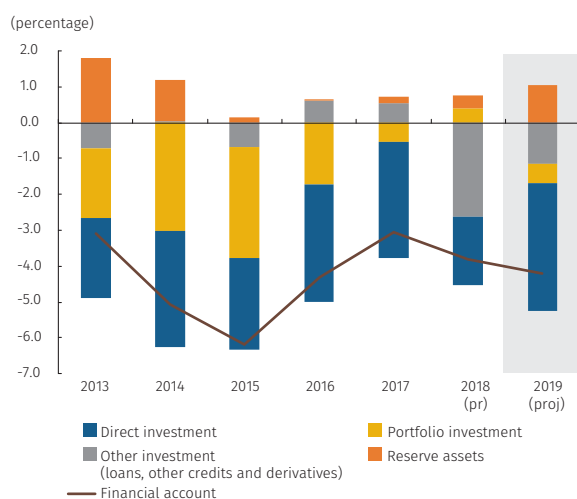
The positive performances of household spending and investment in machinery and equipment appear to have driven imports in consumer and capital goods. Lower prices and reduced production of coal, as well as a reduction in the international price of crude oil, should explain the majority of the fall in goods exports. These factors, together with the economic deceleration of Colombia's trading partners, appear to be reflected in a deterioration of the trade balance, estimated as the primary determinant of growth in the current account deficit in 2019. That said,

lower corporate profits for businesses holding foreign capital and larger income from remittances should have mitigated this expansion. Lower profits are expected to have been the result of reduced export prices in mining and oil products, as well as the effect of peso depreciation on dollar earnings for firms focused on the domestic market. The current account deficit as a percentage of GDP for 2019 is estimated to have been lower by approximately 0.2 percentage points compared to the October report, due to revisions in observable data related to foreign trade and factor income, and a larger estimated reduction in imports in the last quarter of the year.

The current account deficit in 2020 is forecast to be close to 4.4% of GDP, with domestic demand continuing to grow above output levels. Goods imports are expected to grow at annual rates below those of 2019, due to an expected moderation in the growth of household spending and in investment, as the latter is reordered in favor of non-tradable goods. A modest recovery in exports over the course of the year is also expected, thanks to an increase in the price and volume of coffee and gold exports, greater oil exports, and a slight recovery in the economies of Colombia's trade partners, all factors that may be partially offset by lower prices and volumes of coal imports. Increased remittances and a downward adjustment in foreign companies' profits should continue to counteract growth in the external imbalance. The current account deficit for 2020 (4.4%) is expected to be lower than forecast in the October report (4.6%), due to a more favorable price environment for export products (with the exception of coal).

Foreign direct investment should continue to be the primary source of international financing in 2019 and 2020, amid favorable international financing conditions (Graph 2.27). Capital flows to businesses focused on the domestic market are expected to continue, in line with estimated economic growth performance in 2019 and 2020. Capital income in the oil sector should continue enough to sustain or increase production levels. This year and in 2019 Colombia is expected to retain its access to other sources of foreign financing, such as debt and portfolio flows, as international interest rates are expected to remain relatively low and risk premiums forecast to be below historical averages.

Graph 2.27
Financial Account and its Components as a Percentage of GDP

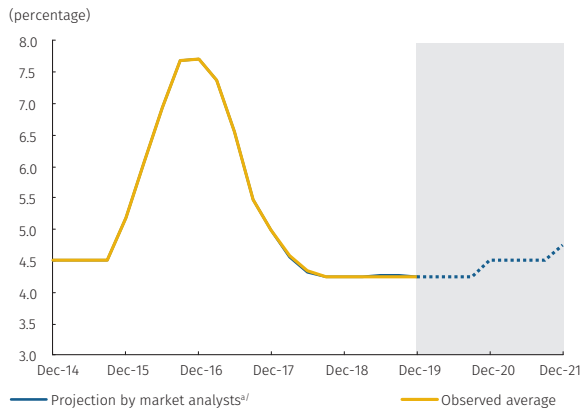


pr): preliminary
(proj): projected
Source: Banco de la República.

2.2.4 Monetary policy and interest rates anticipated by analysts

Analysts' interest rate expectations are similar to the implicit 2020 forecast from the technical staff's baseline scenario (Graph 2.28). The Central Bank's monthly survey of analyst expectations, conducted in mid-January, showed median projections for the year-end policy rate at 4.50%. This fits with the technical staff's baseline scenario forecasts, characterized by a negative production gap that

Graph 2.28
Policy Interest Rate Quarterly Average: Observed and Analyst Expectations^{a/}



a/Corresponds to the median of analyst projections. These projections are calculated by taking the quarterly average of responses to the monthly Survey of analyst expectations conducted by the Central Bank of Colombia in October 2019. Source: *Banco de la República*.

is expected to close within the forecast horizon, as well as inflation and expected inflation above the target rate, but converging toward 3% over the same period. For 2021, the median analyst response suggested an additional 25-bp increase in the benchmark rate at the end of the year. The timing, magnitude and velocity of the normalization in monetary policy will be determined primarily by: 1) domestic demand dynamics and the velocity with which the output gap is closed; and 2) the evolution of international financial conditions and their effects on the exchange rate and prices.

Potential risks to the macroeconomic forecast come mainly from the possibility of more significant currency pressure than anticipated amid deteriorating international economic conditions, a slower reversion of shocks that have affected food prices and uncertainty over the utilization rate and determinants of production capacity. Deterioration in global economic conditions with respect to the baseline scenario could be reflected in more significant exchange rate-based inflationary pressures. The forecast could also be affected by a slower reversion of the shocks observed on food prices in 2019 than projected in the baseline scenario forecast. Uncertainty associated with the future evolution of demographic variables and investment carries a risk for the projection of production capacity. Finally, the possible effects of the recent outbreak of Coronavirus in China have not been considered in this report.

03/ Current Economic Conditions

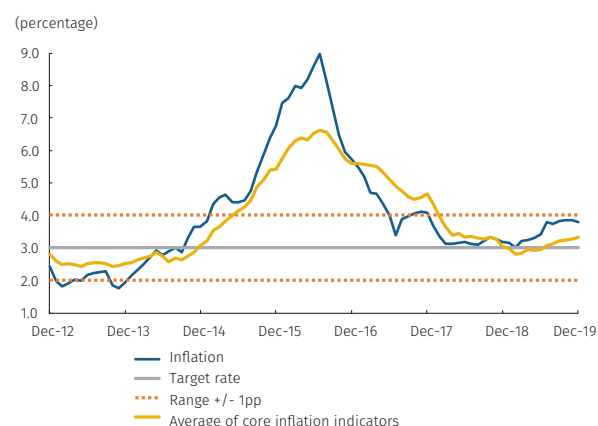
3.1 Inflation and Price Behavior

In December, annual consumer inflation reached 3.8%, slightly below technical staff estimates (Graph 3.1). As explained in previous reports, the increase in inflation in the first three quarters of 2019 was the result of supply shocks (mainly affecting food prices) and the depreciation of the peso. In line with projections from past Monetary Policy Reports, at the end of last year the effects of those shocks on food prices started to wane, though somewhat more quickly than expected, contributing to the end of an upward trend in inflation beginning in the first quarter of 2019. Together with greater-than-expected reductions in the annual change of the CPI for regulated items due largely to the performance of fuel and energy prices, this offset upward pressure induced by peso depreciation. By contrast, estimated aggregate demand performance contributed to lower downward pressures on inflation compared to earlier reports, the result of which led to a revised estimate of the output gap presented in this report (Box 1).

As anticipated, core inflation remained on a growth trend, explained in part by moderate pressures derived from the exchange rate and aggregate demand. In December annual change in the CPI excluding food and regulated items settled at 3.1%, slightly above projections in the previous issue of this report (3.06%) and above levels observed at the end of the third quarter. A similar dynamic was present in the three remaining indicators of core inflation and for the average of the four indicators, which closed the year at 3.3% (compared to 3.2% in September). All indicators ended the year slightly above the target rate of 3.0%. Both tradable and non-tradable goods exerted upward pressure on core inflation, though to a moderate degree. This inflation trajectory is consistent with an output gap that is estimated to have been tightening since 2018.

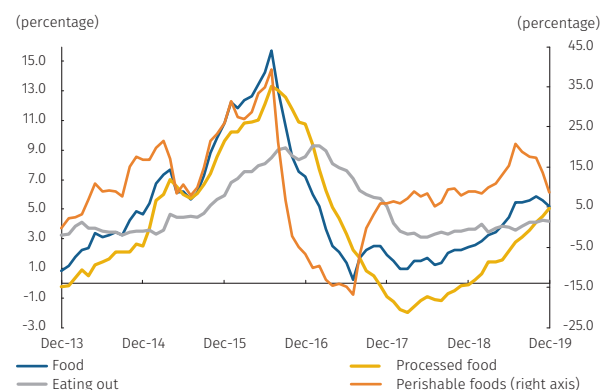
Upward pressures on food prices began to recede beginning in November. The CPI for food (including eating out) registered annual change of 5.2% in December, lower than the level observed in September (5.6%) and projections from the October report (Graph 3.2.) This reduction has been driven by the behavior of perishable food prices, as processed foods and eating out both exerted upward pressure on the CPI. Since the third quarter, the price for perishable foods have shown reductions or relatively low adjustment increases, facilitating an annual fall in the relevant CPI. This trend can be explained, in part, by the normal agricultural cycle, but also suggests that upward pressure associated with climate-related factors (such as

Graph 3.1
CPI And Indicator Average for Basic Goods Baskets
(annual change)



Sources: DANE and Banco de la República.

Graph 3.2
CPI for Food and its Components
(annual change)



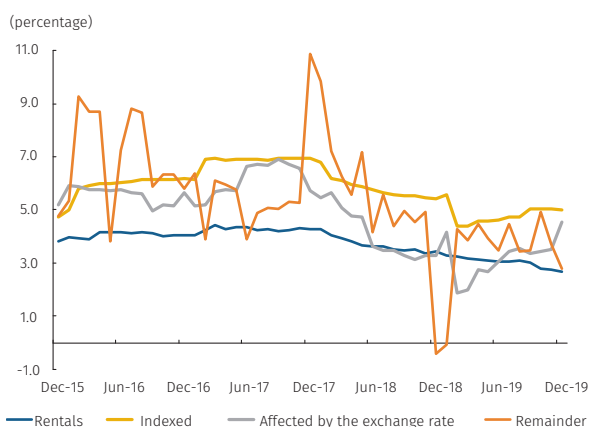
Source: DANE; calculations by Banco de la República.

Graph 3.3
CPI for Tradable and non-Tradable Goods, excluding Food and Regulated Items
(annual change)



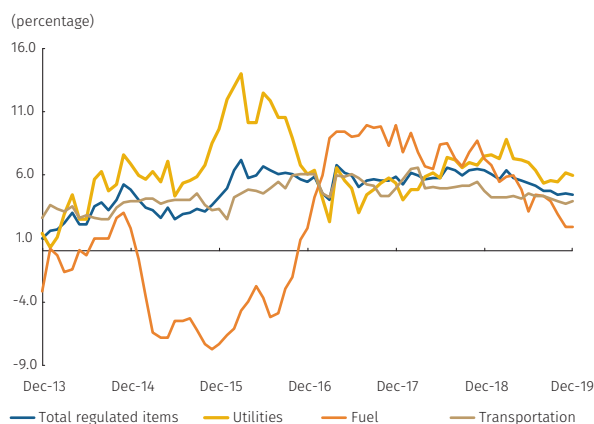
Source: DANE; calculations by Banco de la República.

Graph 3.4
Components of CPI for non-Tradable Goods, excluding Food and Regulated Items
(annual change)



Source: DANE; calculations by Banco de la República.

Graph 3.5
CPI for Regulated Items and its Components
(annual variation)



Source: DANE; calculations by Banco de la República.

an *El Niño* phenomenon beginning at the end of 2018 and limited rainfall in the second and third quarters of 2019) could be receding, especially since November.

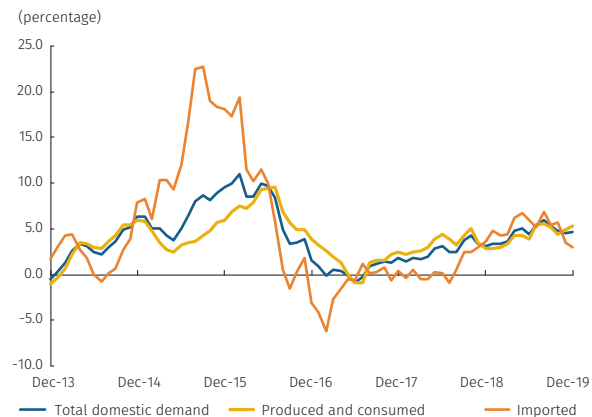
Prices for processed foods continued to be affected by accumulated depreciation of the peso and some supply shocks. A gradual increase in annual change of CPI for processed foods has been observed since January 2019, reaching 5.0% in December last year (Graph 3.2). In addition to the temporary shock resulting from the imposition of a multi-phase tax applied to sodas, dynamic demand growth and the pass-through effects of accumulated peso depreciation on the price of imported foods (oil and cereals, primarily) played a role. In the fourth quarter, the international and domestic price of rice also rose significantly.

The annual adjustment in the CPI for tradable goods continued to grow in the fourth quarter in accordance with peso depreciation and dynamism in demand. Through December, the annual change in the CPI for tradable goods rose to 2.2%, slightly exceeding the technical staff's expectations. A trend toward growth of this indicator has been observed since the beginning of the first quarter, owing to moderate transmission of accumulated depreciation of the peso and, more recently, dynamism in consumption. In any case, the upward trend has been gradual and annual change continues to be relatively low and below the target rate, with an output gap that remains in negative territory despite recent dynamism in demand (Graph 3.3).

Demand dynamism has also been a factor in the annual change of the CPI for non-tradable items, which through December was slightly above projections. The CPI for non-tradable items continued at levels slightly above projections in the second half of the year, as well as those observed in the first six months of 2019. An unexpected increase observed in December, rising to 3.5% (Graph 3.3), was related to increased fixed services for television, internet and telecommunications. Relatively high adjustment increases in prices related to tourism, corresponding to positive growth dynamics in that segment of consumption, was also a factor. These upward pressures have been attenuated by a gradual decrease (2.7% in December) in the annual change of rental market prices (Graph 3.4), which is consistent with continued signs of weakness in the housing market.

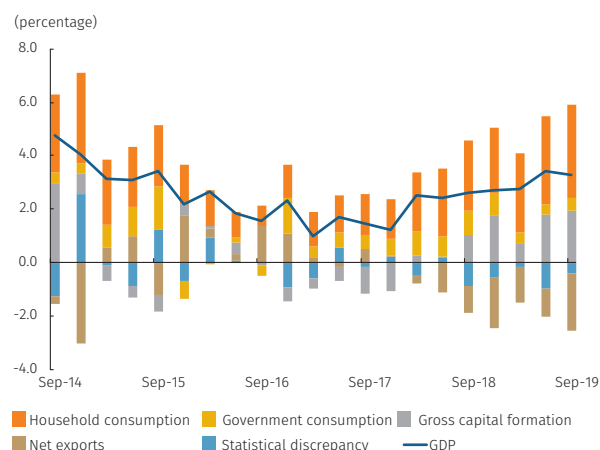
Smaller annual adjustments in transportation and gasoline prices suggest a possible decline in the annual change of regulated items. Annual change in the price of regulated items continued to be relatively high in the fourth quarter (4.5% in December), but maintained its downward trajectory (Graph 3.5) and finished close to the October projection (4.6%). A fair part of this decline over the course of the year can be attributed to minimal adjustment increases in domestic fuel prices. This stabi-

Graph 3.6
PPI by Origin
(annual change)



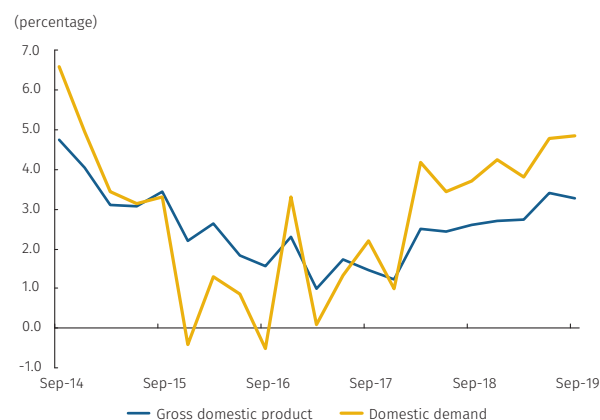
Source: DANE.

Graph 3.7
Quarterly GDP on the Spending Side^{a/}
(annual change and contributions)



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

Graph 3.8
GDP and Quarterly Domestic Demand^{a/}
(annual variation and contributions)



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

ty, in turn, can be explained by oil prices that on average were lower in 2019 than levels observed in 2018, and which offset upward pressures originating in the depreciation of the peso. As expected, utility prices in the fourth quarter continued to increase at high annual rates, though price increases for electricity have tended to be lower than those forecast in previous reports.

Inflationary pressures from non-labor costs moderated in the fourth quarter. An upward trend in the annual change of the producer price index (PPI) for domestic supply was interrupted and began to decline in September (5.3%), falling to 4.7% at the end of 2019 (Graph 3.6). In the last quarter of the year, upward pressures originating in the PPI for imported goods started to recede, with annual change at 3.0%, compared to 5.5% a quarter earlier. This decline was concentrated in prices for goods related to mining, metallurgy, paper and chemicals. By contrast, the annual adjustment of the PPI for locally produced and consumed goods grew from 5.2% in September to 5.4% in December. Prices for local producers have been driven over the course of the year by dynamic domestic consumption, climate-related shocks, and increases in indirect taxes and some road closures.

3.2 Growth and Domestic Demand

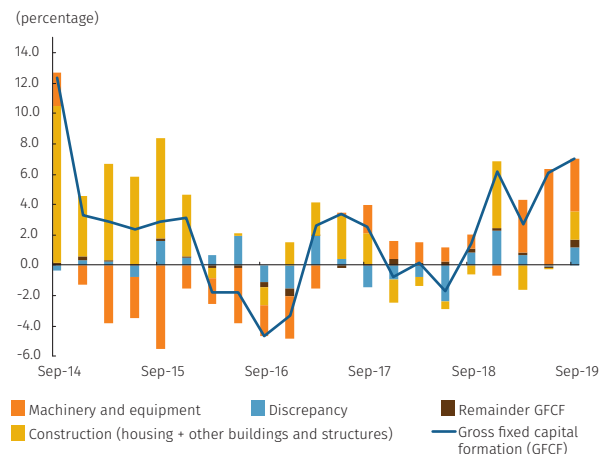
3.2.1 GDP on the Spending Side

In the third quarter of 2019, the Colombian economy sustained growth similar to in the second quarter, in line with the technical staff’s forecast. According to figures published by Colombia’s national statistics agency (DANE), seasonally adjusted GDP corrected for calendar effects expanded at an annual rate of 3.3% in the third quarter, slightly above the level forecast in the previous Monetary Policy Report (3.2%) and close to the average for the first half of the year (3.1%) (Graph 3.7). Quarterly expansion was 0.6%, representing a slowdown compared to the second quarter of the year (1.3%). Reference series GDP also registered annual growth of 3.3% (compared to 3.0% in the second quarter of 2019).

Domestic demand continued to grow faster than GDP. The seasonally adjusted domestic demand series registered growth of 4.8% in the third quarter of 2019, a figure equal to its expansion in the second quarter (Graph 3.8). Household consumption and investment in machinery and equipment were the most dynamic components of spending.

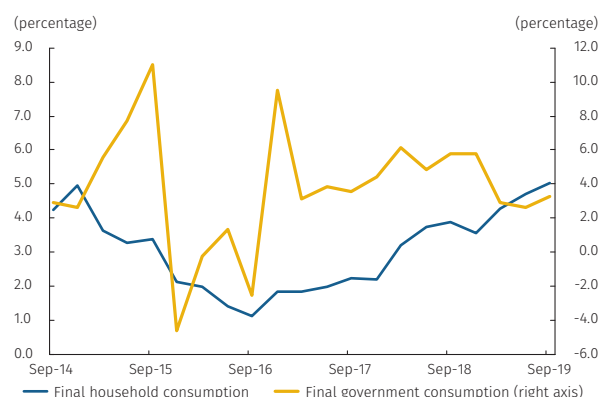
Gross fixed capital formation (GFCF) accelerated, primarily thanks to investment performance in machinery and equipment and other buildings and structures (Graph 3.9). GFCF expanded at an annual rate of 7.0% in the third quarter

Graph 3.9
Quarterly Gross Fixed Capital Formation^{a/}
(annual variation and contributions)



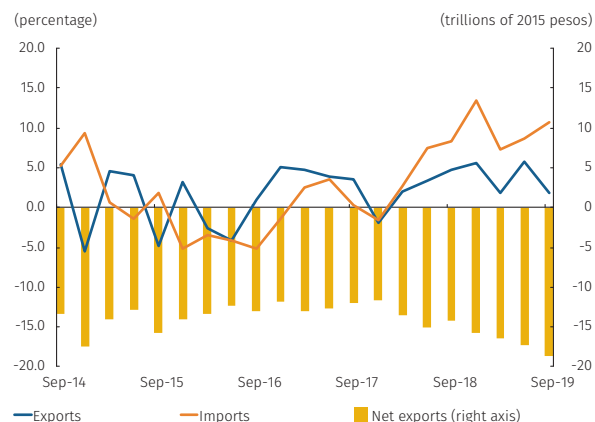
a/ Seasonally adjusted and corrected for calendar effects.
 Source: DANE; calculations by Banco de la República.

Graph 3.10
Final Consumer Spending for Households and Final Quarterly General Government Spending^{a/}
(annual variation)



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

Graph 3.11
Exports, Imports, and Trade Balance^{a/}
(annual variation and trillions of 2015 pesos)



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

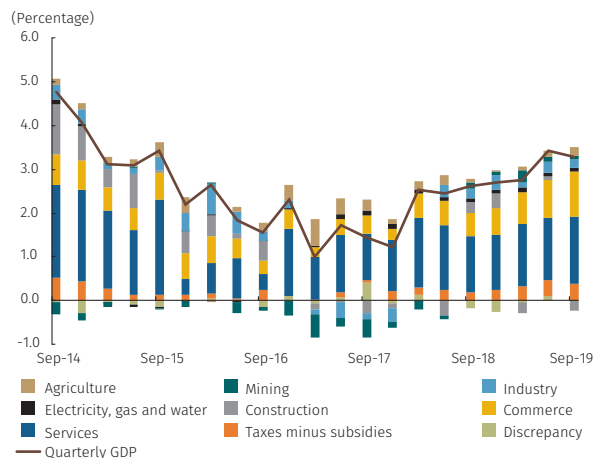
ter of 2019, higher than the 6.1% registered for the three previous months. Investment in machinery and equipment continued to grow at double-digit rates, though it slowed compared to levels registered in the second quarter, falling by 4.5% between quarters. This performance was in line with expectations of the technical staff, which anticipated a transitory component to second-quarter growth rates due in part to the modernization of certain mass transport fleets and aircraft purchases. Driven by the execution of 4G highway projects, investment in other buildings and structures (which includes public works) accelerated, growing at 6.6% (compared to 5.3% in the previous quarter). Investment in housing continued its recovery process, particularly for low-income housing (LIH). That said, annual growth rates continued in negative territory (-3.8%), though those were significantly less negative than in the previous quarter (-9.6%). Finally, the expansion in GFCF also contributed to significant dynamism in cultivated biological resources, which in the third quarter grew by close to 20%.

Consumption continued to be strongly dynamic, accelerating in terms of both public and private consumption (Graph 3.10). Including data from September, household consumption has grown at annual rates above 4% for three consecutive quarters, performance not observed since 2014. Once again, growth in services consumption, which accelerated in annual terms, contributed the most to growth in private consumption. As projected, consumption in durable goods accelerated both in annual and quarterly terms. Household spending came amid loose credit conditions and low real interest rates (Section 3.3). The increase in remittances, which in real peso terms grew by 18.4%, together with incoming migration from Venezuela also appears to have contributed to dynamism in household consumption. Public consumption also accelerated, growing at a 3.3% annual rate in line with the technical staff’s projections given low levels of budget execution. Nevertheless, public consumption continued to remain below the level registered in 2018 (5.6%).

Real exports were less dynamic, after performing well in the second quarter. Annual growth in exports in the seasonally adjusted GDP series was 1.8% in the third quarter, below figures registered in the second quarter (5.7%) (Graph 3.11). The significant quarterly expansion of sales abroad observed in the second quarter (3.5%), forecast to be temporary by the technical staff, did indeed recede partially in the third quarter, falling by 1.2%.

Real imports grew at double digit rates, accelerating compared to second quarter figures. Real imports registered 10.7% annual growth in July-September, though that figure was affected by a low base of comparison (Graphic 3.11). Nevertheless, imports decelerated in quarterly terms, which was consistent with intensive domestic demand for

Graph 3.12
Quarterly GDP on the Supply Side^{a/}
(annual change and contributions)



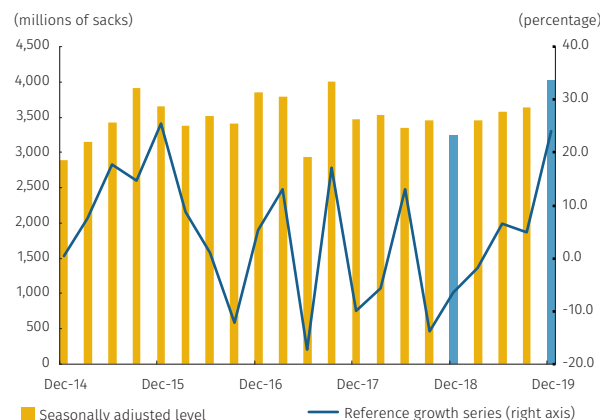
a/ Seasonally adjusted and corrected for calendar effects.
Source: DANE; calculations by Banco de la República.

imported goods. Given that, the contribution of net exports to GDP growth became more negative in the third quarter.

3.2.2 GDP on supply side and sector indicators

Annual growth in the third quarter was driven primarily by commerce, repairs, transportation and lodging, and by financial activities and insurance. These two sectors accounted for 1.4 percentage points of a total 3.3% expansion in the third quarter (Graph 3.12). Financial activities and insurance grew at a high rate (7.4%), above forecast and helped along by performance in investment and portfolio returns. The commerce, repairs, transportation and lodging sector registered its highest growth rate since 2014 (6.1%), with the retail and wholesale commerce sub-sectors, as well as lodging and food services, contributing most to growth. Figures from the Bank’s monthly retail sales survey from October-November showed real retail sales continuing at a strong rate of growth, though lower than in the third quarter in part due to adverse effects of the recent national strike.

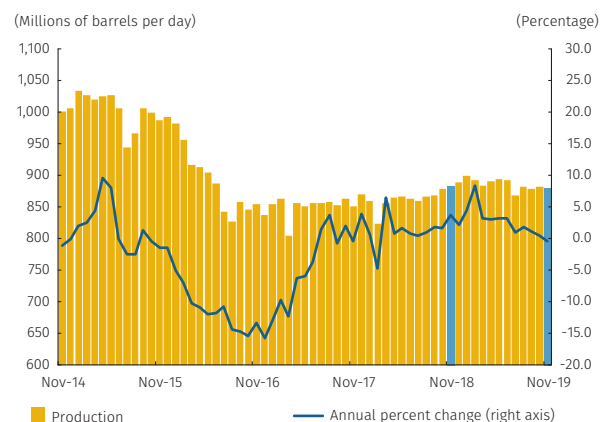
Graph 3.13
Coffee Production
(quarterly and annual change)



Source: National Federation of Coffee Growers; calculations by Banco de la República.

The information and communications and construction sectors were unique in registering negative annual change. Value added from the construction sector fell at annual rate of 2.9%, with a particularly pronounced fall in the residential and non-residential buildings sector (-11.1%) that failed to be offset by dynamism in construction related to public works (12.5%). Figures from the Bank’s building census (Censo de edificaciones) related to social and low-income housing (LIH) suggested more positive dynamics for the former in the third quarter. That said, growth in construction already underway for non-LIH housing remained in negative territory. Value added from the information and communications sector fell by 0.4%, due to reduced demand for those services and operational problems experienced by some telecommunications providers.

Graph 3.14
Oil Production
(monthly and annual change)

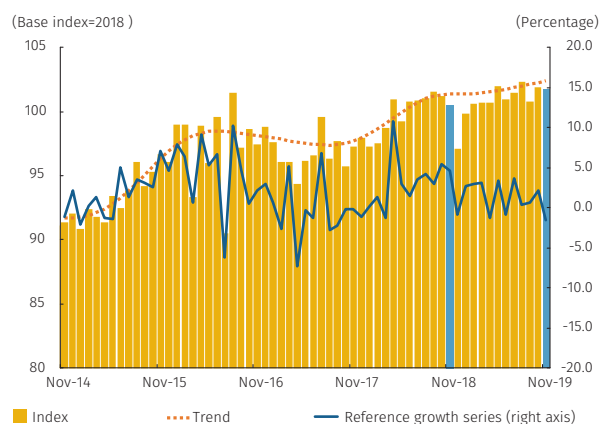


Source: ANH; calculations by Banco de la República.

Third quarter growth for the agricultural sector accelerated. Annual growth in the sector was 3.0% (compared to 2.1% in the second quarter). This can be explained, particularly, by growth in the cultivated crops sub-sector (3.5%). Coffee production grew by 4.9% in the third quarter and 24.1% in the fourth quarter, recovering from adverse climate-related shocks in the second half of 2018 (Graph 3.13). Livestock also accelerated both in annual and quarterly growth terms, despite the negative effects of road closures leading to Colombia’s eastern plains (llanos orientales).

Mining continued to register low growth, due to slow expansion in oil production and falling coal production. Oil production grew by an average of 1.4% in the third quarter, compared to 3.2% in the second quarter, due to problems

Graph 3.15
Real Industrial Production Index
(seasonally adjusted, trend component and annual change)



Source: DANE; calculations by Banco de la República.

of public order (Graph 3.14). This was reflected in lower annual growth in oil and natural gas extraction. Coal extraction continued to contract in the third quarter, as a result of reduced global demand and adverse factors in exploration and exploitation processes. Bimonthly figures for October-November suggest average crude oil production increased on the margin, though it remains at low annual growth rates.

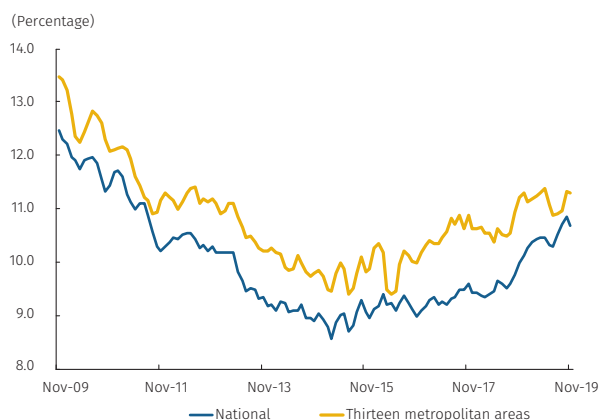
Industrial manufacturing decelerated. Annual expansion in value added from industrial manufacturing fell from 2.1% in the second quarter to 1.7% in the third. The largest factors contributing to this slowdown in the manufacturing of machinery and equipment, and automobile manufacturing. By contrast, food and drink production attributed most to dynamism in the third quarter, growing at an annual rate of 3.6%, while oil refining continued to contract in annual terms (1.9%). Bimonthly industrial production figures for October-November, from DANE's monthly manufacturer's survey (Graph 3.15), point to somewhat less dynamism in the last quarter of the year.

3.3 Labor Market¹¹

The labor market continued a slow decline, above all in rural areas. For the moving average ending in November 2019, the total national unemployment rate maintained its growth trajectory at levels somewhat above those observed a year ago. This trend was more pronounced in the case of rural areas and small cities than it was in the country's thirteen major metropolitan areas (Graph 3.16). The increase in the unemployment rate in rural areas has, in recent months, come as a result of a fall in the employment rate. This was partially mitigated by a reduction in total job supply, above all in jobs for secondary workers and especially among young people without degrees in higher education, who over this period stopped actively looking for work. In the thirteen major urban areas, the unemployment rate remained relatively stable, though above 2018 levels.

Figures from DANE's General Integrated Household Survey show an overall national decline in the number of employed people. The decline is due primarily to a fall in the rural employment rate in the agricultural sector, where backsliding over the last several months has been concentrated in non-specialized, small-scale businesses with varied production. A drop in employment in the manufacturing sector has also been observed. Job creation was concentrated in the construction and service industries,

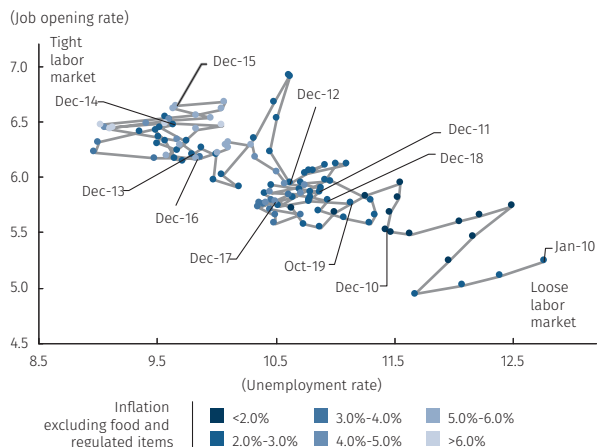
Graph 3.16
Unemployment Rate
(Seasonally adjusted moving average)



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

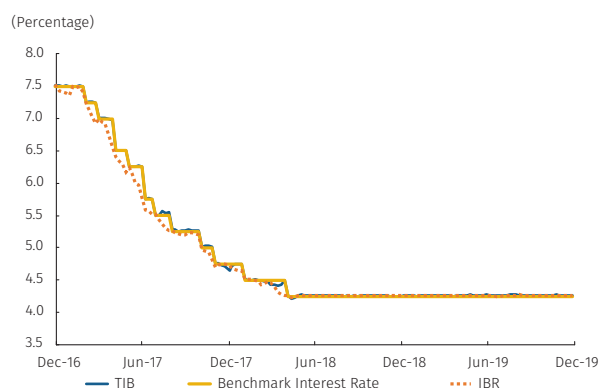
11 For more detailed analysis on the recent evolution of the labor market, please consult the Central Bank of Colombia's Labor Market Report, available at <http://www.banrep.gov.co/es/reporte-mercado-laboral>.

Graph 3.17
Beveridge Curve for 7 Primary Cities



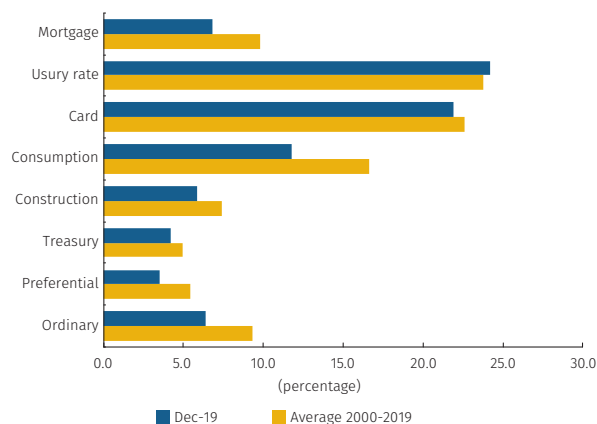
Notes: seasonally adjusted series, moving average. The job opening rate is estimated by the GEIH's contracting methodology, see Morales, L.F., & Lobo, J. (2017). Estimated Vacancies from Firm's Hiring Behavior: The Case of a Developing Economy. *Borradores de Economía*, No. 1017. Source: DANE (GEIH); calculations by Banco de la República.

Graph 3.18
Policy Rate, TIB, and IBR^{a/}
(weekly data)



a/IBR: overnight policy rate. Policy rate: repo. Sources: Office of the Financial Superintendent of Colombia; Banco de la República.

Graph 3.19
Real Lending Rates in National Currency
(deflated with CPI excluding food)



Sources: Office of the Financial Superintendent of Colombia/DANE; calculations by Banco de la República.

both at the national level and in the thirteen largest metropolitan areas in the country.

The quality of employment in large urban areas continued to improve in the second half of the year. The recent increase in employment in urban areas was concentrated in salaried and formal jobs, while non-salaried and informal jobs fell annually. Added to this, real earned income continued to grow at an annual rate. Real earned income for non-salaried workers, which had been declining, returned to growth. Meanwhile, real earned income for salaried workers continued to grow at annual rates, which can be explained by the impact of the minimum wage on salaried workers without a college education.

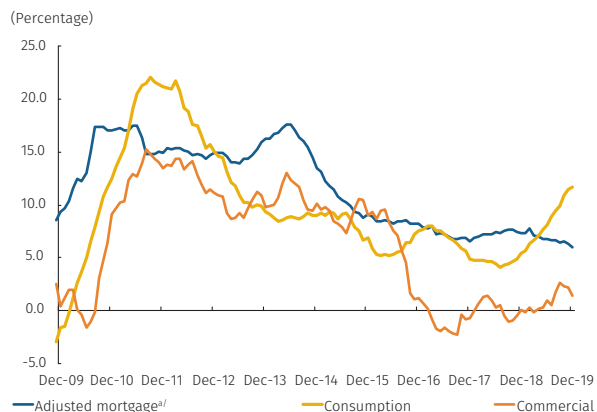
Some increases in real earned income below labor productivity, as well as unemployment and job opening performance, suggest that a loose labor market and expectations that the employment gap will remain in positive territory will not constitute a source of inflationary pressure. Labor productivity, measured as real output over total hours worked, grew by more than real earned income, due primarily to positive GDP growth dynamics in the third quarter of the year. Information as of October 2019 points to a continued downward trajectory for labor market tightness (defined as job openings over unemployment), suggesting the continuation of a loose labor market. Placing this data on the Beveridge curve (Graph 3.17), which maps the relationship between the rate of job openings and the unemployment rate, shows that the labor market is at a point where it should not generate inflationary pressure.

3.4 Money and Financial Markets

Money market figures remained close to the policy rate (Graph 3.18). The interbank overnight interest rate (TIB) and the interbank overnight reference interest rate (IBR) at one month were stable at levels very close to the policy rate, registering averages in the last quarter of 2019 between 4.25% and 4.26%. The IBR at three months also remained level with the policy rate, while the TIB at six months registered 5 basis points higher.

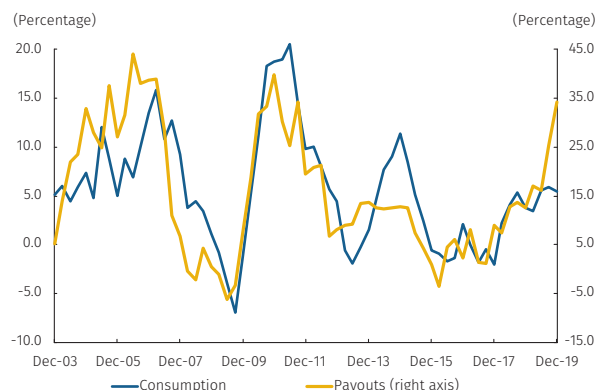
Amid an ample credit environment, real lending interest rates in the fourth quarter continued to be low (Graph 3.19). Nominal interest rates for consumption-directed credit tended to stabilize at the end of last year, after a downward trajectory in previous quarters. Interest rates on consumer loans in real terms were at 11.8% at the end of the year, lower by 4.9 percentage points on averages calculated since the 2000. Real commercial interest rates fell and in December 2019 rates for preferred (3.5%) and ordinary credit (6.4%) were 1.9 and 2.9 percentage points below average, respectively.

Graph 3.20
Real Gross Portfolio in National Currency
(real growth, deflating CPI excluding food)



a/ Banking portfolio plus securitizations.
Sources: Office of the Financial Superintendent of Colombia/DANE; calculations by Banco de la República.

Graph 3.21
Semi-Durable and Durable Goods Consumption and
Consumer Credit Disbursements^{a/}
(real annual change, quarterly data)



a/ Disbursements include credit cards and are softened by the order of 2.
Sources: Office of the Financial Superintendent of Colombia/DANE; calculations by Banco de la República.

Real lending credit in local currency accelerated thanks the performance of consumer-directed loans, while the commercial portfolio continued to experience low growth (Graph 3.20). Household credit grew at the end of 2019, pushing real annual growth up to 9.9% led by resources destined for consumption. Strong competition in the supply of credit in the banking system, primarily in consumer loans excluding salary secure loans, contributed to greater dynamism in household spending in durable and semi-durable goods (Graph 3.21). Deceleration in commercial banking portfolios was observed in the last quarter of the year. Nevertheless, when including funding through bond issuance in the local market and direct foreign financing are included, this aggregate figure suggests that growth in debt among large businesses was maintained in the fourth quarter.

Financial conditions are favorable in a context of low interest rates and available credit. Banking institutions registered improvements in indicators for credit quality and reductions in non-performing loan portfolios. In addition, they maintained high coverage on all portfolio modalities and continued to enjoy sound balance sheets, all favorable factors for the supply of credit at low interest rates. Results from the Bank’s credit survey of financial intermediaries suggest that credit will be given preference for liquidity availability in coming months. Banks should not encounter bottle necks as they tend to a greater demand for loans and are not projected to toughen disbursement requirements. The January 2020 results of the Bank’s economic expectations survey also indicate that credit-seekers perceive a positive environment for financing and widely available resources to that end.

Box 1 New Estimates for Colombia's Potential (Trend) GDP and Output Gap

Leonardo Bonilla Mejía
José David Pulido*

One of the most important variables to consider when making monetary policy decisions is potential (trend) GDP, which measures the maximum level of goods and services an economy can produce without experiencing inflationary pressures. An economy's output gap, defined as the percentage difference between potential and observed GDP, allows policymakers to diagnose the existence of such pressures¹. A negative output gap, where aggregate demand is below production capacity, should lead to slack in the labor market and low inflation. When that gap is positive, by contrast, policymakers anticipate tighter labor markets and higher rates of inflation.

One difficulty lies in the fact that potential GDP is not an observable metric; inferring its size and trajectory requires policymakers to use statistical and economic modeling. Each modeling methodology makes its own assumptions and includes its own restrictions and degree of uncertainty, meaning that estimates of potential GDP include some margin of error. Moreover, as there is no single criterion with which to select between the available modeling methods, in practice potential GDP is projected using several different methodologies.

This issue of the Monetary Policy Report updates and expands on the methodologies previously used by the Central Bank of Colombia to calculate potential GDP and the economy's output gap. It also incorporates new data from the most recent population census, takes into account the effects of recent migration to Colombia from Venezuela, and assesses the impact of the Financial Act of 2018 (Ley de Financiamiento) on the factors of production.

The new set of models is based on six methodologies that are widely used in specialized economic literature. These include a growth accounting model (production function),

a statistical model (univariate Hodrick-Prescott filter) and four semi-structural models that account for different aspects of the economy, the goods market and the labor market. A brief description of each can be found at the end of this supplement.

There are two main innovations incorporated in this update. The first is the inclusion of two new semi-structural models, the Okun's Law model and the free 4G model, each of which accounts for key aspects of the Colombian economy. The first considers the direct relationship between the labor market and the goods market by accounting for the explicit relationship between economic activity and the unemployment rate (known as Okun's Law). This model simultaneously estimates potential GDP and the non-accelerating inflation rate of unemployment (NAIRU). For its part, the free 4G model, which is used in baseline forecast models for monetary policy (see Central Bank of Colombia, 2019a), includes a disaggregation of the four sub-baskets of the consumer price index (CPI): food, regulated items, tradables and non-tradables. This model considers the sub-baskets' corresponding relationship with the output gap and the real exchange rate, providing a more detailed understanding of the transmission mechanisms of monetary policy.

The second innovation is related to updates to the production function model. First, the population information was updated using results from national census data from 2018 and migration information included in the General Integrated Household Survey, both of which were produced by Colombia's national statistics agency, DANE. Graph B1.1 compares the previous size and annual growth of the working-age population (WAP) with the new, updated series. Panel A shows that the updated figures measure lower WAP growth prior to a recent influx of migration, followed by expansion related to subsequent growth in incoming migration flows. In Panel B, both the previous series and the updated series are seen to coincide at the end of 2018 and the beginning of 2019. This suggests that the effect on population calculations resulting from new census and migration data have offset each other in such a way that the 2019 WAP level remains very similar to previous estimates.

The NAIRU estimate was also updated, based on the Okun's Law model (see the second section of this supplement for more details) and a further battery of five models, the results of which are included in the Central Bank of Colombia's Labor Market Report. Graph B1.2 shows the result of the estimate in this variable together with the urban unemployment rate², and shows a slight upward trend in the NAIRU rate over the last two years. The unemployment rate remains higher than the NAIRU rate, suggesting the presence of low inflationary pressures originating in the labor

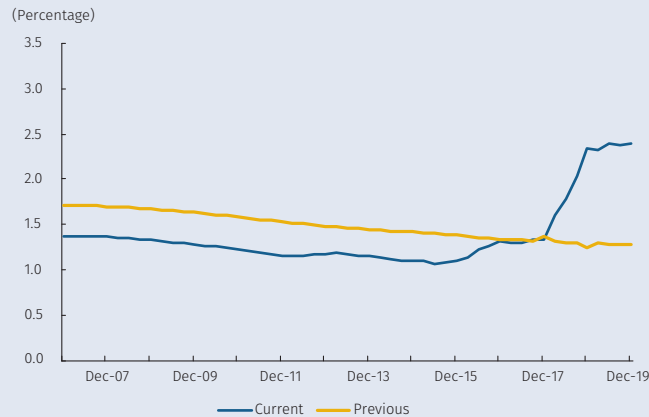
* The authors are economist and senior economist at the Office for Monetary Policy and Economic Information's Labor Market Analysis Group, respectively.

1 Not to be confused with steady-state economic growth, with which it converges in the long term. All models are calibrated based on a steady-state growth rate of 3.3%.

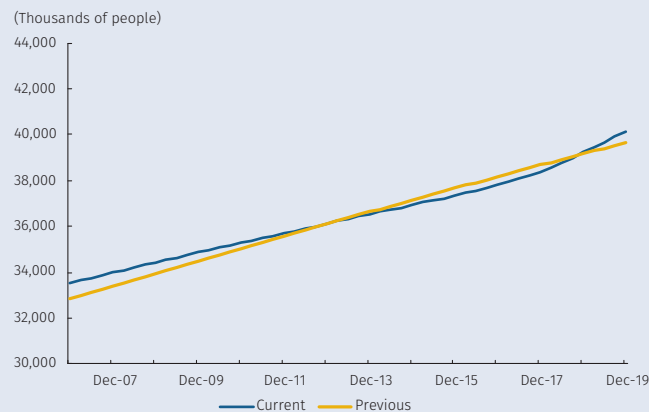
2 Due to greater availability of historic data, the NAIRU estimate bases its unemployment rate on Colombia's seven largest cities.

Graph B1.1
Update to the Population Series for Working-age Adults in the Production Function Model

A. Annual Growth



B. Levels



Note: Current WAP calculations are consistent with overall national census data, while the previous WAP series came directly from DANE's General Integrated Household Survey, which is not representative of the entire country. This produced a lower level in the previous series until 2012.
Source: calculations by *Banco de la República*.

Graph B1.2
Urban Unemployment Rate (7 cities) and NAIUR Estimate (six-model average) (seasonally adjusted quarters)



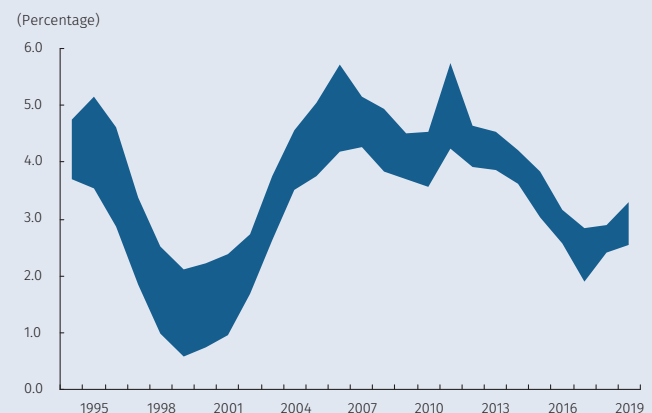
Source: DANE (GIHS); calculations by *Banco de la República*.

market³. Finally, the model specification was changed to incorporate changes in workforce composition based on education levels, expanding the number of workers measured as human capital.

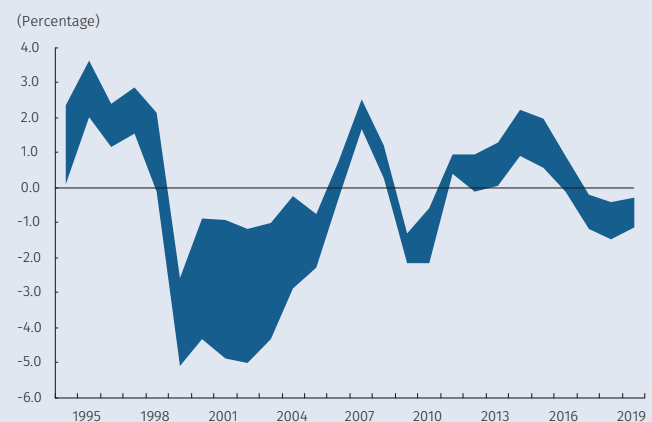
Graph B1.3 shows the evolution over time of the minimum and maximum estimated values from a set of six potential GDP growth models, as well as the output gap between 1994 and 2019. Estimates have shown a negative output gap since 2017, but that has tended to tighten over the last two years. Table B1.1 shows the value of these estimates for 2019, which suggest potential GDP growth in a range between 2.53% and 3.29%, with an output gap then between -1.11% and -0.26%.

Graph B1.3
Change Over Time of Various Potential GDP and Output Gap Estimates

A. Potential GDP Growth: Maximum and Minimum Estimated Values



B. Output Gap (median estimates)



Source: calculations by *Banco de la República*.

3 Models estimate a NAIUR range between 9.3% and 11.4% for the third quarter of 2019. Various available NAIUR measurements were evaluated in terms of the goodness of fit and their predictive power on Phillips curves for salaries and inflation in non-tradable items. The results of the exercise were not conclusive in favor of a single measurement, and as a result the average of these measurements was used.

Table B1.1
Potential GDP and Output Gap Estimates for 2019

	Potential GDP	Output Gap
Focus 1: growth accounting		
Production function (updated)	2.86	-0.84
Focus 2: statistical filters		
Hodrick and Prescott with forecasts	2.80	-0.44
Focus 3: semi-structural models		
Adaptive expectations	3.11	-0.44
Rational expectations	3.29	-0.52
Okun's Law (new)	2.88	-1.11
4G-Free (new)	2.53	-0.26
Minimum	2.53	-1.11
Maximum	3.29	-0.26

Source: calculations by Banco de la República.

These estimates are used by the technical staff to complement the baseline forecast models used to describe the current state of the Colombian economy, and they allow for two important conclusions. First, a revision in the growth trajectory in the unemployment rate allows for an expected NAIUR rate higher than previously estimated, which suggests less excess capacity in the labor market with respect to previous estimates. This conclusion is also borne out in the Okun's Law model estimates, which take into account the relationship between inflation and the output gap as well as the relationship between the output gap and the unemployment gap. By using the production function to account for this information, we can also infer lower excess total capacity compared to previous estimates, even while taking into account the positive effects of the Financial Act of 2018 (Ley de Financiamiento) in the accumulation of capital, and the fact that revised demographic data had only a slight effect on 2019 estimates (Graph B1.1). Secondly, inflation performance, and the change in prices in CPI sub-baskets and their determinants, suggests the existence of a tighter output gap (free 4G model).

Graph B1.4 compares the output gap used for the current macroeconomic projection, incorporating all of the considerations above, with the estimate from the previous quarter. As mentioned throughout the Monetary Policy Report, the output gap for 2019 is expected to be slightly tighter (29 bp on average) compared to estimates from October, which is consistent with a downward revision in potential growth projections.

Graph B1.4
Output Gap Estimate used in the Macroeconomic Forecast



Source: calculations by Banco de la República.

Brief Methodological Description

Production function

This estimate is based on the growth accounting framework. It represents the production capacity of the economy based on the Cobb-Douglas production function aggregate of value added, in which each factor of production is adjusted according to effective use levels:

$$Y_t = A_t \times (UCI_t \times K_t)^\alpha \times (WAP_t \times TGP_t \times (1 - U_t) \times H_t)^{1-\alpha}; \alpha = 0.4$$

Where Y_t corresponds to GDP; UCI_t is a measure of the utilization of installed capacity in the economy⁴; K_t represents aggregated capital inventory⁵; WAP_t is the working age population; TGP_t is the overall labor participation rate; U_t is the unemployment rate; and H_t is a non-linear function of average years of schooling, following the specification proposed by Inklaar and Timmer (2013). Potential GDP is obtained as using this equation:

$$Y_t^* = A_t^* \times (UCI_t^* \times K_t^*)^\alpha \times (WAP \times TGP_t^* \times (1 - Nairu_t) \times H_t^*)^{1-\alpha}$$

The variables with an asterisk represent the trend components of the respective series (obtained using Hodrick and Prescott filters with projections and various smoothing parameter values) and the NAIUR rate corresponding to the average of the six different methodologies, five of

4 This measure corresponds to the measure for industrial manufacturing published by Fedesarrollo.

5 This figure is obtained by the perpetual inventory method using observed interest rates and an assumed depreciation rate.

which are used in the Labor Market Report⁶, with the sixth derived from the Okun's Law model described below.

On a medium-term forecast horizon (up to 2 years), the model uses projections based on the growth and investment forecasts from baseline models, projections for participation and unemployment rates based on combinations of forecast models for worker flows (see Central Bank of Colombia, 2019b) and econometric models forecasting the utilization rate of installed capacity and schooling.

Semi-structural Models

This type of modeling depicts the primary relationships between variables of interest using simultaneous macroeconomic equations, the microfoundations of which can be obtained through neo-Keynesian models. The set of parameters for these models, which in some cases is relatively large, is estimated using Bayesian techniques. The Bank uses four models under this rubric, all of which take into account different aspects of the structure of the economy.

The first two commonly used models are described in González et al (2013) and are labeled in Table B1.1 as rational expectation models and adaptive expectation models. Both represent a small and open economy excluding the labor market, and differ in the way that the actors in the model form expectations. Both are represented by an IS curve, a Phillips Curve, a policy rule, an uncovered interest rate parity equation, and definitions for the output gap, potential GDP, inflation expectations and equilibrium levels for real domestic and foreign interest rates and the real exchange rate. Differences in the formation of expectations by actors in each model lead to differences in the functional forms for various equations made by the system⁷.

The third model, labeled here as the Okun's Law model, was recently incorporated into the Central Bank of Colombia's battery of models and represents a closed economy based on a specification proposed by Blagrove et al (2015). The principal characteristic of this model is the inclusion of an equation that explicitly relates the output level with

the unemployment rate, a relationship known in the literature as Okun's Law. This model is complemented with a Phillips curve, permanent and temporary shocks in the goods and labor markets, and definitions for the output and unemployment gaps together with their corresponding potential and non-inflationary levels (NAIRU)⁸.

Finally, the free 4G model, summarized in Guarín and Romero (2019) and described in full in González et al (2020), is currently one of the baseline forecasting models used for monetary policy. It represents a small and open oil-exporting economy, in its current iteration excluding a labor market though this is in the process of being incorporated. The system of equations used is similar to those of the first two semi-structural models described above, but using a detailed characterization in the origin of inflationary pressures that disaggregates the four sub-baskets of the CPI (food, regulated items, tradables and non-tradables) and considers the overall change of relative prices. Estimates based on this model incorporate the set of satellite models without depending on the short-term projections that usually condition the model for generating macro forecasts.

6 The five methodologies used are: 1) the structural unemployment rate on a search model, based on Shimer (2012); 2) The non-accelerating inflation rate of unemployment on a Phillips curve with adaptive expectations, according to Ball and Mankiw (2002); 3) the equilibrium unemployment rate obtained from an S-VAR with growth, inflation and the unemployment rate (King and Morely, 2007); 4) a statistical filter in which the NAIRU rate changes in accordance with a cubic spline, base July (2001); and 5) the non-accelerating unemployment rate for inflation on a Phillips curve with demographic changes, based on Arango et al (2013). For the implementation of the first three methodologies in the Colombian case, see Arango and Flórez (2018).

7 For a detailed description of the equations used in both models, see Gonzales et al (2013).

8 For a detailed description of the equations used in the model, see Blagrove et al (2015).

References

- Arango, L. E.; Flórez, L. A. (2018) "Determinants of Structural Unemployment in Colombia: A Search Approach," *Empirical Economics*, pp. 1-34.
- Arango, L. E.; García, A.; Posada, C. E. (2013) "Inflación y desempleo en Colombia: Nairu y tasa de desempleo compatible con la meta de inflación (1984-2010)", en Arango, L. E y F. Hamann (eds.), *El mercado de trabajo en Colombia: hechos, tendencias e instituciones*, Central Bank of Colombia, Bogotá.
- Ball, L.; Mankiw, N. G. (2002) "The Nairu in Theory and Practice," *Journal of Economic Perspectives*, vol. 16 (Fall), pp. 115-136.
- Blagrove, P.; García-Saltos, R.; Laxton, D.; Zhang, F. (2015). "A Simple Multivariate Filter for Estimating Potential Output," IMF Working Papers, no. WP/15/79, Fondo Monetario Internacional.
- Central Bank of Colombia (2019a). *Informe de Política Monetaria*, octubre, Bogotá.
- Central Bank of Colombia (2019b). "Tendencia a la baja de la demanda laboral: pausa en las ciudades y continúa en las áreas rurales", *Reporte del Mercado Laboral*, no. 12, October, Bogotá.
- González, A.; Guarín, A.; Rodríguez, D.; Vargas, H. (2020). "4G: A New Model for the Monetary Policy Analysis in Colombia," Borradores de Economía (forthcoming), Central Bank of Colombia.
- Guarín, A.; Romero, J. V. (2019). "Recuadro 2: El modelo 4G", *Monetary Policy Report*, Central Bank of Colombia, October.
- González, A.; Ocampo, S.; Pérez, J.; Rodríguez, D. (2013). "Brecha del producto y medidas de la tasa de interés neutral para Colombia", *Monetaria*, vol. 35, no. 2, pp. 251-310.
- Inklaar, R.; Timmer, M. P. (2013). "Capital, Labor and TFP in PWT 8.0" (mimeo), Groningen Growth and Development Centre, University of Groningen.
- Julio, J. M. (2001). "How Uncertain Are Nairu Estimates in Colombia," *Borradores de Economía*, No. 184, Central Bank of Colombia.
- King, T.; Morley, J. (2007) "In Search of the Natural Rate of Unemployment," *Journal of Monetary Economics*, no. 54, pp. 550-564.
- Shimer, R. (2012) "Reassessing the Ins and Outs of Unemployment," *Review of Economic Dynamics*, vol. 15, no. 2, pp. 127-148.

Box 2 Food Prices drove Inflation in 2019

Edgar Caicedo G.
Nilson Felipe Lizarazo B.
Eva María Ramírez G.*

Consumer price inflation in 2019 trended upward, rising from 3.2% in December 2018 to 3.8% a year later (Table B2.1). Several inflationary pressures were present over the course of the year, including an *El Niño* weather pattern, increases in indirect taxes, depreciation in the exchange rate, and demand pressures¹.

Food prices led the upturn in inflation in consumer goods in 2019, undergoing an annual adjustment in December (5.20%) above observable levels for the remaining three major components of the Consumer Price Index (tradables, non-tradables and regulated items) and far surpassing levels observed 12 months earlier (2.43%). This upward trend in the annual change in food prices in the CPI extended to October (5.84%), before a downward correction in November and December (5.20%). At year-end, food prices contributed close to 85% of the inflationary impulse in consumer prices in 2019 (Table B2.1).

What factors drove the increase in food prices through much of 2019?

Several demand and supply factors contributed to food prices as the primary source of inflationary pressure in the CPI:

The agricultural production cycle

The upturn in the CPI for food in 2019 arrived as a contractionary period for prices from 2016 to 2018 came to an end. As a result of this contraction, food prices were at relatively low levels at the end of 2018, tamping down growth in cultivated land and, at the same time, giving rise to inflationary pressures through much of 2019, above all in perishable foods (Graph B2.1).

* Caicedo is Leading Analyst at Banco de la República's Programming and Inflation Department. Lizarazo and Ramírez are interns with the Department. The opinions herein are not necessarily shared by Banco de la República or its Board of Directors.

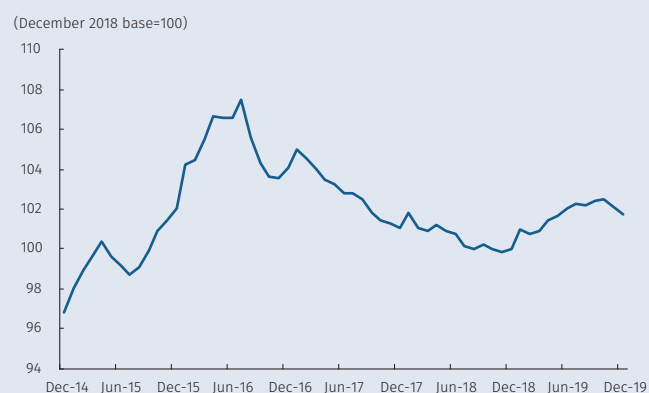
1 For more, see the third chapter of this report.

Table B2.1
Contribution to Acceleration in Inflation

Description	Contribution to Inflation in 2018	Contribution to Inflation in 2019	Difference in Percentage Points	Contribution to Percentage Difference
Total	3.18	3.80	0.626	100
Excluding food	2.47	2.56	0.095	15.13
Tradables	0.25	0.43	0.177	28.28
Non-tradables	1.20	1.48	0.278	44.40
Regulated items	1.02	0.66	-0.360	-57.55
Food	0.71	1.24	0.532	84.87

Source: DANE; calculations by the authors.

Graph B2.1
Relative Food Prices
(CPI for food/CPI excluding food)



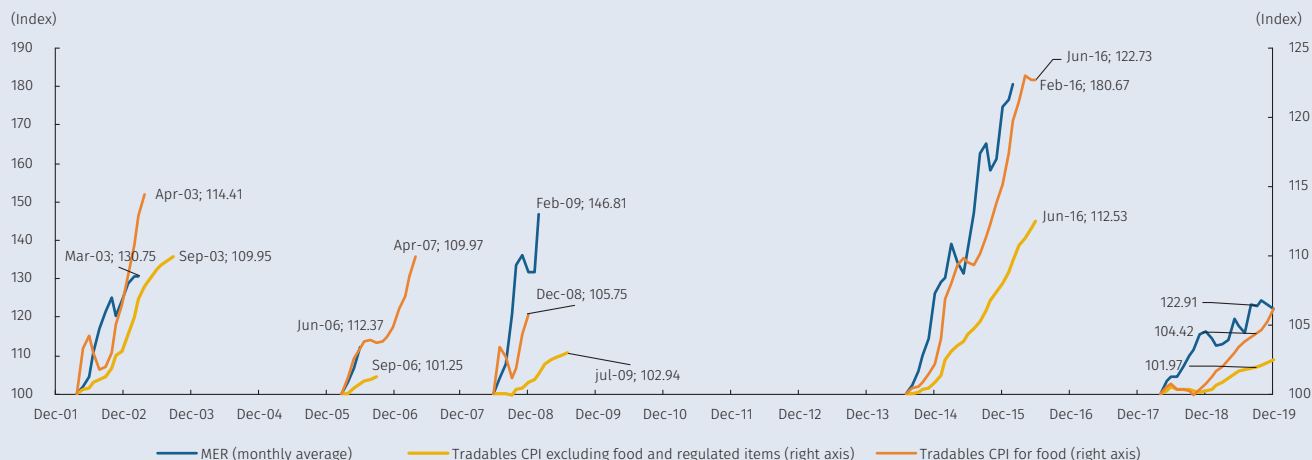
Source: DANE; calculations by the authors.

Climate factors

Food prices were also affected by the presence of a mild *El Niño* weather pattern which, as its effects faded midway through the year, was linked to particularly dry conditions through much of the country originating with the Indian *El Niño*². The combination of these climate factors reduced rainfall throughout the year, affecting the price of meat on the Atlantic coast (particularly at the beginning of the year) and delaying seeding decisions, especially for highly rain-sensitive crops such as rice, the price of which grew by 17.0% in 2019.

2 The lack of rainfall was especially concentrated in the central and western parts of the country, resulting from a phenomenon known as the Indian Ocean dipole (or the Indian *El Niño*), which affected not only agricultural productivity but also reservoir levels. This kept stock market energy prices over the last several months as high as those observed during the *El Niño* weather pattern from 2018-2019.

Graph B2.2
Market Exchange Rate (MER) vs. Tradables CPI Excluding Food and Regulated Items and CPI for Tradable Foods
(base of comparison between variables = 100)



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

Reduced global supply of pork

Prices for Colombian meat exports, especially pork and, thanks to the substitution effect, beef, were driven up by an outbreak of African swine fever. The outbreak resulted in a massive cull in several countries, especially in Asia, with at least one third of the Chinese hog population slaughtered in 2019. The virus could ultimately lead to the slaughter of a quarter of the global hog population.³

Road closures

The aforementioned supply shocks, which drove up prices in the CPI for food, were accentuated by intermittent road closures to and from Colombia’s eastern plain (llano oriental) beginning in May 2019. The effects of a total closure lasting from mid-June to the end of the year were particularly acute. Mobility problems led to temporary increases in the price of perishable foods, especially in central supply markets in Bogotá, Villavicencio and Yopal.

Depreciation of the peso and its pass-through effect on domestic prices

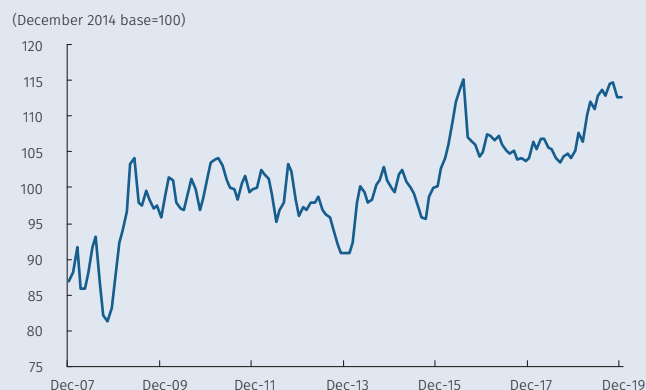
Accumulated currency depreciation that began in the second quarter of 2018 has affected tradable foods to a greater effect than it has the rest of the tradables component of the CPI. As seen in Graph B2.2, the pass-through effect of exchange rate depreciation on the CPI for tradable goods is, in general, higher and more automatic than it is for the tradables CPI excluding food and regulated items. More

recently, increases in international food prices have also had an effect.

Larger profit margins for rural economic activity

Profit margins in agricultural activity registered a significant increase over much of the year, undergoing a downward correction in only the last two months of 2019 (Graph B2.3). As profit margins for rural economic activity rise, the resulting latent upward pressures on producer prices ultimately passes-through to consumer prices. Profit margins tended to recede in the last quarter of the year, in sync with a recent fall in annual growth of the CPI for food.

Graph B2.3
Estimate of Agricultural Sector Profit Margins
(agricultural PPI/non-labor costs)^{a/}



a/ Non-labor costs are estimated using an assumed sum of the PPI for machinery and equipment for agricultural uses and agricultural inputs (fertilizers, pesticides, fungicides, herbicides, etc.).
Source: DANE; calculations by the authors.

3 For more, see: <http://mundoagropecuario.com/la-cuarto-parte-de-todos-los-cerdos-del-mundo-podrian-morir-de-peste-porcina-segun-la-organizacion-de-salud-animal/>

Demand factors

In addition to external and supply factors driving up food prices in 2019, demand pressures were also present in the form of highly dynamic private consumption, possibly a reflection of the size of incoming migration flows in recent quarters. Venezuelan residents' demand for Colombian products, especially food items, may also have contributed to reduced domestic supply. At the same time, consumer credit performed very well in 2019, and was one of the variables that contributed most to portfolio growth (see section 3.4 of this report). Finally, growth in remittances, which exceeded double digits in 2019, also made household consumption more dynamic and pushed inflation upward.

In conclusion, it is important to note that the inflationary shocks signaled above have abated, while those that are still present are of a temporary nature. As a consequence, growth in food prices is expected to continue to moderate in coming months, without cause for analysts to modify their inflation expectations.

Annex I

Macroeconomic Projections from Local and Foreign Analysts

This annex presents a summary of the most recent projections provided by local and foreign analysts relating to primary economic indicators for 2020 and 2021. Participants had information current to January 27, 2020.

1. 2020 Projections

On average, local analysts project economic growth at 3.2%, slightly above average analyst

expectations in the previous quarter's Monetary Policy Report (3.1%). Foreign analysts also projected average GDP growth at 3.3%, though this was lower than their projections in the previous report (3.4%).

Local analysts forecast average inflation at 3.3% at the end of the year, lower than projected in the October report (3.4%). Foreign analysts project 3.3% inflation to finish the year. Both projections are slightly above the Board of Director's 3.0% target rate.

Local analysts expect the market exchange rate (MER) to end the year at an average of COP 3,293, similar to the COP 3,289 projected in the previous report. Foreign analysts project an average MER close to COP 3,367 at the end the year.

Box A1
2020 Projections

	Real GDP Growth (percentage)	Inflation CPI (percentage)	Year-End Nominal Exchange Rate	Nominal DTF (percentage)	Fiscal Deficit (percentage of GDP)	Unemployment Rate in Thirteen Cities (percentage)
Local Analysts						
Alianza Valores ^{a/}	3.0	3.5	3,450	4.8	2.5	10.4
ANIF ^{b/}	3.3	3.4	n/a	4.7	1.1	11.1
Banco de Bogotá ^{a/}	3.3	3.0	3,250	4.6	2.2	10.5
Bancolombia ^{a/}	3.3	3.5	3,290	4.8	2.5	10.8
BBVA Colombia ^{a/}	3.2	3.4	3,340	4.5	2.3	10.7
BTG Pactual ^{a/}	3.0	3.1	3,300	4.1	2.5	10.0
Corficolombiana ^{a/}	3.1	3.4	3,350	4.5	2.6	n/a
Corredores Davivienda ^{a/c/}	3.2	3.1	3,320	4.3	2.2	10.4
Credicorp Capital ^{a/d/}	3.2	3.4	3,200	4.5	2.4	11.5
Davivienda ^{a/}	3.2	3.1	3,320	4.3	2.2	10.4
Fedesarrollo ^{a/}	3.5	3.4	n/a	n/a	2.8	n/a
Itaú ^{a/e/}	3.1	3.3	3,320	4.4	2.2	10.0
Ultraserfinco ^{a/f/}	3.5	3.6	3,080	4.8	2.4	10.5
Average	3.2	3.3	3,293	4.5	2.3	10.6
Foreign Analysts						
Citigroup	3.5	3.0	3,352	n/a	n/a	n/a
Deutsche Bank	3.4	3.6	n/a	n/a	n/a	n/a
Goldman Sachs	3.4	3.3	3,300	n/a	n/a	n/a
JP Morgan	3.0	3.3	3,450	n/a	n/a	n/a
Average	3.3	3.3	3,367	n.d.	n.d.	n.d.

a/ The deficit projection corresponds to the GNC

b/ The deficit projection corresponds to the SPC

c/ Formerly Corredores Asociados

d/ Formerly Correal

e/ Formerly Corpbanca, until June 2017

f/ Formerly Ultrabursátiles

n/a: not available

Source: Banco de la República (electronic survey).

Box A1
2021 Projections

	Real GDP Growth (percentage)	Inflation CPI (percentage)	Year-end nominal exchange rate
Local Analysts			
Alianza Valores	3.3	3.4	3,350
ANIF	3.5	3.3	n/a
Banco de Bogotá	3.5	3.0	3,280
Bancolombia	3.3	3.6	3,260
BBVA Colombia	3.5	3.2	3,220
BGT Pactual	3.2	3.0	3,280
Corficolombiana	3.5	3.0	3,383
Corredores Davivienda ^{a/}	n. d.	3.0	n/a
Credicorp Capital ^{b/}	3.3	3.1	3,100
Davivienda	n. d.	3.0	n/a
Fedesarrollo	3.7	3.3	n/a
Itaú ^{c/}	3.0	3.0	3,320
Ultraserfinco ^{d/}	3.4	3.4	3,050
Average	3.4	3.2	3,249
Foreign Analysts			
Citigroup	3.3	3.1	3,252
Deutsche Bank	3.6	3.2	n/a
Goldman Sachs	3.4	3.2	3,200
JP Morgan	3.1	3.4	n/a
Average	3.4	3.2	3,226

a/ Formerly Corredores Asociados

b/ Formerly Correal

c/ Formerly Corpbanca, until June 2017

d/ Formerly Ultrabursátiles

n/a: not available

Source: Banco de la República (electronic survey).

Local analysts forecast the fixed-term deposit rate at an average of 4.5%, and the unemployment rate at 10.6%.

2. 2021 Projections

On average, local and international analysts both project economic growth for 2020 at 3.4% and year-end inflation at 3.2%. Local analysis firms project the nominal exchange rate, on average, at COP 3,249, whereas international firms' average estimate was 3,226.

Annex 2

Primary Variables of the Macroeconomic Forecast

		Years											
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Exogenous variables													
External^{a/}													
Trade partners GDP ^{b/}	Percentage, annual change, seasonally adjusted	4,8	5,0	4,0	3,6	2,8	2,1	1,6	2,6	2,5	1,4	1,7	2,0
Oil price (Benchmark Brent)	Dollars per barrel, average for period	80	111	112	109	99	54	45	55	72	64	64	62
Federal funds (Fed) effective interest rate	Percentage, average for period												
credit default swaps at 5 years for Colombia	Basis points, average for period	135	131	119	113	101	184	212	129	114	99	103	136
Internal													
Colombia real neutral interest rate	Percentage, average for period	1,6	1,4	1,3	0,9	0,9	1,1	1,3	1,1	1,3	1,2	1,4	1,5
potential (trend) GDP	Percentage, annual change	4,5	4,6	4,5	4,4	4,1	3,4	2,8	2,5	2,5	2,7	2,8	2,9
Endogenous variables													
Prices													
CPI Total	Percentage, annual change, end of period	3,17	3,73	2,44	1,94	3,66	6,77	5,75	4,09	3,18	3,80	3,14	3,01
CPI excluding food ^{d/}	Percentage, annual change, end of period	2,80	3,10	2,40	2,40	3,30	5,20	5,10	5,00	3,50	3,40	.	.
CPI tradables	Percentage, annual change, end of period	-0,30	0,80	0,80	1,40	2,00	7,10	5,30	3,80	1,10	2,20	.	.
CPI non-tradables	Percentage, annual change, end of period	3,50	3,60	3,90	3,80	3,40	4,20	4,90	5,50	3,80	3,50	.	.
CPI regulated items	Percentage, annual change, end of period	6,64	5,81	1,91	1,05	4,84	4,28	5,44	5,86	6,37	4,48	4,30	3,67
CPI food ^{d/}	Percentage, annual change, end of period	4,09	5,27	2,52	0,86	4,69	10,85	7,22	1,92	2,43	5,20	2,83	2,55
CPI perishables	Percentage, annual change, end of period	11,00	7,70	-3,90	-0,20	16,70	26,00	-6,60	5,80	8,90	8,70	.	.
CPI processed	Percentage, annual change, end of period	2,30	4,50	2,80	-0,20	2,50	9,60	10,70	-0,90	-0,10	5,00	.	.
CPI eating out	Percentage, annual change, end of period	4,50	5,60	4,90	3,30	3,50	6,00	8,50	5,20	3,70	4,20	.	.
Core inflation indicators													
CPI excluding food	Percentage, annual change, end of period	2,80	3,10	2,40	2,40	3,30	5,20	5,10	5,00	3,50	3,40	.	.
Core 20 CPI	Percentage, annual change, end of period	3,20	3,90	3,20	2,70	3,40	5,20	6,20	4,90	3,20	3,40	.	.
CPI excluding perishable food, fuel and utilities	Percentage, annual change, end of period	2,60	3,20	3,00	2,20	2,80	5,90	6,00	4,00	2,80	3,50	.	.
CPI excluding food and regulated items ^{d/}	Percentage, annual change, end of period	1,80	2,38	2,55	2,74	2,81	5,42	5,05	4,76	2,64	3,10	3,06	3,03
Average of all core inflation indicators	Percentage, annual change, end of period	2,60	3,20	2,80	2,50	3,10	5,40	5,60	4,70	3,00	3,30	.	.
MER	Pesos per dollar, average for period	1,899	1,848	1,798	1,869	2,001	2,742	3,055	2,951	2,956	3,281	.	.
Inflation gap in the real interest rate	Percentage, average for period	-3,2	-1,6	-3,3	-1,0	-0,5	9,1	2,2	-1,8	-0,8	3,5	0,4	-0,3
Economic activity													
Gross domestic product	Percentage, annual change, s.a.c.e.	4,3	7,4	3,9	4,6	4,7	3,0	2,1	1,4	2,6	3,2	3,3	3,3
Final consumption spending	Percentage, annual change, s.a.c.e.	5,2	6,6	5,2	4,8	4,6	3,4	1,6	2,4	4,0	4,3	.	.
final household consumption spending	Percentage, annual change, s.a.c.e.	5,1	6,6	5,3	4,0	4,6	3,1	1,6	2,1	3,6	4,6	.	.
final government overhead spending	Percentage, annual change, s.a.c.e.	5,2	6,5	4,8	8,9	4,7	4,9	1,8	3,8	5,6	3,2	.	.
Gross capital formation	Percentage, annual change, s.a.c.e.	8,7	19,0	3,4	6,1	11,8	-1,2	-0,2	-3,2	3,5	6,0	.	.
gross fixed capital formation	Percentage, annual change, s.a.c.e.	6,7	14,9	3,0	6,0	9,9	2,8	-2,9	1,9	1,5	4,9	.	.
Housing	Percentage, annual change, s.a.c.e.	-11,2	4,4	-2,3	3,9	9,6	9,5	-0,2	-1,9	0,1	-6,2	.	.
Other buildings and structures	Percentage, annual change, s.a.c.e.	12,0	3,9	5,0	6,9	12,1	10,2	0,0	4,6	1,5	3,8	.	.
Machinery and Equipment	Percentage, annual change, s.a.c.e.	12,0	30,3	5,4	5,5	8,3	-9,3	-7,9	1,4	2,1	13,9	.	.
Cultivated biological resources	Percentage, annual change, s.a.c.e.	12,4	7,5	-7,2	4,0	0,9	2,3	13,1	0,3	0,9	6,6	.	.
Intellectual property products	Percentage, annual change, s.a.c.e.	6,8	9,6	4,2	15,7	6,8	1,2	-12,0	2,5	4,5	1,8	.	.
Domestic demand	Percentage, annual change, s.a.c.e.	5,9	9,2	4,8	5,1	6,2	2,4	1,2	1,2	3,9	4,4	.	.
Exports	Percentage, annual change, s.a.c.e.	2,1	12,3	4,9	4,7	-0,3	1,7	-0,2	2,5	3,9	2,9	.	.
Imports	Percentage, annual change, s.a.c.e.	10,8	22,0	9,4	7,4	7,8	-1,1	-3,5	1,2	7,9	8,4	.	.
Output gap ^{f/}	Percentage	-1,8	0,8	0,2	0,4	1,0	0,6	-0,1	-1,2	-1,2	-0,7	-0,3	0,1
short-term indicators													
Real industrial production	Percentage, annual change, seasonally adjusted	3,4	5,5	-0,3	-1,7	1,9	2,1	4,0	-0,7	3,0	.	.	.
Retail commerce sales, excluding food	Percentage, annual change, seasonally adjusted	13,5	10,5	3,0	4,0	9,2	2,9	1,6	-1,2	7,0	.	.	.
Coffee production	Percentage, annual change in accumulated production for the period	14,2	-12,5	-0,8	40,6	11,5	16,8	0,4	-0,3	-4,5	8,8	.	.
Oil production	Percentage, annual change, average for period	17,1	16,5	3,2	6,6	-1,9	1,6	-11,7	-3,7	1,4	.	.	.
Labor Markets^{g/}													
National Total													
Unemployment rate	Percentage, seasonally adjusted, average for period	11,8	10,8	10,4	9,6	9,1	8,9	9,2	9,4	9,7	10,5	.	.
employment rate	Percentage, seasonally adjusted, average for period	55,4	56,8	57,8	58,0	58,4	59,0	58,5	58,4	57,8	56,6	.	.
overall participation rate	Percentage, seasonally adjusted, average for period	62,7	63,7	64,5	64,2	64,2	64,7	64,5	64,4	64,0	63,3	.	.
Thirteen Cities and Metropolitan Areas													
Unemployment Rate	Percentage, seasonally adjusted, average for period	12,4	11,4	11,2	10,6	9,9	9,8	10,0	10,6	10,8	11,2	.	.
Occupancy Rate	Percentage, seasonally adjusted, average for period	57,6	59,1	60,1	60,3	61,2	61,4	60,7	59,9	59,2	58,6	.	.
Overall Participation Rate	Percentage, seasonally adjusted, average for period	65,7	66,7	67,6	67,5	67,9	68,0	67,5	67,0	66,4	66,0	.	.
Balance of payments^{h/ i/}													
Current account (A+B+C)	Millions of dollars	-8,732	-9,803	-11,362	-12,501	-19,764	-18,564	-12,036	-10,241	-13,005	-13,844	-14,614	.
percentage of GDP	Percentage, nominal terms	-3,0	-2,9	-3,1	-3,3	-5,2	-6,3	-4,2	-3,3	-3,9	-4,3	-4,4	.
A. Goods and Services	Millions of dollars	-2,164	636	-1,187	-3,164	-11,863	-18,267	-12,706	-8,447	-8,879	-12,260	-13,665	.
B. Primary income (factor income)	Millions of dollars	-11,228	-15,490	-15,009	-14,224	-12,523	-5,727	-5,229	-8,405	-11,768	-10,210	-9,887	.
C. Secondary income (current account transfers)	Millions of dollars	4,659	5,051	4,833	4,887	4,622	5,430	5,898	6,611	7,643	8,626	8,938	.
Financial account (A+B+C+D)	Millions of dollars	-9,332	-8,707	-11,553	-11,740	-19,292	-18,244	-12,273	-9,558	-12,567	.	.	.
Percentage of GDP	Percentage, nominal terms	-3,3	-2,6	-3,1	-3,1	-5,1	-6,2	-4,3	-3,1	-3,8	.	.	.
A. Foreign investment (i+ii)	Millions of dollars	-947	-6,227	-15,646	-8,558	-12,270	-7,506	-9,331	-10,147	-6,411	.	.	.
i. Foreign in Colombia (FDI)	Millions of dollars	6,430	14,647	15,040	16,210	16,169	11,724	13,848	13,837	11,535	.	.	.
ii. Colombian abroad	Millions of dollars	5,483	8,420	-606	7,652	3,899	4,218	4,517	3,690	5,125	.	.	.
B. Portfolio investment	Millions of dollars	88	-6,171	-4,769	-7,438	-11,565	-9,166	-4,839	-1,617	1,297	.	.	.
C. Other investment (loans and other credits and derivatives)	Millions of dollars	-11,615	-52	3,457	-2,690	106	-1,988	1,732	1,661	-8,640	.	.	.
D. Reserve assets	Millions of dollars	3,143	3,742	5,406	6,946	4,437	415	165	545	1,187	.	.	.
Errors and omissions (E and O)	Millions of dollars	-599	1,096	-191	762	472	320	-237	683	438	.	.	.
Interest rates													
policy rate	Percentage, average for period	3,2	4,0	5,0	3,4	3,9	4,7	7,1	6,1	4,4	4,3	.	.
policy rate expected by analysts ^{j/}	Percentage, average for period	.	.	.	.	.	.	.	.	.	.	4,3	4,6
IBR	Percentage, average for period	3,2	4,1	5,0	3,4	3,8	4,7	7,1	6,1	4,3	4,3	.	.
Commercial interest rate	Percentage, average for period	7,6	9,0	10,3	8,7	8,7	9,4	12,8	11,1	9,3	8,8	.	.
Consumer interest rate	Percentage, average for period	18,0	18,2	19,2	17,9	17,3	17,2	19,2	19,4	17,9	16,5	.	.
Mortgage rate	Percentage, average for period	13,1	13,0	13,2	11,1	11,1	11,0	12,4	11,6	10,6	10,4	.	.

a/ The quarterly data in bold correspond to an assumed base built on the annual projection of each variable.

b/ The top 21 trade partners (excluding Venezuela) are included in calculations for non-traditional exports from Colombia in dollars.

c/ Calculations from *Banco de la República* use the new methodology; they exclude the division of food and sub-categories corresponding to eating out.

d/ Calculations from *Banco de la República* use the new methodology; they include the division of food and sub-categories corresponding to eating out.

e/ Calculations by *Banco de la República* with provisional classifications.

f/ Refers to the difference between observed GDP and potential (trend) GDP resulting from the 4G monetary policy model.

g/ Corresponds to the annual average of seasonally adjusted monthly figures.

h/ the results presented follow recommendations of the sixth version of the balance of payments manual proposed by the IMF. Consult additional information and methodological changes at <http://www.banrep.gov.co/balanza-pagos>.

i/ Results for 2017 and 2018 are preliminary.

j/ Corresponds to the median of analyst projections. These projections are calculated by taking the quarterly average of monthly responses from the survey of analyst economic expectations conducted by *Banco de la República* in January 2020.

s.a.c.e.: seasonally adjusted and corrected for calendar effects.

Note: the values in bold correspond to a projection or assumption.

Annex 2 (continued) Primary Variables of the Macroeconomic Forecast

		2016			
		T1	T2	T3	T4
Exogenous variables					
External^{a)}					
Trade partners GDP ^{b)}	Percentage, annual change, seasonally adjusted	1.5	2.0	2.0	2.6
Oil price (Benchmark Brent)	Dollars per barrel, average for period	35	47	47	51
Federal funds (Fed) effective interest rate	Percentage, average for period	0.36	0.37	0.40	0.45
credit default swaps at 5 years for Colombia	Basis points, average for period	266	225	179	180
Internal					
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	7.98	8.60	7.27	5.75
CPI excluding food ^{d)}	Percentage, annual change, end of period	6.20	6.31	5.92	5.14
CPI tradables	Percentage, annual change, end of period	7.38	7.90	7.20	5.31
CPI non-tradables	Percentage, annual change, end of period	4.83	4.97	4.85	4.85
CPI regulated items	Percentage, annual change, end of period	7.24	6.71	6.19	5.44
CPI food ^{d)}	Percentage, annual change, end of period	12.35	14.28	10.61	7.22
CPI perishables	Percentage, annual change, end of period	27.09	34.94	6.66	-6.63
CPI processed	Percentage, annual change, end of period	10.83	12.09	12.56	10.74
CPI eating out	Percentage, annual change, end of period	7.53	8.11	9.18	8.54
Core inflation indicators					
CPI excluding food	Percentage, annual change, end of period	6.20	6.31	5.92	5.14
Core 20 CPI	Percentage, annual change, end of period	6.48	6.82	6.73	6.18
CPI excluding perishable food, fuel and utilities	Percentage, annual change, end of period	6.57	6.77	6.65	6.03
CPI excluding food and regulated items ^{d)}	Percentage, annual change, end of period	5.91	6.20	5.84	5.05
Average of all core inflation indicators	Percentage, annual change, end of period	6.29	6.52	6.29	5.60
MER	Pesos per dollar, average for period	3,262	2,993	2,950	3,016
Inflation gap in the real interest rate	Percentage, average for period	10.7	-0.1	-2.0	0.3
Economic activity					
Gross domestic product	Percentage, annual change, s.a.c.e.	2.7	1.8	1.6	2.3
Final consumption spending	Percentage, annual change, s.a.c.e.	1.5	1.3	0.4	3.3
final household consumption spending	Percentage, annual change, s.a.c.e.	2.0	1.4	1.1	1.8
final government overhead spending	Percentage, annual change, s.a.c.e.	-0.3	1.3	-2.5	9.5
Gross capital formation	Percentage, annual change, s.a.c.e.	0.3	1.7	-0.4	-2.3
gross fixed capital formation	Percentage, annual change, s.a.c.e.	-1.8	-1.8	-4.7	-3.3
Housing	Percentage, annual change, s.a.c.e.	-8.4	0.7	-1.0	8.6
Other buildings and structures	Percentage, annual change, s.a.c.e.	3.6	-0.1	-2.5	-1.0
Machinery and Equipment	Percentage, annual change, s.a.c.e.	-5.0	-11.1	-6.7	-8.6
Cultivated biological resources	Percentage, annual change, s.a.c.e.	10.2	21.0	14.1	7.5
Intellectual property products	Percentage, annual change, s.a.c.e.	-8.0	-11.7	-14.2	-14.0
Domestic demand	Percentage, annual change, s.a.c.e.	1.3	0.9	-0.5	3.3
Exports	Percentage, annual change, s.a.c.e.	-2.6	-4.1	0.9	5.2
Imports	Percentage, annual change, s.a.c.e.	-3.4	-4.1	-5.2	-1.4
Output gap ^{f)}	Percentage	0.5	0.2	-0.1	-0.1
short-term indicators					
Real industrial production	Percentage, annual change, seasonally adjusted	6.0	6.2	1.8	2.3
Retail commerce sales, excluding food	Percentage, annual change, seasonally adjusted	2.4	1.5	-1.4	3.9
Coffee production	Percentage, annual change in accumulated production for the period	8.9	1.1	-12.2	5.4
Oil production	Percentage, annual change, average for period	-7.4	-11.5	-13.3	-14.8
Labor Market^{g)}					
National Total					
Unemployment rate	Percentage, seasonally adjusted, average for period	9.4	9.1	9.2	9.1
employment rate	Percentage, seasonally adjusted, average for period	58.7	58.4	58.4	58.6
overall participation rate	Percentage, seasonally adjusted, average for period	64.8	64.3	64.3	64.5
Thirteen Cities and Metropolitan Areas					
Unemployment Rate	Percentage, seasonally adjusted, average for period	10.2	9.5	10.1	10.2
Occupancy Rate	Percentage, seasonally adjusted, average for period	61.3	60.7	60.3	60.6
Overall Participation Rate	Percentage, seasonally adjusted, average for period	68.2	67.1	67.1	67.5
Balance of payments^{h)}					
Current account (A+B+C)					
percentage of GDP	Millions of dollars	-3,439	-2,590	-3,466	-2,541
A. Goods and Services	Percentage, nominal terms	-0.1	-0.0	-0.0	-0.0
B. Primary income (factor income)	Millions of dollars	-3,792	-2,757	-3,367	-2,789
C. Secondary income (current account transfers)	Millions of dollars	-1,018	-1,270	-1,509	-1,432
Financial account (A+B+C-D)	Millions of dollars	1,371	1,437	1,410	1,679
percentage of GDP	Millions of dollars	-3,620	-3,154	-3,423	-2,077
A. Foreign investment (i+ii)	Percentage, nominal terms	-0.1	-0.0	-0.0	-0.0
i. Foreign in Colombia (FDI)	Millions of dollars	-3,672	-2,726	-1,579	-1,353
ii. Colombian abroad	Millions of dollars	4,684	3,638	2,256	3,269
B. Portfolio investment	Millions of dollars	1,012	913	677	1,916
C. Other investment (loans and other credits and derivatives)	Millions of dollars	-856	-1,625	-975	-1,384
D. Reserve assets	Millions of dollars	810	1,352	-954	524
Errors and omissions (E and O)	Millions of dollars	98	-155	85	136
	Millions of dollars	-181	-564	43	465
Interest rates					
policy rate	Percentage, average for period	6.1	6.9	7.7	7.7
policy rate expected by analysts ⁱ⁾	Percentage, average for period	-	-	-	-
IBR	Percentage, average for period	6.1	6.9	7.7	7.7
Commercial interest rate	Percentage, average for period	11.7	13.0	13.4	13.2
Consumer interest rate	Percentage, average for period	18.5	19.0	19.5	19.6
Mortgage rate	Percentage, average for period	11.8	12.4	12.7	12.7

	2017				2018				2019				2020				2021			
	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
Exogenous variables																				
External^{a)}																				
Trade partners GDP ^{b)}	2.4	2.8	3.3	3.1	2.2	2.7	1.3	2.2	0.3	1.8	1.8	0.1	2.8	1.6	1.6	2.0	2.0	2.2	2.4	2.4
Oil price (Benchmark Brent)	55	51	52	62	67	75	76	68	64	69	62	62	65	64	64	63	62	62	62	62
Federal funds (Fed) effective interest rate	0.70	0.95	1.15	1.20	1.45	1.74	1.92	2.22	2.40	2.40	2.19	1.64	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
credit default swaps at 5 years for Colombia	144	130	127	113	99	113	110	132	121	104	90	83	90	98	107	117	128	135	139	143
Internal																				
Colombia real neutral interest rate																				
potential (trend) GDP																				
Endogenous variables																				
Prices																				
CPI Total	4.69	3.99	3.97	4.09	3.14	3.20	3.23	3.18	3.21	3.43	3.82	3.80	3.76	3.50	3.18	3.14	3.15	3.11	3.06	3.01
CPI excluding food ^{d)}	5.13	5.12	4.71	5.01	4.05	3.81	3.71	3.48	3.26	3.15	3.28	3.37	-	-	-	-	-	-	-	-
CPI tradables	5.59	4.41	3.41	3.79	1.80	1.83	1.57	1.09	0.90	1.17	1.65	2.24	-	-	-	-	-	-	-	-
CPI non-tradables	5.33	5.21	5.21	5.49	4.76	4.27	4.13	3.79	3.29	3.36	3.53	3.49	-	-	-	-	-	-	-	-
CPI regulated items	4.05	6.01	5.68	5.86	6.01	5.82	6.03	6.37	6.42	5.33	4.74	4.48	4.08	4.40	4.51	4.30	4.17	3.87	3.74	3.67
CPI food ^{d)}	3.65	1.37	2.22	1.92	0.98	1.74	2.05	2.43	3.26	4.46	5.58	5.20	4.85	3.60	2.65	2.83	2.75	2.77	2.68	2.55
CPI perishables	-13.09	-14.72	-0.32	5.84	7.13	8.47	9.51	8.88	9.98	15.46	17.50	8.66	-	-	-	-	-	-	-	-
CPI processed	6.28	3.29	0.84	-0.91	-2.01	-0.91	-0.72	-0.08	1.43	2.18	3.57	5.04	-	-	-	-	-	-	-	-
CPI eating out	8.94	7.62	6.01	5.21	3.32	3.13	3.32	3.68	3.43	3.80	4.12	4.18	-	-	-	-	-	-	-	-
Core inflation indicators																				
CPI excluding food	5.13	5.12	4.71	5.01	4.05	3.81	3.71	3.48	3.26	3.15	3.28	3.37	-	-	-	-	-	-	-	-
Core 20 CPI	6.01	5.31	4.87	4.87	4.04	3.58	3.56	3.23	3.09	3.28	3.51	3.42	-	-	-	-	-	-	-	-
CPI excluding perishable food, fuel and utilities	5.61	5.07	4.31	4.02	2.99	2.71	2.81	2.76	2.57	2.87	3.21	3.46	-	-	-	-	-	-	-	-
CPI excluding food and regulated items ^{d)}	5.44	4.87	4.44	4.76	3.49	3.23	3.04	2.64	2.38	2.54	2.87	3.10	3.25	3.24	3.10	3.06	3.08	3.05	3.05	3.03
Average of all core inflation indicators	5.55	5.09	4.58	4.66	3.64	3.33	3.28	3.03	2.82	2.96	3.22	3.34	-	-	-	-	-	-	-	-
MER	2,923	2,919	2,977	2,987	2,860	2,841	2,961	3,164	3,134	3,241	3,340	3,411	-	-	-	-	-	-	-	-
Inflation gap in the real interest rate	-3.2	-3.2	-0.7	-0.1	-3.5	-3.8	-0.5	4.5	2.0	3.2	4.0	5.0	0.8	0.3	0.2	0.5	-0.2	-0.3	-0.3	-0.2
Economic activity																				
Gross domestic product	1.0	1.7	1.5	1.2	2.5	2.4	2.6	2.7	2.8	3.4	3.3	3.3	3.4	2.9	3.2	3.5	3.4	3.4	3.3	3.1
Final consumption spending	2.2	2.2	2.6	2.5	3.6	4.0	4.1	4.1	4.2	4.3	4.6	4.2	-	-	-	-	-	-	-	-
final household consumption spending	1.8	2.0	2.2	2.2	3.2	3.7	3.9	3.5	4.3	4.7	5.0	4.3	-	-	-	-	-	-	-	-
final government overhead spending	3.2	3.9	3.6	4.4	6.2	4.9	5.8	5.7	2.9	2.6	3.3	4	-	-	-	-	-	-	-	-
Gross capital formation	-1.6	-2.3	-4.2	-4.6	1.1	0.2	4.8	8.1	3.0	8.1	8.6	4.3	-	-	-	-	-	-	-	-
gross fixed capital formation	2.6	3.3	2.5	-0.8	0.2	-1.7	1.4	6.2	2.7	6.1	7.0	3.9	-	-	-	-	-	-	-	-
Housing	5.6	3.8	-2.3	-13.6	-1.8	0.2	-1.4	3.6	-10.3	-9.6	-3.8	-0.7	-	-	-	-	-	-	-	-
Other buildings and structures	2.2	5.1	6.4	4.8	-0.5	-1.3	-0.8	8.8	2.0	5.3	6.6	1.3	-	-	-	-	-	-	-	-
Machinery and Equipment	-4.8	0.6	6.3	4.1	4.8	3.0	-2.1	11.3	20.7	11.1	12.7	-	-	-	-	-	-	-	-	-
Cultivated biological resources	8.4	-10.5	-4.2	8.6	-2.7	2.0	7.6	-2.6	-1.1	-4.0	19.9	10.5	-	-	-	-	-	-	-	-
Intellectual property products	-2.4	2.7	5.1	4.8	4.7	5.9	3.7	3.8	3.1	0.4	1.9	1.9	-	-	-	-	-	-	-	-
Domestic demand	0.1	1.3	2.2	1.0	4.2	3.4	3.7	4.3	3.8	4.8	4.8	4.2	-	-	-	-	-	-	-	-
Exports	4.7	4.0	3.6	-1.9	2.0	3.3	4.8	5.7	1.9	5.7	1.8	2.1	-	-	-	-	-	-	-	-
Imports	2.5	3.6	0.3	-1.5	2.7	7.5	8.3	13.4	7.3	8.7	10.7	6.8	-	-	-	-	-	-	-	-
Output gap ^{f)}	-0.5	-0.7	-1.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.0	-0.8	-0.7	-0.6	-0.5						

This report was coordinated, edited, and designed by the Publications Management Section of the Administrative Services Department, with font Fira Sans, 10 points.

Printed by Nomos.

February 2019.

