# INFLATION REPORT

December 2016

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* Presented by the technical staff to the Board of Directors for its meeting on January 27, 2017.

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

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# The Inflation-Targeting Strategy in Colombia

## OBJECTIVES

Monetary policy in Colombia is based on inflation targeting, which is intended primarily to keep inflation low and to ensure stable growth in output near its long-term trend. Accordingly, the objectives of monetary policy combine the goal of price stability with that of maximum sustainable growth in output and employment. In this way, monetary policy complies with the constitution and contributes to the well-being of the Colombian population.

## HORIZON AND IMPLEMENTATION

The Board of Directors of *Banco de la República* (the Central Bank of Colombia) (BDBR) sets the target for the annual rate of inflation. The BDBR's policy initiatives are designed to meet that target and to provide for long-term inflation at around 3.0%. The annual change in the consumer price index (CPI) is the benchmark that is used for inflation targeting.

## THE DECISION-MAKING PROCESS

Monetary-policy decisions are adopted based on an analysis of the current state of the economy and its prospects for the future, and on an assessment of the forecast for inflation in light of the predefined targets. If that assessment suggests, with enough certainty, that inflation will deviate from its target under current monetary-policy conditions and within the time horizon in which the policy operates, and that such deviation is not due to temporary shocks, the BDBR modifies

its policy stance by changing its benchmark interest rates (those charged by *Banco de la República* on short-term liquidity operations).

## COMMUNICATION AND TRANSPARENCY

Monetary policy decisions are announced after the Board of Directors meetings. This is done in a press bulletin posted immediately on *Banco de la República*'s website (www.banrep.gov.co).

The Inflation Report is a quarterly publication that is intended to lend transparency to the Board's decisions. It also contributes to a better understanding of monetary policy and helps to enhance its credibility. Specifically, the report: i) lets the public know how the Board of Directors and the Technical Governor of the Bank view recent and anticipated developments in inflation and its short- and mid-term determinants; ii) explains the implications of those determinants for monetary-policy management within the scope of inflation targeting; iii) describes the situation and analysis justifying the monetary-policy decisions made during the quarter; and iv) provides information that helps agents in the economy to form their own expectations about future developments with respect to inflation and output growth.

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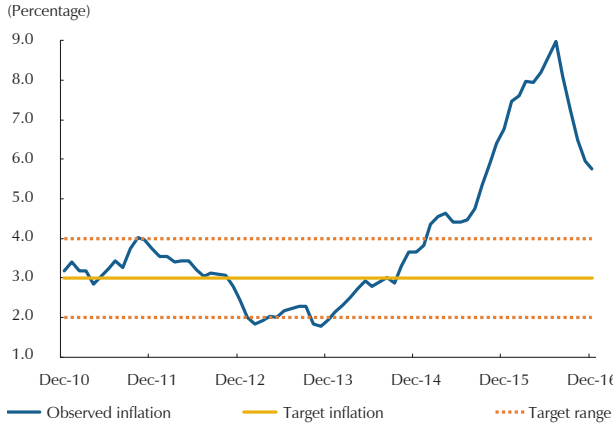
# Inflation Developments and Monetary Policy Decisions

Annual inflation in December fell for the fifth consecutive month, standing at 5.75%, still exceeding the 3.0% target (Graph A). Something similar happened with core inflation indicators and inflation expectations. Also, the slowdown of the food CPI continued, although at a slower pace than expected, as did that for the prices of goods and services which were most impacted by the past strong nominal exchange rate depreciation.

The average of inflation expectations, which reached its highest level in July 2016 (6.61%), stood at 5.6% in December. Some alternative indicators increased, all surpassing the 3.0% target: analysts' inflation expectations to one and two years posted at 4.25% and 3.59%, respectively, and those implicit in public debt bonds to 2, 3, and 5 years increased, posting between 3.8% and 4.8%.

The effects of strong transitory supply shocks (*El Niño* and nominal depreciation), which diverted inflation from its target, are expected to continue fading. This, together with the monetary policy decisions taken so far, should lead inflation to its target range in 2017 (3.0% ±1 pp).

Graph A
Total CPI inflation




Sources: DANE and *Banco de la República*

Regarding economic activity, the new figures for the fourth quarter of 2016 suggest that economic growth would have been low, although somewhat higher than in the third quarter. Consequently, the technical staff reduced the growth forecast for 2016 from 2.0% to 1.8%, within a range between 1.6% and 2.0%. Partly as a result of the slowdown, it is estimated that the current account deficit would have been somewhat lower than forecast one quarter ago, posting between 4.3% and 4.7% of GDP, with 4.5% as the most likely figure.

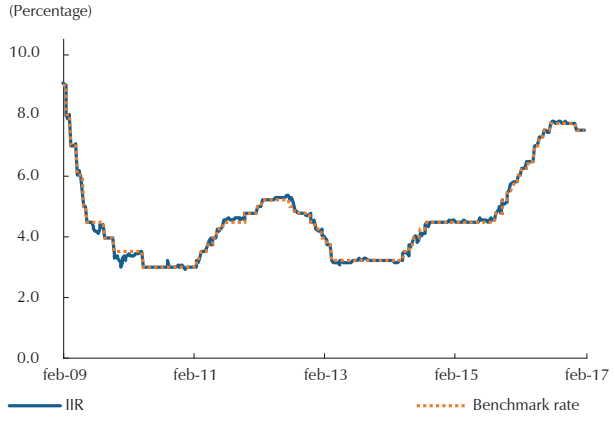
For 2017, recovery of external demand and the country's terms of trade is expected, within a very

uncertain international context. Domestic demand will remain weak, although somewhat stronger than the one recorded in 2016, mainly due to the behavior of investment. With this, the technical staff at the Central Bank forecasts that economic growth will stand between 0.7% and 2.7%, with 2.0% as the most likely figure. This forecast is situated in the lower part of the range projected by the market.

The slowdown of output and the lower external imbalance in 2016 reflect the needed adjustment of the whole economy to the negative shock to national income that the country has been facing since mid 2014. The inflation targeting strategy, which aims to maintain a low and stable increase of consumer prices with inflation expectations anchored to the target, represents an important feature for economic growth sustainability. Returning to higher and sustainable rates of economic growth requires structural reforms in the economy, which do not only depend on the Central Bank, but mainly on the Colombians' savings and investment decisions, as well as on structural reforms implemented by the government.

In all, the Colombian economy continues to adjust to the strong shocks recorded since 2014, and the current account deficit continues to adjust. Output dynamics has been weaker than forecast, inflation has decelerated, and the effects of several of the transitory supply shocks that have affected inflation and inflation expectations continue to reverse, and this trend is likely to continue. However, the reversal of core inflation has been slower than that of headline inflation, and some inflation expectations increased, all of them exceeding the 3.0% target.

Graph B
*Banco de la República*'s Benchmark Interest Rate and the Interbank Interest Rate (IIR)
(2009-2017) a/




a/ The figures pertain to data for working days; the last figure is for February 16, 2017.
Sources: Financial Superintendence of Colombia and *Banco de la República*

The Board of Directors agrees that, without new significant inflationary shocks, benchmark intervention rates will fall this year, at a speed that will depend on the new available information. Inflation has decreased, and will continue doing so towards the target range, and this will boost economic growth.

Considering all this, when assessing the evolution of inflation expectations, the increasing global uncertainty, and the behavior of domestic demand, the Board of Directors, at its meeting of December 2016, considered it appropriate to reduce the benchmark interest rate by 25 basis points and to keep it at 7.5% in January 2017, waiting for new information (Graph B).

**Juan José Echavarría**
**Governor**

# INFLATION REPORT

Prepared by Programming and Inflation
Department of the Division of Economic Studies

Technical Management

Hernando Vargas
**Deputy Technical Governor**

Economic Studies Division

Jorge Hernán Toro
**Chief Economist**

Programming and Inflation Department

Carlos Huertas
**Department Head**

Inflation Section (*)

Adolfo León Cobo
**Section Officer**

Juan Sebastián Amador
Édgar Caicedo
Camilo Cárdenas
Juan Pablo Cote
Camila Londoño
Daniel Parra
Jhon Edwar Torres

Macroeconomic Programming Section

Julián Pérez
**Section Officer**

Luis Hermán Calderón
David Camilo López
Nicolás Martínez

Programming and Inflation Department Assistant

Gloria Sarmiento

(*) This report was prepared with the help of Eliana González, Statistics Section Officer; Franz Hamann (Head), Jesús Antonio Bejarano (Section Officer), Carlos Leonardo Barreto Vargas and Joao Hernández of the Macroeconomic Models Department; and Franky Galeano Ramírez, Johan Yesid Forero, Carlos Daniel Rojas, who are student interns.

# I. The External Context and Balance of Payments

**The amount of growth forecast for the country's trading** partners in 2017 was revised slightly upward in this report. Even though it is expected to surpass the figure on record for 2016, it is still low compared to what was observed in past years.

**Higher prices for Colombia's oil and coal exports allow** us to anticipate some recovery in terms of trade during 2017.

**By September 2016, the country's current account deficit as a proportion of GDP** was 4.7%, down from 6.7% a year ago, thanks largely to more of a contraction in current outflows than in income.

**The external imbalance, both in dollars and as a percentage of GDP**, will continue to adjust during the remainder of 2016 and in 2017.

## A. THE INTERNATIONAL CONTEXT

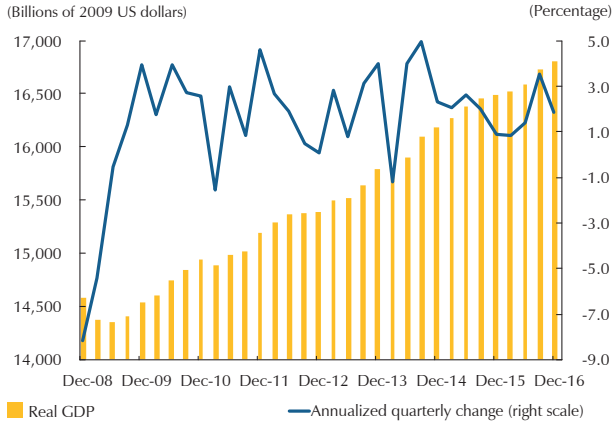
### 1. Real activity, Inflation and Monetary Policy

The figures at hand for the fourth quarter of 2016 confirm the weak economic growth observed during the first three quarters of the year for Colombia's main trading partners. This continues to pose an obstacle to Colombian export growth. The poor momentum has been more pronounced in Latin America, where the rates of expansion are at historic lows or output is contracting. Meanwhile, the economies of the United States and the euro area are growing at modest but sustained rates.

*The pace of growth in the United States slowed unexpectedly during the fourth quarter of 2016.*

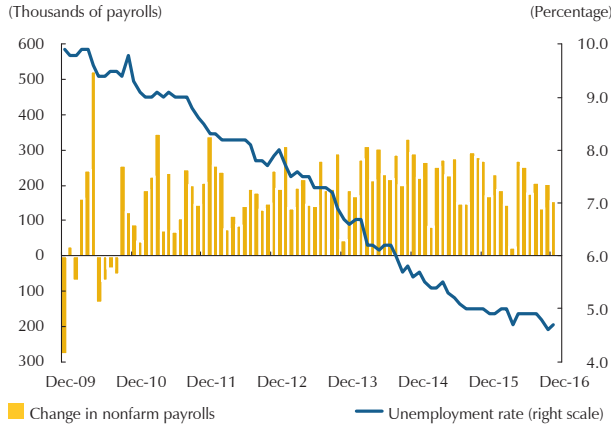
In the case of the United States, the initial estimate of its gross domestic product (GDP) for the fourth quarter of 2016 shows dampened growth at an annualized quarterly rate of 1.9% (a.q.); three months ago it was 3.5% a.q. (Graph 1). Accordingly, growth in 2016 as a whole was 1.6%.

Graph 1
US Real GDP



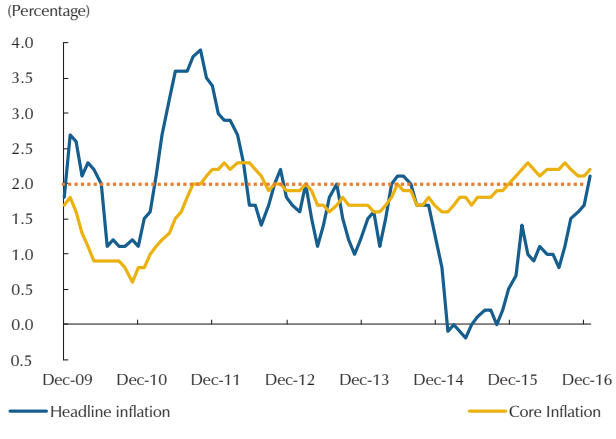

Source: Bureau of Economic Analysis.

Graph 2
Unemployment rate and Job Creation in the United States




Source: Bloomberg.

Graph 3
Annual Headline and Core Inflation indicators in the United States




Source: Bloomberg.

The slowdown in the US economy at the end of the year is explained largely by net exports, which would have been affected by the strength of the dollar, by weak external demand and by the weather. In contrast, domestic demand in the fourth quarter was the healthiest it has been all year. Although consumption continues be the driving force of growth, both residential and non-residential investments are adding to GDP, which has not been the case for five quarters. Also, once again, there was an important accumulation in inventories.

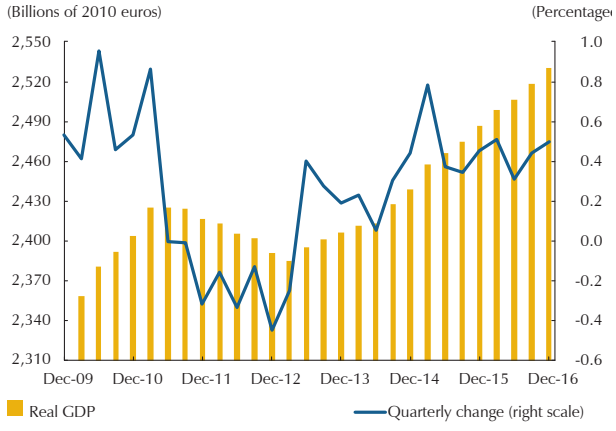
Despite the slowdown in real activity in the United States during the past year, the job market in that country continued to recover at favorable rates. Job creation has remained dynamic. In fact, non-farm payrolls increased at an average monthly rate of around 180,000 new jobs during the fourth quarter (Graph 2). As a result, the unemployment rate declined from 5.3%, on average, in 2015 to 4.9% in 2016, coming close to what analysts and the Federal Reserve (Fed) regard as the long-term level for the US economy.

As for the annual variation in consumer prices, the headline inflation indicator showed increases during the second half of the year, mainly due to the rise in fuel prices. With this, inflation in December stood at 2.1%. Meanwhile, the core inflation indicator excluding food and energy, stayed above the Fed's target of 2.0% throughout the year (Graph 3).

In this context, the Federal Open Market Committee (FOMC) agreed to raise its policy rate by 25 basis points (bp). This decision was reached at its December meeting, one year after its first rate hike following the financial crisis. The FOMC members also announced they would continue with gradual increases, depending on developments in the job market and inflation.

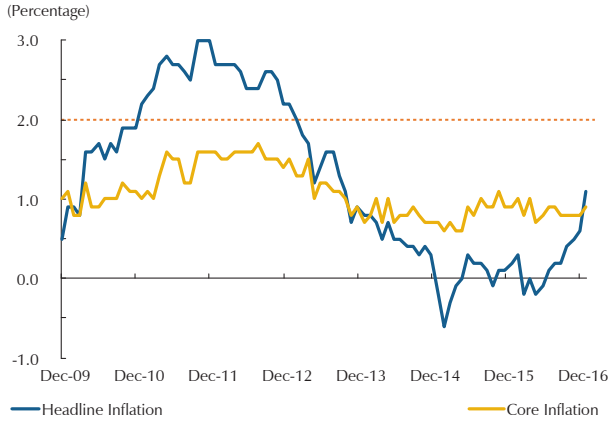
In the euro area, the figures at hand for the last quarter of 2016 with respect to real activity and confidence suggest the economy would have continued to expand. According to records for November on retail sales and industrial production, growth at the end of

Graph 4
Real GDP in the Euro Zone[a/]



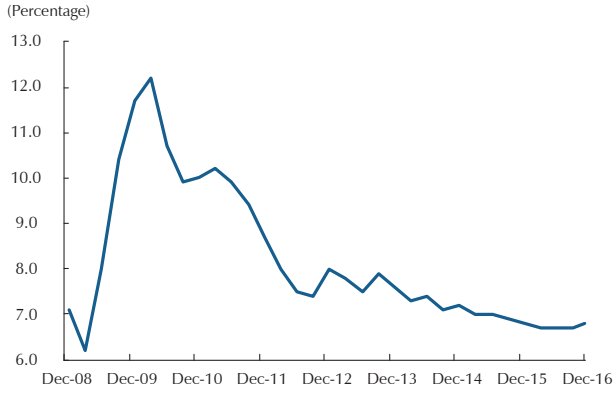

a/ This report was written before the official figures for the third quarter were available. They were published on January 31.
Source: Eurostat

Graph 5
Annual Headline and Core Inflation indicators in Europe




Source: Bloomberg.

Graph 6
Real Annual GDP Growth in China




Source: Bloomberg.

the year would have been similar or slightly higher than in previous quarters. Confidence indicators and industrial surveys in December confirm this trend (Graph 4).[1]

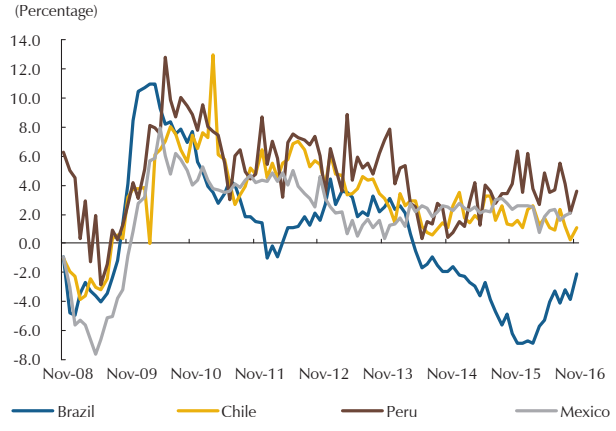
In this environment, both headline inflation (1.1%) and core inflation (0.9%) (Graph 5) remained low and a long ways from the target set by the European Central Bank (ECB) (slightly below 2.0%). However, medium-term inflation expectations for the euro area increased sharply in the fourth quarter, ending the year at 1.8%.

As a result, the ECB agreed at its December meeting to modify the amount and duration of its asset purchase, as well as the composition of that plan. These policies are aimed at stepping up the yield curve and improving monetary policy transmission. The new plan, which initiated in January 2017 and ends in December, permits the purchase of securities with a lower rate than the rate on deposits. In addition, the amount will be reduced from eighty to sixty billion euros as of March.

Meanwhile, the momentum in most emerging countries is still relatively low compared to what was observed in past years. In the case of China, annual GDP growth in the fourth quarter was 6.8%. As a result, growth for all of 2016 came to 6.7%, which is less than what it was the year before (6.9%) (Graph 6). This slowdown was largely the result of a sharp reduction in the rate of growth in investment in fixed assets, despite the fact that average monthly growth in consumption is similar to what is was in 2015. This performance is framed, in principle, by the transition towards a more sustainable development model in the medium term, one that depends less on external demand and investment, and more on private consumption. It is important to point out

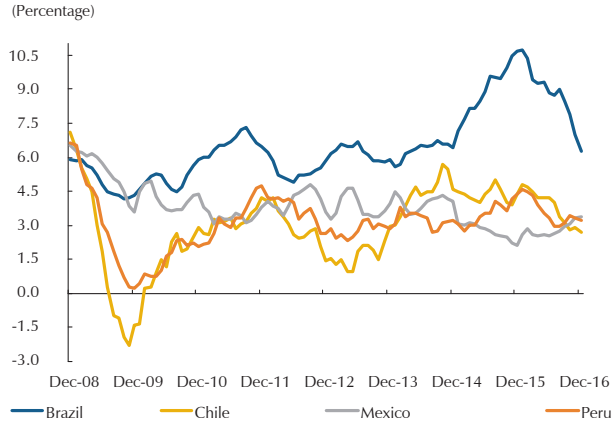
1 This report was produced without the official figures on growth in the euro area for the fourth quarter. The first estimate to that effect was released on January 31, which indicates the quarterly increase in GDP during that period was 0.5%. This is higher than in third quarter of the year and more than the market expected.

Graph 7
Annual Growth in the Monthly Economic Activity Indexes of Several Latin American Economies




Source: Datastream.

Graph 8
Annual Inflation for Several Latin American Economies




Source: Datastream.

that this transition implies a more moderate increase in China's demand for commodities.

As for Latin America, growth during the third quarter and the two previous quarters was mediocre for the countries being monitored. This performance would not have changed in the fourth quarter, as demonstrated by the latest indicators of real activity, despite some improvements (Graph 7). In addition, household and business confidence remained low, which likely affected decisions on investment and consumption.

Although various countries in the region saw their revenue affected by the drop in raw material prices in recent years, this shock has become more pronounced due to the commercial ties that exist between those countries. In addition, some have political problems that have complicated the economic situation in the region, increasing uncertainty, and undermining confidence. This, in turn, has had an adverse impact on employment and economic activity. Accordingly, it is estimated that Argentina, Brazil, Ecuador, and Venezuela would have experienced negative growth during 2016; Chile and Mexico would have grown at rates below their historic averages, while Peru would be the exception in the region, with relatively high growth rates.

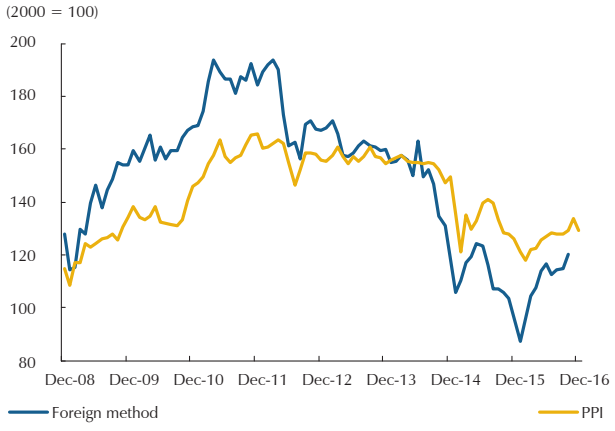
The fourth quarter figures for annual inflation in Latin America show a predominance of downward trends, with the exception of Mexico (Chart 8). Inflation in Brazil remains high, with tendency to decline.

## 2. Commodity Prices

The country's terms of trade fell in 2015, reaching a minimum in January 2016. However, they have increased since then, even in the fourth quarter. Accordingly, the averages for terms of trade in 2015 and 2016 are expected to be quite similar. Yet, they would be lower than in the past decade (Graph 9).

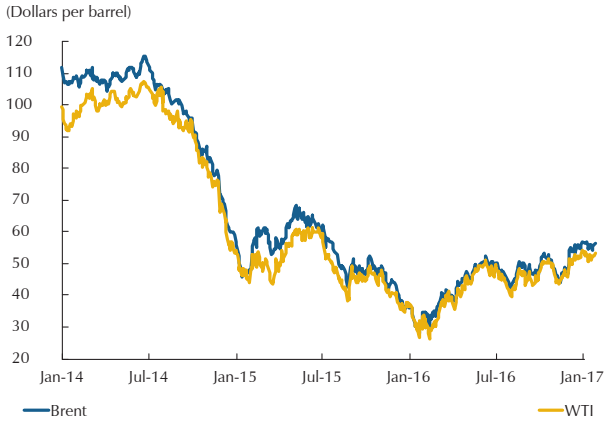
The price of oil (Brent reference) increased by 8.7%, on average, between the third and fourth quarters, going from USD 47 per barrel to USD 51.1 per barrel (Chart 10). In January 2017, the average was USD 55.7 per barrel. Therefore, the levels observed in the last four months have far exceeded the

Graph 9
Terms of Trade Index
(Trade Methodology & PPI)




Source: *Banco de la República*

Graph 10
International Oil Prices (Brent and WTI)




Source: Datastream.

forecasts contemplated in the September edition of this report (USD 47.5 was expected, while the average was USD 50.8).

The price increase is due largely to the agreement reached by the Organization of Petroleum Exporting Countries (OPEC), together with other oil-producing countries, to restrict the world supply and reduce crude inventories. Cutbacks in production in Nigeria and Libya also have been instrumental to keeping the supply low.

In the case of coal, significant price hikes were observed in the second half of the year, thanks to less of a supply worldwide due to regulatory changes and climate shocks. The regulatory problems refer mainly to the policy implemented in China, which discourages the production of this raw material and encourages its replacement by cleaner sources of energy. Flooding in some Australian mines was a contributing factor as well.

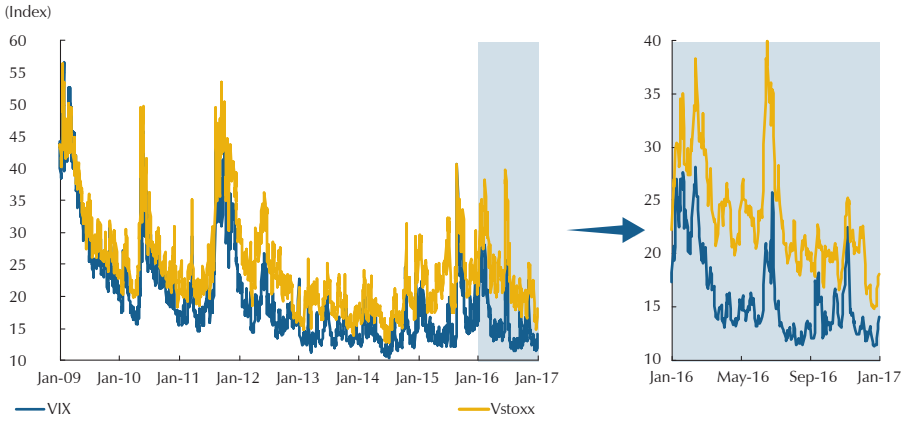
The international price of coffee remained high during 2016, compared to what it was at the end of 2015. The global supply of coffee was reduced by weather problems throughout the year in several producing countries. The last two months witnessed a great deal of price volatility generated by added uncertainty about the extent of production worldwide in 2017.

With respect to international prices for agricultural raw materials, the increases observed three months ago continued throughout the fourth quarter, as reflected in less of an annual contraction in the food price index of the United Nations Food and Agriculture Organization (FAO). Since Colombia is an importer of several of types of agricultural raw materials, this reduction would have dampened somewhat the increase in terms of trade.

### 3. Financial Markets

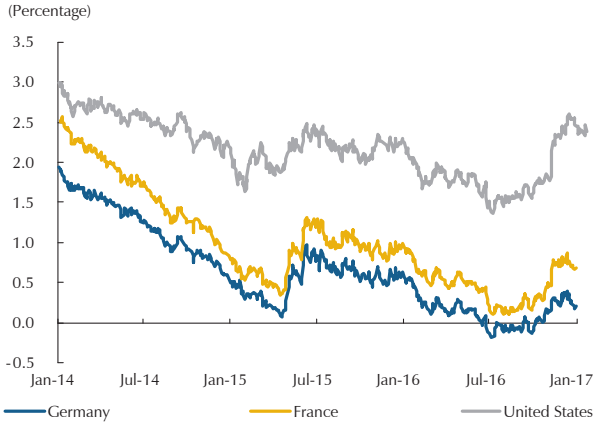
As for international financial markets, the volatility indexes during the fourth quarter showed increases associated with electoral uncertainty in the United States and with the OPEC agreement. However, those indexes already had returned to low levels by mid-December (Chart 11).

Graph 11
Financial Volatility Indexes



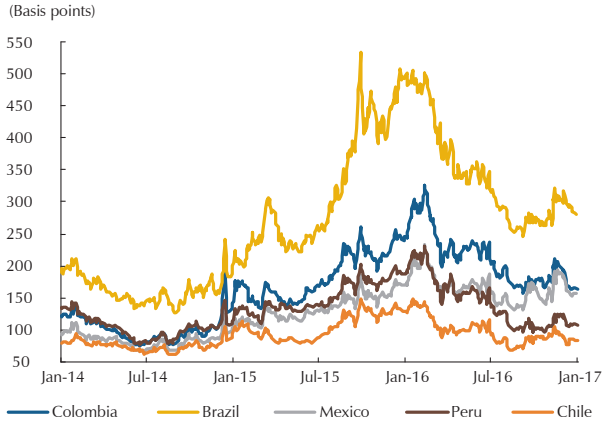

Source: Bloomberg.

Graph 12
Interest Rates on Certain 10-Year Sovereign Bonds




Source: Bloomberg.

Graph 13
Five-year Credit Default Swaps (CDS) for Several Latin American Countries



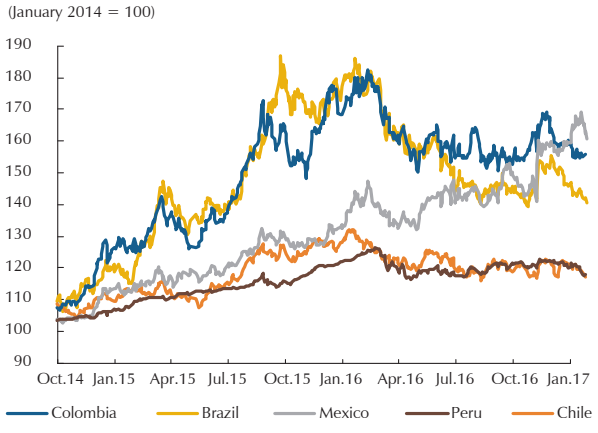

Source: Bloomberg.

Long-term interest rates in the advanced economies have risen during the last three months (emerging from negative territory in some cases) (Chart 12). These hikes have been accompanied by an increase in medium-term inflation expectations and by cutbacks in monetary stimulus in the United States and the euro area. Meanwhile, global stock indexes have posted strong growth since November.

The US dollar continued to appreciate against most of the world's currencies during the final quarter of the year, partly due to elections in the United States and expectations of benchmark interest rate hikes by the Fed.

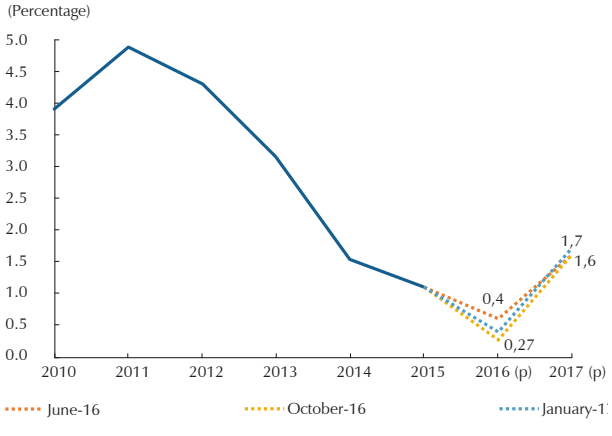
In the case of Latin America, the electoral process in the United States prompted an increase in risk premiums, which is relatively small compared to the one at the beginning of the year (Graph 13). It also sparked renewed depreciation of currencies against the dollar (Graph 14). These phenomena were fully reversed in the early days of November in all economies except that of Mexico. In the Colombian case, five-year credit default swaps (CDS) declined in January, averaging 154 basis points (bp) during the month. In the same period, the Colombian peso appreciated against the dollar by 2.2%, on average, with respect to December.

Graph 14
Exchange Rate Indexes of Several Latin American Countries




Source: Bloomberg.

Graph 15
Average Growth of Colombia's Trading Partners
(Non-traditional trade weighted)




Source: International Monetary Fund (IMF); calculations and projections by *Banco de la República*

## 4. Forecasts by *Banco de la República*'s Technical Staff

The growth forecasts for Colombia's trading partners in 2016 and 2017 were revised upwards in this report compared to the previous edition (Graph 15). This is due mainly to the added momentum estimated for the United States and China and to lesser declines in some of the Latin American economies. The economic growth of the country's main trading partners (non-traditional trade weighted) is expected to be 0.4% for 2016 and 1.7% for 2017 (Table 1).

The forecast for US economic growth in 2017 also was revised upward in this report. Consumption would remain at a favorable pace, supported by higher wages and job improvements. At the same time, non-residential and residential investment would be bolstered by relatively high consumer and business confidence, which was already evident in the fourth quarter of 2016. The comparatively low momentum in the global economy and appreciation of the dollar will tend to limit export growth.

If the tax cuts or increases in public spending announced by the new administration become a reality, their impact on the US economy would be felt more towards 2018 than in 2017.

The policies pursued by the new administration are generally perceived to have sparked a great deal of uncertainty. However, the central scenario assumes there will be no changes in trade policies that imply protectionist measures that could adversely affect economic growth in United States and worldwide.

As for monetary policy, the expectation in this report is that the Fed will raise its benchmark rate on three occasions, bearing in mind that inflation in the United States should remain above the long-term target set by the country´s monetary authorities (2.0%). There are several reasons for this, including relatively high fuel prices, stronger domestic demand, and higher expectations for growth. Moreover, the Fed believes the job market continues to gain strength.

Table 1
Growth Forecasts for Colombia's Trading Partners

| Growth forecasts for Colombia's trading partners | 2015 | Forecasts for 2016 Scenario | | | Forecasts for 2017 Scenario | | |
|---|---|---|---|---|---|---|---|
| | | Minimum forecast | Central forecast | Maximum forecast | Minimum forecast | Central forecast | Maximum forecast |
| Main partners | | | | | | | |
| United States | 2.6 | 1.5 | 1.6 | 1.7 | 1.0 | 2.3 | 3.0 |
| Euro Area | 2.0 | 1.5 | 1.6 | 1.7 | 0.8 | 1.6 | 2.0 |
| Venezuela | (6.2) | (15.0) | (12.0) | (9.0) | (9.0) | (6.0) | (1.0) |
| Ecuador | 0.3 | (2.3) | (2.1) | (1.9) | (1.5) | 0.2 | 1.0 |
| China | 6.9 | 6.6 | 6.7 | 6.8 | 5.4 | 6.4 | 6.8 |
| Other partners | | | | | | | |
| Brazil | (3.8) | (3.8) | (3.5) | (3.2) | (0.5) | 0.5 | 1.5 |
| Peru | 3.3 | 3.8 | 4.0 | 4.2 | 3.0 | 4.2 | 5.0 |
| Mexico | 2.5 | 1.9 | 2.1 | 2.3 | 0.5 | 1.9 | 2.5 |
| Chile | 2.3 | 1.5 | 1.7 | 1.9 | 1.0 | 2.0 | 3.0 |
| Total trading partners (non-traditional trade-weighted) | 1.1 | 0.0 | 0.4 | 0.7 | 0.5 | 1.7 | 2.6 |
| Developed countries[a/] | 2.1 | | 1.6 | | | 1.9 | |
| Emerging and developing countries[a/] | 4.1 | | 4.1 | | | 4.5 | |
| Total worldwide[a] | 3.2 | | 3.1 | | | 3.4 | |

a/ IMF forecasts, January 2017.
Source: International Monetary Fund (IMF); calculations and projections by *Banco de la República*

The forecast for the euro area in 2017 was raised from 1.4% to 1.6%. The reason was primarily the low impact Brexit has had so far has and the likely delay in its execution. The fundamentals of the economy continue to suggest it will grow at relatively low rates and mainly due to domestic rather than external demand. These forecasts are based on the assumption that financial and political risks will not materialize and Brexit will have no significant impact during 2017. During 2017, inflation will remain below the ECB's target, despite recent increases. In this scenario, the ECB will make no change in the asset purchase plan announced at its December meeting.

In the case of China, growth is expected to continue its gradual process of restructuring aimed an economy supported by private consumption. As a result, investment would continue to slow. It is assumed the policies adopted by the government will be effective in reducing over borrowing by companies. Furthermore, we cannot rule out the possibility of government stimulus measures intended to soften the economic slowdown.

Latin America is expected to continue to experience mediocre growth in 2017. The contraction in Brazil and Ecuador would cease, but this relative improvement will hardly offset the slowdowns forecast for Mexico and Chile. Peru,

*The downside risks to growth of the country's trading partners forecast for 2017 have increased in this report with respect to the previous one.*

on the other hand, would maintain the highest growth rate in the region. The situation in Mexico is perhaps the most troubling, because of its close trade relations with the United States. A profound restructuring of the trade agreements between those two countries could have serious implications in terms of commerce, investment, the job market, and trust. These are difficult to quantify and have already sparked a considerable increase in uncertainty. Consequently, the forecast for the country has been reduced in this report and its confidence interval has been widened.

However, the central scenario described above still includes significant downside risks, which would be higher than those estimated in the previous edition of this report. The main one comes from the policies the new administration in the United States might adopt and the impact they could have on the rest of the world and particularly on Latin America. On the other hand, there is the materialization of political and financial risks in several countries of the euro area, and the risk of over borrowing, financial instability, trade barriers and geopolitical developments. A bigger impact from Brexit, and sooner, is still a latent risk.

In addition, the improved situation in the United States and the rise in interest rates in that country make it more attractive to investors. So, there is the possibility of capital flowing out of emerging markets in search of safer assets. This could lead to serious liquidity and solvency problems that would punish growth.

As for raw materials, prices are expected to be higher in 2017 than those observed during 2016 (Table 2). Basically, these increases would respond to a reduction in the supply of raw materials. Oil is expected to be around USD 54 per barrel. This price includes partial compliance with the OPEC agreement and a reaction to higher market prices on the part of production in countries that are outside the agreement. Also, it assumes production in Libya and Nigeria will continue to be diminished by problems with law and order.

Table 2
Benchmark Price Forecasts for Colombia's Commodity Exports

| Major products | 2016 | Forecasts for 2017 | | |
|---|---|---|---|---|
| | | Scenario | | |
| | | Minimum forecast | Central | Maximum forecast |
| Colombian coffee (ex *dock*; dollars per pound) | 1.55 | 1.20 | 1.50 | 1.80 |
| Brent crude (dollars per barrel) | 45.1 | 40 | 54 | 60 |
| Coal (dollars per ton) | 54.8 | 70 | 80 | 100 |
| Nickel on the London exchange (dollars per ton) | 9,638 | 9,000 | 11,200 | 13,000 |
| Gold[a/] (dollars per troy ounce) | 1,249 | 1,550 | 1,250 | 1,100 |

a/ This is assumed to be a safe haven , therefore the price of gold increases when there is more uncertainty (a pessimistic scenario).
Sources: Bloomberg; calculations by *Banco de la República*

*Added production and less economic growth worldwide are the main downside risks to the price of oil.*

However, the risks weighing on this forecast are biased to the downside, as past experience suggests, since the OPEC agreement may not be fulfilled, or only in part, and could erode during the course of the year. The reaction of production in countries that are outside the agreement might be so elevated that it mitigates most of the cuts in global production. There is also a possibility that production cuts will be exceeded in Nigeria and Libya. Lastly, if some of the risks to world growth were to materialize, the demand for crude oil would be reduced. All these risks point to an excess of supply and, consequently, to lower prices.

## B. BALANCE OF PAYMENTS

### 1. Results by the Third Quarter of 2016

During the first three quarters of 2016, the current account in the country's balance of payments showed a deficit of USD 9,599 m. This is USD 5,213 m less with respect to the year before and 4.7% as a proportion of GDP, which implies a reduction from 6.7% by September 2015.

The foregoing is explained by several factors; namely, the decline in the trade deficit for goods and services, fewer net outflows for factor income, and more income from current transfers. Overall, the behavior of the external balance in dollars was characterized by more of a contraction in current expenditure than in income. This is consistent with the fact that the economy has been adapting to the new course of developments in national income. Notably, the evolution of the current deficit observed in September is consistent with the trend anticipated and outlined in the previous edition of this report.

The lower trade deficit for goods during the year to September (USD 2,032 m) is due largely to the drop in imports (-USD 7,739 m, -19.6%), which more than offset the decline in exports (-USD 5,708 m, -19.2%). The cutback in foreign purchases is consistent with the slowdown in economic activity and domestic demand during the same period, and with depreciation of the exchange rate. The reduction in Colombia's exports is occurring in an environment of lower commodity prices and contractions in the volume of oil being produced, as well as low economic growth in the countries that are classified as Colombia's main trading partners.

*The current account deficit in the balance of payments between January and September 2016 was USD 5,213 m. less compared to the same period in 2015.*

The annual reduction in factor income (USD 1,614 m) is attributed to losses and fewer profits reported, particularly in the third quarter, by firms in Colombia with foreign capital, especially those operating in the oil and mining sector. In contrast, the period in question saw higher interest payments associated with loans and debt securities.

As for the balance of services in the first three quarters, net outlays were down by USD 1,343 m compared to the same period in 2015, thanks to a sizeable contrac-

*The annual reduction in the deficit by September 2016 can be explained by the reduced trade deficit for goods and services, the decline in net outflows for factor income and the rise in income from current transfers.*

tion in current expenditure. At the same time, revenue rose slightly. The items that stand out in terms of expenditure include less of a contraction in technical services for the petroleum industry, lower payments for shipping due to the decline in imported volume, and less money spent by Colombian travelers abroad.

The increase in current transfers was another factor that contributed to the reduction in the external imbalance, thanks largely to an annual 3.9% increase in worker remittances. The major increases, in this respect, were observed in remittances from the United States and several Latin American countries.

Regarding external financing, US 10,173 m in net capital inflows were observed between January and September 2016, which is less than a year ago, when they came to USD 14,907 m. Net direct investment (USD 7,656 m) increased by USD 1,478 m in 2016, due to larger inflows, which were offset partly by added direct investment outside the country by Colombians. The increase in the flow of resources of this type was concentrated in the electricity, gas and water sector, and is explained primarily by the sale of Isagén. In contrast, the other sectors as a whole posted an annual contraction of 29% in foreign direct investment (FDI).

In terms of foreign portfolio investment during the third quarter of 2016, the country received USD 4,234 m compared to USD 9,259 m a year ago. The resources received during 2016 originated mainly with the purchase of TES (government bonds) by foreign investors on the local market and, to a lesser extent, by the issuance of long-term debt securities on international markets, mostly issued by the government and by entities in the public sector.

As for other capital flows, mostly loans (without derivatives operations), Colombia constituted USD 2,486 m in net assets abroad, mainly in the form of deposits by private and public entities. This amount contrasts with USD 1,691 m in new disbursements received during 2015, up to September. International reserves from balance of payments transactions increased by USD 29 m during the period in question, mainly due to the net return on the portfolio.

## 2. Forecasts for 2016 and 2017

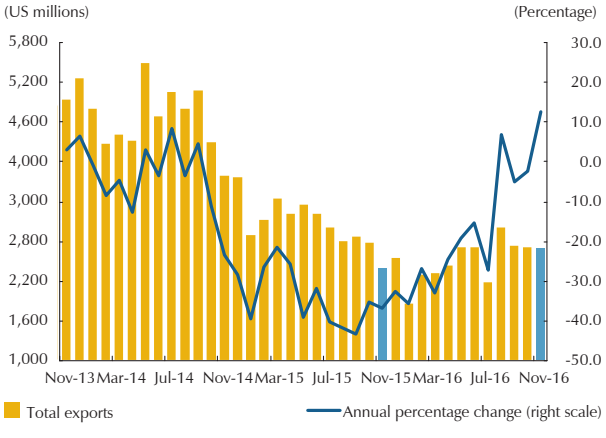
*Foreign direct investment and TES purchases by foreign investors have been the main sources of external financing.*

The forecast exercises developed for this report indicate annual adjustments in the current account deficit will continue during the remainder of 2016 and in 2017. The trade deficit in goods is estimated to have been less during the fourth quarter of 2016 than during the same period in 2015. This is because exports in dollars are expected to have grown, in contrast to the estimated drop in imports, which would continue to contract, although at a lower rate than was observed in previous quarters. The increase in external sales during this period would be due to the recovery in most of the refer-

ence prices for export commodities, as mentioned in the first part of this chapter, and to the higher volumes estimated for coal and coffee.

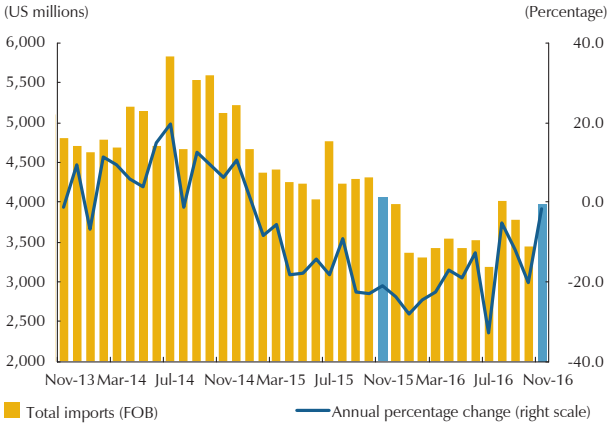
The available figures on foreign trade in goods during October-November confirm this projection. In those two months, total exports in dollars were up by USD 232 m (4.5%) over the previous year (Graph 16), mainly because of the higher export value of petroleum products, coal, and coffee. FOB imports[2] fell by USD 926m (-11.1% year-on-year) in October-November, largely due to fewer capital equipment purchases and reduced fuel imports (Chart 17) (see shaded section on page 28).

Graph 16
Total Exports FOB
(Monthly)




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

Graph 17
Total Imports FOB
(Monthly




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

Accordingly, the trade deficit in goods for 2016 as a whole will remain substantial, but less so than in 2015. As for the forecast outlined last quarter, there is expected to be less of a contraction in traditional exports, particularly because of the upward revision for commodity prices and exported volumes of coal and coffee. The forecast for growth in non-traditional exports was raised as well, due to less of a slowdown in the final quarter of the year, thanks to increased momentum on the part of our major trading partners.

2 Unlike the balance-of-payments measure, which takes into account the FOB (free on board) value of imports, GDP calculated according to the national accounts considers CIF imports, which include freight and insurance. The average total value of the latter, in dollars, during October-November, came to US 7,777 m, which implies an annual reduction of 11.2%.

# EXPORTS AND IMPORTS IN DOLLARS DURING THE THIRD QUARTER OF 2016 AND THE FOURTH QUARTER TO DATE

## The Third Quarter:

Total exports in dollars declined 8.8% during the third quarter of 2016 with respect to the year before, owing to fewer foreign sales in all product groups. As for mining products, oil exports experienced an annual reduction of 27.8%. In the agricultural sector, coffee exports were down 30.9% year on year (Table A).

The destinations affected the most in terms of exports of industrial goods were Venezuela and the European Union, which posted annual declines of 42.3% and 26.1%, respectively. In turn, sales of industrial goods to the United States were down 2.9%, while those to Mexico rose 7.0% year on year (Chart A).

FOB imports in dollars fell 17.3% annually in the third quarter, due to fewer external purchases in all product groups, but mainly capital and intermediate goods (-25.2% and -14.5%, respectively) (Chart B).

## October-November:

Exports recovered somewhat between October and November, largely because of higher export prices. Imports continued to decline, albeit at lower annual rates, partly due to a lower base of comparison with respect to the same period in 2015.

Exports in dollars increased 4.5% during this period, fueled by foreign sales of mining products (6.5%) and agricultural goods (7.8%). The 12.4% recovery in coffee exports is a highlight (Table B).

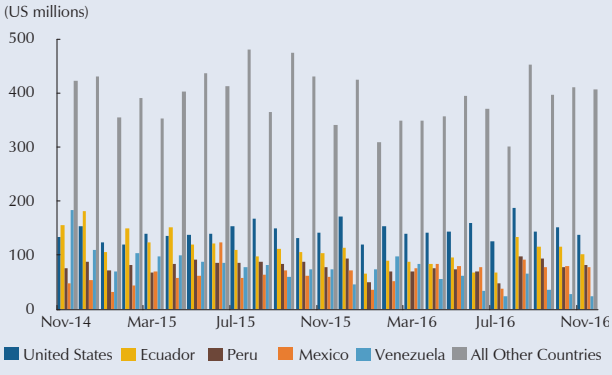
As for industrial exports, a slight annual decline (0.1%) was observed between October and November (Graph

Table A
FOB Exports and Imports in Dollars during the Third Quarter of 2016

| Group | Annual change (Percentage) | Important contributions to the annual change | |
|---|---|---|---|
| | | Item | Annual change in the item |
| **Total exports** | **(8.8)** | | |
| Mining products | (5.5) | Crude oil | (27.8) |
| All other exports[a/] (Industrial goods) | (10.2) | Food, beverages, and tobacco (excluding coffee) | (19.6) |
| | | Chemical products | (9.3) |
| | | To Venezuela | (42.3) |
| | | To the European Union | (26.1) |
| | | To the rest of ALADI (Association for Latin American Integration)[b/] | (5.0) |
| | | To Peru | (7.2) |
| Agricultural goods | (19.4) | Coffee | (30.9) |
| | | Bananas | |
| | | Flowers | 0.2 |
| **Total imports** | **(17.3)** | | |
| Capital goods | (25.2) | Capital goods for industry | (25.9) |
| | | Transport equipment | (21.9) |
| Intermediate goods | (14.5) | Fuel and lubricants | (34.7) |
| | | Raw materials for industry | (8.7) |
| Consumer goods | (11.2) | Durable goods | (16.7) |
| | | Non-durable goods | (6.1) |

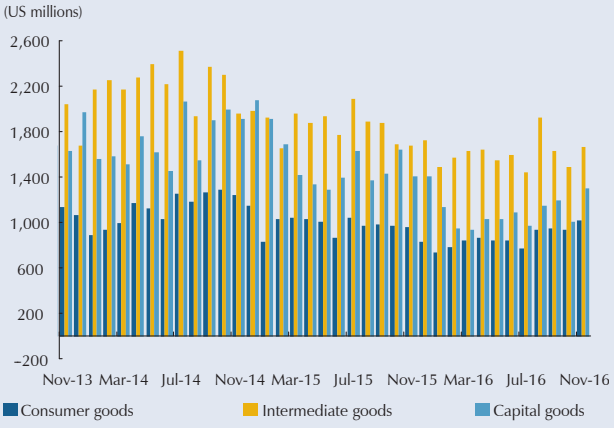
a/ This group does not include petroleum or derivatives thereof, coal, nickel, gold, coffee, bananas or flowers.
b/ ALADI, excluding Venezuela, Ecuador, Peru and Mexico.
Source: DANE; calculations by *Banco de la República*

Graph A
Industrial Exports to the United States, Ecuador, Peru, Mexico, Venezuela and All Other Countries[a/]




a/ This group does not include petroleum or derivatives thereof, coal, nickel, gold, coffee, bananas or flowers. It includes mining and agricultural products.
Source: DANE; calculations by *Banco de la República*

Graph B
Imports, by Type of Goods (FOB)




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

Table B
FOB Exports and Imports in Dollars during the Fourth Quarter of 2016 to Date

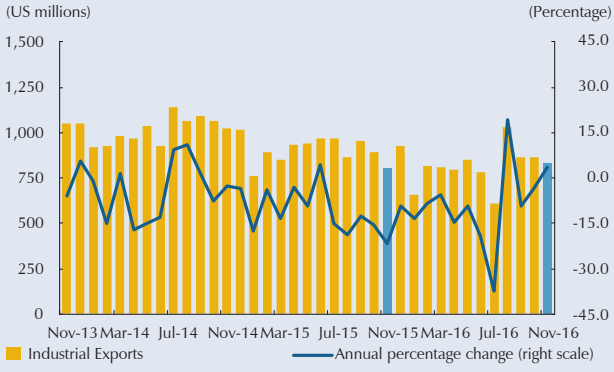
| Group | October-November Annual change (Percentage) | Item | Annual change in the item (Percentage) |
|---|---|---|---|
| **Total Exports** | **4.5** | | |
| Mining products | 6.5 | Oil refining | 87.6 |
| | | Coal (lignite and peat) | 23.5 |
| All other exports[a/] (Industrial products) | (0.1) | Food, beverages, and tobacco (excluding coffee) | (12.9) |
| | | Electrical machinery and devices | (28.8) |
| | | To Venezuela | (64.8) |
| | | To the European Union | (15.1) |
| | | To Peru | (5.0) |
| Agricultural products | 7.8 | Coffee | 12.4 |
| | | Bananas | 3.0 |
| | | Flowers | 2.3 |
| **Total imports** | **(11.1)** | | |
| Capital goods | (23.9) | Capital goods for industry | (24.1) |
| | | Transport equipment | (25.1) |
| Intermediate goods | (6.4) | Fuel and lubricants | (23.4) |
| | | Raw materials for industry | (2.0) |
| Consumer goods | 1.0 | Durable goods | |
| | | Non-durable goods | 2.7 |

a/ This group does not include petroleum or derivatives thereof, coal, nickel, gold, coffee, bananas or flowers. It includes other mining and agricultural products.
Source: DANE; calculations by *Banco de la República*

C), influenced by the plunge in exports of these products to Venezuela (-64.8%), the European Union (-15.1%) and Peru (-5.0%). Industrial exports to the other ALADI countries,[1] Mexico and the United States rose 18.0%, 30.8%, and 5.0% annually, in that order.

On the other hand, FOB imports in dollars during this period were down 11.1% year on year. This reduction is associated with a drop in the imported value of capital goods (-23.9%) and intermediate goods (-6.4%), while imports of consumer goods posted an annual increase of 1.0%, thanks to purchases of non-durable goods (2.7%).

Graph C
Industrial Exports – FOB[a/]
(Monthly)




a/ Does not include petroleum or derivatives thereof, coal, nickel, gold, coffee, bananas or flowers. It includes other mining and agricultural products.
Source: DANE; calculations by *Banco de la República*

1 Excluding Venezuela, Ecuador, Peru, and Mexico.

*The external imbalance will continue to be corrected during the final quarter of 2016, largely as a result of the lower trade deficit for goods.*

The decline in imports in dollars throughout 2016 is expected to equal 17.3% compared to the figure for 2015. Imports of input and capital goods for industry are a particularly important case. The drop in imports would have been due to less momentum in domestic demand, some import substitution, and reductions in the dollar prices of imported goods. Compared to the forecast outlined in the last edition of this report, the estimated decline in imports is now less, given the behavior observed during the final months of the year.

On the other hand, the fourth quarter should see less of an annual adjustment in the non-factor service deficit compared to previous quarters. The trade deficit in services during the year as a whole is expected to be less, given to the reduction in technical services contracted for the petroleum industry, the decline in payments for freight and shipping due to less imported volume, and the reduced impact depreciation is expected to have on what Colombians spend abroad.

In contrast, net outflows of factor income would increase in the final quarter of the year, mainly due to the impact the recovery in prices for mining- energy products would have on profits. In the other sectors, profits are expected to improve as well, in quarterly terms, contrary to the low proceeds reported in the third quarter. Accordingly, 2016 as a whole is expected to see an annual decline in net outlays of factor income, particularly because of fewer profits in the mining and petroleum sector and, to a lesser extent, those in other sectors. This drop would be offset, in part, by higher interest payments on the foreign debt.

Finally, net income from transfers would increase with respect to the same period last year, particularly because of the added growth anticipated in the United States and Europe (see Section A in this chapter).

As for financing, FDI resources are estimated to have declined during the fourth quarter of 2016, compared to the same period a year ago. On the other hand, the available data on capital inflows in the foreign exchange balance show a hefty annual increase in resources from private-sector foreign portfolio investment during the fourth quarter.[3] Added to this are the resources from foreign loans with multilateral banks, especially loans obtained by the government and other entities in the public sector, and, to a lesser extent, the resources from bonds issued by companies in the private sector.

The estimate for all of 2016 is that capital flows would have been less than those received in 2015, mainly due to fewer net resources from portfolio investment and other foreign loans and credits (Table 3). Specifically, inflows from debt securities sold on international markets and shares purchased by

3 Although the capital flows registered in the foreign exchange balance do not pertain exactly to what is recorded in the balance of payments, since the former relate to the inflow and outflow of foreign currency, they do provide some idea of their trend.

foreigners in the domestic market are expected to decline, while the constitution of foreign assets other than direct investments (financial, deposits, etc.) is expected to increase. In the case of TES purchases by foreign investors, these rose to levels well above those observed in 2015. It is important to point out that approximately 25% of the TES that were outstanding at December 2016 are in the hands of foreign capital funds, compared to 18% during the same period a year ago.

Table 3
Balance of Payments
Annual Flows (Millions of US dollars)

| | 2012 | 2013 | 2014 (pr,) | 2015 (pr,) | 2016 (proj,) |
|---|---|---|---|---|---|
| **Current account (A+B+C)** | **(11,214)** | **(12,449)** | **(19,563)** | **(18,922)** | **(12,624)** |
| Percentage of GDP | **(3.0)** | **(3.3)** | **(5.2)** | **(6.5)** | **(4.5)** |
| Goods and services | (840) | (2,957) | (11,671) | (18,512) | (13,513) |
| Primary income (factor income) | (14,994) | (14,220) | (12,367) | (5,527) | (4,515) |
| Secondary income (current transfers) | 4,620 | 4,729 | 4,475 | 5,117 | 5,404 |
| **Financial account (A+B+C+D)** | **(11,746)** | **(11,888)** | **(19,403)** | **(18,356)** | **(13,038)** |
| **Percentage of GDP** | **(3.2)** | **(3.1)** | **(5.1)** | **(6.3)** | **(4.7)** |
| Direct investment (ii-i) | (15,646) | (8,557) | (12,264) | (7,514) | (8,710) |
| Foreign investment in Colombia (FDI) | 15,039 | 16,209 | 16,163 | 11,732 | 12,125 |
| Colombian investment abroad | (606) | 7,652 | 3,899 | 4,218 | 3,415 |
| Portfolio investment | (5,690) | (6,978) | (11,654) | (9,532) | (4,670) |
| Other investment (loans, other types of credit and derivatives) | 4,183 | (3,300) | 79 | (1,725) | 221 |
| Reserve assets | 5,406 | 6,946 | 4,437 | 415 | 122 |
| Errors and omissions (E & O) | (532) | 561 | 160 | 566 | (414) |

(pr.) preliminary
(proj.): projected
Observation: The results presented in this table follow the recommendations outlined in the sixth edition of the Balance of Payments Manual proposed by the IMF. For additional information and changes in methodology, see http://www.banrep.gov.co/balanza-pagos
Source: *Banco de la República*

In contrast, net FDI inflows to Colombia would have increased by 16% during 2016 with respect to the year before, thanks to the proceeds from the sale of Isagén and to less Colombian investment abroad. The foregoing would be offset only in part by the reduction in FDI for all sectors in general, but particularly for oil and mining.

Accordingly, in the central scenario, the estimate for the current account deficit in 2016 as a whole is lower than it was three months ago. This implies more of an adjustment in the external balance, in dollars and as a percentage of GDP, in relation to 2015. Therefore, in the most likely scenario, the current account deficit would be around USD 12,624 m, which is 4.5% of GDP (Table 3). This forecast includes the effect reference prices for export commodities would have on the different accounts in the external balance, as well as the impact of the slowdown in the Colombian economy, as mentioned at the beginning of this section.

*A current account deficit at around 4.5% of GDP, with an approximate value of USD 12,600 m, is estimated for 2016 as a whole.*

As in the previous edition of this report, different balance-of-payments forecast scenarios were considered for all of 2016. These scenarios are associated with the terms and availability of external financing for the domestic economy, as well as the projections on commodity prices and the growth of our trading partners, as outlined in the first part of this chapter. The different assumptions about these and other factors determine the breadth of the forecast range for the current account deficit, which is estimated at -4.3% to -4.7% of GDP for 2016.

The correction in the external imbalance that began in 2016 should continue during 2017. The current account deficit anticipated for 2017 is around 3.7% of GDP, in a central scenario that includes the assumptions outlined in the first part of this chapter. This would be associated mainly with a decline in the trade deficit for goods, since a better price outlook for the country's main exports is anticipated, as is some recovery for our trade partners (see the first part of this chapter), in addition to low import growth.

As for non-factor services, the trade deficit is expected to be higher in 2017 than in 2016, given added shipping costs due to added import volume and higher oil prices. Moreover, imports of services linked to activity in the petroleum sector are expected to increase, as are insurance payments, given the effect of the so-called "fourth generation" concession projects. In terms of factor income, larger net outflows are forecast for 2017, due to an increase in the profits of foreign companies operating in the mining-energy sector and higher interest payments on the external debt.

In relation to capital flows, resources for FDI in 2017 should be the main source of financing, although not at the levels registered in 2016. It is worth noting that a recovery in investment in mining-energy activity is anticipated. It would include capital inflows related to loans and other external credit (granted mostly by multilateral agencies), bond placements, mainly by the government, and portfolio flows associated with net TES purchases by foreign investors. The latter are expected to be less than they were in 2016.

The current forecast contemplates an increase in the cost of external financing, mainly because of possible hikes in the Fed's interest rate. International markets could become more volatile due, for example, to the measures the new administration in the United States might adopt and the possible decisions on Brexit. These are among the most important factors in that respect.

*The current account adjustment witnessed in 2016 would continue during 2017, a year when the deficit would be close to 3.7% as a proportion of GDP.*

Uncertainty about external economic conditions and the availability of financing, as described in the first part of this chapter, define a forecast range for the current account deficit in 2017 that would be between 3.0% and 4.4% of GDP.

# II. Domestic Growth: the Current Situation and Short-Term Outlook

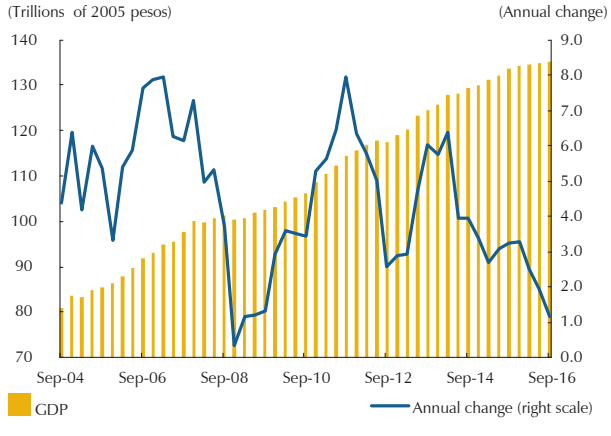
**The Colombian economy slowed during the third quarter, when it grew by 1.2%.** This is less than what was expected three months ago. The weaker performance is explained, in part, by the presence of several supply shocks that were not fully anticipated.

**With respect to the different branches of the economy, a high point** was the momentum in construction and financial services. On the contrary, mining activity, agriculture, transportation and supplied electricity, gas and water exhibited setbacks that are partly explained by the trucker strike.

**The data at hand for the fourth quarter suggest economic activity would have expanded** at a faster pace than it did three months ago, but less so than during the first half of the year.

## A. GDP PERFORMANCE DURING THE THIRD QUARTER OF 2016

Graph 18
Gross Domestic Product
(Seasonally adjusted)




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

The latest GDP figures published by the National Bureau of Statistics (DANE) show economic activity increased 1.2% during the third quarter of 2016 (Graph 18). This figure is at the bottom of the forecast range outlined in the previous *Inflation Report* (between 1.0% and 2.2%, with 1.6% being the most probable rate). Accordingly, the annual growth rate has decline for three consecutive quarters. Compared to the previous quarter, GDP rose by 0.3%, which represents a 1.3% variation in annualized terms.

The new slowdown occurred in a context where supply shocks in the transport sector (particularly the trucker strike) added to the anticipated eco-

*Various supply shocks in the third quarter, such as the trucker strike, negatively affected economic performance.*

nomic adjustment in response to lower terms of trade and less national disposable income. Also, consumer inflation in the third quarter would have continued to undermine the purchasing power of household income in Colombia (in real terms), even though consumer inflation has subsided after reaching several high points during the year.

Domestic demand posted an annual decline in the third quarter of 2016 (Table 4), mainly due to less gross capital formation. Consumption also slowed more than was anticipated in earlier editions of this report. On the other hand, net exports contributed positively to GDP growth, although both exports and imports have deteriorated.

The individual behavior of the components of GDP suggests domestic demand performed poorly. On the one hand, private consumption slowed in a generalized way, except for the consumption of durables, which contracted but less so than during the first half of the year. In this sense, higher prices

Table 4
Real Annual GDP Growth, by Type of Expenditure

| | 2015 | | | | 2015 | 2016 | | | Contributions to annual growth |
|---|---|---|---|---|---|---|---|---|---|
| | I Qtr. | II Qtr. | III Qtr. | IV Qtr. | Full year | I Qtr. | II Qtr. | III Qtr. | (III Qtr. 2016) |
| **Total consumption** | **4.4** | **3.8** | **4.4** | **3.1** | **3.9** | **2.9** | **2.3** | **1.3** | **1.0** |
| Household consumption | 4.6 | 3.9 | 4.3 | 2.6 | 3.8 | 3.3 | 2.4 | 1.1 | 0.7 |
| Non-durable goods | 4.2 | 4.2 | 4.7 | 3.4 | 4.1 | 3.4 | 2.7 | 1.2 | 0.3 |
| Semi-durable goods | 5.8 | 2.9 | 6.9 | 3.0 | 4.6 | 3.6 | 2.8 | 0.2 | 0.0 |
| Durable goods | 10.3 | 2.7 | (7.0) | (12.0) | (2.0) | (5.2) | (5.1) | (3.1) | (0.1) |
| Services | 4.3 | 4.2 | 4.7 | 3.6 | 4.2 | 4.1 | 2.9 | 1.5 | 0.5 |
| Final government consumption | 2.2 | 2.3 | 3.1 | 3.8 | 2.8 | 1.6 | 1.6 | 1.2 | 0.2 |
| **Gross capital formation** | **4.3** | **1.7** | **4.0** | **0.6** | **2.6** | **(3.3)** | **(3.1)** | **(7.3)** | **(2.2)** |
| Gross fixed capital formation | 5.9 | 4.2 | 0.9 | 0.3 | 2.8 | (3.1) | (1.9) | (3.4) | (1.0) |
| Agriculture, forestry, hunting and fishing | (6.7) | (2.1) | 0.7 | 2.7 | (1.5) | (0.7) | 0.0 | (1.2) | (0.0) |
| Machinery and equipment | 0.7 | (2.0) | (0.0) | (5.6) | (1.8) | (11.1) | (7.6) | (14.7) | (1.3) |
| Transport equipment | 29.7 | 12.9 | 8.7 | (5.9) | 9.4 | (18.8) | (5.0) | (15.5) | (0.6) |
| Construction and buildings | 2.1 | 10.2 | (8.2) | 8.1 | 2.7 | 11.5 | 2.7 | 11.3 | 0.7 |
| Civil works | 3.3 | 6.0 | 6.6 | 5.1 | 5.2 | 0.3 | (0.5) | 2.2 | 0.2 |
| Services | 1.2 | 4.6 | (3.3) | 1.4 | 0.9 | 1.9 | 0.3 | (1.2) | (0.0) |
| Domestic demand | 4.3 | 3.4 | 4.3 | 2.4 | 3.6 | 1.5 | 1.0 | (1.1) | (1.3) |
| Total exports | 2.6 | (1.7) | (4.0) | 0.6 | (0.7) | 2.3 | 4.1 | (1.5) | (0.2) |
| Total imports | 8.9 | 1.1 | 8.8 | (2.7) | 3.9 | (2.5) | (1.4) | (8.4) | 2.5 |
| **GDP** | **2.7** | **3.1** | **3.3** | **3.3** | **3.1** | **2.5** | **2.0** | **1.2** | **1.2** |

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

*Aggregate consumption weakened in the third quarter, which was helped by the increase in inflation and to tighter terms for financing.*

in the economy, accumulated depreciation of the peso against the dollar, and tighter terms for domestic financing would have dampened household consumption. On the other hand, public consumption saw poor growth, even less than in the first half of the year, which would have been consistent with a lower level of spending by the national government and by regional and local administrations. This is common during the first year of local administration.

On the other hand, investment fell sharply, especially with respect to transport equipment and machinery and equipment. This would have been due largely to depreciation of the peso, the transmission of monetary policy adjustments to market interest rates, low international prices for mining products, and the adjustment in the current account deficit that has been observed throughout the year (see Chapter 1). In contrast, investment in the construction of buildings and civil works increased. This performance, on the part of both items, would have been the result of the government's social housing programs and the resources spent on infrastructure.

Lastly, the behavior of exports closely followed what was reflected by poor foreign sales of traditional goods, particularly oil and coffee. The good performance of coal and refined products did not compensate for this. In the case of imports, the largest setbacks were in purchases of capital goods for industry, transportation equipment, and petroleum refining. This was a reflection of what happened to the import-intensive component of domestic demand and the process of import substitution after Reficar reopened.

On the supply side, the sectors registering the highest economic growth during the third quarter of 2016 were construction (5.8%) and financial services (3.9%) (Table 5). On the other hand, activities related to mining (-6.1%), supplied electricity, gas and water (-1.8%), agriculture (-1.7%), and transport (-1.2%) contracted. Commerce also posted weak performance (0.1%). It is important to point out that the deterioration in several sectors is explained, in part, by the lagging impact of El Niño weather and by the serious supply shock caused by the trucker strike (Box 1, p. 25-27).

*The effects of the trucker strike and the lagging impact of El Niño weather affected activities such as agriculture, transport and supplied electricity, gas and water.*

The momentum in construction was explained mainly by good performance on the part of building construction (11.0%). This is due to a major increase in non-residential buildings (22.8%) and to activities for maintenance and repair (2.7%). However, it should be noted there was a low base of comparison with respect to a year ago, when this sector declined by 8.8%. As for civil works (1.9%), the component represented by roads and other engineering projects bolstered the sector and offset the decline in construction for mining. The payments made by territorial agencies explain much of this subsector's contribution to Colombia's economic growth.

Table 5
Real Annual GDP Growth by Branch of Economic Activity

| | 2015 | | | | 2015 | 2016 | | |
|---|---|---|---|---|---|---|---|---|
| | I Qtr. | II Qtr. | III Qtr. | IV Qtr. | Full Year | I Qtr. | II Qtr. | III Qtr. |
| Agriculture, forestry, hunting and fishing | 2.2 | 2.4 | 3.0 | 5.8 | 3.3 | 0.7 | (0.1) | (1.7) |
| Mining and quarrying | 0.4 | 4.2 | (0.5) | (1.5) | 0.6 | (4.6) | (7.1) | (6.1) |
| Manufacturing industry | (2.0) | (0.1) | 3.2 | 3.9 | 1.2 | 5.3 | 6.0 | 2.0 |
| Electricity, gas and water | 2.5 | 1.6 | 3.8 | 3.8 | 2.9 | 2.9 | (0.8) | (1.8) |
| Construction | 3.1 | 8.1 | 0.2 | 4.6 | 3.9 | 5.2 | 1.0 | 5.8 |
| Buildings | 1.4 | 9.0 | (7.9) | 7.1 | 2.1 | 10.9 | 2.8 | 11.0 |
| Civil works | 4.7 | 6.5 | 7.1 | 3.2 | 5.4 | 0.4 | (0.4) | 1.9 |
| Retail, repairs, restaurants and hotels | 4.6 | 3.5 | 4.7 | 3.8 | 4.1 | 2.7 | 1.4 | 0.1 |
| Transport, storage and communication | 2.6 | 0.4 | 2.2 | 0.7 | 1.4 | 1.8 | 0.1 | (1.2) |
| Financial, real estate and corporate services | 4.8 | 3.8 | 4.2 | 4.3 | 4.3 | 3.8 | 4.6 | 3.9 |
| Social, community and personal services | 2.4 | 2.5 | 3.4 | 3.5 | 2.9 | 1.7 | 2.3 | 1.8 |
| Subtotal –value added | 2.5 | 2.9 | 3.0 | 3.4 | 3.0 | 2.5 | 1.9 | 1.1 |
| Taxes minus subsidies | 4.1 | 4.0 | 4.6 | 3.4 | 4.0 | 2.3 | 2.8 | 1.8 |
| GDP | 2.7 | 3.1 | 3.1 | 3.4 | 3.1 | 2.5 | 2.0 | 1.2 |

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

Another sector that exhibited significant momentum was financial services; its share of GDP is close to 20%. The total for the sector was up by 3.9%, mainly due to a 7.2% rise in financial intermediation and a 3.4% increase in real estate and home rental activities.

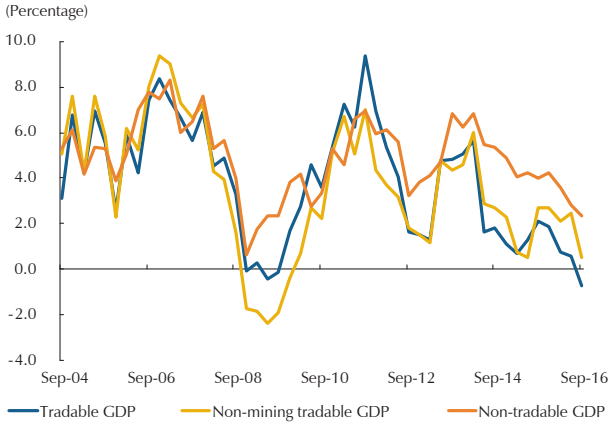
Although the manufacturing industry performed positively once again, it also suffered the negative impact of the trucker strike and its growth was due mainly to good performance in terms of oil refining (30.3%). Therefore, while the total for the sector rose 2.0%, if oil refining is excluded, the other manufacturing segments declined by 1.9%. As for mining, the third quarter witnessed the fifth consecutive annual decline in sector production. Mining contracted by 6.1% and is the branch that has deteriorated the most so far this year. Performance within the sector was mixed. The increase in coal production (16.9%) was offset by important declines in the production of oil (-12.7%), metallic minerals (-1.3%) and non-metallic minerals (-2.3%).

Agricultural activity declined 1.7% year-on-year. This was due to a 15.4% annual reduction in coffee production and a drop in permanent crops (-4.0%)

and the slaughter of animals (-0.3%). The deterioration in permanent crops includes declines in seeds and oleaginous fruits (-20.6%), beverage plants (-17.6%), and fruits and nuts (-3.1%). In contrast, transitional crops performed well and expanded at an annual rate of 14.1%, with cereals and legumes being the most predominant groups.

Supplied electricity, gas, and water were down as well, contracting 1.8% during the third quarter of the year. This performance is explained, in part, by the lagging impact of El Niño weather and by the trucker strike, which affected the performance of several branches of the economy and, hence, the demand for unregulated energy. In addition, and directly related to the trucker strike, transport activity declined by 1.2%; this, in turn, is associated with the effects of the strike on industrial activity, agriculture and commerce.

Graph 19
GDP in the Tradable, Non-mining Tradable and Non-tradable Sectors
(Annual growth)




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

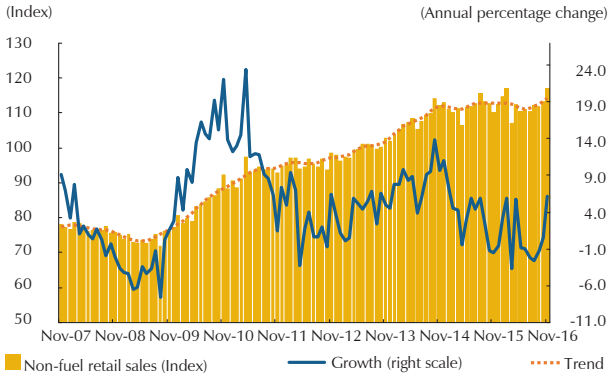
In this environment, both tradable and non-tradable GDP showed some deterioration. The former went from 0.6% annual growth to a contraction of 0.7% between the second and third quarters of 2016. When mining is excluded, GDP in the other tradable sectors rose 0.5% (compared to 2.5% last quarter). Non-tradable GDP increased 2.3% in the third quarter of 2016, having grown 3.2% during the first half of the year (Graph 19).

## B. THE GDP OF THE FOURTH QUARTER OF 2016 AND OF ALL 2016

According to the data at hand, economic activity would have continued to increase more slowly than during the first six months of last year (2.2%), although somewhat better than in the third quarter (1.2%). This performance would have occurred in a context where the supply shocks experienced during the third quarter would have dissipated. In addition, international prices for Colombia's raw material exports increased in the margin, which would have meant higher terms of trade and some relief in the momentum in national disposable income. This occurred in a scenario of volatility in the exchange rate and on international financial markets. At the local level, inflation continued to subside, while public spending by regional and local governments would have accelerated.

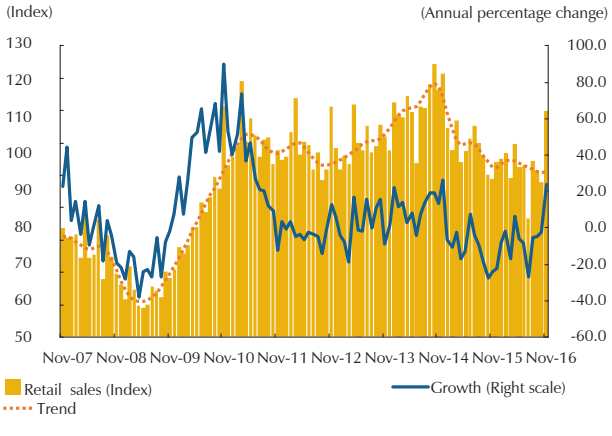
The GDP forecast for the fourth quarter assumes almost no growth in domestic demand. Total consumption would have accelerated somewhat, due to both private and public consumption. However, investment would have

Graph 20
Monthly Retail Trade Survey
(Total Non-fuel Retail Sales, Seasonally Adjusted)



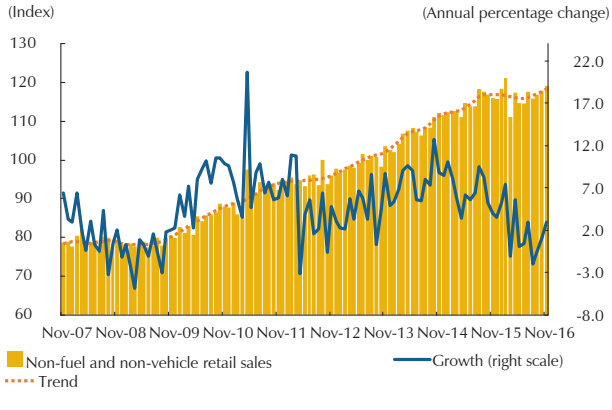

Sources: DANE; calculations by *Banco de la República*

Graph 21
Monthly Retail Trade Survey
(Seasonally adjusted retail automobile sales)




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

Graph 22
Monthly Retail Trade Survey (Total Non-fuel and Non-vehicle Retail Sales, Seasonally Adjusted)



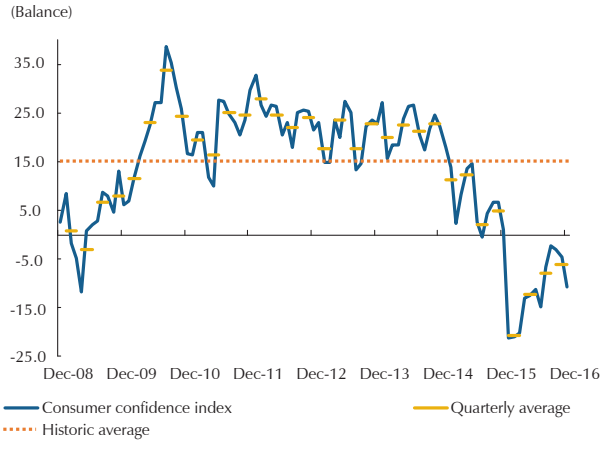

Sources: Colombian Automotive Committee (ANDI, Fenalco and Econometría); calculations by *Banco de la República*

continued to decline for the fourth consecutive quarter. Net exports would have contributed to the expansion in the economy, owing to an increase in foreign sales of traditional goods and services, while there would have been a further drop in imports, particularly of imports of capital goods.

The forecast in this report takes into account what is suggested by a variety of short-term indicators. As for consumption, according to DANE's Monthly Retail Trade Survey (EMCM), retail sales rose 6.1% in November compared to the same month in 2015 (Graph 20). The October-November aggregate increased by 3.4%, which represents an acceleration with respect to the third quarter (-2.0% annually). This improvement in retail sales performance was due largely to vehicles and other durable goods. In November, automotive vehicle sales were up by 23.8% year on year (Graph 21), thanks to the momentum sparked by the XV International Auto Show in Bogotá. This being the case, these sales rose 11.2% for the October-November aggregate, showing quite a recovery compared to -12.7% in the third quarter. When vehicle sales are excluded, the remaining aggregate rose 3.0% annually in November (Graph 22), bringing annual growth for the two-month aggregate to 2.0%, which is slightly higher than 0.1% in the third quarter. Sales of household appliances and furniture constitute the item that contributed most to this increase, with a contribution of 2.6 pp. The other items contributed little to the improved performance of the aggregate.

Other ancillary indicators of consumption suggest similar trends, with a slight recovery during the fourth quarter. Although the Fedesarrollo Consumer Confidence Index (CCI) fell in December with respect to the previous four months - below the averages calculated for the third quarter and since November 2001 (Graph 23) - the average for the fourth quarter of 2016 was slightly higher than the aggregate for the third. The decline in the CCI was concentrated in medium- and long-term expectations, more than in the component

Graph 23
Consumer Confidence Index and Quarterly Average



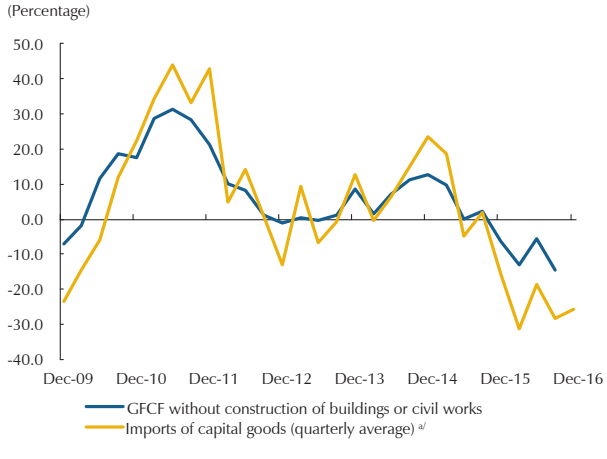

Source: Fedesarrollo.

representing current household economic conditions. Something similar occurred with *Banco de la República*'s Monthly Survey of Economic Expectations (MSEE) concerning the sales balance by November. The trend component of that series suggested growth in private consumption was somewhat higher during the fourth quarter, compared to the third, but would still be weak.

As for financing, the anticipated increase in private consumption also is consistent with a slightly higher pace of growth in household debt than in previous quarters. Specifically, the total nominal (and real) consumer loan portfolio accelerated slightly between October and November, going from 12.2% average annual growth in the third quarter to 12.8% in the fourth quarter (5.8% to 7.0% in real terms, respectively). Even so, interest rates (nominal and real) continue to increase in the margin.

For the fourth quarter, *Banco de la República*'s technical staff is forecasting a mediocre increase in private consumption, but higher than the figure posted for the third quarter (1.1%). Improved sales of vehicles and household appliances would have boosted sales of durable goods, so positive growth in this component of GDP is forecast for the fourth quarter of the year (after having declined for five consecutive quarters). This performance could have been related to some sort of consumption in advance by Colombian families, since the prices for these goods were expected to rise due to the tax reform.

Graph 24
Imports of Capital Goods for Industry and Transport Equipment (Real) and GFCF Excluding construction of buildings and Civil Works
(Annual change)




Note: The figure for June of 2016 is a projection based on preliminary data obtained from DIAN.
a/ Figures in real terms.
Sources: DANE (national and foreign trade accounts) and DIAN; calculations by *Banco de la República*.

The figures at hand suggest gross fixed capital formation, apart from building construction and civil works, would have registered new declines. The series published by DANE on imports of capital goods and the foreign trade bulletin published by the National Tax and Customs Office (DIAN) in December show reductions in imports in dollars with respect to goods of this type. When converted into real pesos, a contraction is also observed, which reinforces the forecast for reductions in this investment segment during the fourth quarter (Graph 24). The series on the balance of investment expectations by November from the MSEE conducted by *Banco de la República* suggests something similar.

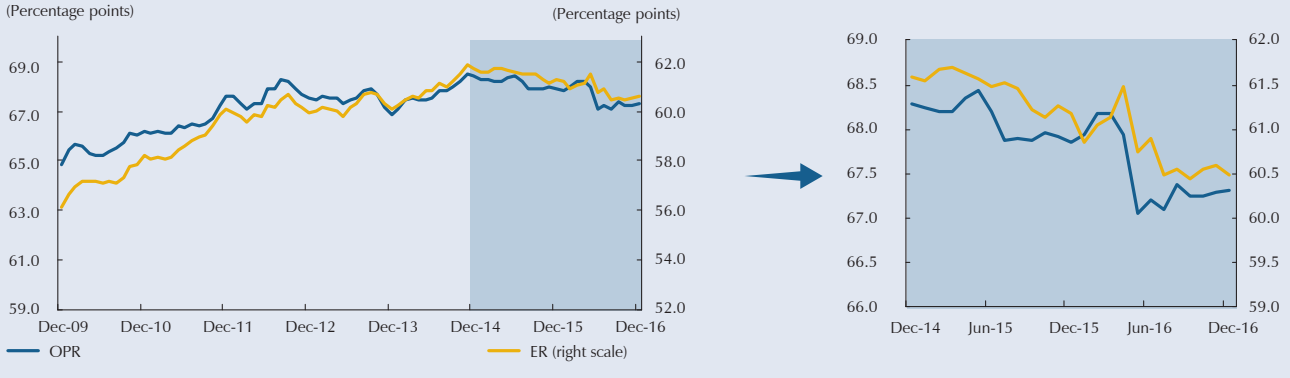
The job market indicators continued to deteriorate during the fourth quarter of 2016, although less so than was anticipated in previous editions of this report. The unemployment rate (UR), in particular, increased due to a decline in the occupation rate (OR), even though the overall participation rate (OPR) was down as well (Graph A).

The UR for the moving quarter ended in December increased compared to the same period last year. It was 8.2% nationwide and 9.2% in the municipal seats and the thirteen major metropolitan areas. On the other hand, the UR in the rural area during the same period declined year on year to 4.4% (Graph B).

When discounting the seasonal effect and considering information on the moving quarter ended in December, the UR nationwide and in the thirteen major metropolitan areas continue to trend slightly upward, although more moderately in the case of the nationwide UR (Graph C). Both these series have been volatile during the past year, given the fluctuations observed in the OPR, which makes it difficult to identify its trend clearly.

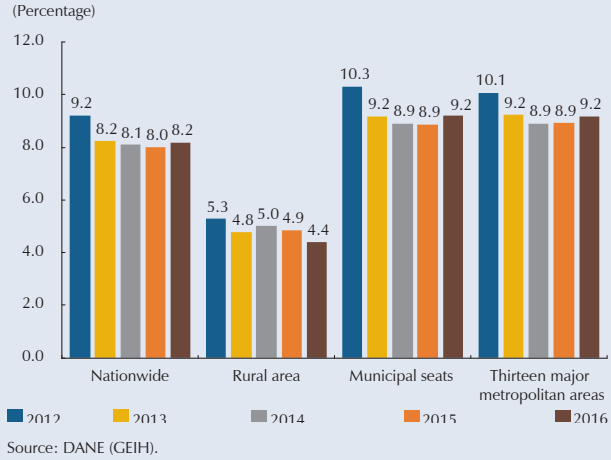
The decline in the ER is due to less growth in the number of employed persons, which rose 0.4% annually nationwide and in the thirteen areas (Graph D, panels A and B). It should be noted that the number of

Graph A
Overall participation rate (OPR) and Employment Rate (ER) (seasonally adjusted, thirteen major metropolitan areas)



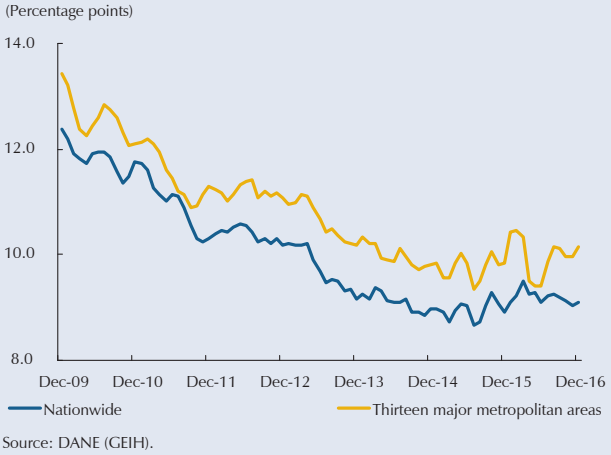

Source: DANE (GEIH).

Graph B
Unemployment Rate
(July-August-September moving quarter)




Source: DANE (GEIH).

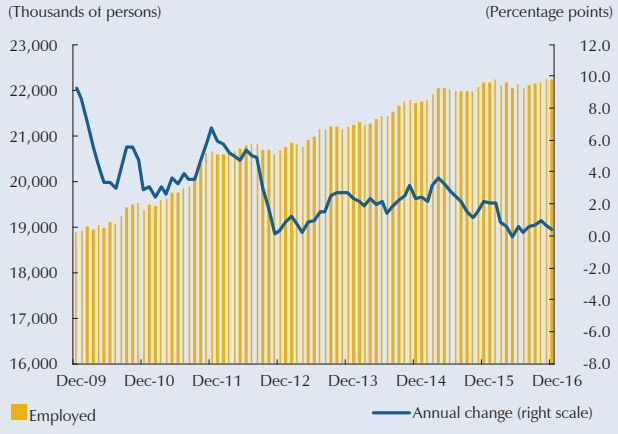
Graph C
Unemployment Rate (UR)
(Seasonally adjusted moving quarter)



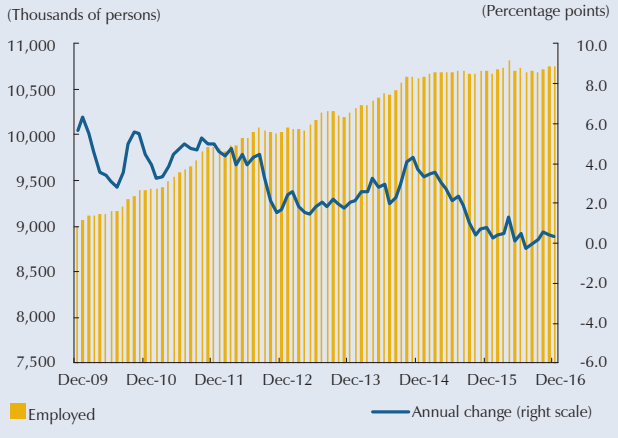

Source: DANE (GEIH).

Graph D
Number of Employed and Annual Change

1. Nationwide

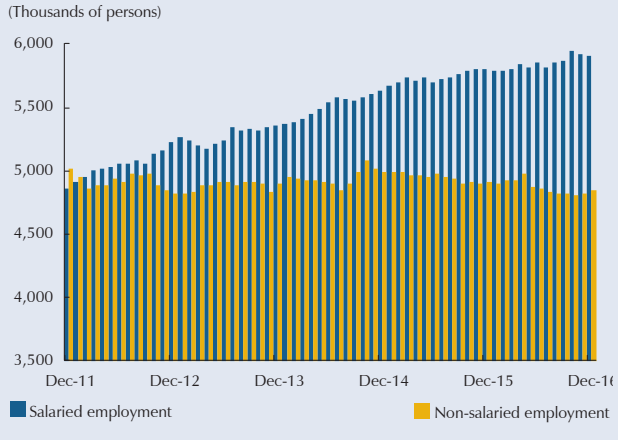



2. Thirteen major metropolitan areas




Source: DANE (GEIH).

Graph E
Employment by Type of Occupation (Thirteen major metropolitan areas, seasonally adjusted moving quarter)




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

employed persons has remained stagnant throughout much of 2016, both nationwide and for the thirteen metropolitan areas (in the analysis with seasonally adjusted series).

The lower annual rate of growth in employment is due to fewer non-salaried workers, since the rate of annual growth in salaried employment remained positive. During the October-December moving quarter, the latter was 1.8%, while non-salaried employment declined by 1.4% (Graph E).

The stagnation in employment has been consistent with the slowdown in economic activity, although its performance has been better than expected. If economic activity continues to weaken, the deterioration in job market indicators could become more pronounced.

*Investment in construction would continue to contribute to growth during the fourth quarter.*

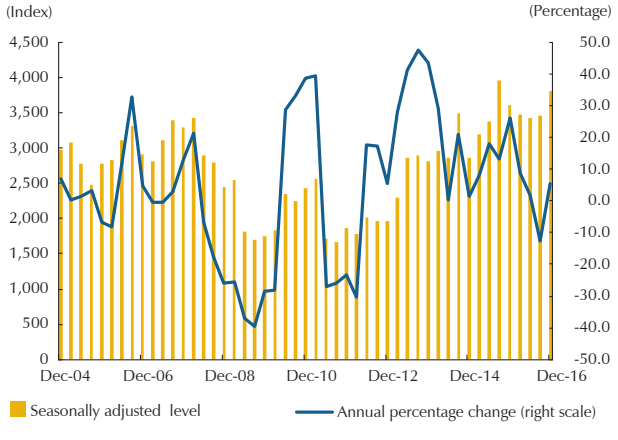
Annual growth that implies higher levels compared to the third quarter is forecast for investment in construction, both buildings and civil works. In the case of civil works, an important increase is expected, the highest in the year, partly because of a low base of comparison for the same period last year and given the increase in spending expected of regional and local administrations.

In terms of foreign trade, the figures published by DANE with respect to exports in dollars by November, coupled with the information in the DIAN bulletins up to December, point to real growth in this component of GDP. Exports of services and traditional goods would have contributed to the growth in real exports. On the import side, the same sources of information allow us to foresee a real contraction in purchases abroad, reflecting the reductions that would have occurred mainly in the demand for capital goods.

On the supply side, the figures at hand point to performance that would be less favorable in the fourth quarter of 2016 than during the first half of the year, but slightly better than it was three months ago. The economic situation is expected to return to normal in sectors such as transport and commerce, once the effects of the trucker strike have been reduced.

According to the National Federation of Coffee Growers, production in October-December amounted to 4,367,000 sacks. This implies 5.4% growth and a significant recovery compared to what was observed three months ago (- 12.2%) (Graph 25). On the other hand, the figures up to November show cattle slaughtering continues to decline, although at a lower rate than during the third quarter (-9.9% versus -13.7%). Therefore, agricultural production is expected to improve during the final quarter of the year compared to the situation observed between July and September.

Graph 25
Coffee Production
(Quarterly and annual growth)

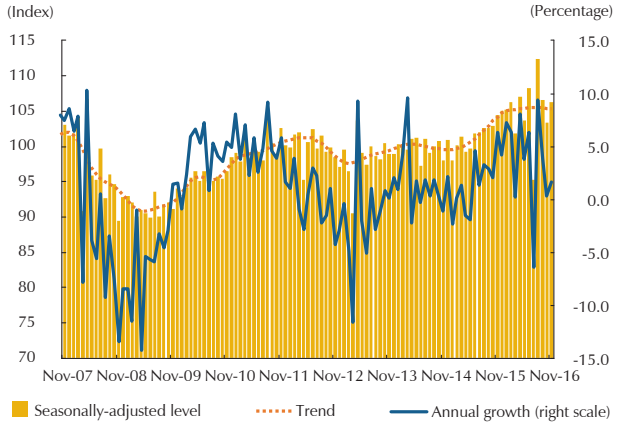



Sources: Federación Nacional de Cafeteros; calculations by *Banco de la República*

According to the DANE Monthly Manufacturing Survey (MMS), the manufacturing industry posted 1.6% annual growth in November. When excluding oil refining, the figure was similar (1.4%). Therefore, between October and November, the sector continued to slow and grew 1.0% in annual terms, after posting 2.3% average growth during the third quarter.

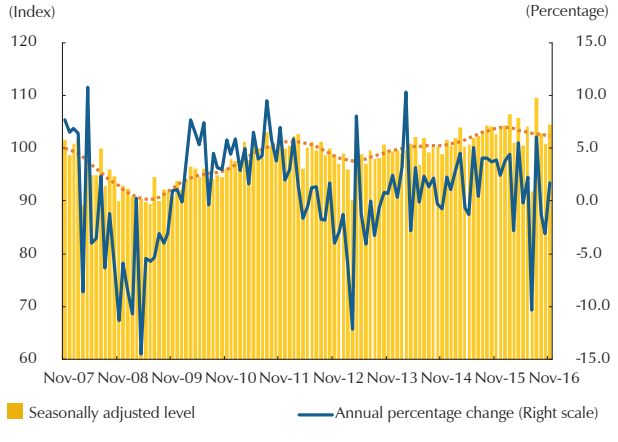
The item related to oil refining rose 2.7% in November, which is far different from the figures observed during the year (around 20%, on average). Although the new facility at the Cartagena Refinery and its supply chains in the sector will continue to contribute to economic growth in the months ahead, the ef-

Graph 26
Total Real Manufacturing Industry Production
(Seasonally adjusted series, trend component and annual growth)




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

Graph 27
Real Industrial Production Excluding Oil Refining
(Seasonally adjusted series, trend component and annual growth)




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

fects of a higher base of comparison (for the period when the refinery was closed) will lessen the high growth figures observed for this sector. On the other hand, a look at the trend component of the industry series (total and non-refining) shows activity has weakened in the recent months, despite better performance by our trading partners and the impulse accumulated depreciation has provided to industrial exports (graphs 26 and 27).

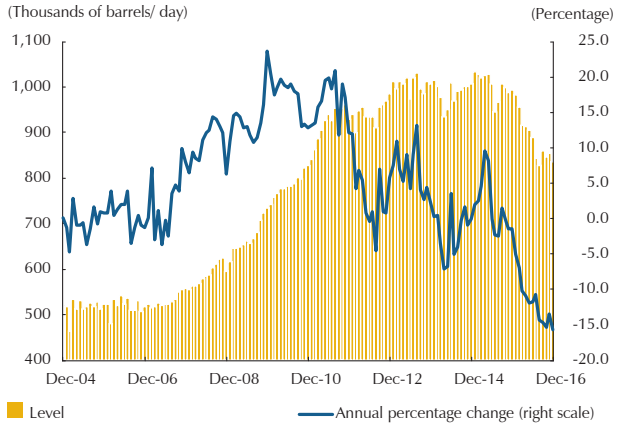
Additionally, with information up to December, the Fedesarrollo Business Opinion Survey for the industrial sector showed a slight deterioration in the inventory indicator and an increase in orders. At the same time, expectations for three months ahead deteriorated in December, but in an environment where the volatility of the indicator is high and makes it impossible to ratify any clear trend. As a result, industrial confidence fell during the last three months with respect to the levels registered the quarter before.

In the same context, the figures for oil production confirm further deterioration in the mining sector. In December, crude oil production came to 837 thousand barrels per day (kbpd), which implies a sizeable annual drop of 15.7%. In quarterly terms with respect to the October-December period, production averaged 846 kbpd and declined by 14.8% year on year (Graph 28).

The foregoing, as a whole, points to low GDP growth during the fourth quarter, although higher than in the third quarter. Accordingly, the technical staff at *Banco de la República* estimates annual GDP growth in the fourth quarter would have been between 1.0% and 2.0%, with 1.5% being the most likely figure. The breadth of the forecast range is consistent with the uncertainty related to how government consumption and civil works will perform, among other factors.

These figures implicitly assume a GDP growth forecast of 1.8% for 2016 as a whole, and a forecast range between 1.6% and 2.0%. The breadth of the range and its midpoint were revised downwards from the previous *Inflation Report* (from 1.5% to 2.5% and centered at 2.0%). This forecast is consistent with a lower current account deficit being anticipated, compared to the one in 2015, and with a drop in terms of trade.

Graph 28
Oil Production
(Level and annual growth)




Source: Agencia Nacional de Hidrocarburos (ANH); calculations by *Banco de la República*

In general, the adjustment in domestic demand throughout 2016 originated with: 1) the real effect the terms-of-trade shock had on disposable income, and 2) the change in relative prices in the economy, given the various supply shocks (El Niño weather and the trucker strike). In this sense, adjustments in the private and public components of the economy were made throughout the year. In other words, government consumption increased at a low rate, below those observed over the past decade, while the largest adjustments in private demand were evident in the performance of investment in tradable capital goods (machinery and transportation equipment), and in the consumption of durables.

The foreign trade accounts also would have reflected the shift in the Colombian economy towards tradable production. Real exports increased during the year as a whole, although at a slow pace, despite accumulated depreciation of the exchange rate, partly because of weak external demand. On the other hand, imports contracted, which is consistent with the behavior of the import-intensive component of domestic demand.

## Box 1
## SUPPLY SHOCKS AND THEIR IMPACT ON ECONOMIC ACTIVITY

Daniel Parra
Mariana Escobar
Carlos Daniel Rojas*

In an economic cycle, one sees supply and demand shocks that can affect how agents in the market decide to allocate resources. Determining the impact, transmission and nature (transitory or permanent) of those shocks poses a challenge to economists, and understanding them can be very useful in economic policy-making. Being able to fathom transmission channels allows us to appreciate to what extent shocks can be extended or restricted in the short term, and how these effects can influence the long term, as well as their propagation towards relevant variables such as prices and quantities (Campbell and Mankiw , 1987).

The Colombian economy has suffered several supply and demand shocks in recent years, the most notable being the shock related to the drop in the price of oil in 2014. This, in turn, affected terms of trade and national income during 2015 and 2016. However, our focus will be on several transitory supply shocks that affected economic activity in 2016, particularly those related to El Niño weather and the trucking strike. It is important to note that the concept of a transitory supply shock that we will attempt to evaluate in this section involves an exogenous change in certain relative prices and production that does not affect employment levels or medium- or long-term expectations. However, in some cases, it is reflected in a reduction in the extent to which companies use installed capacity.

The trucking strike [1] that paralyzed ground transportation activities between the second and third quarters of 2016 is a clear example and one that significantly and indirectly affected activities such as industry, commerce and agriculture. To show the impact of that event, we will use as the case of industry as an example. We will begin by examining the monthly data for the 33 sectors covered by the Monthly Manufacturing Survey, with monthly figures from January 2001 to December 2016.

The proposed exercise includes the following steps: 1) use of econometric methods to detect atypical data in order to identify shocks of considerable magnitude (Dixon, 1950)[2]; 2) a breakdown of the statistical series into trend-cycle, seasonality and irregular components, and 3) an assessment as to whether the dates of the trucking strike coinciding with those for which the method was able to identify atypical shocks.

Once this was done, a counterfactual exercise was proposed in which we tried to correct the series in each sector where the dates of the atypical data were in line with those of the trucking strike. With that in mind, each series for the 33 manufacturing sub-branches was seasonally adjusted, assuming additive seasonality. Then, in those sectors where a shock was identified, the irregular term estimated for the series was added to the original series and the seasonal adjustment process was performed again to see how the disruption would have affected the cyclic-trend component. Although this is a strong assumption, as 100% of the shock is presumed as attributable to the strike, it is part of the strategy to "clean" the series of such events.

A model of the type (Melo and Parra, 2014: Abril et al., 2016) is estimated in this way:

$$Y(t) = \sum_{i=1} \alpha_i D_i(B) d_i(t) + \sum_{i=1} \beta_i cal_t(t) + x(t) \qquad [1]$$

Where $Y(t)$ is the original series (to which the procedure is applied), $B$ is the lag operator, $d_i(t)$ is a dummy variable that indicates the position of the $i$th atypical data (outlier), and $D_i(B)$ is a polynomial in which the type of

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* Mr. Parra is a professional leader with the Programming and Inflation Department of the Division of Economic Studies. Ms. Escobar and Mr. Rojas are student interns with the same department. The opinions expressed in this section are theirs alone and imply no commitment on the part of *Banco de la República* or its Board of Directors

1 The trucking strike lasted from the moment it was called, on midnight on June 6, 2016, until the early morning of July 22, 2016 when the truckers reached an agreement with the government.

2 Dixon's (1950) criterion for identifying extreme or atypical values is to compare the difference between the possible atypical data and its nearest neighbor to the remaining range of the sample; that is, to determine the fraction of the total range that is attributable to a supposed atypical value. This procedure is referred to as "the $Q$ test" and is fairly reliable for small samples (Rorabacher, 1991). The ratio ($Q$) to calculate and compare the respective critical values, having ordered values so that $x_1 < x_2 < \ldots < x_{n-1} < x_n$, is:

$$Q = \frac{x_2 - x_1}{x_n - x_1} \left( 0 \frac{x_n - x_{n-1}}{x_n - x_1} \right)$$

outlier is reflected.[3] With the variable, *cal*, the calendar effects are denoted as business days or Easter Week; $\beta_i$ is the associated coefficient. Finally, the term $x(t)$ follows an Arima model [4] of the following type, which complies with the traditional assumptions.[5]

$$\varphi(B)\delta(B)x(t) = \theta(B)a(t) \qquad [2]$$

Where

$$\varphi(B) = (1+ \phi_1 B +...+ \phi_p B^p)\,(1+\Phi_1 B^S + ...+ \Phi_P L^{SxP})$$

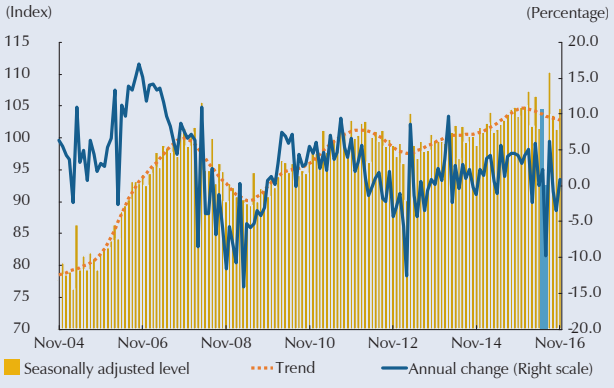
$$\delta(B) = (1 - B)^d (1 - B)^D$$

$$\theta(B) =(1+\theta_1 B+...+\theta_q B^p)\,(1+\Theta_1 B^S+...+\Phi_Q L^{SxQ}) \qquad [3]$$

Using this econometric exercise, statistical evidence was found to consider the data from sixteen sectors where statistically atypical values associated with the trucking strike. After the figures for these sixteen subbranches are corrected and the result is added, the non-oil-refining industry would have fallen by 3.7% for the month of July 2016 (-9.8%, according to the official figures from DANE). Among the most affected manufacturing activities are those related to the production of beverages, leftover foods, wood processing, bakery products, nonmetallic mineral products and footwear (Graph B1.1 and B1.2).

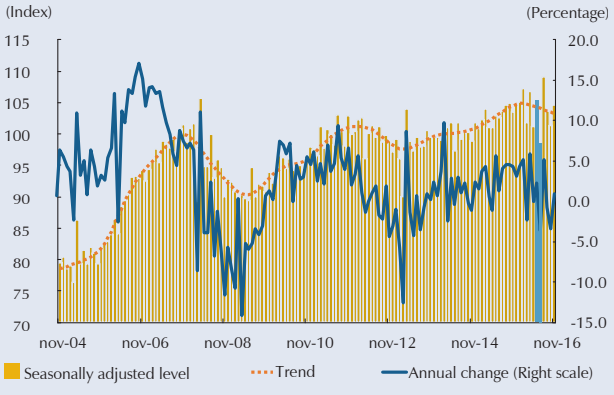
The previous exercise focused on the trucking strike, which was one of the most recent shocks. However, we must not forget the shock related to the severe bout of El Niño weather that affected the Colombian economy during the first half of the year.[6] It is important to remember the reduction in precipitation caused by El Niño led, in turn, to less agricultural supply, which had a transitory impact on food prices (Abril et al., 2016). Then again, this weather phenomenon also affected the

Graph B1.1
Industrial Production Index without Oil Refining
(Seasonally adjusted series, trend and annual change)




Sources: DANE.

Graph B1.2
Industrial Production Index without Oil Refining
(Modified by the proposed exercise)
(Seasonally adjusted series, trend and annual change)




Sources: DANE; authors' calculations

behavior of sectors such as electricity, natural gas and water supplies. In fact, campaigns were conducted by the government and local authorities during the first half of 2016 to promote energy and water conservation as a contingency measure in the face of that situation (Table B1.1).

Using the same methodology as in the previous exercise, an estimate was done on the national accounts, according to branches of activity, with the presence of atypical data being found in the transport and electricity and water supply sectors for the second quarter. The exercise for the industry was included in the monthly survey and its impact on national accounts was estimated. The results of several exercises assuming different weights in the transmission of shocks suggest the negative effect on GDP growth (January- September 2016) would have been between 0% and 0.3% for the entire year (Table B1.2 and Graph B1.3).

3 For an additive outlier (AO), Di (B) = 1; for a transitory change (TC), Di (B) = 1/(1 0.7B), and for a change in level (LS), Di (B)=1 / (1-B).

4 Autoregressive integrated moving average (ARIMA) model

5 Stationarity of the series (polynomials with stable roots) and white noise in model errors, among others.

6 According to the National Oceanic and Atmospheric Administration (NOAA), El Niño occurred in the last quarter of 2015 and was declared by NOAA as severe. The Oceanographic El Niño Index (ONI), which is produced by that agency, was used for the regressions in Table B1.1.

Table B1.1
Granger Causality Tests (1969)

| | Annual change | | |
|---|---|---|---|
| | 1 lag | 2 lags | 3 lags |
| ONI does not Granger-cause agriculture | 0.647 | 0.7901 | 0.2209 |
| ONI does not Granger-cause manufacturing related to food | 0.2115 | 0.1663 | 0.0074 |
| ONI does not Granger-cause electricity, natural gas and water | 0.4173 | 0.0986 | 0.1005 |

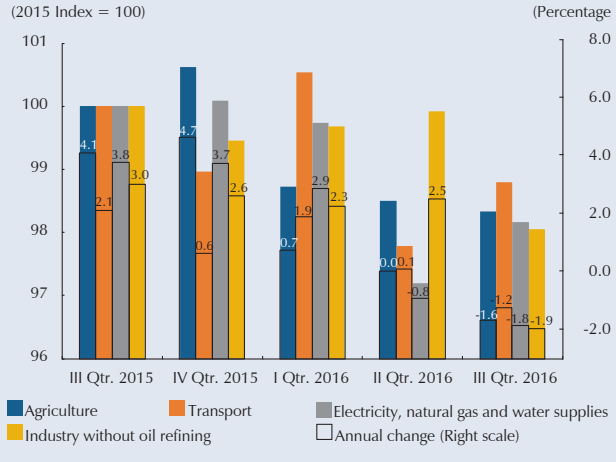
Note: The shaded values pertain to significant effects.
Source: DANE; authors' calculations.

Table B1.2
Growth in 2016 by the Third Quarter[a/]

| Sectors | Participation | Original | Modified |
|---|---|---|---|
| Agriculture | 6.2 | (0.3) | 1.8 |
| Mining and quarrying | 7.1 | (5.9) | (5.9) |
| Manufacturing industries | 10.9 | 3.9 | 4.7 |
| Electricity, natural gas and water supplies | 3.5 | 0.0 | 1.7 |
| Construction | 7.3 | 4.0 | 4.0 |
| Commerce, repairs, restaurants and hotels | 12.1 | 1.4 | 1.4 |
| Transport | 7.2 | 0.3 | 1.4 |
| Financial establishments | 20.1 | 4.3 | 4.3 |
| Social, community and personal services | 15.3 | 2.1 | 2.1 |
| Total taxes | 9.8 | 2.4 | 2.4 |
| GDP | | 1.9 | 2.2 |

a/ The exercise was done with figures up to the third quarter of 2016, which were published by DANE in December 2016.
Note: The shaded values pertain to the series that were corrected with the methodology outlined in this section.
Source: DANE; authors' calculations.

Graph B1.3
Quarterly Index and Annual Change in Sectoral GDP on the Supply Side




Sources: DANE.

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# III. Recent Developments in Inflation

**Annual consumer inflation and core inflation continued to decline** in the fourth quarter of 2016, but remained over the target range set by the Board of Directors of *Banco de la República*.

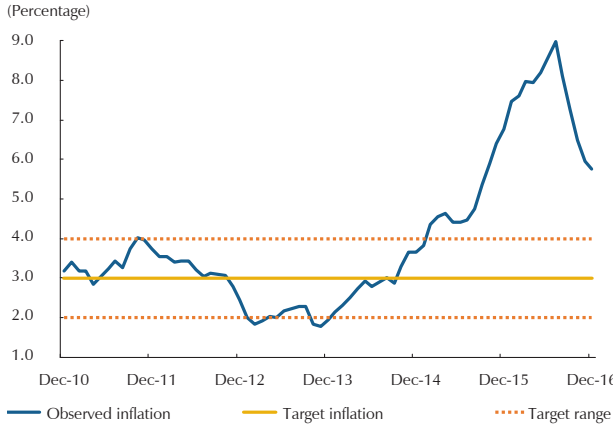
**The effects of peso depreciation and a number of shocks, including several related to the weather**, continued to subside. However, there is still evidence of upward pressure due to the activation of indexing mechanisms, relatively high inflation expectations compared to the long-term target, and wage adjustments that are above the target as well.

**The main groupings that make up the CPI basket** exerted downward pressure during the fourth quarter of 2016. However, the declines in perishable food and in the tradable sub-basket excluding food and regulated items were particularly important.

Annual consumer inflation continued to trend downward during the fourth quarter of 2016 and declined sharply, ending the year at 5.75% versus 7.27% in September and 6.77% in December 2015. This being the case, and as expected, the steep upward trend in inflation observed since mid-2015, caused largely by temporary supply shocks that led to a high point in July of this year, came to an end (Graph 29 and Table 6).

Overall, the results for the fourth quarter were more favorable than anticipated in the previous *Inflation Report* and by the market. This conclusion applies to the consumer price index (CPI) overall and to most of its components. However, the decline was concentrated in October and November, and was less in December, when the figures tended to surpass market expectations. On the other hand, despite this encouraging performance, it is important to remember that consumer inflation in December 2016 exceeded the BDBR's 3.0% target for the third year in a row. As will be illustrated later, this situation had an impact on expectations and the extent of indexing, which tended to increase inflationary inertia.

Graph 29
Total CPI inflation (Percentage)




Sources: DANE and *Banco de la República*

Table 6
CPI inflation Indicators
(At December 2016)

| Description | Weigh | Dec-15 | Mar-16 | Apr-16 | May-16 | Jun-16 | Jul-16 | Aug-16 | Sep-16 | Oct-16 | Nov-16 | Dec-16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **100.00** | **6.77** | **7.98** | **7.93** | **8.20** | **8.60** | **8.97** | **8.10** | **7.27** | **6.48** | **5.96** | **5.75** |
| **Non-food** | 71.79 | 5.17 | 6.20 | 6.02 | 6.07 | 6.31 | 6.26 | 6.10 | 5.92 | 5.64 | 5.31 | 5.14 |
| Tradables | 26.00 | 7.09 | 7.38 | 7.57 | 7.88 | 7.90 | 7.87 | 7.53 | 7.20 | 6.49 | 5.74 | 5.31 |
| Non-tradables | 30.52 | 4.21 | 4.83 | 5.00 | 4.78 | 4.97 | 5.01 | 5.05 | 4.85 | 4.81 | 4.83 | 4.85 |
| Regulated items | 15.26 | 4.28 | 7.24 | 5.78 | 6.00 | 6.71 | 6.40 | 6.10 | 6.19 | 6.07 | 5.64 | 5.44 |
| **Food** | 28.21 | 10.85 | 12.35 | 12.63 | 13.46 | 14.28 | 15.71 | 13.06 | 10.61 | 8.53 | 7.54 | 7.22 |
| Perishables | 3.88 | 26.03 | 27.09 | 28.62 | 33.44 | 34.94 | 39.27 | 21.27 | 6.66 | (2.18) | (4.94) | (6.63) |
| Processed | 16.26 | 9.62 | 10.83 | 10.89 | 11.04 | 12.09 | 13.33 | 13.07 | 12.56 | 11.75 | 10.89 | 10.74 |
| Eating-out | 8.07 | 5.95 | 7.53 | 7.53 | 7.92 | 8.11 | 8.50 | 9.00 | 9.18 | 8.64 | 8.36 | 8.54 |
| **Core inflation indicators** | | | | | | | | | | | | |
| Non-food | | 5.17 | 6.20 | 6.02 | 6.07 | 6.31 | 6.26 | 6.10 | 5.92 | 5.64 | 5.31 | 5.14 |
| Core 20 | | 5.22 | 6.48 | 6.69 | 6.55 | 6.82 | 7.03 | 7.07 | 6.73 | 6.58 | 6.33 | 6.18 |
| CPI excluding perishable foods, fuel and public utilities | | 5.93 | 6.57 | 6.72 | 6.61 | 6.77 | 6.92 | 6.97 | 6.65 | 6.37 | 6.08 | 6.03 |
| CPI excluding food and regulated items | | 5.42 | 5.91 | 6.08 | 6.08 | 6.20 | 6.22 | 6.10 | 5.84 | 5.52 | 5.22 | 5.05 |
| **Average of all the indicators** | | **5.43** | **6.29** | **6.38** | **6.33** | **6.52** | **6.61** | **6.56** | **6.29** | **6.03** | **5.74** | **5.60** |

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

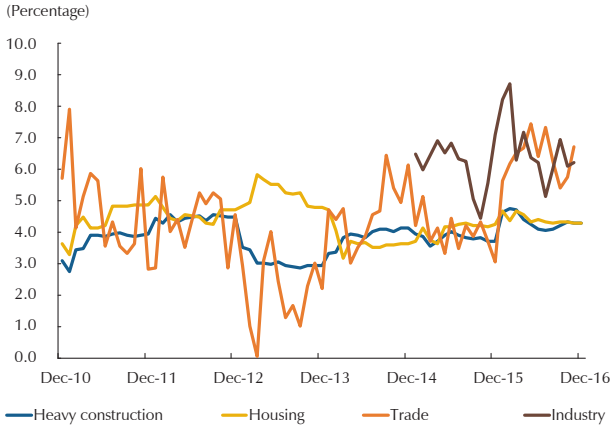
As explained in the previous edition of this report, consumer prices in Colombia during the first half of the year and up to August continued to be affected by a variety of shocks. To begin with, the pass-through of peso depreciation accumulated between July 2014 and the early months of 2016 sustained upward pressure on prices in the tradable component of the CPI, at least until the middle of the year. Secondly, the climatic shock caused by El Niño weather reduced the country's agricultural supply and accelerated the adjustments in prices for perishable foods as of mid- 2015 and particularly during the first seven months of this year. Although El Niño ended in the first half of the year, its contractionary impact on Colombia's agricultural supply has gradually disappeared as of the third quarter. Something similar has happened with the normalization of prices. Added to this was the short-lived price shock, especially on food, caused by the trucking strike in June and July, and the more prolonged shock brought on by added livestock retention, which reduced the supply of beef and increased beef prices in the second half of the year.

All these shocks had an effect on annual consumer inflation, which would have been temporary, in principle, as evidenced by the fact that their impact began to

subside gradually in the second half of 2016 and particularly in the fourth quarter. However, medium- and long-term inflation expectations tended to rise and to move away from the 3.0% target, as mentioned in previous reports and discussed here in chapter IV. Also, given the continued existence of several indexing mechanisms, the price adjustments for some goods and services depended more so in 2016, than in the past, on the already high rate of inflation in 2015. In addition, wage hikes, including the increase in the minimum wage, were around 7.0% for 2016, generating labor costs that were incompatible with the 3.0% target (Graph 30). All these factors helped to increase inflation inertia in Colombia at the end of 2016 and to broaden and prolong the impact of the temporary shocks mentioned earlier.

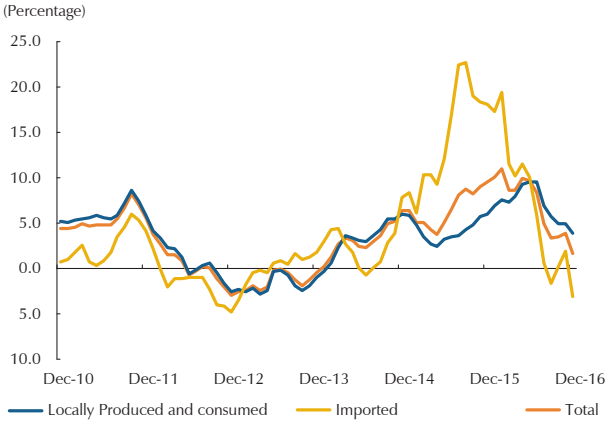
The momentum in annual inflation during the last three months of the year was explained by a significant decline in the pace of the annual adjustment in tradable CPI excluding food and regulated items and particularly in the CPI for perishable foods. These two sub-baskets ceased to exert upward pressure on consumer inflation towards the middle of last year, leading to its recent slowdown.

Graph 30
Nominal Wages
(Annual change)




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

Graph 31
PPI, by Origin
(Annual change)



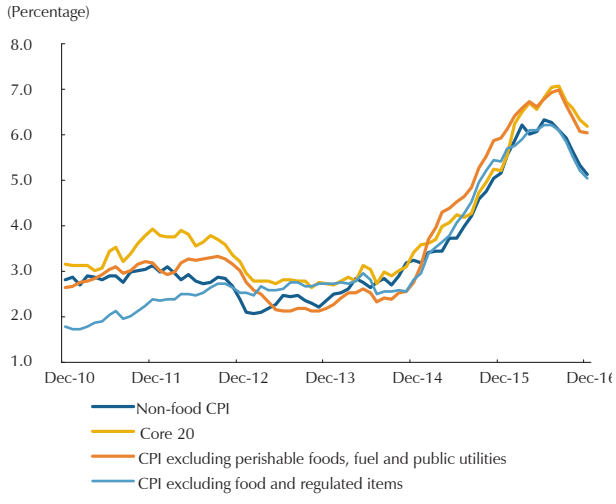

Source: DANE.

The drop in annual inflation also was possible thanks to a reduction in non-labor cost pressures, especially during the second half of 2016. This was due to the producer price index (PPI) for domestic supply (the imported PPI plus the PPI for goods produced and consumed internally); its annual variation went from 9.64% in June to 1.62% in December (Graph 31). The decline in annual producer inflation was the result of lower annual adjustments in the domestically produced and consumed component of the PPI (which declined from 9.49% in June to 3.85% in December) and in the imported component (which went from 9.99% to -3.13% during the same period). The bearish pressures within the local component were concentrated mainly on agricultural goods (the annual variation in their prices went from 25.52% in June to 2.03% in December), although the annual increase in the industrial PPI also contributed to this trend (having gone from 6.32% in June to 3.93% in December).

## A. CORE INFLATION

Like headline inflation, core inflation (Graph 32) continued to decline during the fourth quarter, after peaking in July 2016. The average of the four indica-

Graph 32
Core Inflation Indicators




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

tors regularly monitored by *Banco de la República* was 5.60% in December versus 6.29% in September. However, unlike what happened with headline inflation, year-end core inflation measured this way surpassed the figure for December 2015 (5.43%) (Table 6). Indeed, as of December 2014, the average of the core inflation indicators has exceeded *Banco de la República*'s long-term target for inflation (3%).

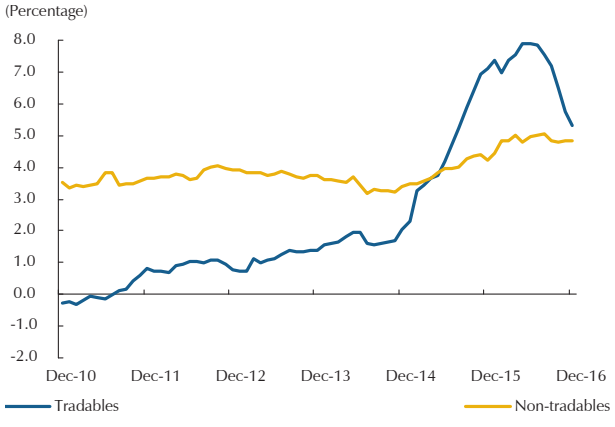
A look at the various indicators shows they all have declined steadily, at least since last August, but are still above the target range for inflation. The CPI excluding food and regulated items (5.05%) was the lowest of all and, in this case, there was a decline compared to December 2015 (5.42%). In contrast, Core 20 (6.18%) ended the year above the others and higher than the rate observed 12 months ago (5.22%). Likewise, the annual increase by December in the CPI excluding perishables, fuel, and public utilities (6.03%) was 10 bp higher than the rate a year earlier. Annual non-food inflation was 5.14%, which is only 3 bp less that it was a year ago.

The decline observed in all the core inflation indicators during the final quarter is largely because the pass-through of accumulated peso depreciation has been transmitted almost entirely to consumer prices. Weak demand was a contributing factor as well. This, in turn, helped to create a situation where domestic producers faced declining non-labor costs, as reflected in the annual changes in the local and imported PPI, as discussed earlier.

The slowdown in annual non-food CPI inflation during the last quarter of the year and since August was due primarily to the favorable behavior of the tradable CPI excluding food and regulated prices. Its annual variation went from a recent high of 7.90% in June to 7.20% in September and 5.31% in December, with results lower than those anticipated in the previous *Inflation Report*. The last major episode of peso depreciation, which began in July 2014 and lasted until February 2016, would have ceased to push up prices in the tradable CPI excluding food and regulated items by the middle of the year. The fourth-quarter slowdown in annual inflation in airfares, general appliances and vehicles, among items in the tradable segment of the CPI excluding food and regulated items, is a high point.

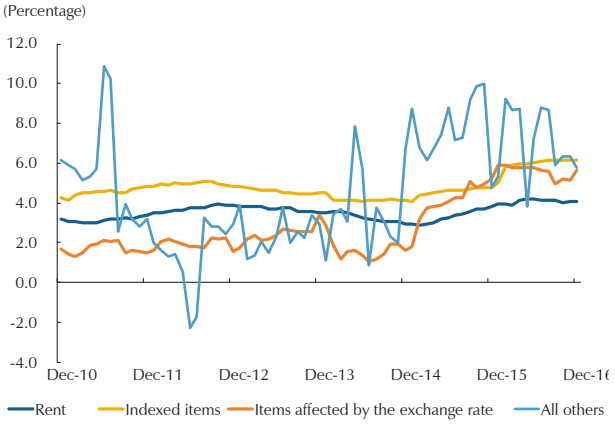
On the other hand, the non-tradable segment of the CPI excluding food and regulated items stayed relatively stable, ranging between 4.8% and 5.0% in the last 11 months, including the fourth quarter (Graph 6, Graph 33). In fact, the main component of non-tradables (leases) remained unchanged at around 4.0%

Graph 33
CPI for Tradables and Non-tradables Excluding Food and Regulated Items
(Annual change)



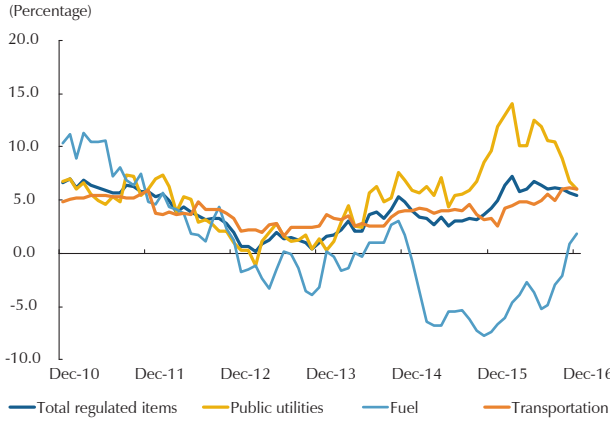

Sources: DANE; calculations by *Banco de la República*

Graph 34
Annual non-tradable inflation, excluding food and regulated items by groups
(Annual change)




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

Graph 35
CPI for Regulated Items and Components Thereof
(Annual change)




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

throughout 2016 (Graph 34). This suggests partial indexation of these prices with respect to inflation in December 2015, which may be due partly to a less buoyant housing market (see Chapter V).

Annual inflation in the non-tradable sub-basket with a higher degree of indexing (apart from leases) ended the year at 6.16%, which is similar to the September figure, but higher than what it was in December 2015 (4.75%). Apparently, in this case, past inflation and wage adjustments influenced the momentum in these prices throughout 2016. In turn, annual inflation in the non-tradable CPI, which was affected by the exchange rate (5.66% in December), rose with respect to September (4.95%) and December 2015 (5.19%).

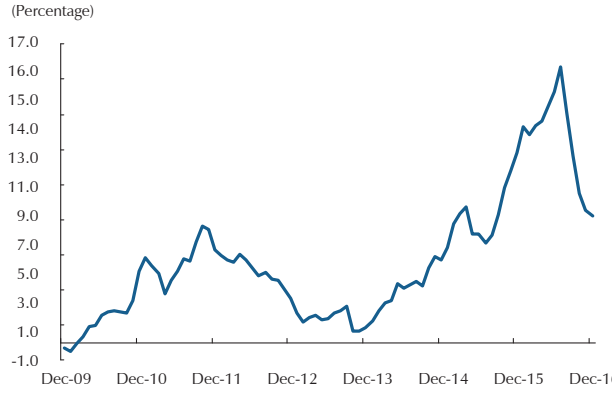
Annual changes in the CPI for regulated items helped to slow annual inflation during the last quarter of 2016, which went from 6.19% in September to 5.44% in December, but rebounded compared to the figure for 2015 (4.28%) (Table 6 and Graph 35). This behavior in the final months of the year is explained entirely by the CPI for public utilities, particularly by lower adjustments in electricity rates. These would be associated with the fact that reservoirs were replenished and the demand for thermal energy declined once El Niño was over.

In contrast, the annual variation in domestic fuel prices went from -2.98% in September to 1.83% in December (Chart 35). Incorporated in this surge is the rise in international oil prices, which exceeded 16.0% in the last three months of 2016. Annual rate adjustments in the transport subgroup increased as well.

## B. FOOD INFLATION

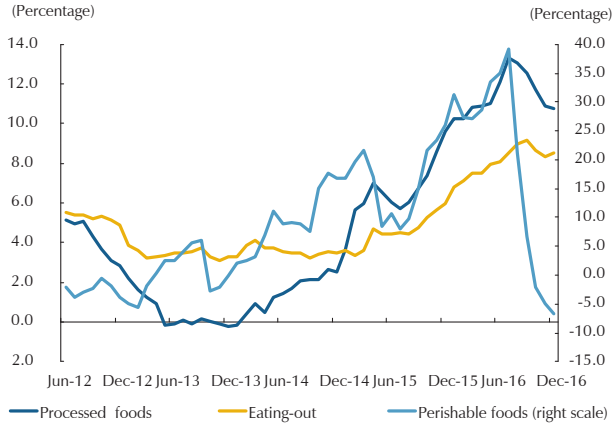
Annual food inflation continued to wane during the fourth quarter, inasmuch as the temporary shocks caused by El Niño weather and the trucking strike at mid-year have subsided. The decline in the last three months (especially in October and November) was particularly pronounced and somewhat higher than anticipated in the previ-

Graph 36
Food CPI
(Annual change)




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

Graph 37
Food CPI, by Groups
(Annual change)




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

ous *Inflation Report,* with an annual variation of 7.22% in December, compared to 10.61% in September (Graph 36).

The disappearance of El Niño weather in the second quarter of 2016 and the end of the trucking strike allowed food production and supply to recover significantly, especially in the case of fresh or perishable foods. The annual variation in the CPI for this sub-basket, which reached a high of 39.27% in July 2016, was -6.63% in December. Recent months have seen generalized absolute reductions in prices for a large number of fruits, vegetables, and tubers (such as potatoes).

The annual variation in the CPI for processed foods declined as well, although less so, going from 13.33% in July to 12.56% in September and 10.74% in December (Graph 37). It is important to point out that international food prices pushed up those for imported processed foods (cereals, oils, flour, oilseeds, and some fruits) during the first half of 2016. They fell afterwards, but did not return to the low levels witnessed at the start of the year, accumulating an increase of nearly 10% in all of 2016. Beef prices also continued to rise during the second half of the year (with annual variations that stayed above 20%), preventing more of a decline in the processed food sub-basket. The high beef prices are attributed, in part, to less productivity as a result of the last episode of El Niño weather, in addition to the continuation of a cattle retention phase, as suggested by the drop in slaughtering (See Chapter II).

Finally, the annual variation in the CPI for meals outside the home was down in December (8.54%) versus September (9.18%), but not with respect to December 2015 (5.95%). Last year, including the fourth quarter, this component of food was propelled by the 7.0% hike in the minimum wage, by high food prices, and especially by increases in public utility rates.

# IV. Medium-Term Forecasts

**In this version of the Inflation Report, the mid-point of the GDP growth forecast for 2017** remained at 2.0%, but the ceiling and floor of the interval were revised downwards.

**By 2017, growth should be driven by more favorable demand from our trade partners** than was the case last year, with higher terms of trade than those observed in 2016 and an investment in civil works that would remain buoyant.

**The central forecast for inflation increased slightly in this report** compared to the previous quarter.

**On this occasion, it includes the effect of the tax reform on inflation,** which would be temporary, in principle.

## A. ECONOMIC GROWTH IN 2017

In this edition of the *Inflation Report*, the midpoint of the GDP growth forecast range for 2017 remained the same, but the ceiling and floor of the interval were revised downwards, as will be discussed later. The forecast range continues to be broad and biased downwards, reflecting the high level of uncertainty and the risks to economic growth (both new ones and those covered already in the last report) that are implicit in the assumptions and projections for the current year. It should be noted, however, that the results presented on this occasion are not fully comparable to those presented in September, since they now include the effects of the tax reform that took effect in January.

As usual, the forecast was prepared according to the balance of payments scenarios outlined in Chapter I. In the external context, the main changes in the assumptions with respect to the previous *Inflation Report* are related to the added momentum in external demand, with higher international prices forecast for raw materials. This implies slightly better terms of trade in 2017, on average, than was the case in 2016. The somewhat improved economic growth expected in the United States and in most countries in the region should allow for better Colombian export performance, mainly in the case of non-traditional products, although at relatively low rates, since our trading partners would continue to grow at rates below the averages witnessed

*Terms of trade are expected to recover somewhat in 2017.*

in the last fifteen years. Moreover, with the upward trend in prices anticipated for our main export commodities, terms of trade are expected to be 3.5% and 11.0% above those in 2015 and 2016, respectively ( See Chapter I). The GDP forecast also means there will be no deterioration in the perception of country risk during 2017, thanks to approval of the tax reform bill (TR) at the end of last year, among other reasons.

Even so, and as indicated in Chapter I, a further decline in the current account deficit is anticipated for 2017, which implies less external financing to increase domestic demand. Added to this is the impact normalization of monetary policy in the United States and the European Union would have on the availability and cost of external financing. Therefore, it is not clear if the fundamentals of the international situation that are relevant to the Colombian case will significantly boost the momentum in GDP during 2017. In the new forecast, the positive effects of the improvement in terms of trade and external demand would be offset, in part, by the negative impact of a reduced flow of resources from abroad, probably at a higher cost.

Accordingly, moderate growth in the foreign trade accounts is forecast for 2017. In terms of exports, the central scenario for GDP growth (and the balance of payments) contemplates mediocre volume in foreign sales of traditional goods, similar to what was observed in 2016. In this sense, there would not be more of a contribution to GDP growth from real exports of oil, coal and ferronickel. Coffee sales, meanwhile, would recover and surpass the highs witnessed in the last decade. Moderate performance is also expected for non-traditional exports and services. This is because external demand will remain week, despite some recovery, and the economies of the countries that are the main destinations for exports of this type will experience low growth. However, the effect of accumulated peso depreciation on non-traditional and service industries is expected to contribute somewhat to their performance. Imports are not forecast to increase significantly in 2017, partly because Reficar is now operating fully, which would encourage some degree of fuel substitution, and also because no major increase in the import-intensive component of domestic demand is anticipated, namely, the consumption of durables and semi-durable goods, nor for investment in transport machinery and equipment.

*The foreign trade accounts would continue to contribute to the gradual adjustment in the Colombian economy.*

With regard to the internal context, it is important to note the GDP forecast for 2017 assumes the negative effects of the various supply shocks during 2016 - particularly those related to El Niño weather and unemployment in the transport sector - would have subsided entirely by then. It also considers the real effects - both direct and indirect - of the tax reform (TR) on the different items that make up GDP.

*The momentum in government consumption would continue in 2017.*

In this sense, no excessive adjustment in public spending by the central government is expected after the decline in terms of trade and the slowdown in economic activity. Therefore, the momentum in government consumption during 2017 should be similar to what it was in 2016. Also, investment that depends on public resources is expected to accelerate because of the tax reform. In particular, a significant expansion in the construction of civil works is anticipated, mainly due to the highways that are part of the so-called the fourth generation (4G) projects, and because of more momentum in infrastructure spending by regional and local governments (the latter is particular to the second year of these administrations).

As for private investment, this component of GDP is not expected to recover significantly in 2017. In principle, factors such as accumulated depreciation of the nominal exchange rate, the transmission of monetary policy adjustments in Colombia to market interest rates, and the variation in relative prices between tradables and non-tradables would discourage spending on investment, particularly for machinery and transport equipment. Consequently, no major contribution to the growth of these items of gross capital formation is expected, even though the reduction in the corporate tax burden, as approved in the tax reform bill, would have a favorable impact on investment. However, this report assumes that effect will be reflected primarily in 2018.

Positive contributions to the increase in investment in building construction are expected for 2017. On the one hand, the residential component will continue to be favored by consolidation of the government's low-income housing plans and also by the expansionary effect of subsidized interest rates on new home purchases in the low and middle income brackets, although less so than in 2016. On the other hand, growth in the non-residential component is expected be low.

A moderate increase also is forecast for private consumption. In this respect, the changes in the tax structure of the economy, as a result of the tax reform, would have negative short-term consequences for real growth in this item of GDP, since the purchasing power of disposable household income would be affected somewhat by the impact the higher value added tax (VAT) would have on prices. In addition, there is expected to be pressure on household financing for the purchase of durable goods, due to the lagged effects of change in the monetary policy and the transmission to market rates. Lastly, the prospect of a less dynamic job market in the medium term does not allow us to foresee an additional boost to the performance of household consumption. Even so, declining consumer inflation, coupled with a 7.0% minimum wage hike, can have a positive impact on the purchasing power of disposable household income in Colombia.

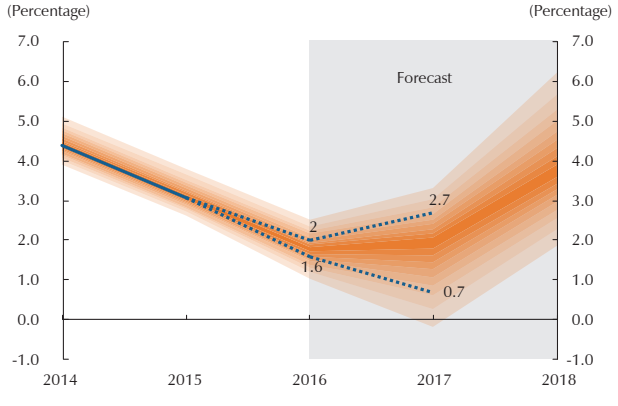
*No significant recovery in private investment is anticipated for 2017, other than in civil works.*

On the supply side, accumulated depreciation of the peso stimulated production in several tradable sectors during 2016, although the momentum subsided

towards the end of the year due to flagging demand from Colombia's trading partners. Import substitution is expected to continue during 2017, thanks to added competitiveness resulting from accumulated depreciation, efforts to expand markets for domestic products, and investment in capital goods in past years, which also will depend on the performance of demand on the part of our trading partners.

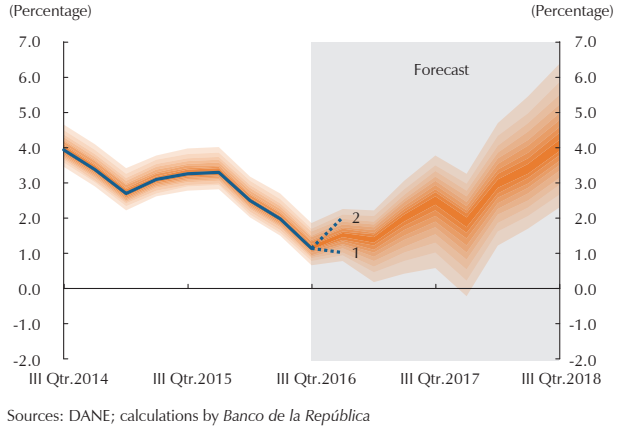
Estimates developed by the technical staff at *Banco de la República* suggest tradable production would continue to recover in 2017, partly because of the effects of depreciation and the shift in production towards local goods. Moreover, the setbacks observed in mining production would be overcome, as in the case of oil. Also, the improvement in international commodity prices is expected to stimulate capital flows and investment in tradable activities, such as mining.

Graph 38
Fan Chart of Annual GDP Growth




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

Graph 39
Fan Chart of Annual Growth in Quarterly GDP




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

As mentioned, the government's building programs and the schedule for 4G civil works will bolster non-tradable production and contribute a great deal to growth this year and the next. It is important to bear in mind this branch has productive links with sectors such as industry and transportation, which contributes significantly to the increase in the national aggregate.

Accordingly, the forecast for output growth, in the most likely scenario, is around 2.0% for 2017 (graphs 38 and 39), within a forecast range of 0.7% to 2.7% (Table 7). The interval remains wide and the risk balance is skewed to the downside, given the high amount of uncertainty, both domestically and internationally.

The main downside risks are associated with: 1) less growth in the global economy and for our trading partners that would affect exports and terms of trade; 2) the effect the increase in the VAT might have on private consumption and household purchasing power, and 3) the possibility of less momentum in government investment than is contemplated in the central scenario, which would depend on efficiency in carrying out the 4G projects, for example. The main upside risks are related to: 1) more of an increase in tradable GDP, thanks to accumulated depreciation of the exchange rate; and 2) larger capital flows associ-

Table 7
Probability Ranges in the Fan Chart of Annual GDP Growth
(Percentage)

| Range | 2016 | 2017 |
|---|---|---|
| <-1.0 | 0.0 | 1.4 |
| -1.0-0.0 | 0.0 | 6.7 |
| 0.0-1.0 | 4.3 | 20.1 |
| 1.0-2.0 | 64.6 | 34.4 |
| 2.0-3.0 | 30.8 | 29.3 |
| 3.0-4.0 | 0.4 | 7.5 |
| >7.0 | 0.0 | 0.5 |
| Between 3 & 5 | 0.4 | 8.0 |
| Between 2 & 4 | 17.7 | 36.8 |
| Between 1.5 & 3 | 72.4 | 47.6 |

Source: Calculations by *Banco de la República*

ated with the stabilization of the international financial markets and with an improvement in the perception of country risk.

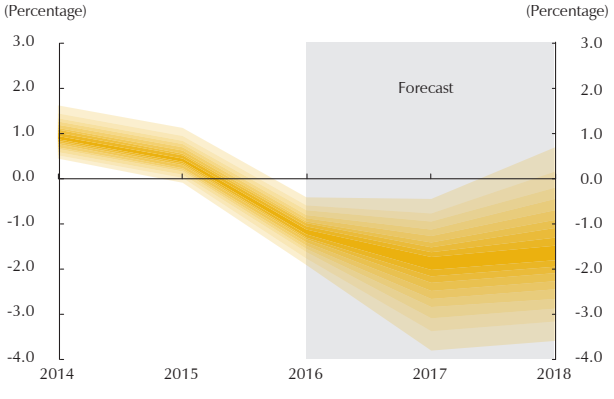
According to the forecasts for economic growth, the exercise developed to estimate the output gap suggests it would have become slightly negative at the beginning of 2016. The forecasts suggest this negative gap would continue to widen during 2017.

The average gap for 2017 is now more negative than the one outlined in the previous edition of this report. In fact, there is a 98.7% probability of it being negative at the end of 2017 (Graph 40).

On the other hand, the available estimates suggest the Unemployment Rate (UR) in 2016 would have been slightly above the non-accelerating inflation rate of unemployment (NAIRU). The forecasts suggest this difference would become more pronounced during 2017.

Accordingly, it is possible to conclude the inflationary pressures originating with aggregate demand would have been low and will remain as such during the rest of this year. As for pressure from the labor market, although the UR is above the NAIRU, the 7.0% hike in the minimum wage for 2017 must be taken into account. To the extent this increase affects the cost of labor and activates indexing, it could imply a slower than expected decline in inflation.

Graph 40
Fan Chart of the Output Gap




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

*The pace at which inflation declined in the third and fourth quarters was somewhat more than was anticipated in previous reports.*

## B. INFLATION

### 1. Forecasts

During the third and fourth quarters, consumer inflation in Colombia declined sharply and at a slightly higher rate than was anticipated in the last two editions of this report. In principle, this circumstance affects the central path for inflation predicted with the models used by *Banco de la República*, as outlined in this report. However, for the first time, the forecasts include the effects the tax reform that took effect at the beginning of 2017 would have on prices, especially the impact of the increase in VAT and the new carbon tax. The effects of the new liquor law that will take effect in 2017 were included as well.

According to the estimates developed by the technical team at *Banco de la República*, 105 basis points would be the maximum impact on consumer inflation from the change in various indirect taxes. It would be concentrated in 2017; however, the actual effect will depend on a number of factors, including the strength of domestic demand or the degree of competition in the markets for the products that are taxed. Taking this into account, a 52 bp shock was included in the central forecast presented in this report, given the increase in all the taxes mentioned (with both a direct and indirect first-round impact). This would imply half of the maximum estimated effect.

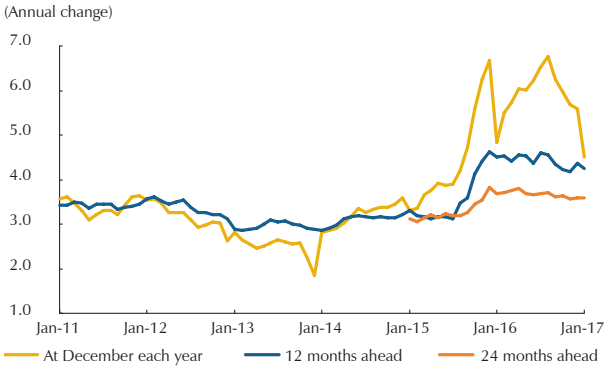
The hike in indirect taxes, in principle, acts like a one-time blow to prices. According to the forecasts, the resulting impact would be concentrated in the first quarter of 2017, which means a temporary effect on quarterly inflation during the period is to be expected, although it would disappear towards the second quarter. However, the impact on annual inflation would remain for a year, and its disappearance would come only towards the end of the first quarter of 2018.

The behavior described above corresponds to the impact directly attributable to changes in taxes. However, additional or second-round effects due to the activation of various channels were taken into account when constructing the central forecast presented in this report, such as inflation expectations, indexing mechanisms, and production and marketing costs. Therefore, the temporary impact on prices from higher indirect taxes might be more long-term and permanent, especially if it taints expectations and is transferred to prices and wages through the indexing processes that operate in Colombia.

*In principle, the effect of the increase in indirect taxes on inflation would be temporary.*

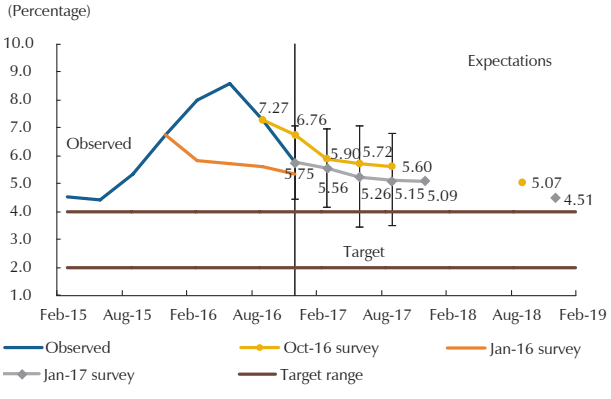
Considering the latest information at hand, expectations by mid-January had declined very little compared to the values reported in the September edition of the *Inflation Report* and increases were reported in some cases, continuing above the 3.0% target for all horizons. *Banco de la República*'s

Graph 41
Annual Inflation Forecasts by Banks and Brokerage Firms



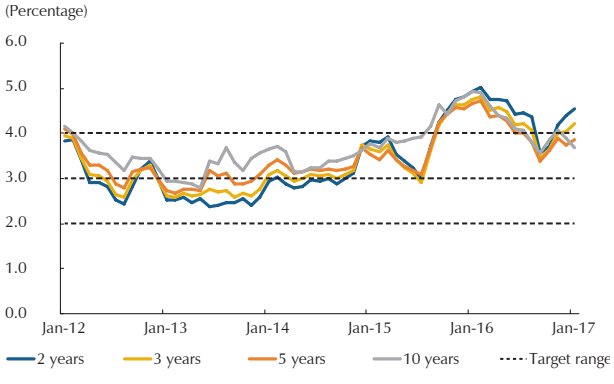

Sources: *Banco de la República*.

Graph 42
Observed Inflation and Inflation Expectations
(At three, six, nine and twelve months)
(Annual inflation)




Note: Each expectation is presented with its respective standard deviation.
Sources: DANE and *Banco de la República* (Quarterly Survey of Expectations)

Graph 43
Breakeven Inflation Expectations
(At two, three, five and ten years)
(Monthly average)[a/]




a/ Nelson & Siegel Method
Sources: *Banco de la República* (Quarterly Survey of Expectations) and DANE.

monthly survey of financial market analysts indicates they expect 4.51% inflation by December 2017, on average, versus 4.16% three months ago. Also, the expectation for inflation at 12 months was 4.25%, compared to 4.24% in the previous report; at 24 months, it is now 3.59%, compared to 3.65% previously (Graph 41).

As for the quarterly survey of entrepreneurs, the values obtained in January did show a more moderate decline with respect to what was observed three months ago, although the levels are still high. Accordingly, the expectation for inflation in twelve months rose from 5.60% to 5.15% and the 24-month expectation went from 5.07% to 4.51% (Chart 42). Expectations based on TES (breakeven inflation: BEI) tended to increase in the fourth quarter. Considering figures at mid-January, the expectation for inflation at two, three and five years is 4.79%, 4.31% and 3.82%, respectively, while the figures obtained at mid-October were 3.62%, 3.58% and 3.57%, in that order (Graph 43).[4]

Given the foregoing, the central forecasts for headline and non-food inflation in all of 2017 are higher in this report compared to those in the September edition. Thus, convergence towards the target range tended to be postponed. However, by 2018, once the direct effect of the tax shock disappears, the forecast paths should decline compared to the previous report. This would occur as of the first quarter of that year, when inflation is expected to fall within the target range and remain there.

In this sense, the central forecast contemplates a relatively low impact from the second-round effects related to this shock, with the increase being attributed mainly to the direct impact. As explained in the next section of this chapter, an upside risk ac-

4 Mentioned here are the figures the JDBR took into account at its meeting on January 27, 2017.

*The forecasts outlined in this report include some upward pressure from labor costs.*

companying the current forecasts is the possibility the second-round effects will outweigh those predicted here.

In addition to the tax shock, other factors that explain the changes in the forecasts for inflation are related to wage adjustments (particularly in the minimum wage), the anticipated momentum in economic activity and its impact on the output gap, and the way the exchange rate is expected to behave. The first of these factors implies upward pressure on the forecasts for inflation compared to what they were three months ago, while the other two imply downward pressures.

In the case of wages, the figures at hand show they rose at rates above 6.0% in key sectors such as trade and manufacturing (Chapter III). Moreover, the minimum wage for 2017 increased by 7%. These figures are significantly higher than the inflation rate at the end of 2016 and are likely to lead to an increase in unit labor costs that is well above the target for inflation, since estimates of labor productivity gains in Colombia typically do not exceed 1.0% annually. The bulk of the companies in Colombia are very likely to face such a situation, since a high percentage of workers in the country are hired at the minimum wage or because this is a reference price for negotiating contracts on the job market. However, there is some degree of slack in the job market and employment growth has slowed.

Accordingly, some upward pressure from labor costs is contemplated in the inflation forecasts presented in this report. This pressure is mainly on the forecasts for labor-intensive non-tradable goods and services, such as health care, education, transportation, and meals outside the home.

Again, no upward demand-pulled pressure on prices in 2017 and 2018 is anticipated in this report. Although the central forecast for growth in 2017 remained at 2.0%, the forecast for 2016 was revised downward (to 1.8 %). This led us to project a slightly more negative gap by the end of 2016 and for 2017 than previously was estimated, which exerts downward pressure on inflation forecasts, especially in the basket of non-tradables, but also in the basket of tradables. This partially offsets upward pressures coming from expectations, wage costs, indexation, and the tax shock.

*This report continues to anticipate no demand-pulled inflationary pressure in 2017 and 2018.*

The current central forecast on the exchange rate front contemplates slightly less peso depreciation compared to the forecast in the previous report. This would translate into less upward pressure on the CPI, especially on tradable prices, but also on non-tradables, including food and regulated items.

As explained in Chapter I of this report, this forecast implies a continuation of the gradual and orderly adjustment of the economy in response to the terms

*The effects of El Niño and accumulated depreciation as of the third quarter of 2014 would finally end in the first half of 2017.*

of trade shock observed in 2014 and 2015, with an additional reduction in the current account deficit.

As for the other determinants of inflation in Colombia, the forecasts for international commodity prices relevant to the Colombian economy are not substantially different in this report. Oil prices, like those for the agricultural products the country imports, should increase moderately in 2017 and 2018, which would lead to adjustments in consumer prices for fuel (gasoline and residential natural gas) and foods of imported origin, also in keeping with expected depreciation, which would be somewhat above the inflation target.

This being the case, the new central forecast for inflation assumes the effect of the temporary shocks attributed to El Niño weather and the large amount of depreciation accumulated between the third quarter of 2014 and the first of 2016 will finally disappear in the first half of 2017. However, as of 2017 and throughout the year, consumer inflation would be affected by the upward shock associated with the hike in indirect taxes, which will prevent this variable from falling faster. The basket of goods most affected by this shock would be tradables excluding food and regulated items, but the other three main baskets (food, regulated items and non-tradables) would be influenced as well.

In terms of individual baskets of goods and services, an important additional drop in annual food CPI inflation is anticipated and would be concentrated in the first half of the year. This is due to the waning impact of El Niño weather and in spite of the tax shock. In the case of food, the changes in the tax system are less; however, the forecast for this basket also has increased somewhat compared to what it was in the September report, given the fact that the bottlenecks in the beef and veal sector are expected to continue because of new health standards for the meat packing industry, as well as extension of the livestock retention cycle. The presence of La Niña weather is not expected to cause inflationary pressure, since similar events in the past had no significant impact on prices.

Far less annual inflation also is expected for the tradable CPI excluding food and regulated items, inasmuch as the pass-through of depreciation accumulated in past years would have finished and the amount of depreciation expected for 2017 is low. Despite the tax shock, the new forecast for tradables in 2017 and 2018 declined compared to the one quarter ago, partly because the forecasts for the fourth quarter of 2016 overestimated the final outcome. Even so, the annual variation is not expected to rapidly fall to within the target range, since the persistence of this variable is high. This underscores the important role of factors such as indexing and the pressures exerted by labor costs and expectations.

*The disappearance of the climatic shock would imply a significant decline in the variation in the food CPI.*

In the case of the non-tradable CPI excluding food and regulated items, the hike in indirect taxes will slow the decline in its annual variation for a time, as

was estimated in the previous forecasts. However, within a four-quarter horizon and in the future, the presence of a widening negative output gap would offset this shock, as would the effects of indexing, inflation expectations, and relatively high labor costs. As a result, significant reductions are expected for this variable in 2018, placing it at around 3.0%.

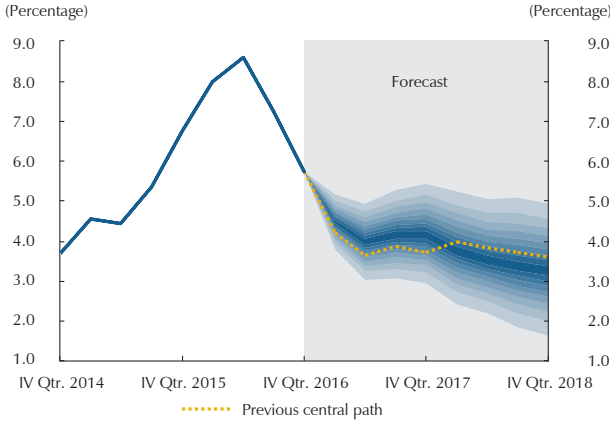
As for regulated items, annual inflation in 2017 will remain high and at current levels, since adjustments in fuel prices and fares for public transportation are forecast to exceed the inflation target, as explained already. Fuel prices are expected to be adjusted, especially during the first quarter of 2017, because of the carbon tax (COP 135 per gallon) and the increase in VAT from 16.0% to 19.0% (collection of this tax was not explicit prior to the tax reform). Additional inflationary pressures would come from the change in fares for public transportation that was announced at the end of 2016 in several Colombian cities; namely, Medellín, Cali, Cartagena, Bucaramanga and Manizales.

It is important to point out that the decline in consumer inflation during 2017 continues to depend largely on less of an annual change in the food CPI. Non-food inflation would remain above 4.0% throughout the year, due to the tax shock, but also because of the high inertia exhibited by its components, given the role of indexing and expectations in an environment where inflation is still relatively high.

## C. RISK BALANCE

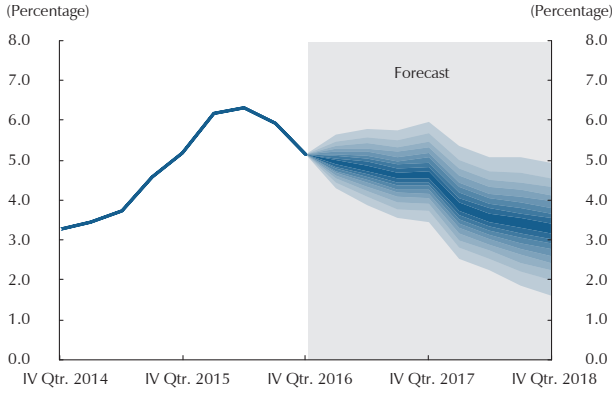
The risk balance for headline consumer and non-food inflation is shown in the fan charts (Graphs 44 and 45). In this report, a slightly-upward biased fan chart is estimated for the entire forecast horizon. The current central inflation forecast increased for 2017 compared to the one in the previous re-

Graph 44
Fan Chart of Headline Inflation




Source: *Banco de la República*

Graph 45
Fan Chart of Non-food Inflation




Source: *Banco de la República*

*The risk balance is biased slightly upward for inflation in 2017.*

port (Graph 44). The present path was constructed to include a partial effect of the tax reform approved by the Congress. In addition, the uncertainty that accompanies the forecasts in terms of public and private consumption, as well as performance in the external context, remained high.

The following are the upside risks considered in this report:

*Added transmission of the increase in VAT and other taxes to consumer prices:* As noted earlier, the path of the central forecast presented in this report includes some impact the hike in VAT and other taxes could have on the sub-accounts in the CPI (half of the maximum possible impact is included). However, full transmission of these indirect tax increases will depend on a variety of factors, as mentioned already. Therefore, the likelihood of this transmission ending up being more than anticipated cannot be ruled out. This would exert direct upward pressure on consumer inflation during 2017, in addition to what is contemplated in this report. Added transmission also raises the prospect of higher indexing and a change in inflation expectations at different horizons, all of which can generate more inflationary inertia that could delay the convergence of inflation towards its target, beyond what is predicted in the central forecast in this report.

*Higher price and wage indexing that translates into added inflationary inertia:* Headline inflation in 2016 was above the target range, and the hike in the minimum wage exceeded inflation, which tends to generate price and wage adjustments above the target. For example, we cannot rule out the possibility that the forecast for inflation outlined in this report underestimates, to some extent, the impact the 7.0% increase in the minimum wage could have on consumer prices, particularly in view of the large percentage of workers who are minimum-wage earners. In this context, inflationary inertia could rise to a level above what is considered in the forecast models. This would affect both the extent of headline inflation and its convergence towards the target, and could affect the level of inflation anticipated by agents in the economy.

*There transmission of VAT and other taxes might be more in 2017 than is contemplated in the central forecast.*

*An unexpected rise in food prices during 2017, because of the weather or other supply shocks: T*here is currently no consensus about whether or not La Niña will materialize, although it cannot be ruled out entirely. If it does occur and if it is intense, we might see some upward pressure on food prices. Moderate or weak La Niña weather has not led to higher inflation in the past. On the other hand, the cattle retention cycle poses an additional risk, insofar as it has been prolonged and would have an impact in 2017 that is not contemplated in the central forecast. If these risks materialize, it would be mostly in the second half of the year, because downward pressure

*A higher rate of decline in food prices could help inflation converge faster towards the target.*

on food prices is expected, in the short term, once the weather returns to normal (as discussed later in this report).

The following are the main downside risks considered in this report:

*A more favorable than expected response from food prices to a return to normal weather*: The current forecast for food inflation implies less of a decline than what was observed in the wake of other episodes of El Niño in the past. However, food prices could react positively to normal weather conditions, either by stabilizing or even declining, which would cause a more pronounced drop in inflation in this sub-basket. This would lead to a faster convergence towards the target than is contemplated in the most likely path for inflation, as outlined in this report. In addition to having an effect on observed inflation, this could have a favorable impact on inflation expectations.

*Less demand than is contemplated in the central forecast*: Some of the world's largest economies continue to face downside risks because of the fragile state of their financial systems. China and several European countries are an example. In addition, the political landscape in the United States and in several European countries might end up negatively impacting economic performance overall. Some of these risks are now beginning to materialize, affecting investment in countries, such as Mexico, with repercussions on their economic growth. Moreover, the anticipated momentum in Colombian exports assumes a break in the trend observed for the last few years. However, given the structural changes occurring in the global economy, this recovery might be weaker than expected, even if our trading partners grow as anticipated in the central forecast.

*Less depreciation than expected:* Several factors could result in the nominal exchange rate ending up below the central forecast presented in this report. A better outlook for raw material prices, slower-than-expected rate hikes by the Fed and relatively good domestic performance are the main ones. These factors could favor more of an inflow of capital than is estimated in the central forecast. The country's raw material exports could perform better as well. The occurrence of one or more of these factors would exert downward pressure on the exchange rate and, consequently, on the prices for tradable goods and the CPI overall.

*The probability of inflation being within the target range by December 2017 declined in this report.*

Given this set of risks, their balance suggests the probability of headline inflation being within the target range in 2017 is 40.2%, and increases to 66.2% in 2018 (Tables 8 and 9). Graph 46 shows the most likely forecast for inflation by December 2017 increased compared to the figures in the June and September 2016 reports. It also shows the distribution shifted to the right, reflecting the reduced probability that Inflation would be between 2.0% and

Table 8
Estimated Probability of Inflation between 2.0% and 4.0% by December 2017
(Percentage)

| | |
|---|---|
| June 2016 Report | 42.0 |
| September 2016 Report | 58.9 |
| December 2016 Report | 40.2 |

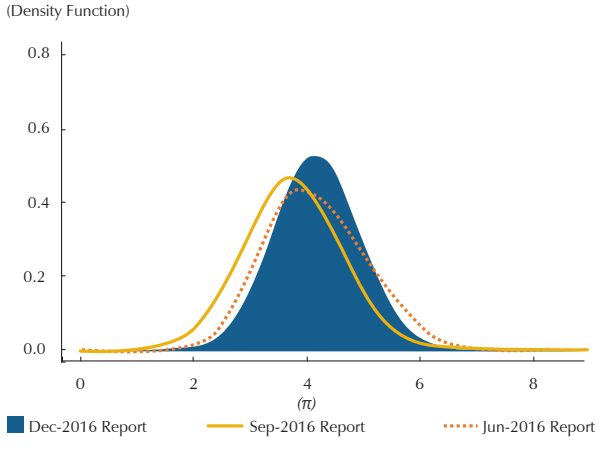
Source: Calculations by *Banco de la República*

Table 9
Probability Ranges in the Fan Chart of Headline Inflation
(Percentage)

| Range | 2017 | 2018 |
|---|---|---|
| <2 | 0.0 | 10.0 |
| 2.0-2.5 | 1.0 | 12.0 |
| 2.5-3.0 | 4.0 | 17.0 |
| 3.0-3.5 | 12.0 | 20.0 |
| 3.5-4.0 | 22.0 | 18.0 |
| >4.0 | 60.0 | 24.0 |
| Between 2 & 4 | 40.0 | 66.0 |

Source: Calculations by *Banco de la República*

Graph 46
Cross-section of the Fan Chart of Headline Inflation for December 2017




Source: *Banco de la República*.

4.0% by the end of 2017, compared to the previous report. It is worth noting that the shaded part of the density function of the forecasts shown in graphs 44 and 45 only includes 90% of the distribution's area. These results, like the central forecast, assume there will be an active monetary policy, with the benchmark rate being adjusted to make sure the target is met.

## Box 2
## INFLATIONARY IMPACT OF THE NEW TAX REFORM AND THE LIQUOR LAW

Edgar Caicedo G.
Carlos Daniel Rojas*

The new tax reform (Law 1819 passed on December 29, 2016) and the liquor law (Law 1816 of December 19, 2016) introduce changes that will affect future developments in the consumer price index (CPI). Among other measures, the new regulations include a change in the value added tax (VAT) on a number of goods and services, the creation of a national carbon tax, and changes in the levies on fuel and tobacco. In addition, the new liquor law will have an upward impact on consumer prices. The main changes implied by these reforms are outlined in this section, specifically those that might have some impact on the momentum in the CPI. The adopted methodology and quantification of the possible inflationary impact of these laws are presented as well.

### 1. Changes in the VAT

As a whole, the modifications in the VAT concentrate most of the adjustments that the CPI will face as a result of the new tax reform. It is effective as of January 1, 2017, but its application will be mandatory only after February 1.[1] The main changes in the VAT are described below.

The new law increases the general rate from 16% to 19% and maintains the other two rates at 0% and 5%.[2]

The value at which personal desktop computers or laptops are excluded has declined from 82 tax value units (UVT in Spanish) to 50 UVT; in other words, from COP 2,612,438 to COP 1,592,950. Similarly, smart mobile devices (tablets and cell phones) went from a maximum value of 43 UVT (COP 1,369,937) to 22 UVT (COP 700,898).[3]

The first sale of a new home valued at more than 26,800 UVT (COP 853,821,200) will begin to be taxed at the 5% rate. However, subsequent sales of that same real estate, as in the case of low income housing (LIH), both urban and rural, and housing of priority interest, will be excluded.[4]

The VAT on non-motorized bicycles valued at no more than 50 UVT (COP 1,592,950) was reduced to 5%. Previously, they were taxed at a rate of 16%.

The VAT on sanitary pads, tampons and diapers went from 16% to 5%.

Asphalt is no longer excluded. It now will be taxed a rate of 19%.

### 2. Tax on Consumption and Tobacco

The new reform creates a consumption tax of 4% on cellular telephony, data and mobile navigation, applicable only to amounts exceeding 1.5 UVT (COP 47,789). On the other hand, restaurant franchises will not be charged the 19% tax; they will now pay the 8% consumption tax. This modification evens out the tax treatment for all types of restaurants, thereby favoring consumers.

At the same time, the excise tax on cigarettes and manufactured tobacco products will increase from COP 701.06 in 2016 for each pack of 20 units to COP 1,400 in 2017 and COP 2,100 in 2018.[5]

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* Mr. Caicedo is a professional leader with the Programing and Inflation Department at *Banco de la República* and Mr. Rojas is a student intern with that department. Their opinions imply no commitment on the part of *Banco de la República* or its Board of Directors.

1 When the law takes effect, establishments with goods at a retail value that was determined according to the previous rate (16% or 5%, as applicable) may continue to sell those goods until January 31, 2017. See Press Bulletin 227/ 2016 released by the National Tax Revenue and Customs Authority (DIAN).

2 It is important to remember the 0% VAT rate applies to exempt goods. This tax is intended to grant the right to deduct the amount of VAT paid. On the contrary, no VAT is levied on excluded goods and services.

3 The calculations were made with the UVT value that will apply in 2017, which is COP 31,859. For more information in this respect, see DIAN Resolution 000071/2016.

4 The sale of new homes with a promise to purchase, separation, trust agreement and real estate deed signed or entered into before December 31, 2017, as certified by a notary public, shall be excluded.

5 For the 2016 rates, see Certification 4/2015 issued by the Tax Support Office, which is part of the Ministry of Finance and Public Credit.

### 3. Modified Taxes on Gasoline and ACPM (Diesel oil or fuel)

The new tax reform changes the national tax rates on gasoline and (diesel oil or fuel). Accordingly, the tax on a gallon of regular gasoline will go from COP 1,213.57 [6] to COP 490. The tax on a gallon of premium gasoline will go from COP 1,754.43 to COP 930, while the tax on a gallon of ACPM will go from COP 1,213.57 to COP 469. This reduction is largely offset because the new tax law changes the levy on gasoline and ACPM, which are now subject to the general rate of 19% rather than being exempt from VAT, as was previously the case.

### 4. Creation of a National Carbon Tax

In an effort to protect the environment, the tax reform created a new levy on carbon emissions from all fossil fuels, including all petroleum products and all types of natural gas. The rate will be adjusted to COP 15,000 per ton of CO2, and the values pertaining to each unit of fuel will be those outlined in Table B2.1

Table B2.1
National Carbon Tax Units and Rates
(Pesos)

| Fossil fuel | Unit | Value per unit |
|---|---|---|
| Natural gas (Industrial) | Cubic meter | COP29 |
| Liquefied petroleum gas | Gallon | COP95 |
| Gasoline | Gallon | COP135 |
| Kerosene & Jet fuel | Gallon | COP148 |
| Diesel | Gallon | COP152 |
| Fuel oil | Gallon | COP177 |

Source: Article 222, Act 1819 of December 29, 2016.

These rates will be adjusted every February 1st in line with the rate of inflation for the previous year, plus one point, until the tax is equivalent to one UVT per ton of CO2. It is important to clarify that this new tax, in the case of gasoline and diesel, will have a rate of COP 0 in the departments of Guainía, Vaupés and Amazonas.

6 For information on the tax rates effective in 2016, see DIAN Resolution 11 of January 28, 2016. For the new tax rates, see Article 219 in Law 1819 of December 29, 2016.

### 5. The new Liquor Act that modifies Taxes on Alcoholic Beverages

At the end of 2016, a new liquor law was passed that changes the consumption tax rates applicable to liqueurs, wines, aperitifs and the like. Under new rule, alcoholic beverages are no longer taxed according to their alcohol content;[7] rather, they are taxed on a specific component and an ad valorem component. The first is based on the percentage of alcohol content and the rate, per unit of 750 cc, is COP 150 for wines and wine aperitifs and COP 220 for other liqueurs, aperitifs, or similar items. The ad valorem component is calculated by applying a rate of 20% on the retail price, before taxes, in the case of wines and wine aperitifs, and 25% for other liqueurs, aperitifs and the like. Under the new tax law, liqueurs, wines and aperitifs also are subject to a 5% sales tax as of January 1, 2017.

### 6. Impact on the CPI [8]

In principle, in order to identify the maximum direct inflationary impact of the tax reform and the liquor law, the weight structure of the CPI is modified directly according to the proportions in which the prices of the products affected by the tax changes will increase.

Therefore, an adjustment ($\alpha$) in the price of an item in the CPI can be transformed into an inflationary impact by increasing the weight assigned to item $X$ in $\alpha$. The resulting price level ($Px^*$) is compared to the initial price ($Px$), verifying the percentage increase of $Px^*$. The adopted procedure is explained in the following algebraic expressions:

$$Px = \sum_{x=1,n} \delta_x$$

$$Px^* = \sum_{x=1,n} \delta_x (1+\alpha_x), \text{ where:}$$

$Px$ is the initial price level for items $x$; $\delta_x$ is the weight of items $x$, with $0 < \delta < 1$; $Px^*$ is the final price level of

7 The following rates were in force in 2016 for each unit of 750 cc: 1) for products with an alcohol content of up to 35 percent, COP 306 for each alcohol degree, and 2) for products with an alcohol content of more than 35 percent, COP 502 for each for each alcohol degree. For more information, see Certification 3/ 2015 issued by the Tax Support Office, which is part of the Ministry of Finance and Public Credit.

8 The methodology is taken from Caicedo & Tique (2012). "La nueva fórmula de la gasolina y su potencial impacto en Colombia," *Borradores de Economía*, No. 698, *Banco de la República*.

items $x$, and $\alpha_x$ is the increase in the price of item $x$ in the CPI.

However, this methodology only quantifies the direct impact of an increase in taxes on the CPI, ignoring the indirect impact generated by possible increases in prices for input. In order to capture the maximum indirect effect, it is necessary to identify productive chains among sectors, for which an input-output matrix was used. The national accounts data from DANE was adopted for this purpose and the DANE supply-use matrix for the year 2013 was used, which is the latest one available. The impact is quantified as follows:

$VPx^* = ((I\text{-}A)^{-1})'(A_{xj}Cx)+VPx$, where:

$VPx^*$ is the new price vector; $VPx$ is the initial price vector; $(I\text{-}A)$ is the Leontief matrix; $A_{xj}$ is the input requirement of branch $j$, and $Cx$ is the percentage of change in the price of input $x$.

Then,

$IP = VPx^* CIPC$, where:

$IP$ is the impact of the change in price, and $CIPC$ is the correlation between the sectors of the matrix used and the weights of the $CPI$.[9]

The main results of the direct, indirect and total effects of the new tax reform and the liquor law on the CPI are summarized in Table B2.2. As illustrated, the direct impact of these reforms would raise the CPI by 0.80 percentage points (pp). Likewise, there would be an additional 0.25 pp increase the CPI through higher production costs (indirect effect). As a result, the reforms mentioned above would push the CPI up by as much as 1.05 pp.

The tradable component of the family basket would be the hardest hit by the reforms, increasing by almost 2.0%, followed by the non-tradable segment of the CPI, which would increase by 0.85 pp, and by regulated items, whose prices would rise by no more than 0.76 pp. Foods would be the least affected group of the CPI, increasing by less than 0.60 pp at the most.

Finally, it is important to bear in mind that this methodology involving weights and an input-output matrix includes no adjustment dynamic. It is only an exercise in comparative statics. Let us not forget that calculations with the input-output matrix tend to overestimate the impact on consumer prices, because the technical coefficients of production, which are fixed with this methodology, cancel out the possibility of substitution in production and ignore the response of demand to changes in prices.

9 In this respect, see Caicedo & Tique (2012), Attachment 1.

Table B2.2
Maximum Direct and Indirect Impact on the CPI
(Additional percentage points)

| Group | Weighing | Direct effect | Indirect effect | Total effect |
|---|---|---|---|---|
| Food | 28.21 | 0.40 | 0.17 | 0.57 |
| Tradables excluding food and regulated items | 26.00 | 1.86 | 0.11 | 1.97 |
| Non-tradables excluding food and regulated items | 30.52 | 0.37 | 0.49 | 0.85 |
| Regulated items | 15.26 | 0.59 | 0.17 | 0.76 |
| Total | **100.00** | **0.80** | **0.25** | **1.05** |

Source: Ministry of Finance and Public Credit; calculations by *Banco de la República*

## Box 3
# CENTRAL BANK COMMUNICATIONS IN RESPONSE TO CHANGES IN THE VALUE ADDED TAX: THE CASES OF AUSTRALIA, NEW ZEALAND, NORWAY, THE UNITED KINGDOM AND CANADA

Nicolás Martínez Cortés
Mariana Escobar Villarraga
Juan David Torres Robayo
Daniela Pinilla Marín*

The recent tax reform in Colombia, which was passed in December 2016 and took effective as of January 2017, with the maximum deadline for adoption being February of the same year, implies an upward shock to the prices of most products marketed in the country. As mentioned in other sections of this report, a bullish impact on the consumer price index (CPI) is anticipated, either because items that make up the index are subject directly to the reform or because they respond, in some way, to other taxed items (via costs or indexing).

In principle, the increase in inflation should be largely transitory, because the shock of the reform on the level of prices occurs only once. However, it can have more permanent effects, if it significantly influences inflation expectations and generates higher indexing.

Therefore, the way the country's monetary authority communicates and acts in these circumstances is particularly relevant. To the extent that its action fosters certainty and lends credibility to the inflation target, it can contribute to a situation where medium- and long-term expectations are not altered.

With this in mind, the following is a summary of several similar international experiences. Communication from the central banks of Australia, New Zealand, Norway, the United Kingdom and Canada[1] in response to value-added-tax reform episodes similar to the current one in Colombia is reviewed specifically for this purpose. In that respect, the information published by these central banks is considered to be of two types: their press releases on policy decision and their inflation reports.

### 1. Communication from Central Banks

As will be outlined in detail, the documents reviewed highlight the central banks' initial intention not to react, in terms of policy, to purely transitory shocks to inflation, which in this case refer to changes in the value-added tax. However, the central banks do mention some concern about the uncertainty surrounding the second-round effects these changes might have on wage and price-makers. For this reason, they conclude this event will have to be monitored closely and their attention will be focused on the mid-term determinants of inflation, specifically those that would motivate their policy decisions and could be affected in some way by the transitory shock (through expectations).

As might be expected, the tax hike in these countries affected inflation[2] and its short-term expectations. However, the banks reported the impact was transitory and on a scale consistent with what analysts had anticipated. This reinforced the transitory effect of the shock and the decision not to intervene.

The graphs at the end of the box show how inflation, its expectations and the monetary-policy rate[3] evolved in each of the five economies under study, contextualized with the inflation target, the date in which the change in the value-added tax took effect, and the periods when the tax change was mentioned in the press releases on policy decisions and in the inflation reports.

These graphs are clearly illustrative. So, the full dynamics of the variables cannot be attributed to the change in the tax burden in each country, since there were different factors that contributed to the behavior of inflation, its expectations and to policy decisions (which are difficult to isolate adequately). However, the graphs do suggest movement compatible with the tax shock in each economy.

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* Mr. Martinez is a member of the staff of the Programing and Inflation Department at *Banco de la República*. Ms. Escobar and Mr. Torres are student interns assigned to that department, while Ms. Pinilla is a student intern with the Research Unit. Their opinions imply no commitment on the part of *Banco de la República* or its Board of Directors.

1 Countries with an inflation targeting scheme at the time of the respective change in the generalized tax burden.

2 The tax rate declined in Canada, so the effect was the opposite of that experienced by the other four countries.

3 The measurements available for each economy are presented. Two inflation measurements are included in the case of Australia and Norway. As for the series of inflation expectations in the short-and long-term, it was impossible to unify them due to a lack of available data for the periods under study.

## 2. Press Releases on Policy Decisions

The press releases related to the policy decision made little mention of the change in the value-added tax and its effects. More attention was given to the behavior of the fundamentals of the medium-term trend in inflation, which is what actually determined the decision on policy.

In general, the five countries in question opted to include, in their press releases, a brief note about the date when the tax change was scheduled to take effect. They did warn of transitory noise in inflation, which made it difficult to interpret its medium- term trend.

It was indicated they would make an effort to analyze inflation without the distortion generated by taxes, so as to do all possible to ensure inflation returns to somewhere near its target, once the transitory effects have passed.

## 3. Periodic Inflation Reports

The periodic inflation reports analyze the effects of the tax change in greater and simpler detail. Generally, these effects begin to be mentioned once the new tax rate has been approved (which is different from period when it takes effect). This is done to warn about the possible impact the reform might have. The potential consequences continue to be monitored in these reports, and the analysis focuses on the impact the change would have on inflation, short- and long-term inflation expectations, domestic demand and on certain major sectors of the national economy that would be acutely affected. Emphasis is given to the concern expressed by central banks about the uncertainty surrounding the possible second-round effects that could be generated. The reports offer different analyzes during and after the direct impact of the change in the tax burden. Nevertheless, in no case were alarming consequences of this type reported.

In the case of Norway, mention was made of past instances where the country also experienced generalized increases in the tax burden. This was done to support the analysis. Both Canada and Norway resorted to accompanying reports to analyze how the change in tax might affect inflation, policy decisions and certain sectors of the national economy.

On the other hand, it is appropriate to mention that Australia and Norway have an additional measure of inflation that excludes the effect of taxes.[4] In order to focus on the medium-term trend in inflation, that index becomes the center of analysis during the period when the impact on inflation of the change in the tax rate becomes apparent.

As a supplement to the foregoing, Table B3.1 contains an individual summary of what was found in terms of each central bank's communications, as well as the date and magnitude of each change in the tax burden.

## 4. Conclusion and Comments

The consensus among the five economies in question is not to react via the policy interest rate, when faced with changes in the value-added tax, which basically is just a transitory shock to inflation. However, it is clear the second-round effects that could occur must be monitored closely. The communication strategy of these countries was to briefly mention the policy decision, in the respective press releases, on the date the tax change took effect (highlighting the fundamentals of the medium-term trend in inflation). In contrast, a more detailed analysis of the effects of the change was provided in each inflation report for several months before and after it occurred.

On the other hand, the graphs show the tax change coincides with deviations in the behavior of inflation, which last between one and two years after the shock. In the case of Australia and New Zealand, it is easy to see the behavior of short-term expectations is affected before the change in taxes was adopted, possibly a signal of anticipation on the part of the market. Once the shock occurs, these expectations begin to return to levels similar to those witnessed prior to knowledge the tax change. As for long-term expectations, it is not easy to identify any sort of widespread behavior, which could mean there was no impact on these expectations, ruling out second-round effects.

Finally, it is important to point out that characteristics different from those in the cases analyzed here have been identified in the current Colombian situation. While the tax shock in the countries in question occurred at a time when inflation was near the target (favorable conditions), Colombia has been adjusting to new macroeconomic conditions in which

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4 In the case of Australia, this measure also excludes changes in interest rates and is produced by the country's central bank. Norway, for its part, has an inflation measurement adjusted for taxes and energy products (which are particularly volatile), calculated by its national bureau of statistics.

consumer inflation was seriously affected. In fact, it was above the ceiling of the target range for twenty-four months in a row. Inflation is now returning towards the target; so, the shock caused by the tax reform comes at a difficult time and must be monitored closely by the country's monetary authority. In addition, vis-à-vis Colombia, the economies being analyzed have met their target more times throughout their history of inflation targeting. This has positive consequences for the credibility of the central bank and facilitates the effectiveness of its communications.

Table B3.1
Communication by the Central Bank and Reforms in the Value-added-Tax

| Country | Tax reforms | Communication | | Others to highlight |
|---|---|---|---|---|
| | | Mention in the press release on the policy decisions | Mention in the inflation report | |
| Australia | July 2000: Introduction of the GST [a/, b/] Equal to 10%. | Introduction of the GST is mentioned only in September 2000. There is a simple warning about transitory noise in inflation due to the change in the tax burden. It is noted that efforts will be made to try to analyze inflation without the noise generated by taxes. More attention to the behavior of the fundamentals of the medium-term trend in inflation is reported. | The effect of introduction of the GST is analyzed in detail. Mention is made on more than one occasion between April 1999 (when the GST was approved by law) and January 2002 (18 months after it took effect). The possible consequences of the GST are tracked and the impact analysis is focused on Inflation, inflation expectations, domestic demand and several important sectors of the national economy that are affected (housing, automotive vehicles). The concern about possible second-round effects is emphasized, and various analyzes to that effect are conducted during and after the direct effect of the change in the tax burden (surveys and analytical exercises). However, no significant second-round effects were reported. | There is analysis of the inflation measurement excluding the impact of changes in taxes and interest rates (so as to focus on the medium-term trend in inflation). |
| New Zealand | October 2010: Increase in the GST [a/, c/] from 12.5% to 15%. | The increase is mentioned only in the December 2010 press release. The possible effects on annual inflation and short- and medium-term expectations are explained only in a very brief way. There is talk of transitory effects and, for that reason, their analysis is not focused directly on this shock. | There is specific analysis regarding the effect of the increase in the GST on inflation (and the contribution from external effects). Mention is made on more than on occasion between June 2010 (four months before the change in the GST took effect) and December 2011 (14 months after it entered into force). | |
| The United Kingdom | January 2010: Increase in VAT d/ from 15% to 17.5%.<br>January 2011: Increase in VAT from 17.5% to 20%. | The increases are mentioned in the press releases for November 2009, February 2010, October 2011 and February 2012. It is noted there will be approximately two years during which inflation would be volatile. | The consequences of changes in VAT are analyzed, particularly the impact on inflation, expectations, households, the private sector and the real sector. | |

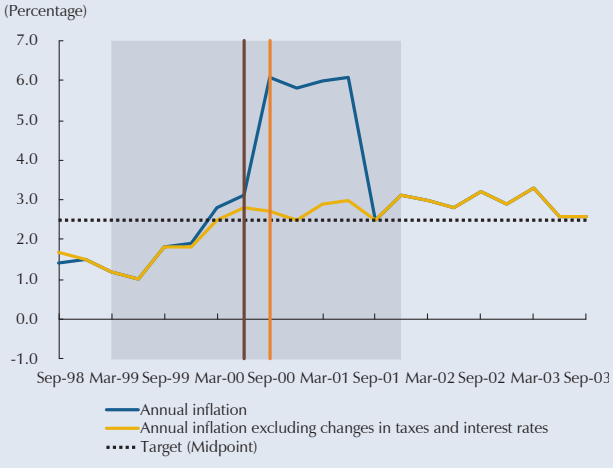
Table B3.1 (Continuation)
Communication by the Central Bank and Reforms in the Value-added-Tax

| Country | Tax reforms | Communication | | Others to highlight |
|---|---|---|---|---|
| | | Mention in the press release on the policy decisions | Mention in the inflation report | |
| Norway | January 2005: Increase in VAT from 24% to 25%. | The March 2005 press release only mentioned that the change in VAT made it more difficult than usual to interpret the behavior of inflation. | The report for the final quarter of 2004 showed the increase in VAT would raise inflation by 0.5 percentage points in the early months of 2005, and this was repeated in the first quarter of 2006. In subsequent reports, it was insisted that the change in VAT had made it difficult to interpret inflation. | Mention is made of the measure of inflation that is adjusted for changes in taxes and energy products (CPI-AT) in order analyze developments in inflation during the medium term. |
| Canada | July 2006: Reduction in the GST[a/] 7% to 6%. | The reform is mentioned three times: once prior to the GST reduction in April 2006, once during the period when it took effect and, for the last time, three months later. According to the communiques on policy, intervention was not necessary because inflation excluding the effect of indirect taxes and other items remained consistent with expectations. | Mention is made one quarter before the reform and two quarters afterwards. In the previous report, the scenarios were presented without taking the reform into account, in addition a box referring to its possible consequences. The other two reports showed other pressures that would affect inflation, in addition to reform. | Boxes are used in the inflation report. |
| | January 2008: Reduction in the GST[a/] from 6% to 5% | The second GST shock was mentioned twice: once simultaneous to the reform and another time three months later. The pressure the reform constitutes was mentioned on those occasions, but it was not cited as the fundamental reason for the changes in inflation. | In terms of the second change in the GST, it is mentioned that the reform contributed somewhat to the downward revision in inflation, but that there were other causes for this as well. | |

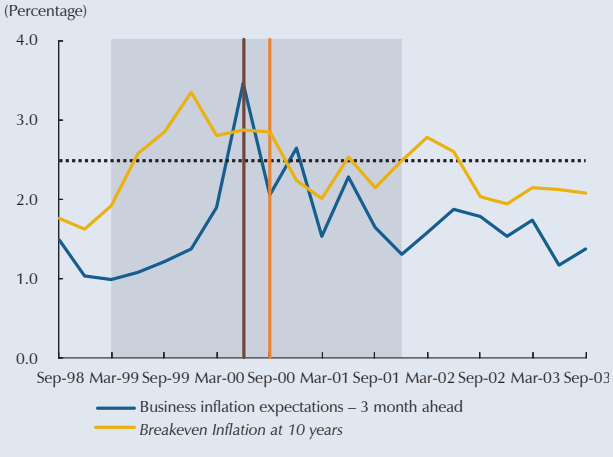
a/ GST (Goods and service tax) is a VAT (value added tax) in Australia, New Zealand and Canada.
b/ Restructuring of the tax system included introduction of the GST, which is a 10% tax on consumer goods, excluding basic foodstuffs, personal care items, health, education, goods related to children and exports. Ten (10) taxes considered inefficient (on wholesale transactions and rent, among others) were eliminated.
c/ In addition to the increase in the GST, a higher tax burden on tobacco consumption was implemented and the energy sector was included in the tax base.
d/ Value added tax
Sources: Central banks of Australia, New Zealand, the United Kingdom, Norway and Canada; compiled by the authors.

## Graph B3.1
## Australia: Annual Inflation, Inflation Expectations and the Policy Rate

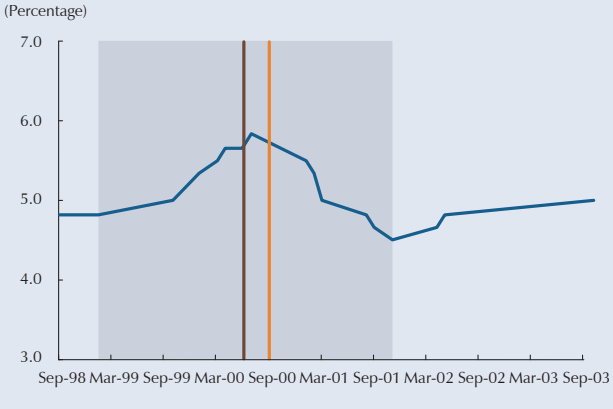
### A. Annual Inflation




### B. Inflation Expectations



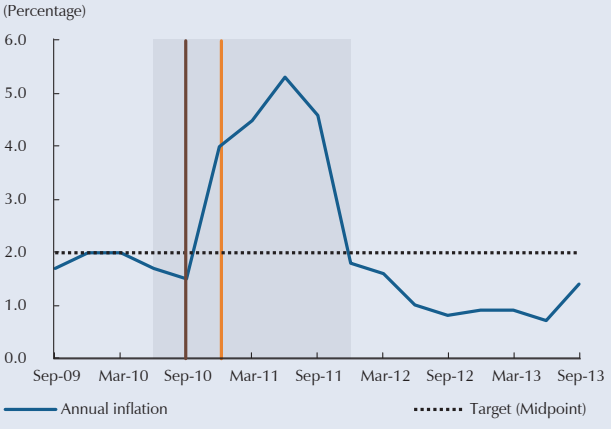

### C. Policy Rate



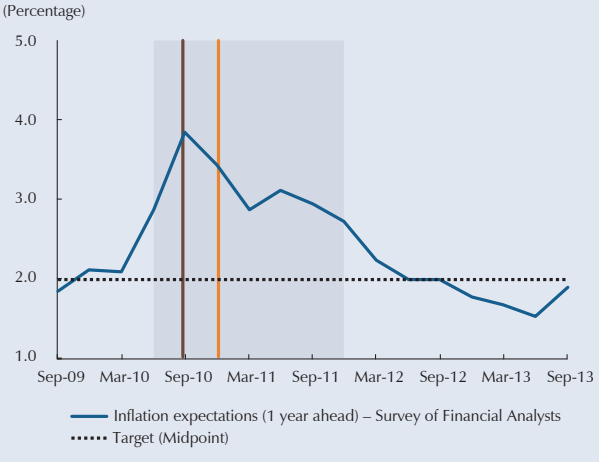

Note: The brown line represents the deadline for adoption of the change in the value added tax. The orange line is the date of the press release on the policy decision that mentions the change in the value added tax. The gray shading denotes the period in which the inflation reports refer to the change in the value added tax.
Sources: Central Bank of Australia and Bloomberg; authors' calculations.

## Graph B3.2
## New Zealand: Annual Inflation, Inflation Expectations and the Policy Rate

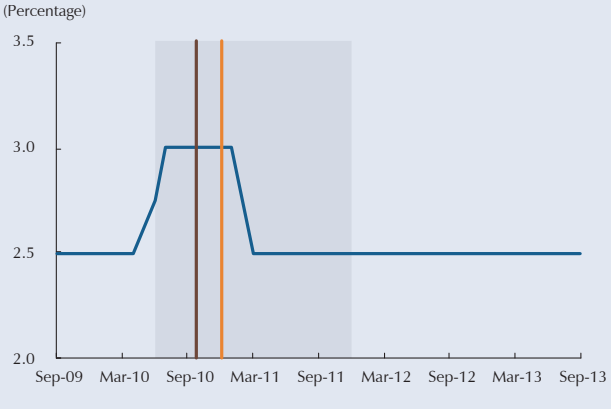
### A. Annual Inflation




### B. Inflation Expectations



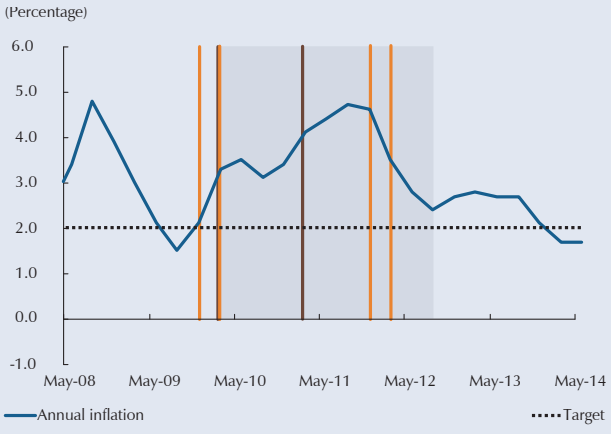

### C. Policy Rate



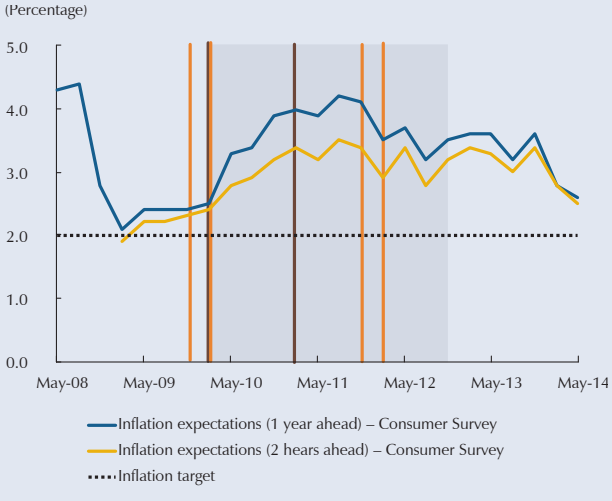

Note: The brown line represents the deadline for adoption of the change in the value added tax. The orange line is the date of the press release on the policy decision that mentions the change in the value added tax. The gray shading denotes the period in which the inflation reports refer to the change in the value added tax.
Sources: Central Bank of New Zealand and Bloomberg; authors' calculations.

## Graph B3.3
## United Kingdom: Annual Inflation, Inflation Expectations and the Policy Rate

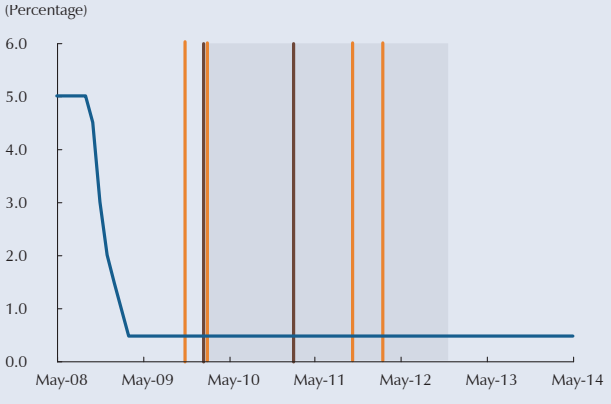
### A. Annual Inflation




### B. Inflation Expectations



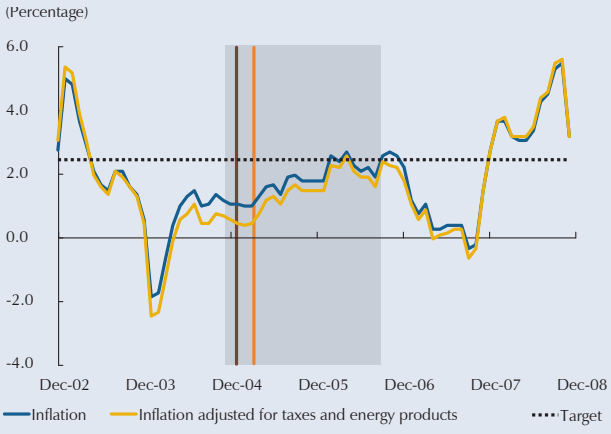

### C. Policy Rate



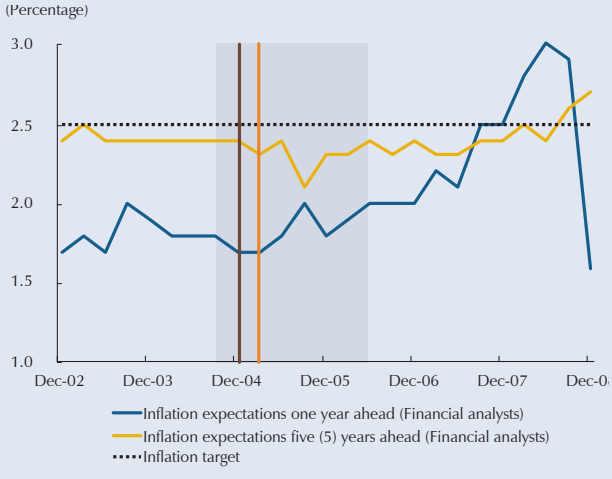

Note: The brown line represents the deadline for adoption of the change in the value added tax. The orange line is the date of the press release on the policy decision that mentions the change in the value added tax. The gray shading denotes the period in which the inflation reports refer to the change in the value added tax.
Sources: Central Bank of England and Bloomberg; authors' calculations.

## Graph B3.4
## Norway: Annual Inflation, Inflation Expectations and the Policy Rate

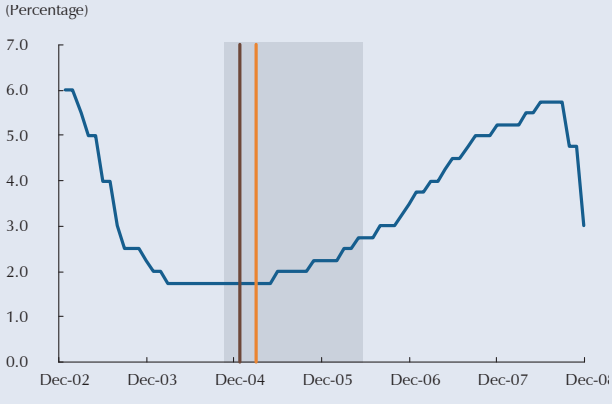
### A. Annual Inflation




### B. Inflation Expectations



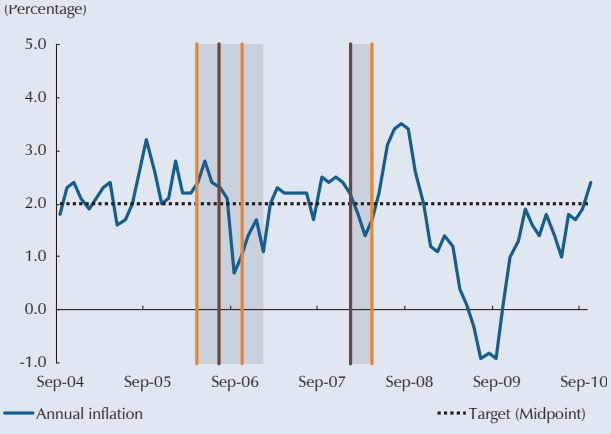

### C. Policy Rate



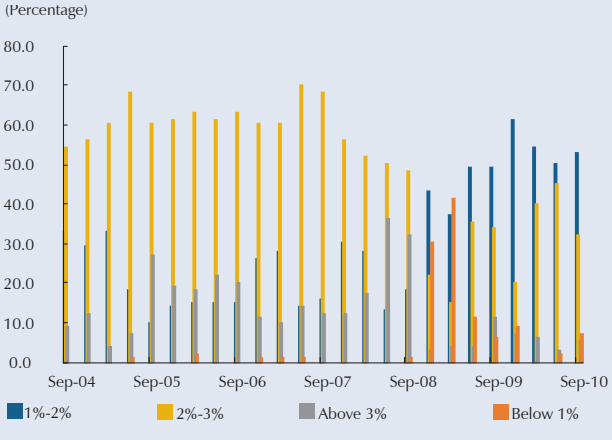

Note: The brown line represents the deadline for adoption of the change in the value added tax. The orange line is the date of the press release on the policy decision that mentions the change in the value added tax. The gray shading denotes the period in which the inflation reports refer to the change in the value added tax.
Sources: Central Bank of Norway and Bloomberg; authors' calculations.

Graph B3.5
Canada: Annual Inflation, Inflation Expectations and the Policy Rate

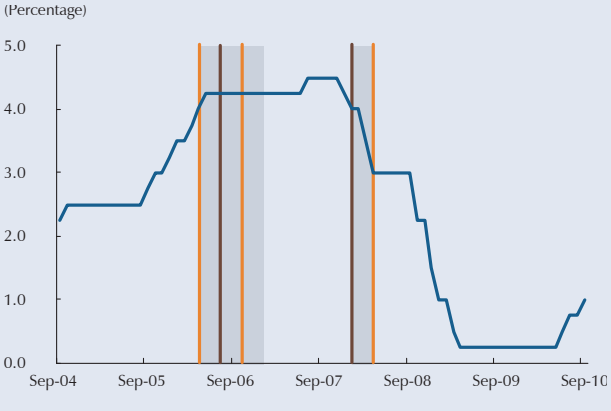
A. Annual Inflation




B. Inflation Expectations Two Years Ahead




C. Policy Rate




Note: The brown line represents the deadline for adoption of the change in the value added tax. The orange line is the date of the press release on the policy decision that mentions the change in the value added tax. The gray shading denotes the period in which the inflation reports refer to the change in the value added tax.
Sources: Central Bank of Canada and Bloomberg; authors' calculations

# V. Risks to Macroeconomic Stability

**Colombia's external imbalance is being corrected progressively, the exchange** rate has remained relatively stable in recent months, borrowing has slowed and home prices (relative to the CPI) are no longer on the rise.

**For this year, the macroeconomic imbalances estimated in previous reports** are likely to be corrected in a context where international markets might face high volatility, while certain risks to the cost of financing could become more relevant.

As explained in previous chapters, the information at hand shows the Colombian economy has slowed gradually, although faster than was expected several months ago. Even so, the country has sustained growth rates higher than those of other economies in the region that also faced a drop in terms of trade.[5] Therefore, the correction in Colombia's external imbalance is occurring progressively, so far with no abrupt contraction in spending and without a significant rise in the unemployment rate. The exchange rate, in turn, has remained relatively stable in recent months, after strong nominal and real depreciation. At the same time, borrowing has slowed and home prices (relative to the CPI) are no longer on the rise.

Various factors have contributed to the gradual adjustment. To begin with, the country continues to have access to external financing.[6] The public sec-

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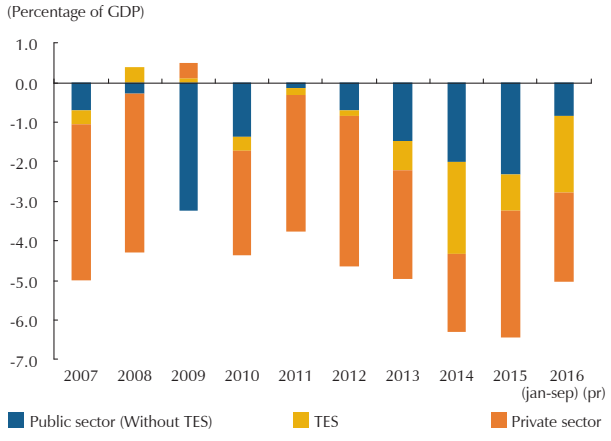
5 See Box 1: "Disminución de los precios de los productos básicos y sus efectos sobre las economías de Chile, Perú y Colombia," *Report of the Board of Directors to the Congress of Colombia,* July 2016.

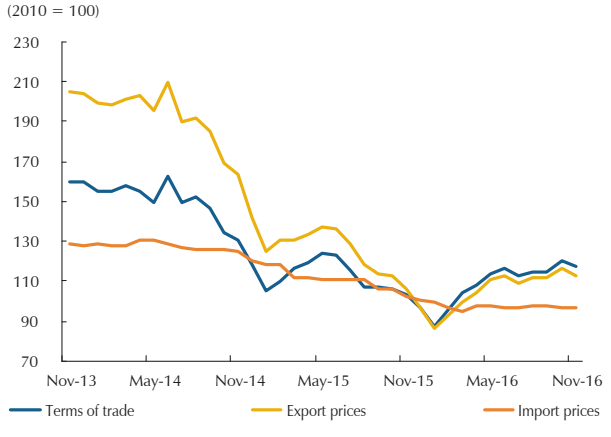
6 Sharp peso depreciation between mid-2014 and February 2016 significantly increased the peso cost of foreign currency loans, despite the fact that external interest rates remained low. As of March 2016, with the recovery in oil prices, the peso gained strength and expectations of further depreciation eased.

Graph 47
Financial Account in the Balance of Payments
(Without reserve assets)




(pr): Preliminary
Note: According to the sixth edition of the IMR Balance of Payments Manual, net capital income is shown with a minus sign.
Source: *Banco de la República*.

Graph 48
Terms of Trade Index and Components Thereof[a/]




a/ Foreign trade method.
Source: *Banco de la República*.

tor, which has been the most affected in terms of income due to the drop in oil prices, relied on added external liabilities for its financing (Graph 47). This helped to maintain its spending as a percentage of GDP and to mitigate its impact on domestic demand. The tax reform bill approved in December, which reinforced fiscal sustainability, will help to maintain access to external financing and to consolidate the adjustment process.

Although the plunge in imports was the main component that explains the lower current account deficit in 2016, the decline in international prices for these goods (Graph 48) contributed to the fact that the drop in demand for imported goods was not more pronounced. A healthy local financial system, which has taken loan risk assessments into account when granting credit, also has been instrumental in easing the shock. Indeed, although the loan portfolio has slowed, its growth continues to outpace the rise in nominal GDP. On the other hand, credit risk indicators have increased, but are still at historically low levels.[7]

For this year, the macroeconomic imbalances estimated in previous reports are likely to be corrected in a context where international markets might face high volatility, while certain risks to the cost of financing could become more relevant. On the one hand, although external interest rate hikes are expected, they might be higher than anticipated because of a somewhat more rapid return to normal for monetary policy in the United States. In addition, there is uncertainty about the implementation of possible protectionist measures that would affect world trade, [8]which can have a negative impact on the appetite for risk. Also, the country's terms of trade could recover less than expected, or our trading partners could grow less than projected. Besides affecting the

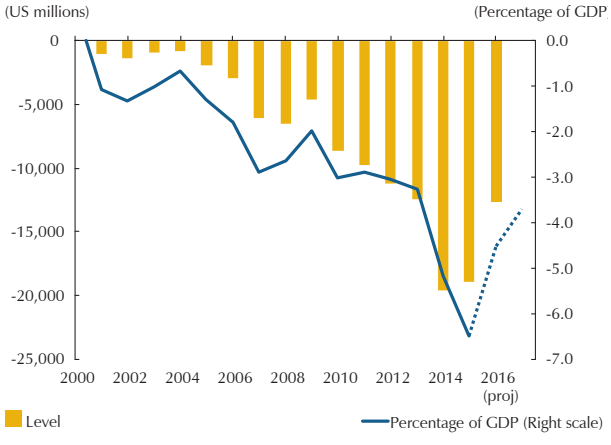
7 The microcredit indicators are an exception. They are near the highs witnessed since the series has been available. The micro-lending institutions in *Banco de la República*'s Survey on Microcredit cited this deterioration as being the main factor that prompted them to increase their requirements for granting new loans of this type.

8 Originating, for example, with the new administration in the United States, or with decisions concerning Brexit.

country risk premium, these factors could imply additional movement in variables such as the exchange rate and asset prices.

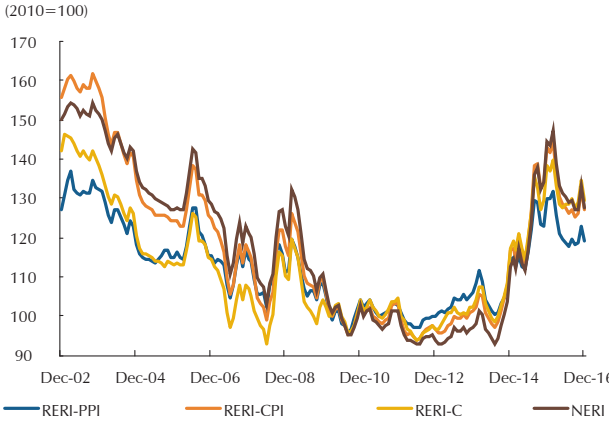
As for domestic financing, a further deterioration in credit risk indicators cannot be ruled out. It will depend, among other factors, on how economic activity and the job market perform. If this risk materializes, borrowing requirements would increase and upward pressure could be brought to bear on lending rates.

Graph 49
Current Account in the Balance of Payments




(proj): Projected
Source: *Banco de la República*.

Graph 50
Multilateral Exchange Rate Indexes
(nominal and real)




Note: The NERI is the nominal exchange rate index for the Colombian peso against the currencies of the country's main trading partners. The RERI-PPI and the RERI-CPI compare the purchasing power of the Colombian peso against our main trading partners using as deflator the PPI and the CPI, respectively. In the RERI-C (for competitiveness), a comparison is made against our main competitors in US markets for coffee, banana, flower and textiles.
Source: *Banco de la República*

Recent developments and several considerations regarding the current account, the real exchange rate, borrowing and home prices are discussed below. These are variables identified in the literature as relevant to understanding possible macroeconomic imbalances and their process of adjustment. Also included is the macroeconomic imbalance index (MII),[9] which combines the estimated imbalances for each of these variables.

## A. THE CURRENT ACCOUNT AND THE REAL EXCHANGE RATE

The country's external deficit continued to be corrected by the third quarter of 2016. During the first nine months of 2016, it was equivalent to 4.7% of GDP and, in US dollars, it was 35% less than a year earlier. As outlined in Chapter I of this report, the correction was due to a drop in current expenditure, which was greater than the decline in income. The reduction in outlays is explained by the decline in imports and, to a lesser extent, by fewer profits for companies with foreign capital. In terms of the national accounts, the adjustment in the current deficit is partly a reflection of the weakness of domestic demand, especially the decline in investment. The balance of payments deficit in all of 2016 is estimated to have been equivalent to 4.5% of GDP and, in levels, similar to the value observed in 2013. The forecasts for 2017 estimate a deficit of 3.7% of GDP (Graph 49).

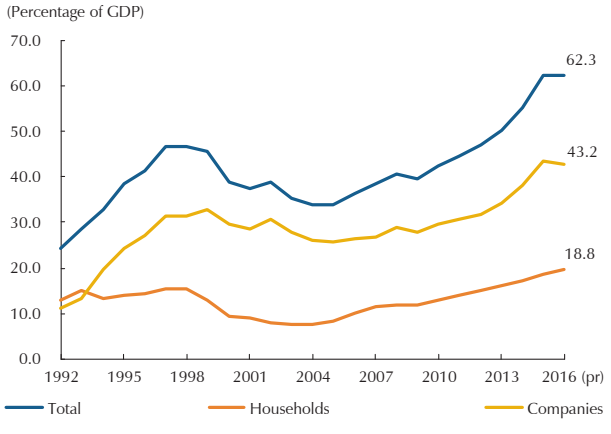
9 See Arteaga, Huertas & Olarte (2012). "Índice de desbalance macroeconómico," *Borradores de Economía*, No. 744, *Banco de la República*.

During the year, the Colombian peso weakened in nominal and real terms, on average, against the dollar and the currencies of country's main trading partners, although much less so than between 2014 and 2015 (Graph 50). The slowdown in real depreciation is explained largely by terms of trade that were lower than in 2015 - although they have recovered - and by a slight increase in the country risk premium.

Colombia's external imbalance is expected to continue to decline during 2017, amidst an environment of better terms of trade and low growth in external and domestic demand. Even so, the current account deficit relative to GDP would remain high compared to the historical average (near 2%, if calculated since 1970) and with respect to the levels of other countries in the region.

As for financing the external deficit, the scenario described in Chapter I of this report anticipates international interest rate hikes, mainly due to the normalization of monetary policy in the United States, which could occur a bit faster than was anticipated in previous reports. On the other hand, given the tremendous amount of uncertainty surrounding the measures to be taken by the new administration in the United States or the implementation of Brexit, among other elements, an increase in risk aversion and country risk premiums cannot be ruled out. These factors could affect the cost of financing and influence investment decisions (both direct and portfolio investment).

Graph 51
Indebtedness[a/] - Households and Companies




a/ Includes bank loans in domestic and foreign currency, mortgage portfolio securitizations, bonds floated on the market and foreign direct financing.
Source: Financial Superintendence of Colombia; calculations by *Banco de la República*.

## B. BORROWING

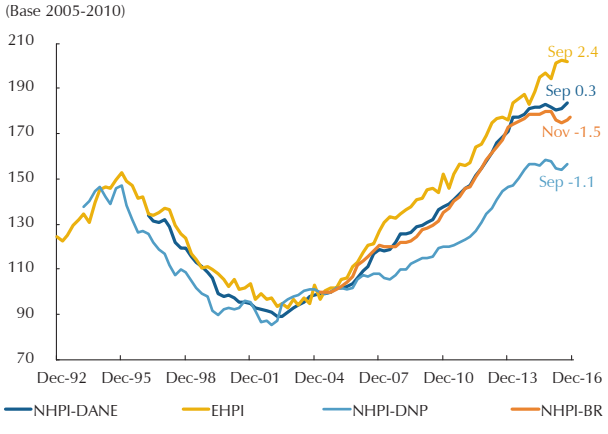
The behavior of borrowing also is a reflection of the adjustment process facing the economy. Although indebtedness remains at historically high levels (relative to GDP), it has slowed, particular corporate borrowing, which includes bank lending (Graph 51).

The trend in borrowing is a result of both demand and supply factors. On the demand side, the slowdown in the economy and the deterioration in business and consumer confidence, coupled with the increase in interest rates on loans throughout the year, discourage the demand for loans. On the supply side, according to the December 2016 edition of the Survey of the Credit Situation in Colombia, banks maintained or increased their requirements for new loans of all types, as they have done in recent months and as is expected to continue to occur in the first quarter of 2017. The rise in the cost of funding, as well as the deterioration that is beginning to be observed in the quality of the loan portfolio, are factors that explain this behavior.

The trend witnessed in borrowing during recent quarters could continue in 2017. The low momentum forecast for consumption and investment would not support substantial loan growth. On the other hand, although credit risk has not increased significantly, further deterioration in the quality of the portfolio cannot be ruled out, given the fact that economic activity is weak. This could imply stiffer requirements for granting loans and, thus, accentuate the slowdown in the portfolio.

## C. HOME PRICES

Graph 52
Home prices in Colombia (Relative to the CPI)[a/]




a/ Data at the third quarter of 2016 for the NHPI-DANE, the NHPI-NDP and the NHPI-BR. The latest figures for the NHPI-BR are up to the Sept.-Nov. 2016 quarter.
Sources: DANE, DNP and *Banco de la República*

New home prices (deflated by the CPI) have remained relatively stable in the last two years. As of September 2016, the index calculated by DANE (NHPI-DANE) showed an increase of 0.3% per year and that of the DNP (NPV-DNP), an increase of -1.1%, while the index calculated by *Banco de la República* (IPVN-BR) posted a 1.5% annual decline for the moving quarter ended in November. The annual increase in existing homes (EHPI) at September was 2.4%, the lowest since December 2011 (Graph 52).

According to figures compiled by the Colombian Chamber of Construction (Camacol), new home sales (in units) fell slightly during the year (-2.1%),[10] but remained very close to the high point reached in 2015. The segments that reported growth in the number of units sold were those supported by government programs. Specifically, homes priced between 70 and 135 times the minimum monthly wage (SMMLV), on which the *Mi Casa Ya* Program ("My Home Now")[11] is targeted, and the interest rate coverage for low-income housing (LIH), as per Decree 1190/2012 (FRECH II),[12] saw an annual increase of 5.7% compared to the total for 2015, and homes priced at 135 to 335 SMMLV, which benefit from the interest rate subsidy under the Second Plan to Stimulate Productivity and Employment (PIPE 2)[13] rose 5.7%

10 The total for the thirteen regional áreas (Antioquia, Atlántico, Bogotá and Cundinamarca, Bolívar, Boyacá, Caldas, Huila, Nariño, Norte de Santander, Risaralda, Santander, Tolima and Valle).

11 *Mi Casa Ya* is a program for households with an income anywhere between two and four times the minimum monthly wage. The family receives a subsidy for the down payment (from 12 to 20 times the SMMLV), plus and interest rate coverage (4 pp) during the first seven years of the loan to purchase low-income housing priced between 70 and 135 times the SMMLV.

12 Interest rate coverage (between 4 and 5 pp) is provided during the first seven years of the loan in the case of low-income housing (priced below 135 times the SMMLV) purchased by households with an income under eight times the SMMLV.

13 The subsidy is 2.5 pp during the first seven years of the loan.

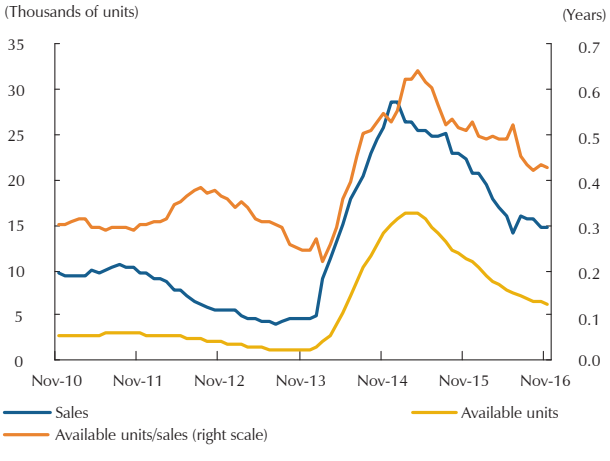
year on year. In contrast, sales of so-called priority low-income housing (PLIH); that is, homes priced under 70 times the SMMLV, were down 34.1%, while those priced above 335 times the SMMLV contracted by 11.1% (Graph 53).

The supply, on the other hand, increased more than sales in all price ranges, except in the PLIH segment, where there were no active government programs during 2016. This means the time it would take to sell all available units at the current rate of sales has increased for homes priced over 70 times the SMMLV; that is, for more than 80% of the market (Graph 53).

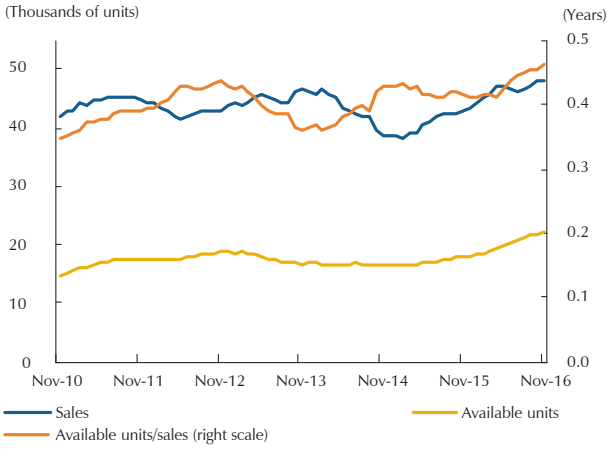
Consequently, a dynamic supply versus relatively stagnant sales might explain the behavior of prices in an environment where the profitability of housing

Graph 53
New Homes: Sales vs. Units Available for Sale[a/]

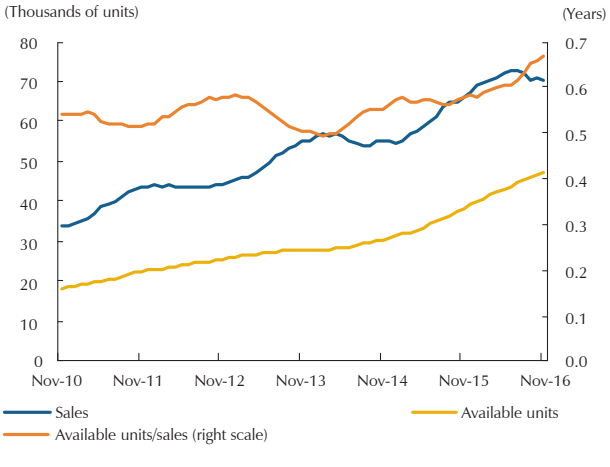
A. Priced equal to or less than 70 times the minimum monthly wage (SMMLV in Spanish)



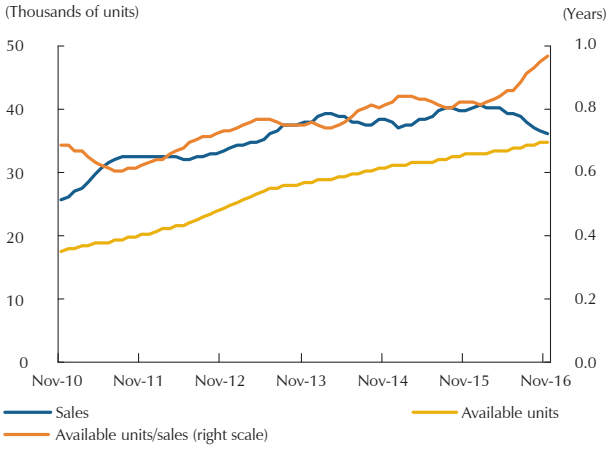

B. Priced over 70 SMMLV and equal or less than 135 SMMLV




C. Priced over 135 SMMLV or equal to or less than 335 SMMLV




D. Priced over 335 SMMLV




a/ Includes figures from 13 regional branches. Sales reflect the cumulative figure for 12 months and the average number of units available for sale in the last 12 months.
Source: Camacol; calculations by *Banco de la República*.

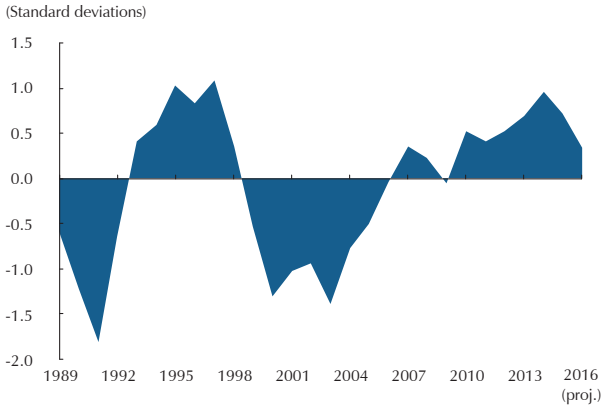
relative to another type of investment seems to have been diminished by several factors. On the one hand, the rent hikes in 2016 were below the actual rate of inflation, interest rates on mortgages increased, and possibilities for housing to appreciate were more moderate. During the same year, the yield on certificates of deposit (CDT), TES (government bonds) and shares increased and posted rates that exceeded the increases in rent payment.

As for 2017, in addition to the programs in force during 2016, the government has announced it will launch the second phase of its "Free Home" Program[14] and the second phase of the PLIH Program, which will operate along the same lines as *Mi Casa Ya*. Besides, lease contracts will begin to be an option in the *Mi Casa Ya* program. This will contribute to growth in the PLIH segment, provided the households benefitting from these initiatives continue to fulfill the requirements that allow them to have financial closure.

In terms of the non-PLIH segment, although the interest-rate subsidy will be maintained in PIPE 2, the VAT on new homes of more than 26,800 UVT (tax value units), as contemplated in the tax reform adopted last December, may further weaken that high income market, with more of an impact as of 2018.[15]

This being the case and considering the macroeconomic scenario described in the previous chapters, the moderation in prices and quantities in the housing market is expected to continue.

Graph 54
Macroeconomic Imbalance Index




Proj.: Projected
Source: *Banco de la República*

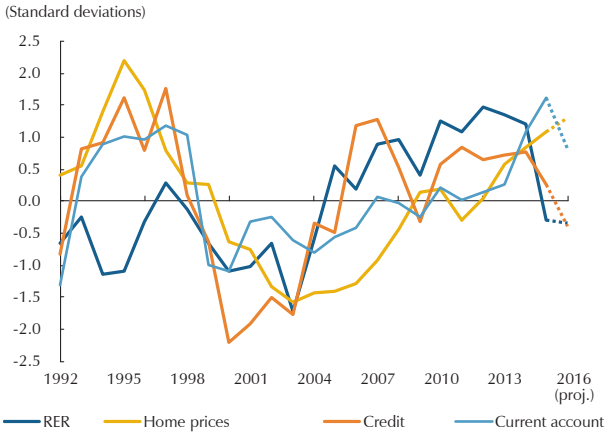
## D. MACROECONOMIC IMBALANCE INDEX

In short, the information and forecasts at hand suggest the current account deficit continued to decline in 2016. At the same time, the peso weakened against the currencies of the country's main trading partners, on average, while housing prices relative to the CPI stabilized and borrowing slowed. Accordingly, the estimates of the macroeconomic imbalance index suggest the imbalances in the Colombian economy would have declined during the year at a higher rate than in 2015 (Graph 54).

14 In its first phase, the program delivered 100,000 homes. For the second phase, 30,000 units are planned.

15 According to the temporary paragraph in Article 185 of Act 1819 dated December 29, 2016 (Tax Reform Act), the real estate for which some type of purchase agreement is signed by December 31, 2017 is exempt from the 5% VAT.

Graph 55
Gaps in the Current Account, Real Exchange Rate, Home prices and Credit[a/]




(Proj.) Projected
a / The gaps are calculated as the difference between the observed value and the estimated long-term value. In the case of the RER, its negative is presented. This means positive gaps, in all cases, indicate imbalances.
Source: *Banco de la República*

For all variables, other than home prices, the new data point to more of a correction in the imbalances than was contemplated in the estimates presented in the September quarterly report. In the case of the current account, the forecast in Chapter I indicates the deficit would have been less in 2016 (4.5% of GDP vs. 4.7% of GDP in the September report). In terms of the real exchange rate, the coal and oil prices considered in the last report were lower than those actually observed. Thus, higher terms of trade are consistent with a stronger currency in real terms. Lastly, indebtedness has slowed more than was projected three months ago (Graph 55).

# Attachment

## Macroeconomic Forecasts by Domestic and Foreign Analysts

The latest forecasts developed by domestic and foreign analysts for the major economic variables in 2017 and 2018 are summarized in this attachment. At the time they were consulted, the analysts had access to data up to January 24, 2017.

### Forecasts for 2017

The domestic analysts expect the economy to grow by 2.4%, on average, compared to 2.7% estimated in the *Inflation Report* for last quarter. The foreign analysts who were consulted are forecasting 2.3% GDP growth, on average.

Table A1
Forecasts for 2017

| | Real GDP Growth (Percentage) | CPI Inflation (Percentage) | Nominal exchange rate end of: | Nominal fixed-term deposit rate (Percentage) | Fiscal deficit (Percentage of GDP) | Unemployment Rate in the Thirteen Major Metropolitan Areas (Percentage) |
|---|---|---|---|---|---|---|
| **Domestic Analysts** | | | | | | |
| Alianza valores | 1.5 | 5.3 | 3,400 | 5.9 | 3.6 | 10.5 |
| ANIF | 2.2 | 4.6 | n. d. | 6.2 | 2.6 | 10.1 |
| Banco de Bogotá [a/] | 2.8 | 4.4 | 2,900 | 6.2 | 3.3 | 9.9 |
| Bancolombia | 2.6 | 4.3 | 3,010 | 5.3 | 3.3 | 9.9 |
| BBVA Colombia | 2.4 | 4.1 | 3,060 | 5.7 | 3.3 | 10.2 |
| BTG Pactual | 2.6 | 4.0 | 3,080 | n. d. | 3.3 | 9.5 |
| Corficolombiana | 2.8 | 3.9 | 3,300 | 5.5 | 3.3 | 9.5 |
| Corpbanca [a/ b/] | 2.3 | 4.3 | 3,080 | 5.3 | 3.3 | 10.0 |
| Corredores Davivienda [a/ c/] | 2.4 | 6.1 | 3,000 | 6.5 | 3.5 | 9.6 |
| Credicorp Capital [d/] | 2.1 | 4.3 | 2,800 | 5.5 | 2.6 | 10.4 |
| Davivienda [a/] | 2.4 | 6.1 | 3,000 | 6.5 | 3.5 | 9.6 |
| Fedesarrollo | 2.6 | 3.9 | n. d. | n. d. | 3.1 | n. d. |
| Ultraserfinco [e/] | 2.4 | 4.8 | 2,980 | 6.2 | 3.5 | 9.0 |
| **Average** | **2.4** | **4.6** | **3,055** | **5.9** | **3.2** | **9.9** |
| **Foreign Analysts** | | | | | | |
| Citibank-Colombia [a/] | 2.3 | 4.0 | 3,026 | 5.9 | 3.3 | 11.3 |
| Deutsche Bank | 2.5 | 4.4 | 2,971 | n. d. | 3.5 | 9.7 |
| Goldman Sachs | 2.1 | 4.4 | 2,800 | n. d. | 3.5 | n. d. |
| JP Morgan | 2.2 | 3.9 | 3,250 | n. d. | 3.3 | n. d. |
| **Average** | **2.3** | **4.2** | **3,012** | **5.9** | **3.4** | **10.5** |

a/ The projected deficit pertains to the national government.
b/ Formerly Banco Santander
c/ Formerly Corredores Asociados
d/ Formerly Correval
e/ Formerly Ultrabursátiles
n.d. Not available
Source: *Banco de la República* (electronic survey)

Table A2
Forecasts for 2018

| | Real GDP Growth | Inflation CPI | Nominal Exchange Rate End of: |
|---|---|---|---|
| | (Percentage) | | |
| **Domestic Analysts** | | | |
| Alianza valores | 2.3 | 4.3 | 3,600 |
| ANIF | 2.8 | 3.3 | n. d. |
| Banco de Bogotá | 3.4 | 3.0 | 2,950 |
| Bancolombia | 3.4 | 3.2 | 2,950 |
| BBVA Colombia | 3.3 | 3.6 | 2,900 |
| BGT Pactual | 3.0 | 3.3 | 3,110 |
| Corficolombiana | 3.5 | 3.5 | 3,275 |
| Corpbanca [a/] | 2.8 | 3.5 | 3,175 |
| Corredores Davivienda [b/] | 2.7 | n. d. | n. d. |
| Credicorp Capital [c/] | 2.8 | 2.9 | 2,800 |
| Davivienda | 2.7 | n.d. | n. d. |
| Fedesarrollo | 3.3 | 3.0 | n. d. |
| Ultraserfinco [d/] | 2.8 | 3.6 | 2,900 |
| **Average** | **3.0** | **3.4** | **3,073** |
| **Foreign Analysts** | | | |
| Citibank-Colombia | 3.2 | 3.1 | 2,850 |
| Deutsche Bank | 3.6 | 3.6 | n. d. |
| Goldman Sachs | 2.8 | 3.5 | 2,800 |
| JP Morgan | 3.3 | 3.8 | n. d. |
| **Average** | **3.2** | **3.5** | **2,825** |

a/ Formerly Banco Santander
b/ Formerly Corredores Asociados
c/ Formerly Correval
d/ Formerly Ultrabursatiles
n.d. Not available
Source: *Banco de la República* (electronic survey)

As for prices, the domestic analysts estimate 4.6% inflation and the foreign analysts expect it to be 4.2% by the end of the year. Both forecasts are outside the target range set for 2017 by the Board of Directors of *Banco de la República* (JDBR) (between 2.0% and 4.0%).

In terms of the exchange rate, the domestic analysts expect the representative market rate (RMR) to end the year at COP 3,055, on average, versus COP 2,953 estimated in the survey that was taken into account for the previous report. The foreign analysts expect the RMR to be around COP 3,012 by the end of the year.

The domestic analysts expect the interest rate on fixed-term deposits (DTF) to average 5.9%. They also anticipate 9.9% unemployment.

**Forecasts for 2018**

The domestic analysts are forecasting 3.0% economic growth in 2018, while the foreign analysts are expecting 3.2%. As for inflation, the domestic and foreign analysts are forecasting 3.4% and 3.5% respectively. In terms of the nominal exchange rate, the domestic firms are expecting it to average COP 3,073, while the foreign ones are forecasting COP 2,825.

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